



**ENFORCEMENT BRANCH  
OF THE COMPLIANCE COMMITTEE**

CC-2007-1-11/Greece/EB  
27 October 2008

**HELLENIC REPUBLIC  
MINISTRY FOR THE ENVIRONMENT, PHYSICAL PLANNING  
& PUBLIC WORKS  
DIRECTOR GENERAL OF ENVIRONMENT**

Athens, October 27, 2008  
Ref: 1990

**To: Mr Feng Gao  
Secretary to the Compliance Committee  
UNFCCC Secretariat**

Fax: +49 228 815 1999

*Dear Sir,*

The Ministry for the Environment Physical Planning and Public Works, in accordance with the decision of the Enforcement Branch of the review and assessment of the Plan submitted under paragraph 2 of section XV of 7 October 2008, submits the revised plan required by paragraph 4 of the above decision.

*Attached: 55 pages*



**IOANNIS VOURNAS**

**Director General**

**cc :**

- 1. Ministry for the Environment  
Office of Deputy Minister  
Mr St. Kaloyannis**
- 2. Elpida Politi  
National Focal Point**



**HELLENIC REPUBLIC  
MINISTRY FOR THE ENVIRONMENT,  
PHYSICAL PLANNING AND PUBLIC WORKS**

**SUBMISSION OF GREECE TO THE COMPLIANCE COMMITTEE**

**REVISED PLAN UNDER PARAGRAPH 4 OF THE DECISION CC-2007-1-  
10/GREECE/EB/7-10-08  
ON THE REVIEW AND ASSESSMENT OF THE PLAN SUBMITTED BY  
GREECE ON 16 JULY 2008, UNDER PARAGRAPH 2 OF SECTION XV OF  
ANNEX TO DECISION 27/CMP.1**

**ATHENS,  
OCTOBER 2008**

**REVISED PLAN UNDER PARAGRAPH 4 OF THE DECISION  
CC-2007-1-10/GREECE/EB/7-10-08**

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## ***1. Introduction***

The revised plan is submitted in accordance with the decision CC-2007-1-10/Greece/EB/7-10-08 of the Enforcement Branch on the review and assessment of the plan submitted by Greece on 16 July 2008, under paragraph 2 of section XV.

Greece explained to the Enforcement Branch, during its sixth meeting on 6 October 2008, that Greece had already implemented the measures needed to remedy the non-compliance and that the visit of the expert review team (assigned to execute the in-country review of the national system, in conjunction with a review of the an annual inventory report generated by this national system ), coordinated by the secretariat, had been completed.

Paragraph 4 of decision CC-2007-1-10/Greece/EB/7-10-08 of the Enforcement Branch requested a revised plan to be submitted addressing the stipulated elements and issues explicitly. This revised plan is submitted in accordance with this requirement.

In order to facilitate the review and assessment of the revised plan by the enforcement branch, the revised plan refers also to the relevant paragraphs of the plan submitted in July.

## ***2. Analysis of the causes of non-compliance*** *(section 1 of July plan)*

The Ministry for the Environment, Physical Planning and Public Works (henceforth Ministry for the Environment, MINENV) is the governmental body responsible for the development and implementation of environmental policy in Greece. Moreover, according to the Law 3017/2002, with which Greece ratified the Kyoto Protocol, the Ministry for the Environment is responsible for the co-ordination of all ministries involved, as well as of any relevant public or private organization, for the implementation of the provisions of the Kyoto Protocol. The Ministry for the Environment has also been designated competent authority for the implementation of the Kyoto Protocol flexible mechanisms.

In this context, the Ministry for the Environment has the overall responsibility for the national GHG inventory, and the official consideration and approval of the inventory prior to its submission.

Till the beginning of 2007, the entities participating in the system, apart from the Ministry for the Environment which was designated as the national entity for the GHG inventory, were:

- the National Observatory of Athens (NOA), assigned on a contract basis by the Ministry for the Environment the technical responsibility for the compilation of the annual inventory

- other ministries of the Greek government and relevant public or private organizations that were involved in the inventory preparation process.

Since early 2007, taking the advantage of the experience gained during the past years, the Ministry for the Environment, started an effort to further enhance the reliability of the national GHG inventory system, in compliance with the guidelines for national systems under Article 5 /Paragraph 1 of the Kyoto Protocol (decision 19/CMP.1) and the preparation of the information required under Article 7 of the Kyoto Protocol (decision 15/CMP.1), focused mainly on the continuity of the inventory preparation process and the assurance of the timely performance of the system, on enhancing the role of the Ministry in the whole inventory process, on the institutional, legal and procedural arrangements among the responsible government agencies and other entities, and the technical competence of the staff involved.

The ERT visited Greece the last week of April 2007, thus the in-country review of Greece coincided with this transitional period of the country's effort for reorganisation and improvement of the national system.

The ERT, during its visit, was able to assess the organisation of the National System as described in the Initial Report of Greece submitted in December 2006, and the last submitted GHG inventory. However due to the coincidence of the above-mentioned reorganisation, the ERT concluded in its report FCCC/IRR/2007/GRC/28-12-07, that the national system of Greece does not fully comply with the guidelines for national systems under Article 5, paragraph 1 of the Kyoto Protocol and the guidelines for the preparation of the information required. In particular, it concluded that the maintenance of the institutional and procedural arrangements; the arrangements for the technical competence of the staff; and the capacity for timely performance of Greece's national system is an unresolved problem, and therefore listed it as a question of implementation.

The Hellenic Ministry for the Environment submitted written comments on the report to the UNFCCC Secretariat on the 28<sup>th</sup> of December 2007, which together with the report were forwarded to the Compliance Committee.

The Enforcement Branch of the Compliance Committee decided to proceed with the question of implementation, and following the expedited procedures contained in section X of Decision 27/ CMP.1, Greece submitted a written submission on the 26<sup>th</sup> of February 2008 and requested a hearing, which was held during the Enforcement Branch meeting of 4-5 March 2008, with the presence of the Deputy Minister for the Environment and the General Director for the Environment of Greece.

During the hearing, in addition to the information contained in the submission of 26 February, 2008, of the actions taken to address the unresolved problems led to the question of implementation, Greece made a detailed presentation to the Enforcement Branch about the legal, institutional and procedural arrangements in place to ensure the continuation and enhancement of the national system, together with the presentation of its overall strategy in order to comply with its KP target.

The enforcement branch's preliminary finding, CC-2007-1-6/Greece/EB/6-3-08, although acknowledging the progress reported, stated that the information submitted and presented was not sufficient for the enforcement branch to conclude that the question of implementation has now been fully resolved. It also stated that, a further in-country review of Greece's new national system, in conjunction with a review of an annual inventory report generated by this national system, is required for the enforcement branch to assess present compliance with the guidelines.

Greece forwarded to the enforcement branch a further written submission on 8 April 2008, where, in addition to those already mentioned in the submission of 26 February, 2008, and the detailed presentation to the Enforcement Branch, informed the Branch about

- (a) the assurance of the completeness and timely submission of the inventory through the internal EU coordination.
- (b) the timely submission of the 2008 GHG inventory to the UNFCCC Secretariat, as a self-approval of the maintenance of the system, the technical competence of the staff, and the capacity for timely performance of the national system.
- (c) the conclusion of the transfer of knowledge from the National Observatory of Athens (NOA) to the Climate Team of the Ministry for the Environment and the National Technical University of Athens (NTUA) with a seminar.

The above information was also confirmed by the representatives of Greece to the meeting of the Enforcement Branch on 16-17 April 2008, when the final decision was adopted.

The final decision CC-2007-1-8/Greece/EB/17-4-08, confirmed the preliminary finding, and Greece was declared to be in non-compliance, and not eligible to participate in the mechanisms.

### **3. Measures that Greece implements to remedy the non-compliance**

#### **3.1. Re-organisation of the national system**

*(section 2.1 paragraphs 3&4 of July plan)*

Since early 2007, the Ministry for the Environment, started an effort to further enhance the reliability of the national GHG inventory system in compliance with the guidelines for national systems under Article 5 /Paragraph 1 of the Kyoto Protocol (decision 19/CMP.1) and the preparation of the information required under Article 7 of the Kyoto Protocol (decision 15/CMP.1),

Concerning the transition period of 2007, special attention was given for the complete and successful transfer of knowledge, appropriate data and supporting informative material from NOA, technical consultant of MINENV through 2007, to MINENV and then to NTUA. More specifically, according to its contract, NOA, the previous technical consultant of MINENV, delivered to MINENV the reports for EU and UNFCCC, as well as special reports dealing with the description and improvement issues of the National GHG Inventory System, the methodologies being used for the preparation of the reports, the calculation tools and databases (working files in excel format), covering all the sectors of the inventory and the whole inventory period, and were stored to the Centralised Inventory file in MINENV premises.

The knowledge transfer from NOA was ensured through several meetings and ad-hoc communication that took place during the duration of the contract, and finally, the whole process of knowledge transfer was completed with a two-days working meeting conducted on 20<sup>th</sup> and 21<sup>st</sup> of March 2008 at MINENV's premises. At this meeting, the data, methodologies, models and tools (working excel files, CRF reporter tool, etc) that were used by NOA for the GHG inventory preparation of the 2006 submission (years 1990-2004), along with the emissions projection tools, were extensively discussed between NOA, MINENV climate team and NTUA experts.

The new organisational structure of the national inventory system is focusing mainly on:

- the enhanced role of MINENV in the inventory planning, preparation and management.
- the institutional, legal and procedural arrangements necessary to perform the functions relating to inventory planning, preparation and management, specified by the decision 19/CMP.1, among the responsible government agencies and other entities,
- the capacity of timely performance of the system,
- the technical competence of the staff involved in the inventory development process,
- the continuity of the inventory preparation process and knowledge management issues.

The re-defined roles and responsibilities of the entities participating in it, is presented in Figure 1. The entities participating in it are:

- The **Ministry for the Environment** designated as the national entity responsible for the national inventory, which keeps the overall responsibility, but also plays a more active role in monitoring the work of the technical consultant for the inventory planning, preparation and management, and overseeing the operation of the GHG national system .
- **The National Technical University of Athens (NTUA) / School of Chemical Engineering**, which has the technical and scientific responsibility for the inventory planning, preparation and management of all sectors, as a technical consultant of the Ministry.
- **Governmental agencies and ministries, international associations, along with individual private industrial companies.** The involvement of these entities is not limited to data providing but also concerns methodological issues as appropriate. However, the technical consultant (NTUA) is responsible for the final decision concerning methodological issues.



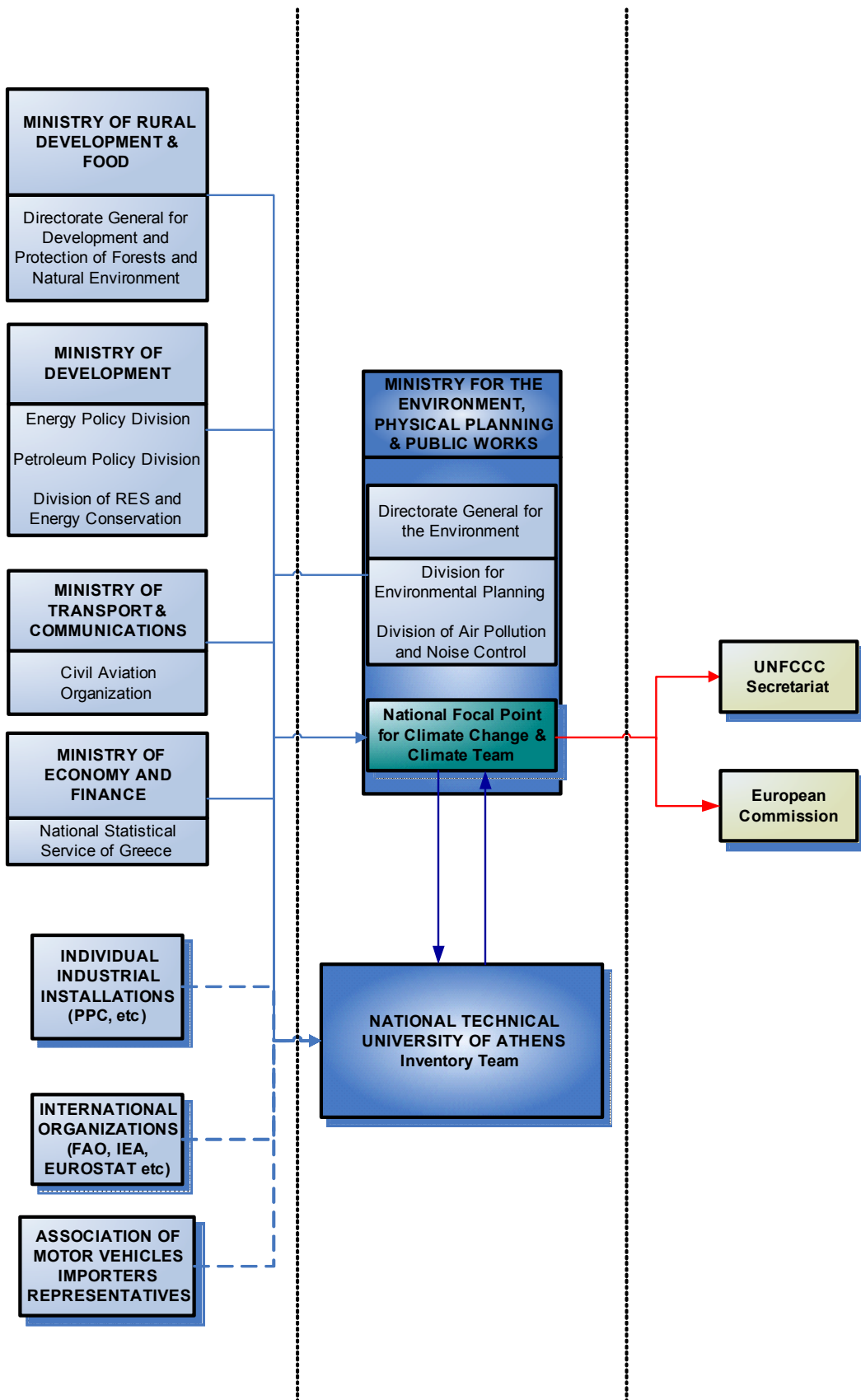


Figure 1. Organizational Structure of the National Inventory System

### **3.2. Definition of roles and responsibilities of the entities involved in the national system.**

The legal framework defining the roles-responsibilities and the co-operation between the MINENV Climate team, the NTUA Inventory team and the designated contact points of the competent Ministries were formalized by:

- written communication between MINENV's Deputy Minister Mr Stavros Kalogiannis and his respective ministers of the other ministries involved (February 2008).
- a circular 918/21-4-08 released by MINENV entitled "Structure and operation of the National Greenhouse Gases Inventory System- Roles and Responsibilities"

The above-mentioned circular includes a description of each entity's responsibilities, concerning the inventory preparation, data providing or other relative information. This formal framework has improved the collaboration between the entities involved, assuring the timely collection and quality of the activity data required and solving data access restriction problems raised due to confidentiality issues. The appointment of the specific above-mentioned contact persons by the involved relevant ministries, as responsible to collaborate with the MINENV Climate Team and NTUA Inventory Team has definitely facilitated the inventory preparation process. (section 2.2.3. p.19 of July plan).

The roles and responsibilities of the entities involved are as follows (see also AnnexI):

#### **3.2.1 Ministry for the Environment, Physical Planning & Public Works** *(section 2.2.1. of July plan)*

The Ministry for the Environment, as previously stated, is designated as the national entity with the overall responsibility for the national GHG inventory. Among its responsibilities are the following:

- The co-ordination of all ministries and governmental agencies involved, as well as any relevant public or private organization. In this context, it oversees the operation of the National System and decides on the necessary arrangements to ensure compliance with relevant decisions of the COP and the COP/MOP.
- The official consideration and approval of the inventory prior to its submission.
- The response to any issues raised by the inventory review process under Article 8 of the Kyoto Protocol, in co-operation with the technical consultant (NTUA Inventory Team), who has the technical and scientific responsibility for the inventory planning, preparation and management of all sectors, as mentioned above.

- The timely submission of the GHG inventory to the European Commission and to the UNFCCC Secretariat.
- The keeping of the Centralised Inventory File, which is delivered to the institute which has the technical responsibility for the inventory planning, preparation and management (currently NTUA) at the beginning of each inventory cycle. The Centralised Inventory File is kept at the premises of MINENV (Inventory File contact person: Koromila Chryssoula).
- The administration of the National Registry. Greece cooperates with the Member states of the European Union and with the supplementary transaction log and the registry of the European Community by maintaining the national registries in a consolidated system. The administration of the registry is assigned to the National Center for the Environment and Sustainable Development, which reports to the Ministry of Environment and operates under the authority of the latter.
- The supervision of Quality Assurance/Quality Control Plan (QA/QC)

As it appears from the above description, the role of the Ministry for the Environment is not narrowed to the co-ordination of the entities involved in the inventory process and to facilitate the activity data transfer from the data providers to the NTUA's Inventory Team. MINENV has an active role in monitoring and overseeing the inventory process through continuous communication and frequent scheduled and / or ad-hoc meetings with the Inventory Team of NTUA and the competent ministries or other agencies involved. For each inventory sector, a member of the MINENV's Climate team has been assigned as responsible for overseeing NTUA's inventory work and communication with other ministries and other data providing agencies. Furthermore, for expanding the overseeing role of MINENV in the inventory process, the supervision of QA/QC system is performed by Mr Alexandros Karavanas (QA/QC responsible) expert from the National Center for the Environment and Sustainable Development (NCESD), which is supervised by MINENV. The QA/QC responsible is not involved in the day-to-day inventory preparation and compilation. In co-operation with the scientific responsible of NTUA team and the NTUA inventory sector experts, he is responsible for the sound performance of the QA/QC system. (Contact details: Alexandros Karavanas).

For the fulfilment of the above-mentioned roles and responsibilities of the ministry, a Climate Team was established within the Ministry for the Environment (MINENV Climate Team), comprising experts with adequate technical and scientific background and experience:

1. Politi Elpida, National UNFCCC focal point, Co-ordinator
2. Koloutsou Sotiria, alternate Kotidou Afroditi
3. Moraiti Christina, alternate Lasaridis Klimis
4. Ballas Dionisios, alternate Koromila Chryssoula
5. Efthymiou Nectaria, alternate Lytras Euthimios

The major scope of this team is the development of capacity within the Ministry for Environment, concerning the GHG inventory preparation process and national GHG system.

**3.2.2 National Technical University of Athens (NTUA) – School of Chemical Engineering**  
*(section 2.2.2. of July plan)*

The Ministry for the Environment has assigned, on a contract basis, the National Technical University of Athens (NTUA) / School of Chemical Engineering as the national institution that has the overall technical and scientific responsibility for the planning, preparation and management of the annual national inventory (Inventory Team). In this framework, NTUA has the following responsibilities / tasks to fulfill for the GHG inventory preparation:

1. Data collection (activity data and emission factors) for all source / sinks categories that are Energy, Industrial Processes, Solvents and Other Product Use, Agriculture, Land Use, Land Use Change and Forest, and Waste.
2. Reliability check of input data through
  - ✓ the comparison of the same or similar data from alternative data sources and
  - ✓ time-series assessment in order to identify changes that cannot be explained.
3. Selection of the appropriate methodologies according to IPCC guidelines. GHG emissions estimates preparation by applying the methodologies and models having been selected.
4. Data processing and archiving. At the end of each cycle of the inventory preparation, all inventory related information is handled to the MINENV's employee responsible for keeping the Centralised Inventory File (member of the Climate Team), who in turn gives the latest version of all relevant files to the NTUA inventory team at the beginning of the next inventory cycle.
5. Assessment of the consistency of the methodologies applied, inventory improvement – recalculations.
6. Reliability check of results.
7. Key categories analysis.
8. Uncertainty assessment.
9. Preparation of Common Reporting Format (CRF) tables.

10. Preparation of National Inventory Report (NIR).
11. Reporting of the required information according to Article 3 of the Decision 280/2004/EC of the European Parliament and of the Council.
12. Preparation and keeping of Centralised Inventory File which is delivered to the Ministry for the Environment / Climate Team at the end of each inventory cycle.
13. Development of QA/QC procedures.
14. Implementing the QA/QC procedures under the supervision of MINENV.
15. Training the representatives of providing data agencies on inventory issues.

The names of the NTUA inventory team follows:

1. Prof. Ioannis Ziomas, Scientific responsible
2. Prof. Dimitris Marinos-Kouris
3. Athina Progiou, Dr Mechanical Engineer
4. Ioannis Sempos (Sebos), Chemical Engineer, MBA, NTUA technical staff
5. Spyridoula Ntemiri, Chemical Engineer, NTUA
6. Leonidas Kallinikos, Chemical Engineer, NTUA

It should be stressed that, when necessary, the above mentioned NTUA's Inventory Team is ad hoc supported by experts either from the NTUA or other institutions.

### **3.2.3 Ministries (with designated contact /focal persons).** (section 2.2.3. of July plan).

A Network of Representatives of Competent Ministries, appointed by their institution in response to the written communication between MINENV's Deputy Minister and his respective ministers of the other ministries involved, was established with the following competences:

- i. To guarantee the information which is required for the National Inventory compilation and which is sent to the UNFCCC Secretariat and the EU.
- ii. Contribution to methodological issues related to the Inventory
- iii. Participation in the control of the National Inventory Report, according to the estimates of the MINENV Climate team
- iv. Contribution in the control of the National Inventory, which is executed by the UNFCCC Secretariat or the EU.

More particularly, the network of representatives provides the following information:

- The **Ministry for the Environment** provides information and data for Large Combustion Plants (fuel consumption, NO<sub>x</sub> and SO<sub>2</sub> emissions – Department of industries), solid waste management (Department of Solid Waste Management) and domestic wastewater

handling practices (Department of Water Resources). (Contact persons: Dimitris Chatzidakis, Macheras Ioannis).

- The **National Statistical Service of Greece, supervised by the Ministry of Economy and Finance**, represents the main source of information for the estimation of emissions / removals from most of the IPCC source / sink categories (contact persons: Ioanna Papanagnou and Konstantina Kantartzi).
- The **Ministry for Development**, is responsible for reporting and maintaining annual statistical data for energy consumption and production (more specifically: Energy policy division – Solid fuels and electricity; Petroleum policy division – Liquid and gaseous fuels; Division of RES and energy conservation – Renewable energy sources) as well as for providing those data to international organizations such as the International Energy Agency (IEA), the European Statistical Service EUROSTAT, etc (Contact persons: Constantinos Chatzigianakis and Charikleia Piperopoulou).
- The **Ministry of Rural Development and Food** provides information and data (through the National Statistical Service of Greece which processes primary data collected by the Ministry) for the main indices and parameters of rural economy (e.g. animal population, cultivated areas, crops production, etc.) and LULUCF. Furthermore, the Ministry of Rural Development and Food is the responsible entity for the identification and measurement of areas of land subject to activities under Article 3, paragraphs 3 and 4 of the Kyoto Protocol and the estimation of the respective emissions / removals. The above-mentioned activities are afforestation, reforestation and deforestation, which are mandatory according to Article 3.3, along with the elected one forest land management, according to Article 3.4. (Contact persons: Eirini Nikolaou, and Panagiotis Drougas).
- **Ministry of Transport and Communications** provides information and data for the vehicle fleet and its technical characteristics. The Civil Aviation Organization, supervised by the Ministry of Transport and Communications, provides information on Landing and Take-off cycles for both domestic and international aviation (Contact persons: Anastasios Kokkinos and Panagiotis Tselikas).

The above ministries develop and maintain, within their terms of operation, data sets and emission methodology information necessary for the estimation of GHG emissions / removals. Most of these institutes have been used as sources of data since the first submission of Greek GHG national

inventory. However, new sources of information are being sought both for further inventory development and improvement (higher Tier methodology usage) and quality control issues.

Furthermore, individual industrial companies / installations, either public or private, as Power Public Corporation, cement plants, etc, constitute a data source for the GHG inventory preparation. However, these data are used supplementary to the above mentioned data sources (e.g. for QC).

### **3.3. *Inventory preparation and approval process*** *(section 2.3. of July plan)*

The compilation of the inventory is completed in three main stages (Figure 2), and the timetable for the completion of those stages in the annual inventory cycle is presented in Figure 3, as also described in chapter B of the Circular.

**Stage 1:** the first stage, performed by NTUA experts, consists of data collection and check for all source/sink categories.

Quality control of activity data includes among others, the comparison of the same or similar data from alternative data sources as well as time-series assessment in order to identify changes that cannot be explained. The quality control of activity data is performed by NTUA experts according to QA/QC procedure AI 01 for the archiving of inventory information process, entitled "Centralised archiving of inventory information" (see Table 1).

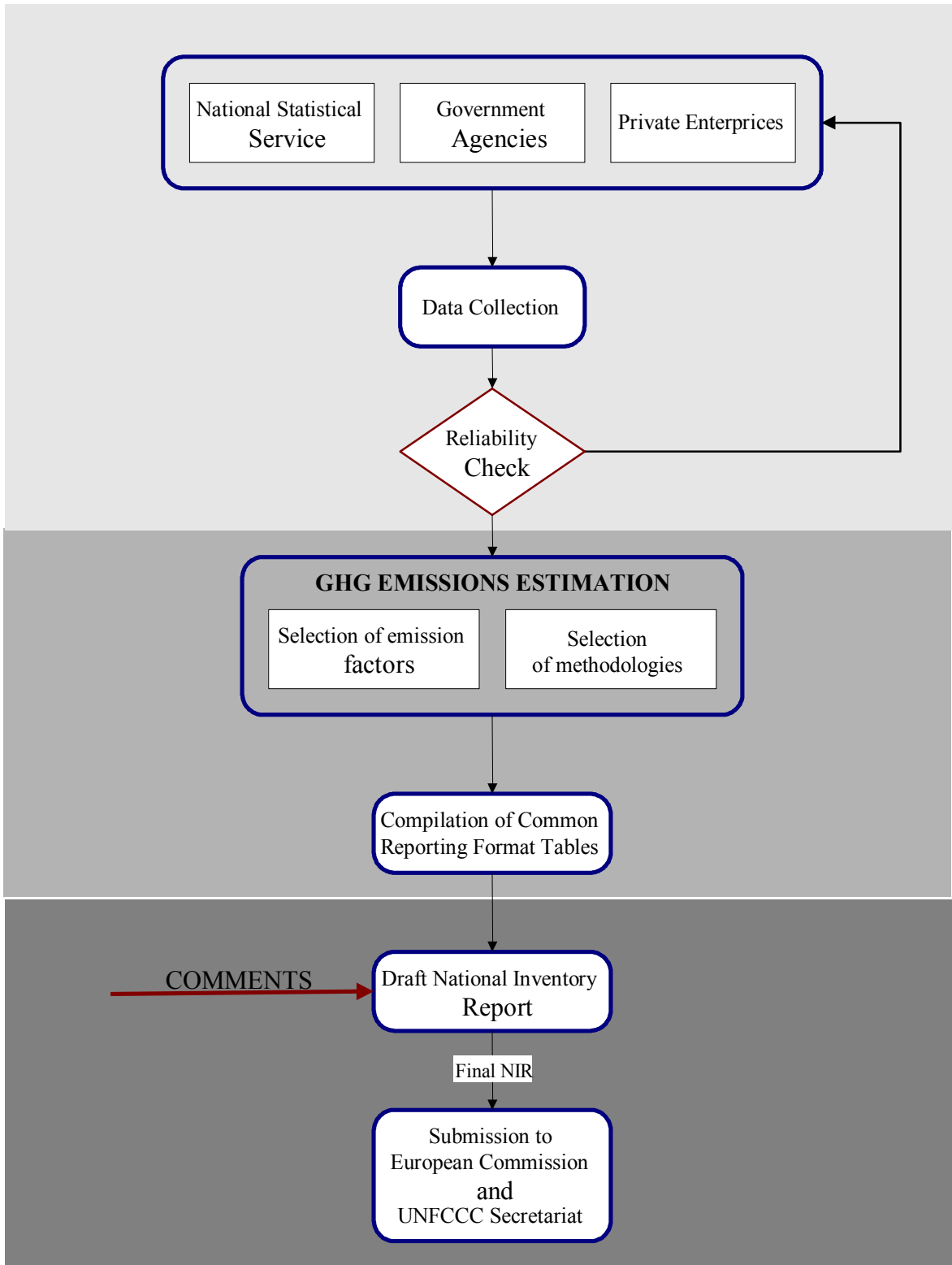
**Stage 2:** After the completion of the check and verification of the input data reliability, emissions/removals per source/sink category are estimated by NTUA experts. This stage also includes the evaluation of the emission factors used and the assessment of the consistency of the methodologies applied in relation to the provisions of the IPCC Guidelines, the IPCC Good Practice Guidance and the LULUCF Good Practice Guidance. Finally, the NTUA team transform the emissions estimates to the format required by the CRF Reporter.

Quality control checks, when at this stage, are related to time-series assessment as well as to the identification and correction of any errors / gaps while estimating emissions / removals and filling in the CRF Reporter.

**Stage 3:** The last stage involves the compilation of the NIR and its internal (i.e. within NTUA) check. The official approval procedure follows for one month period of interactions

between the Inventory Team (NTUA) and the Climate Team (MINENV), starting on the 1<sup>st</sup> of February of the year of submission. During this period, the NTUA Inventory Team has to revise the report according to the observations and recommendations of the Climate Team. On the basis of this interaction process, the final version of the report is compiled. The General Director for the Environment of MINENV, who supervises the National System, approves the inventory and then the Ministry for the Environment submits the NIR to the European Commission and to the UNFCCC Secretariat.





**Figure 2. GHG emissions inventory preparation process in Greece**

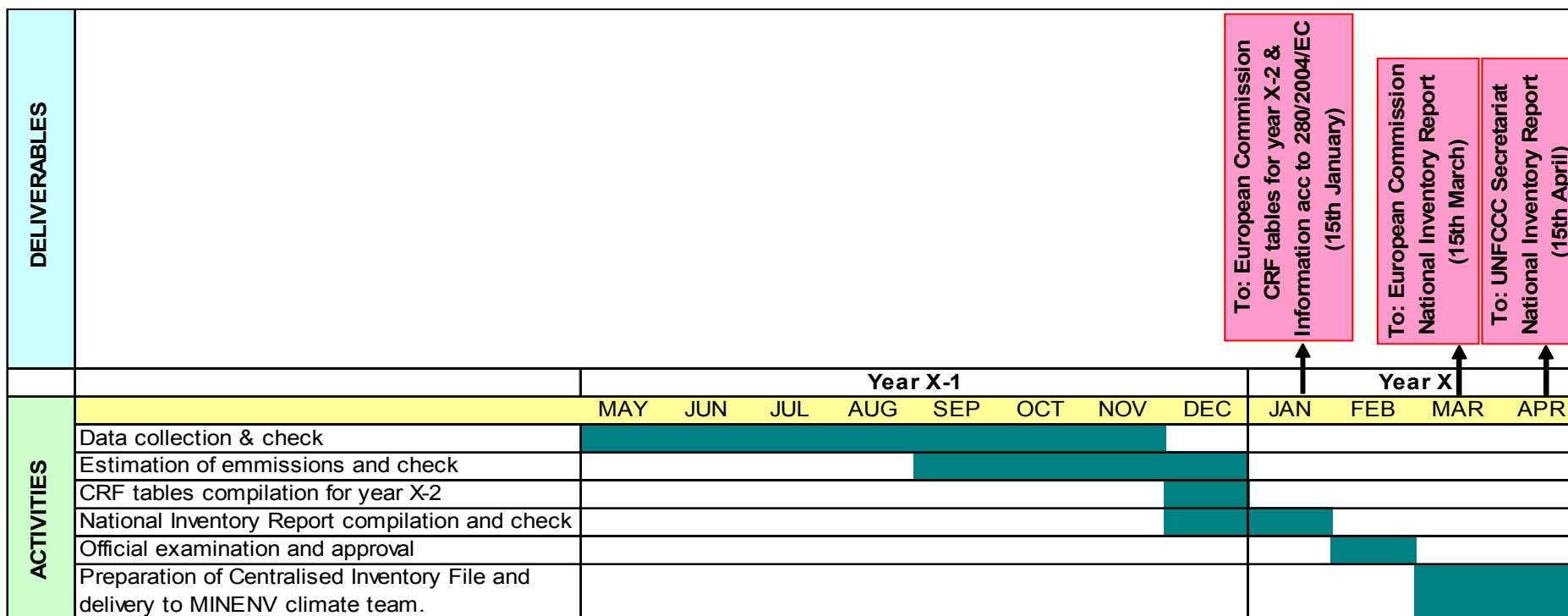


Figure 3. Timetable for the preparation and submission of GHG emissions/removals inventory in Greece

As shown in the timetable, the government agencies and ministries and the individual private or public industrial companies referred in section 3.2 should have collected and delivered to the MINENV Climate team and the NTUA inventory team the respective activity data needed for the inventory (for year X-2) and any changes in activity data for the period 1990 to year X-2, within the time period of May to November of year X-1 (X is the submission year of CRF tables and NIR referred to X-2 GHG emissions inventory).

The information related to the annual GHG emissions inventory (activity data, emission factors, analytic results, compilation in the required analysis level of the CRF tables) is stored in MS Excel spreadsheets.

In addition and within the context of the Quality Assurance/Quality Control system developed, two master files have been organized aiming at the systematic and safe archiving of inventory information: the Input Data File and the Centralised Inventory File.

- Each NTUA sector expert is responsible for the keeping of the Input Data File of his/her sector, which contains (in electronic format and/or hard copy) all input data and parameters that are necessary for the estimation of GHG emissions/removals. Input data are mainly activity data. Data are stored according to Quality Control Process procedure QC 04 entitled "Input data record keeping".
- The Centralised Inventory File includes all information relevant to the GHG emissions/removals inventory. At the end of each stage of the inventory preparation, all inventory related information is handed to the person responsible for keeping the Centralised Inventory File (member of the Climate Team), who in turn gives the latest version of all relevant files (calculation files and NIR) to the Inventory Team at the beginning of the next inventory cycle.

More specifically the information stored in the Centralised Inventory File includes:

- All the reports, the Input Data Files of all sectors, the working files used for emissions/removals estimation, the working files containing the application models used, key categories and uncertainty estimation working files.
- Full contact details of the Inventory team.
- Final versions of the NIR.
- CRF tables in electronic format and a hard copy of the CRF tables of the last submission.

- XML file and database of CRF reporter.
- Expert review reports.
- Any comments from the public review of the inventory.
- Documentation derived during the implementation of the QA/QC procedures.

### **3.4. Quality assurance – Quality control system (QA/QC)** (section 2.4 of July plan)

The development and the implementation of an inventory Quality Assurance / Quality Control (QA/QC) plan represents a key tool for meeting the objectives of National Systems under Article 5 Paragraph 1 of the Protocol as described in Decision 19/CMP.1.7.

With the Protocol's application, it is expected that the pressure upon national GHG emissions inventories will increase and therefore quality management would be essential to comply with the requirements of (a) producing transparent, consistent, comparable, complete and accurate emissions estimates, (b) establishing a reliable central archiving system concerning all necessary information for GHG emissions inventories development and (c) compiling national reports according to the provisions of the adopted decisions.

In this framework, a QA/QC system is being implemented since April 2004. It has been developed by the previous technical consultant (NOA) and is still being used by NTUA. A revision of the system was performed in May 2008, according to the experience gained from 2008 and 2009 submission. As mentioned above, the supervision of QA/QC system is performed by MINENV. The system is based on the ISO 9001:2000 standard and its quality objectives, as stated in the **quality management handbook**, are the following:

1. Compliance with the IPCC guidelines and the UNFCCC reporting guidelines while estimating and reporting emissions/removals.
2. Continuous improvement of GHG emissions/removals estimates.
3. Timely submission of necessary information in compliance with relevant requirements defined in international conventions, protocols and agreements.

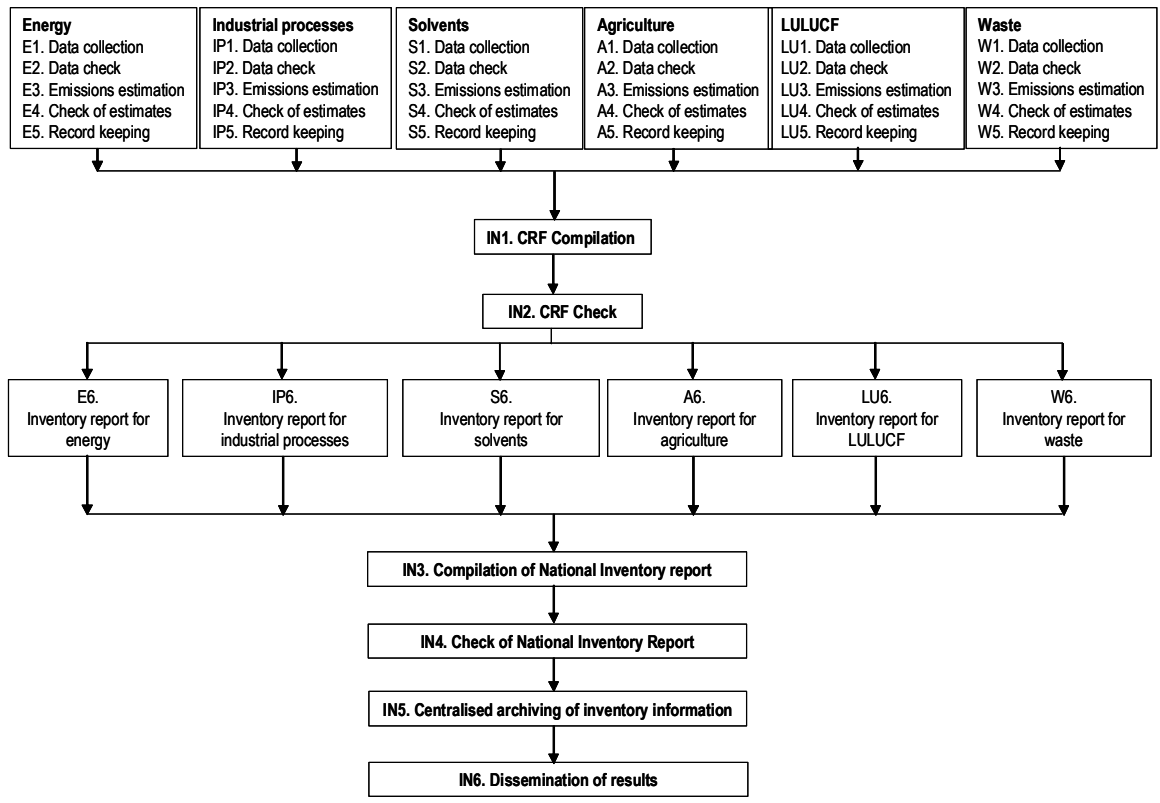
The accomplishment of the above-mentioned objectives can only be ensured by the adaptation and implementation by all the members of the Inventory Team (see Figure 4 for the flow chart of activities concerning emissions inventory within the NTUA), of all the QA/QC procedures included in the plan for:

- data collection and processing,

- applying methods consistent with IPCC Good Practice Guidance and LULUCF Good Practice Guidance for calculating / recalculating emissions or removals,
- making quantitative estimates of inventory uncertainty,
- archiving information and record keeping and
- compiling national inventory reports.

The QA/QC system developed covers the following processes (see Table 1 for the list of procedures within each process and Figure 5 for the relationship between the processes and the activities of the inventory team):

- **QA/QC system management**, comprising all activities that are necessary for the management and control of the inventory agency in order to ensure the accomplishment of the above-mentioned quality objectives.
- **Quality control** that is directly related to the estimation of emissions and covers all inventory sectors. The process includes activities related to (a) data inquiry, collection and documentation, (b) methodological choice in accordance with IPCC Good Practice Guidance, (c) quality control checks for data from secondary sources and (d) record keeping.
- **Archiving inventory information**, comprising activities related to centralised archiving of inventory information and the compilation of the national inventory report.
- **Quality assurance**, comprising activities related to the different levels of review processes including the review of input data from experts, if necessary, and comments from the public
- **Estimation of uncertainties**, defining procedures for estimating and documenting uncertainty estimates per source / sink category and for the whole inventory.
- **Inventory improvement**, that is related to the preparation and the justification of any recalculations made. Relative procedures with inventory improvement are QM01 "System Review", QM02 "System Improvement, QM06 "Non compliance – Corrective and preventive actions" and II01 "Recalculations management".



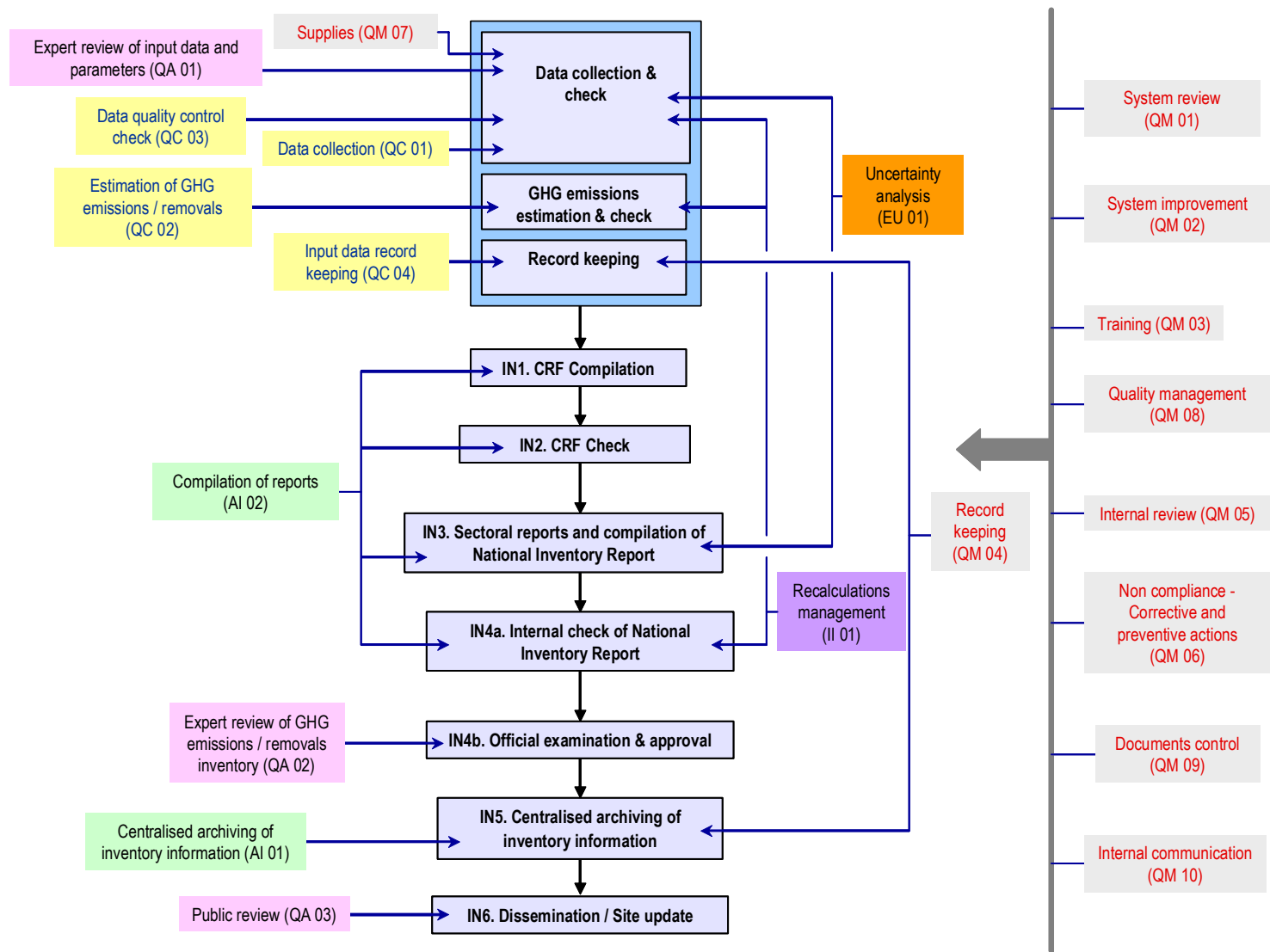
**Figure 4. Flow chart activities concerning the GHG emissions inventory**

**Table 1. Quality assurance / quality control procedures for the Greek GHG emissions inventory**

<b>Process</b>	<b>Procedure code</b>	<b>Procedures</b>
<b>Quality management</b>	QM 01	System review
	QM 02	System improvement
	QM 03	Training
	QM 04	Record keeping
	QM 05	Internal reviews
	QM 06	Non compliance – Corrective and preventive actions
	QM 07	Supplies
	QM 08	Quality management system
	QM 09	Documents control
	QM 10	Internal communication
<b>Quality control</b>	QC 01	Data collection
	QC 02	Estimation of emissions / removals
	QC 03	Data quality control check
	QC 04	Input data record keeping
<b>Archiving of inventory information</b>	AI 01	Centralised archiving of inventory information
	AI 02	Compilation of reports
<b>Quality assurance</b>	QA 01	Expert review of input data and parameters
	QA 02	Expert review of GHG emissions / removals inventory
	QA 03	Review from public
<b>Estimation of uncertainties</b>	EU 01	Uncertainty analysis
<b>Inventory improvement</b>	II 01	Recalculations management

The implementation of the plan started in April 2004 and the first internal review was carried out in June 2004, following procedures and manuals (available only in Greek) developed by in house staff and outside consultants.

According to QM 05 procedure, entitled "Internal reviews", internal audits are scheduled by MINENV/NTUA between September and November of 2008. Moreover, an audit by an independent local expert is scheduled early in 2009.



**Figure 5. QA/QC processes and procedures and inventory related activities**



#### **4. Timetable for the implementation of measures**

<b>Measures / Actions</b>	<b>Date of implementation</b>	<b>Reference to July plan</b>
1. Decision for the re-organisation of the national system.	➤ Early 2007	➤ Section 2.1 , p.7
2. Knowledge transfer processes from previous technical consultant (NOA)	➤ Early 2007 to March 2008	➤ Section 2.2.1. , p.13
3. Communication with data providers (ministries – agencies) for the appointment of contact persons. Preparation of formal framework of co-operation.	➤ December 2007 – February 2008	
4. Ministerial decision for the contract with the NTUA	➤ December 2007	➤ Section 2.2.2., p.14
5. Contract with NTUA	➤ February 2008	➤ Section 2.2.2., p.14
6. Ministerial decision for the support of the Ministry's division with new personnel – Establishment of MINENV Climate Team (Development of capacity within MINENV)	➤ February 2008	➤ Section 2.2.1., p.11
7. Deputy Minister's written communications with competent ministries	➤ February 2008	➤ Section 2.2.3, p.19
8. Written submission to Compliance Committee	➤ February 2008	➤ Section 1, p.4
9. Further written submission to Compliance Committee	➤ April 2008	➤ Section 1, p.5
10. Circular 918/2008	➤ April 2008	➤ Section 2.2.3, p.19
11. Revision of QA/QC plan	➤ May 2008	
12. Thorough examination of GHG inventory according to revised QA/QC procedures	➤ May 2008 – August 2008	
13. Agreement with UNFCCC for an in-country review on 8-13 September 2008	➤ May 2008	➤ Section 3, p.34
14. Arrangements for the in-country review in close co-operation with UNFCCC Secretariat	➤ June-August 2008	➤ Section 3, p.34
15. Submission of plan to EB	➤ July 2008	➤ All

<b>Measures / Actions</b>	<b>Date of implementation</b>	<b>Reference to July plan</b>
16. In –country review – Athens, MINENV	➤ September 2008	➤ N.A
17. Internal audit according to QA/QC procedures of the National GHG System	➤ September to November 2008	
18. Audit of National GHG System by independent local expert (not involved in National System)	➤ January to March 2009	

## ***5. Maintenance of the national system through transitions***

Under the new formal structure the maintenance of the system through transitions is ensured by the following procedures which are legally formalised by the Circular :

1. High-level commitment
  - Communication of competent ministries at Ministerial level (paragraph 3.2, p. 9) - (section 2.2.3 of July plan).
2. The enhanced role of the Ministry for the Environment (paragraph 3.2.1. p. 9-10) – (section 2.2.1.p. 10-11, July plan) – ( Annex I in both submissions) :
  - A Climate team is established with staff assigned sectoral responsibilities (see Annex I) and performing the following main functions:
    - ✓ Continuous monitoring of inventory process
    - ✓ Co-ordination of data collection
    - ✓ Review of the inventory, recommendation for its approval to the General director and the submission to UNFCCC and EC
    - ✓ Co-ordination and sectoral support during inventory reviews
  - The Centralised file containing all inventory information is located in the Ministry – the single national entity with the overall responsibility for the inventory, where a responsible person for keeping the file has been designated (paragraph 3.2.1 p. 10) – (section 2.3, p. 24 of July plan).
  - Supervision of QA/QC system. The QA/QC supervision is performed by an expert from the National Center for the Environment and Sustainable Development , an institution supervised by the Ministry (paragraph 3.2.1. p.10) –( section 2.2, p.11 of July plan).
3. The continuous co-operation of MINENV Climate team with NTUA Inventory team in expert sectoral level and co-ordinators' level
4. The continuous co-operation of MINENV Climate team (and NTUA Inventory team) with the designated focal points of competent Ministries.
5. The long-term contract between MINENV and NTUA with continuous support and training of MINENV climate team and focal points of competent ministries (Annex I).

The above institutionalised procedures which provide for the co-ordinating role of the Ministry for the Environment on all entities involved and for the enhancement of the capacity of the Ministry, ensures the continuation of the system through transitions.

## **6. *Administrative arrangements to support the in-country review by the expert review team***

Greece, in cooperation with the UNFCCC Secretariat, prepared the in-country review of its new national system, coordinated by the secretariat in conjunction with the review of the 2007 and 2008 inventory submissions.

Greece confirmed the dates of the review (8-13 September 2008) with the Secretariat by its letter signed by the Director General of Environment, dated 23 May 2008. By this letter, Greece informed the secretariat that the contact person for the related arrangements will be the National Focal Point.

The review took place as scheduled in September 2008 (8-13). The venue of the review was the premises of MINENV in Kifissia (Epavlis Kazouli).

The arrangements described in section 3 of the July plan submission were fully followed. More specifically:

- MINENV was in close co-operation with the Secretariat in order to finalise the agenda and proceed to the necessary logistics arrangements which fulfilled all needs of the ERT for travel, stay and excellent working conditions.
- The Deputy Minister for the Environment, Mr. Stavros Kalogiannis and the General Secretary for the Environment met and welcomed the ERT
- The Climate Team and the NTUA team were present and answered all the questions by the ERT throughout the whole review week.
- The focal points and other representatives of the competent Ministries and the QA/QC supervisor was present not only the first day of the review but also during the sectoral discussions, and available for the whole review period for any further data or clarification needed.
- All files were found archived in the venue of the review – in the offices of the Climate Team of the MINENV.

## Annex I. Responsibilities / roles per entity involved in the National GHG Inventory System

<b>Responsibilities / Roles</b>	<b>Responsible Entity</b>	<b>Experts of Responsible Entity(ies)</b>	<b>Supervisor from MINENV side</b>
General responsibility for the national GHG inventory	Ministry for the Environment	Elpida Politi	
Official consideration and approval of the inventory prior to its submission	Ministry for the Environment	Elpida Politi (Climate Team)	
Technical and scientific responsibility for national GHG inventory (inventory planning, preparation and management)	NTUA (consultant)	Ioannis Ziomas	
Supervision of the processes concerning the inventory preparation and management, CRF and reports compilation. QA/QC procedures preparation and implementation under the supervision of MINENV.	NTUA (consultant)	Ioannis Sempas	Elpida Politi
QA/QC supervision	Ministry for the Environment	Alexandros Karavanas	
Energy Sector: Data collection and QC check, application of models (COPERT III), emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	1. Ioannis Sempas 2. Athina Progiou	Nektaria Efthymiou  Euthimios Lytras
Energy Sector: data providing	1. Ministry for Development,	1. Constantinos Chatzigianakis	Nektaria Efthymiou

<b>Responsibilities / Roles</b>	<b>Responsible Entity</b>	<b>Experts of Responsible Entity(ies)</b>	<b>Supervisor from MINENV side</b>
	<ol style="list-style-type: none"> <li>2. Civil Aviation Organization</li> <li>3. Ministry of Transport and Communications</li> <li>4. Ministry for the Environment</li> </ol>	<ol style="list-style-type: none"> <li>2. Anastasios Kokkinos</li> <li>3. Panagiotis Tselikas</li> <li>4. Dimitris Chatzidakis</li> </ol>	Euthimios Lytras
Industry Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Spyridoula Ntemiri	<p>Sotiria Koloutsou</p> <p>Afroditi Kotidou</p>
Industry Sector: data providing	<ol style="list-style-type: none"> <li>1. Ministry for Development,</li> <li>2. Ministry for the Environment</li> <li>3. National Statistical Service of Greece</li> <li>4. ICAP</li> </ol>	<ol style="list-style-type: none"> <li>1. Charikleia Piperopoulou</li> <li>2. Dimitris Chatzidakis</li> <li>3. Ioanna Papanagnou</li> </ol>	<p>Sotiria Koloutsou</p> <p>Afroditi Kotidou</p>
Solvents Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Ioannis Sempos	Afroditi Kotidou
Solvents Sector: data providing	<ol style="list-style-type: none"> <li>1. National Statistical Service of Greece</li> </ol>	Ioanna Papanagnou	Afroditi Kotidou

<b>Responsibilities / Roles</b>	<b>Responsible Entity</b>	<b>Experts of Responsible Entity(ies)</b>	<b>Supervisor from MINENV side</b>
Agriculture Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Leonidas Kallinikos	Dionisios Ballas Chryssoula Koromila
Agriculture Sector: data providing	<ol style="list-style-type: none"> <li>1. National Statistical Service of Greece</li> <li>2. Ministry of Rural Development and Food</li> <li>3. United Nations Food and Agricultural Organization (FAO)</li> </ol>	<ol style="list-style-type: none"> <li>1. Ioanna Papanagnou</li> <li>2. Eirini Nikolaou, and Panagiotis Drougas</li> </ol>	Dionisios Balas Chryssoula Koromila
Waste Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Leonidas Kallinikos	Moraiti Christina Klimis Lasaridis
Waste Sector: data providing	<ol style="list-style-type: none"> <li>1. Ministry for the Environment</li> <li>2. National Statistical Service of Greece</li> </ol>	<ol style="list-style-type: none"> <li>1. Ioannis Macheras</li> <li>2. Ioanna Papanagnou</li> </ol>	Moraiti Christina Klimis Lasaridis
LULUCF Sector (report under convention): Data collection and QC check, emission estimation and	NTUA (consultant)	Ioannis Sempas	Dionisios Ballas Chryssoula Koromila

<b>Responsibilities / Roles</b>	<b>Responsible Entity</b>	<b>Experts of Responsible Entity(ies)</b>	<b>Supervisor from MINENV side</b>
QC check, record keeping, inventory report compilation and QC check			
LULUCF Sector (report under convention): data providing	<ol style="list-style-type: none"> <li>1. National Statistical Service of Greece</li> <li>2. Ministry of Rural Development and Food</li> </ol>	<ol style="list-style-type: none"> <li>1. Ioanna Papanagnou</li> <li>2. Eirini Nikolaou, and Panagiotis Drougas</li> </ol>	<p>Dionisios Ballas</p> <p>Chryssoula Koromila</p>
LULUCF Sector (report for the KP, art 3.3 & 3.4): Development of a methodology for estimation of emissions/sinks, data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	Ministry of Rural Development and Food	<ol style="list-style-type: none"> <li>1. Eirini Nikolaou</li> <li>2. Panagiotis Drougas</li> </ol>	
LULUCF Sector (report for the KP, art 3.3 & 3.4): CRF compilation	NTUA (consultant)	Ioannis Sempos	Dionisios Ballas Chryssoula Koromila
Uncertainty assessment	NTUA (consultant)	Leonidas Kallinikos	Nektaria Efthymiou
Key categories analysis	NTUA (consultant)	Spyridoula Ntemiri	Nektaria Efthymiou
CRF and National Inventory Report compilation and QC checks	NTUA (consultant)	<ol style="list-style-type: none"> <li>1. Spyridoula Ntemiri</li> <li>2. Leonidas Kallinikos</li> <li>3. Ioannis Sempos</li> </ol>	Nektaria Efthymiou
Preparation and keeping of Centralized Inventory File which is	NTUA (consultant)	<ol style="list-style-type: none"> <li>1. Spyridoula Ntemiri</li> <li>2. Leonidas Kallinikos</li> </ol>	



<b>Responsibilities / Roles</b>	<b>Responsible Entity</b>	<b>Experts of Responsible Entity(ies)</b>	<b>Supervisor from MINENV side</b>
delivered to the Ministry for the Environment / Climate Team at the end of each inventory cycle.	Ministry for the Environment	3. Ioannis Sempos Chryssoula Koromila	
Training the representatives of providing data agencies on inventory issues.	NTUA (consultant)	1. Leonidas Kallinikos 2. Spyridoula Ntemiri 3. Ioannis Sempos	

***ANNEX II CIRCULAR 918/ 21-4-08 (UNOFFICIAL TRANSLATION)***

[HANDLED TO ERT ON 10-9-08]

## UNOFFICIAL TRANSLATION



**HELLENIC REPUBLIC  
MINISTRY FOR THE ENVIRONMENT,  
PHYSICAL PLANNING AND PUBLIC WORKS  
DEPUTY MINISTER'S OFFICE**

17, Amaliados Street, 11523 Athens  
Tel: 210/6475181-3  
Fax: 210/6432589

Athens, 21 April 2008  
Ref no. 918

**To:**  
RECIPIENTS LIST

### CIRCULAR

**SUBJECT: STRUCTURE AND OPERATION OF THE NATIONAL GREENHOUSE GASES INVENTORY SYSTEM- ROLES AND RESPONSIBILITIES**

Under article 5 of the Kyoto Protocol, each Party of the Protocol must have in place a National System for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol.

According to Law 3017/2002, with which Greece ratified the Kyoto Protocol, the Ministry for the Environment, Physical Planning and Public Works (MINENV) co-ordinates all competent ministries and any relevant public or private organization, for the implementation of the provisions of the Kyoto Protocol. The Ministry for the Environment has also been designated competent authority for the implementation of the Kyoto Protocol flexible mechanisms (Competent authority: Emissions Trading Office).

In this context, the Ministry for the Environment has the overall responsibility for the National Greenhouse Gases inventory, and the official consideration and approval of the inventory prior to its submission (National UNFCCC Focal point: Elpida Politi).

## CHAPTER A. Description of the National Inventory System

The National GHG Inventory System shall be under the supervision of the Director General for the Environment. In this context, the Director General supervises the operation of the national system and forwards the necessary arrangements to ensure compliance with relevant decisions of the Conference of the Parties and the Meeting of the Parties to the Protocol (COP and the COP/MOP) upon proposal of the competent division, as well as the timely submission of the Inventory to the European Commission and the UNFCCC Secretariat.

The National Inventory System consists of:

A. **The Climate Team**, which operates under the coordination of the National UNFCCC focal point.

This Team consists of:

1. Politi Elpida, National UNFCCC focal point, Co-ordinator
2. Koloutsou Sotiria, alternate Afroditi Kotidou
3. Moraiti Christina, alternate Lazaridis Klimis
4. Ballas Dionisios, alternate Koromila Chryssoula
5. Efthymiou Nektaria, alternate Lytras Euthimios

and has the following responsibilities:

- i. the coordination for the collection of the data required for the National Inventory compilation.
- ii. The supervision of national Inventory preparation.
- iii. The keeping of the Centralised Inventory File
- iv. the national Inventory consideration prior to its submission
- v. the coordination – in collaboration with the Consultant of paragraph C, of the National Inventory review from the UNFCCC Secretariat and the EU.
- vi. Proposal of the necessary arrangements to ensure compliance with relevant decisions of the Conference of the Parties and the Meetings of the Parties to the Protocol (COP and the COP/MOP)

B. A Network of **Representatives of Competent Ministries (focal persons)** that are appointed by their respective Ministry:

1. **Ministry for the Environment, Physical Planning and Public Works (MINENV)**
  - Chatzidakis Dimitris, Division of Air Pollution and Noise Control

- Macheras Ioannis, Division for Environmental Planning
2. - The **National Statistical Service of Greece, Ministry of Economy and Finance**  
(Document with Ref. Nr. 2370/ Γ3-225/ 21-2-08)
    - Papanagnou Ioanna
    - Kantartzi Kostantina
  3. The **Ministry for Development** (Doc with Ref. Nr. 445A/12-2-08)
    - Chatzigianakis Kostantinos, Electricity Production Division
    - Charikleia Piperopoulou, General Secretariat of Industry
  4. The **Ministry of Rural Development and Food** (Doc. with Ref. Nr. 1384/12-2-08)
    - Nikolaou Eirini, General Directorate of Forests
    - Drougas Panagiotis, General Directorate of Forests
  5. The **Ministry of Transport and Communications** (Doc. of 25-2-08)
    - Kokkinos Anastasios, Civil Aviation Organization
    - Tselikas Panagiotis

The representatives of the Ministries have the following responsibilities/competences:

- i. To guarantee the provision of data required for the compilation of the National Inventory submitted to the UNFCCC Secretariat and the EU.
- ii. Their contribution to methodological issues related to the Inventory
- iii. Their ad-hoc participation (according to the appraisal of the Climate Team) in the consideration of the National Inventory Report, prior to its submission, according to the estimates of the MINENV Climate team
- iv. Their contribution during the review of the National Inventory, which is executed by the UNFCCC Secretariat or the EU.

More particularly, the network of representatives provides the following information:

- The **Ministry for the Environment** provides information and data for Large Combustion Plants (fuel consumption, NO<sub>x</sub> and SO<sub>2</sub> emissions – Department of industries), solid waste management (Department of Solid Waste Management) and domestic wastewater handling practices (Department of Water Resources).

- The **National Statistical Service of Greece**, supervised by the Ministry of Economy and Finance, represents the main source of data for the estimation of emissions / removals for most of the IPCC source / sink categories.
- The **Ministry for Development**, is responsible for reporting and maintaining annual statistical data for energy consumption and production (more specifically: Energy policy division – Solid fuels and electricity; Petroleum policy division – Liquid and gaseous fuels; Division of RES Renewable energy sources) as well as for providing those data to International organizations such as the International Energy Agency (IEA), the European Statistical Service EUROSTAT, etc.
- The **Ministry of Rural Development and Food** provides information and data (through the National Statistical Service of Greece which processes primary data collected by the Ministry) for the main indices and parameters of rural economy (e.g. animal population, cultivated areas, crops production, etc.) and LULUCF. Furthermore, the Ministry of Rural Development and Food is the responsible entity for the identification and measurement of areas of land subject to activities under article 3, paragraphs 3 and 4 of the Kyoto Protocol and the estimation of relative emissions/removals. These activities are afforestation, reforestation and deforestation, which are mandatory according to Article 3.3, along with the elected one forest land management, according to Article 3.4.
- The **Ministry of Transport and Communications** provides information and data for the vehicle fleet and its technical characteristics. The Civil Aviation Organization, supervised by the Ministry of Transport and Communications, provides information on Landing and Take-off cycles for both domestic and international aviation

C. The Consultant – The **National Technical University of Athens (NTUA)** / School of Chemical Engineering, which has been assigned on a contract basis by the Ministry for the Environment for the compilation of the Annual National Inventories.

The NTUA Inventory team consists of:

1. Prof. Ioannis Ziomas, Scientific responsible
2. National Technical University of Athens, School of Chemical Engineering
3. Prof. Dimitris Marinos-Kouris
4. Athina Progiou, Dr Mechanical Engineer
5. Ioannis Sempos (Sebos), Chemical Engineer, MBA, NTUA
6. Spyridoula Ntemiri, Chemical Engineer, NTUA
7. Leonidas Kallinikos, Chemical Engineer, NTUA

The NTUA inventory team, is ad hoc supported, when necessary, by experts either from the NTUA or other institutions.

The NTUA Inventory Team has the following responsibilities/tasks to fulfil for the GHG inventory preparation:

1. Data collection (activity data and emission factors) for all source / sinks categories (Energy, Industrial Processes, Solvents and Other Product Use, Agriculture, Land Use, Land Use Change and Forest, and Waste).
2. Reliability check of input data through
  - ✓ the comparison of the same or similar data from alternative data sources and
  - ✓ time-series assessment in order to identify changes that cannot be explained.
3. Selection of the appropriate methodologies according to IPCC guidelines. GHG emissions estimates preparation by applying the methodologies and models having been selected.
4. Data processing and archiving. At the end of each cycle of the inventory preparation, all inventory related information is handled to the MINENV's employee responsible for keeping the Centralised Inventory File (member of the Climate Team), who in turn provides the latest version of all relevant files to the NTUA inventory team at the beginning of the next inventory cycle.
5. Assessment of the consistency of the methodologies applied, inventory improvement – recalculations.
6. Reliability check of results.
7. Key categories analysis.
8. Uncertainty assessment.

9. Preparation of Common Reporting Format (CRF) tables.
10. Preparation of National Inventory Report (NIR).
11. Reporting of the required information according to Article 3 of the Decision 280/2004/EC of the European Parliament and of the Council.
12. Preparation and keeping of Centralised Inventory File which is delivered to the Ministry for the Environment / Climate Team at the end of each inventory cycle.
13. Development of QA/QC procedures.
14. Implementing the QA/QC procedures under the supervision of MINENV.
15. Training the representatives of data providing agencies on inventory issues.

Government agencies, international organisations and private entities are participating in data collection and, in ad hoc basis, in methodological issues. However, the technical consultant (NTUA) is responsible for the final decision concerning methodological issues.

D. The supervision of Quality Assurance/Quality Control Plan (QA/QC) is performed by Mr Alexandros Karavanas (QA/QC Coordinator) expert from the National Center for the Environment and Sustainable Development (NCESD), which is supervised by MINENV. The QA/QC Coordinator is not involved in the day-to-day inventory preparation and compilation. In co-operation with the scientific responsible of NTUA team and the NTUA inventory sector experts, he is responsible for the sound performance of the QA/QC system.

## **CHAPTER B Inventory Compilation and Approval Procedure**

The National Inventories compilation, approval and submission procedure is defined as following:

1. The compilation of information is carried out under the coordination of the Climate team of the Ministry for the Environment, according to the institutionalized coordinating role of the MINENV, under Law 3017/2002.
2. The National Inventory is compiled by the Consultant of paragraph C with the collaboration of the Climate Team and the Network of the Representatives of the relevant Ministries.



3. The quality control of the National Inventory is executed by the Consultant of paragraph C, under the supervision of the MINENV coordinator.(paragraph D).
4. After the initial control according to QA/QC Plan, the report and the Tables of the National Inventory, together with the Annual Inventory File (for the Centralized Inventory File which is kept at the MINENV) are submitted by the Consultant of paragraph C to the MINENV.
5. The consideration (review) of the National Inventory Report and CFRs Tables are carried out by the MINENV Climate Team-, with, at its discretion, the collaboration of the Network of the Representatives of the relevant Ministries.
6. The National Inventory (report and tables) is approved by the General Director of the Environment of MINENV and is submitted to the European Commission and the UNFCCC Secretariat.

The compilation of the inventory is completed in three main stages

**Stage 1: the first stage**, performed by NTUA experts, consists of data collection and check for all source/sink categories.

Quality control of activity data includes among others, the comparison of data from alternative data sources as well as time-series assessment in order to identify changes that cannot be explained. The quality control of activity data is performed by NTUA experts according to QA/QC Plan AI 01 for the processing of the Inventory information process, entitled “Centralised archiving of Inventory information” (see Annex II).

**Stage 2:** After the completion of the check and verification of the input data reliability, emissions/removals per source/sink category are estimated by NTUA experts. This stage also includes the evaluation of the emission factors used and the assessment of the consistency of the methodologies applied in relation to the provisions of the IPCC Guidelines, the IPCC Good Practice Guidance and the LULUCF Good Practice Guidance. Finally, the NTUA team transforms the emissions estimates to the format required by the CRF Reporter.

Quality control checks, when at this stage, are related to time-series assessment as well as to the identification and correction of any errors / gaps while estimating emissions / removals and filling in the CRF Reporter.

**Stage 3:** The last stage involves the compilation of the NIR and its internal (i.e. within NTUA) check. The official approval procedure follows for one month period of interactions between the Inventory Team (NTUA) and the Climate Team (MINENV), starting on the 1<sup>st</sup> February of the year of submission. During this period, the NTUA Inventory Team has to revise the report according to the observations and recommendations of the Climate Team. On the basis of this interaction process, the final version of the report is compiled and then the Ministry for the Environment submits the NIR to the European Commission and to the UNFCCC Secretariat.

The **timetable** of the implementation of the above-mentioned stages requires that the government agencies and ministries and the individual private or public industrial companies should have collected and delivered to the MINENV Climate team and the NTUA Inventory Team the respective activity data needed for the inventory (for year X-2) and any changes in activity data for the period 1990 to year X-2, within the time period of May to November of year X-1 (X is the submission year of CRF tables and the NIR refers to X-2 GHG emissions inventory). The complete National Inventory shall be submitted to the EU no later than March 15<sup>th</sup> of each year and to the UNFCCC Secretariat no later than the 15<sup>th</sup> of April (see Annex III)

The information related to the annual GHG emissions inventory (activity data, emission factors, analytic results, compilation in the required analysis level of the CRF tables) is stored in MS Excel spreadsheets.

In addition, for the systematic and safe archiving of inventory information, two master files have been organized: the **Input Data File** and the **Centralised Inventory File**.

- Each NTUA sector expert is responsible for keeping the Input Data File of his/her sector, which contains (in electronic format and/or hard copy) all input data and parameters that are necessary for the estimation of GHG emissions/removals. Input data are mainly activity data. Data are stored according to Quality Control Process QC 04 entitled "Input data record keeping".

- The Centralised Inventory File includes all information relevant to the GHG emissions/removals inventory. At the end of each stage of the inventory preparation, all inventory related information is handed to the person responsible for keeping the Centralised Inventory File (member of the Climate Team), who in turn provides the latest version of all relevant files (calculation files and NIR) to the Inventory Team.

More specifically the information stored in the Centralised Inventory File includes:

- List of reports, the Input Data Files of all sectors, the working files used for emissions/removals estimation, the working files containing the application models used, key categories and uncertainty estimation working files.
- Full contact details of the Inventory Team.
- Final versions of the NIR.
- CRF tables in electronic format and a hard copy of the CRF tables of the last submission.
- XML file and database of CRF reporter.
- UN experts review reports.
- Any comments from the public review of the inventory.
- Documentation derived from the implementation of the QA/QC procedures.

## CHAPTER C **Quality assurance – Quality control Plan (QA/QC)**

The development and the implementation of an inventory Quality Assurance / Quality Control (QA/QC) plan represents a key tool for meeting the objectives of National Inventory System under Article 5 Paragraph 1 of the Protocol as described in Decision 19/CMP.1.

In this framework, a QA/QC Plan is being implemented since April 2004. A revision of the system is planned to be performed according to the experience that it will be gained from the 2008 submission.

As mentioned above, the supervision of QA/QC plan is performed by the MINENV. The system is based on the ISO 9001:2000 standard and its quality objectives, as stated in the Quality Management Manual, are the following:

1. Compliance with the IPCC guidelines and the UNFCCC reporting guidelines while estimating and reporting emissions/removals.

2. Continuous improvement of GHG emissions/removals estimates.
3. Timely submission of necessary information in compliance with relevant requirements defined in international conventions, protocols and agreements.

The accomplishment of the above-mentioned objectives can only be ensured by the implementation, from all those who are involved in the GHG emissions/removals Inventory of all the QA/QC procedures included in the plan for:

- data collection and processing,
- applying methods consistent with IPCC Good Practice Guidance and LULUCF Good Practice Guidance for calculating / recalculating emissions or removals,
- making quantitative estimates of inventory uncertainty,
- archiving information and record keeping and
- compiling national inventory reports.

The QA/QC plan consists of the following processes :

- **System management**, comprising all activities that are necessary for the management and control of the inventory department in order to ensure the accomplishment of the above-mentioned quality objectives.
- **Quality control** that is directly related to the estimation of emissions/removals and covers all inventory sectors. The process includes activities related to (a) data inquiry, collection and documentation, (b) methodological choice in accordance with IPCC Good Practice Guidance, (c) quality control checks for data from secondary sources and (d) record keeping.
- **Archiving of Inventory information**, comprising activities related to centralised archiving of inventory information and the compilation of the National inventory report.
- **Quality assurance**, comprising activities related to the different levels of review processes including the review of input data from experts, if necessary, and comments from the public
- **Estimation of uncertainties**, defining procedures for estimating and documenting uncertainty estimates per source / sink category and for the whole inventory.

- **Inventory improvement**, that is related to the preparation and the justification of any recalculations made. Relative procedures with inventory improvement are QM01 “System Review”, QM02 “System Improvement, QM06 “Non compliance – Corrective and preventive actions” and QM0 6 “Recalculations management. II01”.

The Deputy Minister for the Environment

Stavros El. Kaloyannis

**Annex I. Responsibilities / roles per entity involved in the National GHG Inventory System**

<b>Responsibilities / Roles</b>	<b>Competent Body</b>	<b>Experts of Competent Body/ies</b>	<b>Supervisor from MINENV</b>
General responsibility for the national GHG inventory	Ministry for the Environment	Elpida Politi	
Official consideration and approval of the inventory prior to its submission	Ministry for the Environment	Elpida Politi (Climate Team)	
Technical and scientific responsibility for national GHG inventory (inventory planning, preparation and management)	NTUA (consultant)	Ioannis Ziomas	
Supervision of the processes concerning the inventory preparation and management, CRF and reports compilation. QA/QC procedures preparation and implementation under the supervision of MINENV	NTUA (consultant)	Ioannis Sempos	Elpida Politi
QA/QC supervision	Ministry for the Environment	Alexandros Karavanas	
Energy Sector: Data collection and QC check, application of models (COPERT III), emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	1. Ioannis Sempos 2 Athina Progiou	Nektaria Efthymiou  Euthimios Lytras
Energy Sector: data providing	1. Ministry for Development, 2. Civil Aviation Organization, 3. Ministry of Transport and Communications 4. MINENV	1. Constantinos Chatzigianakis 2. Anastasios Kokkinos 3 Panagiotis Tselikas 4. Dimitris Chadzidakis	Nektaria Efthymiou  Euthimios Lytras

<b>Responsibilities / Roles</b>	<b>Competent Body</b>	<b>Experts of Competent Body/ies</b>	<b>Supervisor from MINENV</b>
Industry Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Spyridoula Ntemiri	Sotiria Koloutsou  Afroditi Kotidou
Industry Sector: data providing	1. Ministry for Development, 2. Ministry for the Environment 3. National Statistical Service of Greece 4. ICAP	1. Xarikleia Piperopoulou 2. Dimitris Chadzidakis 3. Ioanna Papanagnou	Sotiria Koloutsou  Afroditi Kotidou
Solvents Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Ioannis Sempas	Afroditi Kotidou
Solvents Sector: data providing	National Statistical Service of Greece	Ioanna Papanagnou	Afroditi Kotidou
Agriculture Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Leonidas Kallinikos	Dionisios Ballas  Chryssoula Koromila

<b>Responsibilities / Roles</b>	<b>Competent Body</b>	<b>Experts of Competent Body/ies</b>	<b>Supervisor from MINENV</b>
Agriculture Sector: data providing	1. National Statistical Service of Greece 2. Ministry of Rural Development and Food 3. United Nations Food and Agricultural Organization (FAO)	1. Ioanna Papanagnou 2. Eirini Nikolaou Panagiotis Drougas	Dionisios Ballas  Chryssoula Koromila
Waste Sector: Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Leonidas Kallinikos	Moraiti Christina  Klimis Lazaridis
Waste Sector: data providing	1. Ministry for the Environment 2. National Statistical Service of Greece	1. Ioannis Macheras 2. Ioanna Papanagnou	Moraiti Christina  Klimis Lazaridis
LULUCF Sector (report under convention): Data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	NTUA (consultant)	Ioannis Sempos	Dionisios Ballas  Chryssoula Koromila
LULUCF Sector (report under convention): data providing:	1. National Statistical Service of Greece 2. Ministry of Rural Development and Food	1. Ioanna Papanagnou 2. Eirini Nikolaou and Panagiotis Drougas	Dionisios Ballas  Chryssoula Koromila



<b>Responsibilities / Roles</b>	<b>Competent Body</b>	<b>Experts of Competent Body/ies</b>	<b>Supervisor from MINENV</b>
LULUCF Sector (report for the KP, art 3.3 & 3.4): Development of a methodology for estimation of emissions/sinks, data collection and QC check, emission estimation and QC check, record keeping, inventory report compilation and QC check	Ministry of Rural Development and Food	1. Eirini Nikolaou 2. Panagiotis Drougas	
LULUCF Sector (report for the KP, art 3.3 & 3.4): CRF compilation	NTUA (consultant)	Ioannis Sempos	Dionisios Ballas Chryssoula Koromila
Uncertainty assessment	NTUA (consultant)	1. Leonidas Kallinikos	Nektaria Eftymiou
Key categories analysis	NTUA (consultant)	Spyridoula Ntemiri	Nektaria Eftymiou
CRF and National Inventory Report compilation and QC checks	NTUA (consultant)	1. Spyridoula Ntemiri 2. Leonidas Kallinikos 3. Ioannis Sempos	Nektaria Eftymiou
Preparation and keeping of Centralized Inventory File which is delivered to the Ministry for the Environment / Climate Team at the end of each inventory cycle	NTUA (consultant)  Ministry for the Environment	1. Spyridoula Ntemiri 2. Leonidas Kallinikos 3. Ioannis Sempos  Chryssoula Koromila	
Training the representatives of providing data agencies on inventory issues.	NTUA (consultant)	1. Leonidas Kallinikos 2. Spyridoula Ntemiri 3. Ioannis Sempos	

**Annex II. Quality assurance / quality control procedures for the Greek  
Emissions Inventory**

<b>Process</b>	<b>Procedure code</b>	<b>Procedures</b>
<b>Quality management</b>	QM 01	System review
	QM 02	System improvement
	QM 03	Training
	QM 04	Record keeping
	QM 05	Internal reviews
	QM 06	Non compliance – Corrective and preventive actions
	QM 07	Supplies
	QM 08	Quality management system
	QM 09	Documents control
	QM 10	Internal communication
<b>Quality control</b>	QC 01	Data collection
	QC 02	Estimation of emissions / removals
	QC 03	Data quality control check
	QC 04	Input data record keeping
<b>Archiving of inventory information</b>	AI 01	Centralised archiving of inventory information
	AI 02	Compilation of reports
<b>Quality assurance</b>	QA 01	Expert review of input data and parameters
	QA 02	Expert review of GHG emissions / removals inventory
	QA 03	Review from public
<b>Estimation of uncertainties</b>	EU 01	Uncertainty analysis
<b>Inventory improvement</b>	II 01	Recalculations management

DELIVERABLES												
	Year X-1								Year X			
	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
ACTIVITIES	Data collection & check											
				Estimation of emissions and check								
								CRF tables compilation for year X-2				
								National Inventory Report compilation and check				
									Official examination and approval			
										Preparation of Centralised Inventory File and delivery to MINENV climate team.		

To: European Commission  
CRF tables for year X-2 &  
Information acc to 280/2004/EC  
(15th January)

To: European Commission  
National Inventory Report  
(15th March)

To: UNFCCC Secretariat  
National Inventory Report  
(15th April)

**ANNEX III: Timetable for the preparation and submission of GHG emissions/removals inventory in Greece**

## **RECIPIENTS LIST**

### **1. MINISTRY OF ECONOMY AND FINANCE - NATIONAL STATISTICAL SERVICE OF GREECE**

- General Secretary Mr E. Kontopyrakis
- Mrs I. Papanagnou
- Mrs K. Kantartzi

### **2. MINISTRY FOR DEVELOPMENT**

- Deputy Minister Mr Stavros Kalafatis
- Mr K. Chatzigianakis
- Mrs Ch. Piperopoulou

### **3. MINISTRY OF RURAL DEVELOPMENT AND FOOD**

- Deputy Minister Mr K. Kiltidis
- Mrs E. Nikolaou
- Mr P. Drougas

### **4. MINISTRY OF TRANSPORT AND COMMUNICATIONS**

- General Secretary Mr S. Simopoulos
- Mr A.Kokkinos
- Mr P. Tselikas

## **INTERNAL COMMUNICATION**

### **MINENV**

- Minister Office
- General Secretary Mr E. Baltas
- Mr Vournas
- Mrs Tryfona-Panagopoulou
- Mrs D. Chatzidakis
- Mr I. Macheras
- Emissions Trading Office
- Climate Team