WRITTEN SUBMISSION FROM LITHUANIA

LIETUVOS RESPUBLIKOS AMBASADA VOKIETIJOS FEDERACINĖJE RESPUBLIKOJE
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LITHUANIAN WRITTEN SUBMISSION

With reference to the Compliance Committee's letter of 5 October 2011, please, find enclosed the electronic version of the Lithuanian written submission in Word format.

Enclosed. The Lithuanian written submission, 99 pages.

Yours sincerely,

Ambassador Mindaugas Butkus

WRITTEN SUBMISSION FROM LITHUANIA

Under Section X of the Annex to Decision 27/CMP.1

8 November 2011

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CHAPTER 1

1. INTRODUCTION AND QUESTIONS OF IMPLEMENTATION

1.1 In response to the Decision on Preliminary Examination of the Compliance Committee (reference CC-2011-3-2/Lithuania/EB of 4 October 2011) we are pleased to submit the following written submission (the "**Written Submission**") on behalf of the Government of Lithuania.

1.2 Upon releasing the "Decision on Preliminary Examination" dated 4 October 2011 (CC-2011-3-2/Lithuania/EB), in accordance with paragraph 2 of section VII and paragraph 1(a) of section X of the annex to decision 27 CMP.1, the Enforcement Branch of the Compliance Committee decided to proceed with the question of implementation. With reference to the 'Report of the individual review of the annual submission of Lithuania submitted in 2010', dated 7 September 2011 (FCCC/ARR/2010/LTU) (hereafter referred to as the "**2010 Inventory Report**"), the Expert Review Team (the "**ERT**") concluded that the questions of implementation relate to the following categories:

1.2.1 non-compliance with the Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol (annex to decision 19/CMP.1; hereinafter referred to as "**Guidelines for national systems**") and the Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol (annex to decision 15/CMP.1; hereinafter referred to as "**Article 7 guidelines**");

1.2.2 general and specific functions required of the national system in accordance with the requirements set up in the annex to decision 19/CMP.1 did not operate fully in accordance with the Guidelines for national systems, including:

(i) to ensure sufficient capacity for data collection for estimating antropogenic GHG emissions by sources and removals by sinks (paragraph 10(b) of the Guidelines for national systems);

(ii) preparation of national annual GHG inventories and supplementary information in a timely manner in accordance with Article 5 and Article 7, paragraphs 1 and 2, and relevant decisions of the Conference of the Parties (COP) and/or the CMP (paragraph 10(d) of the Guidelines for national systems);

(iii) provide information necessary to meet the reporting requirements defined in the Article 7 guidelines (paragraph 10(e) of the Guidelines for national systems);

(iv) to prepare estimates in accordance with the methods described in the Revised 1996 IPCC Guidelines, as elaborated by the IPCC good practice guidance and the IPCC good practice guidance for LULUCF, and ensure that appropriate methods are used to estimate emissions for key categories (paragraph 14(b) of the Guidelines for national systems); and

(v) to collect sufficient AD, process information and EFs as are necessary to support the methods selected for estimating anthropogenic GHG

emissions by sources and removals by sinks (paragraph 14(c) of the Guidelines for national systems).

1.2.3 failure to comply with the requirements of the national systems as set out in the Guidelines for national systems because Lithuania could not prepare information on KP-LULUCF activities on time; and

1.2.4 inability of the Lithuanian national system to ensure that areas of land subject to KP-LULUCF activities are identifiable in accordance with paragraph 20 of Decision 16/CMP.1.

1.3 Lithuania will, in this Written Submission, address each of these issues in this submission and seek to demonstrate (in particular, in Chapter 2 of this Written Submission) the steps taken during the years 2010 - 2011 to improve the national system to facilitate GHG inventory preparation and to comply with the Guidelines for national systems under Article 5, paragraph 1, of the Kyoto protocol (decision 19/CMP.1). Where Lithuania has been found to be non-compliant with any of these provisions, we have set out detailed measures which will be undertaken during 2011 and 2012 to resolve these particular issues.

1.4 As a Party included in Annex I to the United Nations Framework Convention on Climate Change (UNFCCC) and as a Party to the Kyoto Protocol, Lithuania submits that it has and will continue to strive to adhere to the tenets of the Kyoto Protocol and the associated guidelines, and uses this opportunity to portray its commitment to maintaining its Kyoto Protocol eligibility status and conformity with Article 7.

1.5 In light of the evidence provided in Chapter 2 of this Written Submission and, in light of the conclusions referred to in Chapter 3 herein, the Government of Lithuania requests that the Enforcement Branch of the Compliance Committee determines not to proceed further with any of the questions of implementation raised in the 2010 Inventory report and Decision On Preliminary Examination of 4 October 2011 (CC-2011-3-2/ Lithuania /EB).

However, should the Enforcement Branch not be minded to make a decision as requested above, then to:

a) defer any decision until the draft report from the in-country review undertaken by the ERT between 26 September 2011 and 1 October 2011 of the inventory submitted by Lithuania in 2011 (the "**in-country review**") is available as permitted under paragraph 11, section IX, of the Annex to decision 27/CMP.l; or

b) taking into account its national conditions and specific circumstances, refer any question of implementation that the Enforcement Branch considers to remain with respect to Lithuania to the Facilitative Branch for consideration under paragraph 12, section IX, Annex to Decision 27/CMP.l with the view to the Facilitative Branch providing Lithuania with advice and assistance relating to its KP-LULUCF reporting and information obligations. The Enforcement Branch is requested to take note of the ERT's "in-country review" comments on Lithuania's 2011 Inventory Submission that Lithuania has put in place all of the mandatory elements for a national system and therefore, there are no impediments to a referral under paragraph 12, section IX, Annex to Decision 27/CMP.l.

CHAPTER 2

2. RESPONSE TO QUESTIONS OF IMPLEMENTATION RELATING TO LITHUANIA'S NATIONAL SYSTEM

2.1 As identified in paragraphs 1.2.1 to 1.2.2 of Chapter 1 (and in paragraphs 224 and 225 of the 2010 Inventory Report), it has been suggested that the Lithuanian national system fails to perform a number of generic and specific functions required by the Guidelines for national systems. Lithuania acknowledges that at the time of the original 2010 annual inventory submissions, there were a number of issues that prevented the Lithuanian national system from fully functioning in accordance with the Guidelines for national systems. However, for the various reasons explained below and the further elaborations provided by the respective Annexes as set out in this Written Submission, we submit that the Lithuanian national system is not in compliance with all the mandatory elements for a national system under Article 5, paragraph 1 of the Kyoto Protocol and the Guidelines for national systems. We address the specific questions of implementation set out in Chapter 1 at paragraphs 1.2.3 and 1.2.4 (relating to KP-LULUCF) separately in Chapter 3 of this Written Submission.

2.2 Legal infrastructure and institutional functions

The Government of Lithuania and the Minister of Environment have issued a number of new key governmental legal acts (see **Annex 1**) and these Government resolutions, orders and activities, currently ensure that Lithuania's national inventory system for GHG inventory works effectively and in accordance with the requirements of Article 5, paragraph 1 of the Kyoto Protocol and the Guidelines for national systems (under Decision 19/CMP.1) and Article 7 of the Kyoto Protocol and the Article 7 guidelines (under Decision 15/CMP.1).

The re-defined national system designed during 2010-2011 (see figures and outline tables in **Annex 2**) set up by the new legislation, principally creates and utilises the following institutions to oversee the GHG inventory process:

(a) Ministry of Environment (the "**MoE**");

(b) Environmental Protection Agency (the "**EPA**");

(c) State Forest Service (the "**SFS**");

(d) Permanent National GHG inventory preparation working group;

(e) National Climate Change Committee

(f) Data providers; and

(g) External consultants.

A detailed description of each institution's responsibilities in relation to inventory preparation is set out in **Annex 3.** To ensure the efficient operation of the national GHG inventory, the MoE has overall responsibility for the national system for inventory, is in charge of the legal, institutional and procedural arrangements for the national system and the strategic development of the inventory and has been appointed as the National Focal Point to the UNFCCC. EPA under the MoE is designated as an inventory compiler and QA/QC manager. The SFS undertakes responsibility to prepare annually the national GHG inventory

parts related to LULUCF and supplementary information required under Article 7, paragraph 1 (KP-LULUCF articles 3.3 and 3.4).

To address the ERT's concerns regarding the continuity of experts within these institutions, Lithuania's recently approved Government Resolution No 683 establishes a permanent GHG inventory working group which determines their rules, responsibilities and financing provisions.

The members of the Permanent National GHG inventory preparation working group are all well respected in their respective fields of expertise and a list of all the members and their experience is set out in **Annex 4**.

To raise the technical competence of staff involved in the national GHG inventory development and review process, all sector experts will have access to online training provided by the UNFCCC secretariat, some of the experts have already undertaken and passed the course successfully. The course covers technical aspects of the review of GHG inventories of Annex I Parties and consists of seven modules. Each of the modules provides important background information and references for the sector, instructions on general procedures for review, exercises on key topics and specific emission categories, and practical case studies that simulate an actual review.

In recognition of the ERT's recommendation to continually strive to improve Lithuania's national systems, Lithuania has set in motion a plan to enter into a formal partnership with Norway starting in January 2012, in order to benefit from Norway's expertise in capacity building and improvement of the national system for the preparation of GHG inventory to comply with the relevant UNFCCC and Kyoto protocol reporting requirements. See a detailed description of the planned project in **Annex 5**.

We believe that the recent steps taken to overhaul Lithuania's national system clearly shows both a willingness to achieve and the actual compliance with the provisions of the Guidelines for national systems and the Article 7 guidelines and thereby addresses any concerns regarding the question of implementation as specifically listed in paragraph 1.2.2(i) of Chapter 1 herein. We submit that these steps will facilitate the comprehensive, transparent and complete preparation and submission of future NIR inventories. The changes to Lithuania's national system have been clearly documented in Lithuania's 2011 annual inventory submission (the "**2011 Inventory Submission**") (see Chapter 13) as recommended by the ERT in its 2010 Inventory Report.

2.3 GHG Inventory preparation

With a view to following the overarching principles of transparency, consistency, comparability, completeness and accuracy in the GHG inventory, as set out in the updated UNFCCC reporting guidelines on annual inventories following incorporation of the provisions of decision 14/CP.11 (FCCC/SBSTA/2006/9), Lithuania follows the methods to prepare estimates in accordance with the requirements set out in the Guidelines for national systems, the Revised 1996 IPCC Guidelines, as elaborated by the IPCC good practice guidance and the IPCC good practice guidance for LULUCF, and ensure that appropriate methods are used to estimate emissions for key categories (as per paragraph 14(b) of the Guidelines for national systems) and to collect sufficient AD, process information and EFs as are necessary to support the methods selected for estimating anthropogenic GHG emissions by sources and removals by sinks (paragraph 14(c) of the Guidelines for national systems).

Key source categories analysis for the GHG inventory for the years 1990 (base year) and 2009 were performed according to the Good Practice Guidance (2000). Both level assessment and trend assessment of the key source categories including and excluding LULUCF were conducted, following the IPCC Tier 1 approach. The results of the analysis are set out in **Annex 6**.

Annex 7 shows a summary of the methods and emission factors used in the Lithuania‘s GHG inventory and further detailed information on methods and emission factors used can be found in CRF tables Summary 3s1and 3s2 of Lithuania's 2011 Inventory Submission. The steps taken by Lithuania's national system as evidenced in Annex 6 and Annex 7 are specifically with a view to addressing the questions of implementation described in paragraphs 1.2.2(iv) and 1.2.2(v). Please also see Chapter 3 of this Written Submission.

2.4 GHG inventory improvements (2006-2011 and 2012)

Lithuania‘s GHG inventory plan is continuously subject to scrutiny with a view to streamlining the GHG inventory procedure. The summary of historical improvements to the inventory during 2006-2011 is set out in **Annex 8**. Areas for further improvement are also set out and prioritises methodological issues of Key Categories, resolving the uncertainty of existing emission estimates and implementing recommendations of the ERT given during previous reviews of Lithuania's GHG inventory.

In accordance with the requirements of the UNFCCC, the Kyoto Protocol and the EU greenhouse gas monitoring mechanism decision No 280/2004/EC, the annual GHG inventory plan for 2011/2012 is set out in **Annex 9**.

We strongly believe that a combination of the changes to the national system, improvements to the GHG preparation procedure (including the updates to the QA/QC procedure as set out in 2.4 below) and planned updates to the current GHG inventory system will ensure the timely preparation and submission of Lithuania's national annual GHG inventory, thereby addressing any concerns raised in the 2010 Inventory Report and the Enforcement Branch's questions of implementation (specifically listed in paragraph 1.2.2(ii) of Chapter 1 herein).

2.5 Quality Assurance and Quality Control

In order to ensure that the data used in the GHG inventory is comprehensive, correct and complete, the Quality Assurance and Quality Control (**QA/AC**) plan was updated in 2011 and submitted to the UNFCCC secretariat before the in-country review week on 22 September 2011. The ERT has concluded that Lithuania has elaborated a QA/QC plan in accordance with the IPCC GPG. The QA/QC plan establishes good practice consistent with the IPCC Good Practice Guidance aimed at improving transparency, consistency, comparability, completeness, and confidence in the national inventory of emissions estimates.

The QA/QC Plan describes the quality objectives of the GHG inventory, improved national system for inventory preparation, tasks and responsibilities. A description is provided of various formal procedures already implemented in the development of the GHG inventory and of planned improvements. The plan also includes any potential obstructions which may hinder timely implementation of any of the activities.

Under the recently improved Lithuanian national system, particular attention has been paid to improving the QC procedures to put in place processes for documentation and archiving of inventory material, and recording of all QC activity data. The EPA is assigned as GHG

inventory coordinator and central QA/QC Manager for Lithuania's GHG inventory. The EPA is responsible for ensuring the implementation and functioning of the QA/QC system in 2012, for management and implementation of the QA/QC plan and procedures, and for reviewing and checking reports provided by the sectoral experts. The EPA's functions and responsibilities are described in Annex 3, paragraph 2 and the QA/QC procedure for 2012 is set out in **Annex 10** herein.

The national GHG inventory expert team has noted the ERT's recommendations to improve the QA/QC procedure and will ensure that all estimates and explanations will be corrected and included in future submissions.

2.6 Archiving

Lithuania has paid particular attention to putting in place a plan to develop the system of archiving documentation during 2011, as we appreciate the ERT's concerns and the potential lack of transparency and consistency that can be implied from inadequate storing of information in a correct manner. As an item on the planned improvements to the GHG inventory for 2012 (see **Annex 12**), our intention and commitment to placing sufficient time and resources to developing the archiving system is clearly described, along with the timeline for the steps to be taken. The overall aim is to create a complete and accessible archive of documentation, recording methodology used, data and data sources, spreadsheets and other data contacts in line with decision 19/CMP.1.

Lithuania's GHG inventory archive improvement plan has been presented and approved by the ERT on 30 October 2011, see **Annex 11**. Further, the Action Plan set out in **Annex 15** outlines further planned developments to streamline the archiving system for estimates of GHG emissions and removals from LULUCF and KP-LULUCF sectors during 2012 and the plan will be included in the 2012 Inventory Submission.

2.7 Recalculations

In response to the ERT's request in the draft of the 2010 Inventory Report received on 3 June 2011, to perform recalculations and improvements, we carried out recalculations for 18 of the 23 Key Categories and these were included in the 2011 Inventory Submission:

(a) Stationary combustion, liquid fuel, CO_2

(b) Road transportation, CO_2

(c) Stationary combustion, solid fuel, CO_2

(d) Enteric fermentation, CH_4

(e) Cement production, CO_2

(f) Ammonia production, CO_2

(g) Solid waste disposal on land, CH_4

(h) Nitric acid production, N_2O

(i) Manure management, N_2O

(j) Manure management CH_4

(k) Consumption of HFCs, HFC

(l) Direct soil emissions, N_2O

(m) Indirect soil emissions, N_2O

(n) Fugitive emissions from oil and gas operations, CH_4

(o) Other industries, CO_2

(p) Forest land, CO_2

(q) Other land, CO_2

(r) Settlements, CO_2

Recalculations performed are related to the changes in methodologies used to carry out emission estimates, revised emission factors and/or activity data, inclusion of the emission from categories not previously estimated. All recalculations made are considered as a contribution to the overall improvement of the inventory.

We believe that the short time taken to perform these recalculations is strong evidence that Lithuania's GHG inventory system is capable of using appropriate methods to estimate emissions from key source categories and is capable of collecting the sufficient activity data, processing information and emission factors necessary to support the methods selected. This evidence specifically addresses the question of implementation described at paragraph 1.2.2(iv) of Chapter 1 herein.

2.8 ERT's response to changes in Lithuania's national system

During the "in-country review" by the ERT in relation to Lithuania's 2011 Inventory Submission, the ERT was complimentary about Lithuania's efforts to improve the national system and noted that Lithuania has put in place all of the mandatory elements for a national system and is generally prepared in accordance with the guidelines for national systems under Article 5, paragraph 1 of the Kyoto Protocol (decision 19/CMP.1), which is likely to strengthen its core functions. The ERT also noted that several improvements in methods, emission factors and activity data sources have been put in place since the 2010 Inventory Submission.

2.9 Planned improvements for the 2012 GHG inventory

During the "in-country review" in relation to the 2011 Inventory Submission, the ERT noted that notwithstanding the clear progress made with respect to Lithuania's national system, additional improvements are still necessary.

In light of this, Lithuania is continually monitoring the functioning of its national system and has prepared a list of planned improvements (see **Annex 12**) which will be implemented according to the implementation timelines specified in Annex 12 and these changes will also be reflected in the 2012 Inventory Submission.

The potential problems which may delay the implementation of the planned improvements could be a lack of:

(a) institutional capacities; or
(b) sectoral expert knowledge.

In order to pre-empt these potential pitfalls, we have secured two further experts to join the SFS and three officials to join the EPA. This, coupled with the Norwegian partnership programme, will develop training and therefore specialised knowledge of key experts within

the departments. This will ultimately ensure timely completion of future annual GHG Inventory Reports and implementation of the QA/QC procedures.

2.10 Chapter 2 Summary

We hope that this chapter has provided the Enforcement Branch with sufficient evidence to determine that no further questions of implementation need be raised with respect to the questions listed in paragraph 1.2.1 to 1.2.2 of Chapter 1 of this Written Submission. We recognise that the Enforcement Branch cannot make determinations in the absence of supporting objective evidence. We refer the Enforcement Branch to the conclusions of the ERT following its "in-country review" for Lithuania's 2011 Inventory System (see **Annex 14**) for their conclusion that:

"Lithuania has put in place all of the mandatory elements for a national system under Article 5.1

a) NS is generally prepared in accordance with the guidelines for national systems under Article 5, paragraph 1 of the Kyoto Protocol (decision 19/CMP.1)" (see page 5 of **Annex 14**).

With respect to the questions of implementation listed in paragraphs 1.2.3 and 1.2.4 of Chapter 1 of this Written Submission, we refer you to Chapter 3 herein.

CHAPTER 3

3. RESPONSE TO QUESTIONS OF IMPLEMENTATION RELATING TO KP – LULUCF ACTIVITIES AND REPORTING

3.1 In the 2010 Inventory Report, the ERT concluded from the information contained in the NIR, CRF tables and the additional information received during and after the centralised review, that Lithuania's national system does not ensure that areas of land subject to KP-LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are identifiable in accordance with paragraph 20 of decisions 16/CMP.l (see paragraph 1.2.4 of Chapter 1 herein). The ERT also found that Lithuania's national system failed to meet the Guidelines for national systems because Lithuania could not prepare information on KP – LULUCF activities on time (see paragraph 1.2.3 of Chapter 1 herein).

Since the 2011 Inventory Report was published and recommendations provided, Lithuania has undertaken a number of measures to meet the ERT's suggestions including, putting in place a number of planned process to ensure the required information for LULUCF activities, is included in Lithuania's 2011 Inventory Submission and subsequent annual submissions.

3.2 National systems

3.2.1 Institutions and legislative framework

The main institutions within the national system for the preparation of KP-LULUCF estimations for the national GHG inventory are the State Forest Service and the State Land Fund (under the legislation described in paragraph (c) and (d) of **Annex 1**). The EPA (under the supervision of the MoE) is responsible for the coordination of LULUCF reporting between the State Forest Service, State Land Fund, Ministry of Agriculture and National Paying Agency among others (see **Annex 2** and EPA functions described in **Annex 3**). The State Forest Service is responsible for collecting, monitoring, analysing and maintaining data for afforestation (**A**), reforestation (**R**), deforestation (**D**) under Article 3, paragraph 3 under Article 3, paragraph and for forest management (**FM**) under Article 3, paragraph 4 of the Kyoto Protocol. The State Land Fund is responsible for providing data of land use and land use change in non-forested land.

The results of the State Land Fund's work will be presented in full in the 2012 GHG Inventory Submission.

The main legislation, laying down principles and determining standards when assessing carbon stock under Article 3, paragraphs 3 and 4 of the Kyoto Protocol in Lithuanian forests, is described in **Annex 13**.

3.2.2 QA/QC procedures

The following measures have been implemented to ensure high standards of quality control levels:

(a) data consistency and completeness control – field crews enter data simultaneously into a handheld Tablet PC when carrying out on-site measurements and when processing data post field work. The crew ensures

that data should conform to standards requirements, fall within parameter limits and pass the logical tests;

(b) independent internal check assessments – carried out on 5% of measured sample plots by the National Forestry Inventory ("**NFI**") control team;

(c) independent external check assessments – carried out by third parties (e.g. certified wood measurers or universities); and

(d) expert analysis and review.

The institutional and QA/QC updates to Lithuania's national system to ensure that areas of land subject to KP-LULUCF activities are identifiable have been fully implemented, and further detail is set out in Chapter 11 of the 2011 Inventory Submission.

3.3 The 2011 Inventory Submission

Lithuania has made significant progress in identifying areas of land subject to KP-LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in accordance with paragraph 20 of annex to decision 16/CMP. 1 based on data sources of the Lithuanian NFI using the sampling method (detail of the NFI sampling method is set out in Chapter 3.2 of the 2011 Inventory Submission), which is in accordance with the Reporting Method 1 for Lands subject to Article 3, paragraphs 3 and 4 activities in the IPCC Good practice Guidance for LULUCF.

Lithuania has placed increasing amounts of time, effort and resources into improving KP-LULUCF reporting during 2010. This is evidenced by the enhanced quality of information relating to LULUCF activities in Lithuania's 2011 Inventory Submission, including:

(a) development of a more sophisticated analysis of historical data, more specifically, locating areas which were afforested, reforested or deforested during 1990 – 1997, before the NFI procedure began in 1998. The decision on A/R/D is based on integrated analysis of collated NFI data and Standwise Forest Inventory ("**SFI**") data. The SFI forest maps cover all of Lithuania’s territory (independent from ownership) and are used to determine the assignment of an area to forest, agriculture or any other land use category (2011 NIR Chapter 11 and Annex 5);

(b) the grid of NFI permanent sample plots covers the whole national territory on forest and non-forest land. The geographical locations of the boundaries of assessable areas tally with the state borders of Lithuania and assessment of A/R/D is performed on the grid of NFI permanent sample plots. Continuous visits and remeasurements of the same sample plots allow detecting of relatively small forest land area changes. Areas of forest land and their changes are repeatedly assessed over a 5 year NFI cycle. A detailed description of the A/R/D assessment along with examples is provided in Chapter 11 and Annex 5 of the 2011 Inventory Submission and **Annex 13**;

(c) inconsistencies between forest area and other data in the NIR and CRF tables for the 2010 Inventory Submission were corrected for the 2011 Inventory Submission. According to Lithuanian legislation, land-use changes and minimum forest areas are identified at the 0,1 ha scale, which is also

consistent with datasets used for the GHG estimation (see **Annex 13 Corresponding Chapter 3**);

(d) explanations on methodological changes and newer datasets which resulted in recalculations performed between 2010 and 2011 included (see Chapter 7 11 of 2011 Inventory Submission);

(e) Emissions Factors (EFs) used for forest fires were reviewed and emissions were recalculated (see Chapter 7.2.2.7 of the 2011 Inventory Submission);

(f) time series of emissions/removals from LULUCF were recalculated using Method 2 (see Chapter 7.2.3 of the 2011 Inventory Submission); and

(g) land areas were reported consistently and the requirement not to double count land areas subject to KP-LULUCF activities has been implemented (see Chapter 11 of the 2011 Inventory Submission).

3.4 Comprehensive reporting in 2012 Inventory Submission

The State Land Fund and the State Forest Service experts are currently harmonising the data on land categories in the LULUCF sector, to ensure consistent time series and land representation.

Lithuania is striving to develop consistent time series for all land categories in the LULUCF sector by assessing and analysing the current available data and we expect that the land use matrix for earch year of 1990-2012 period will be provided in the 2012 Inventory Submission.

The State Forest Service is improving assessment of land units subject to activities under Art 3 para 3, Art 3, para 3, which would otherwise be included in land subject to elected activities under Art 3, para 4, under the provisions of para 8 of the annex to decision 16/CMP.1, Art 3 para 4 of Kyoto Protocol. Changes of above mentioned areas for earch year of 1990-2012 period will be provided in the 2012 Inventory Submission.

3.5 ERT response to changes in Lithuania's LULUCF reporting

Following the "in country review" for Lithuania's 2011 Inventory Submission, the ERT noted that Lithuania had performed improvements since last reporting and estimations are consistent with the LULUCF reporting under the Convention (pools, emission factors, activity data), however, the ERT also noted that improvements are still required and made specific reference to:

(a) transparency, in particular, recalculations and harmonisation of different data sources; and

(b) identifying KP-LULUCF areas and annual changes, including for the year 1990.

Lithuania has sought to rectify these specific problems in the 2011 Inventory Submission, as set out in 3.2 above, and has put in place various plans and procedures (see paragraphs 3.3

and 3.5 of this Chapter) to ensure these issues are addressed more comprehensively in the 2012 Inventory Submission.

3.6 Future planned improvements to KP-LULUCF reporting

Lithuania recognises that there are some shortfalls in the way in which Lithuania's KP-LULUCF reporting has historically been performed. We refer to you to the Action Plan to improve KP-LULUCF reporting set out in **Annex 15**, with the aim of providing evidence for and assurance on our commitment and dedication to improving current and future KP-LULUCF reporting.

The plan includes details on how we intend to improve the data archive for NFI databases and consequently ensure that it fully complies with the requirements under Article 3, paragraphs 3 and 4 of the Kyoto Protocol.

In addition, Lithuania will initiate the following three studies in 2012 to ensure comprehensive LULUCF reporting:

(a) "Forest land changes in Lithuania during 1990-2012" – the results of the study will locate geographical locations of land subject to activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The projected outcomes for this project will be collating annual information for: 1) areas of afforested, reforested, deforested territories; and 2) lists of afforested, reforested, deforested objects with attribute data for the years 1990-2010. These results will significantly enhance the current SFI data;

(b) "Changes of areas of croplands, grasslands, wetlands, settlements and other lands in Lithuania during 1990-2012" - the results of the study will progress the development of a specified matrix of land use, based on land definition and land hierarchy annual changes during 1990-2012. The recommendations resulting from this study will be implemented during 2012-2013; and

(c) the harmonized methodology for the data evaluation and estimation of removals and emissions for lulucf sector according to the unfccc and the kyoto protocol requirements will be developed.

3.7 Summary

3.7.1 The combination of steps described in 3.2 **-** 3.6 are specifically designed to address the issues relating to timely submission of KP – LULUCF information and future Lithuanian Inventory Submissions. As demonstrated by our ability to submit the relevant KP – LULUCF information in a timely manner for the 2011 Inventory Submission, we believe no question of implementation remains to be answered with respect to this question raised in paragraph 1.2.3 of chapter 1 of this Written Submission.

3.7.2 The question of implementation referred to in paragraph 1.2.4 is more challenging for Lithuania. It is clear that the systems in place so far have not adequately reflected the requirements of the IPCC Good Practice for LULUCF. However, Lithuania is taking significant steps to overcome these issues but currently is facing limitations caused by lack of technical expertise and resources. These limitations are expected to be overcome by a combination of projects. The first, is described in paragraph (iv) of the "Action Plan to improve LULUCF reporting of Lithuania" and

relates to accumulation of data (including, orthophotographs) covering suitable spatial resolution, the funding of this project has already been budgeted in the State's budget. The second, is the previously mentioned formal partnership with Norway. Within the scope of this project, along with the capacity building and training programmes referred to in Chapter 2 herein, a separate study entitled "Forest land changes in Lithuania during 1990-2012" will be conducted. This project work will begin from January 2012 onwards. These two projects will go a long way towards overcoming any current shortfalls in Lithuania's ability to identify the appropriate land areas for the purposes of paragraph 20 of Decision 16/CMP.1. We therefore submit that this plan of action is sufficient to satisfy the Enforcement Branch that there is no need to proceed further on this particular question of implementation.

CHAPTER 4

4. CONCLUSION

4.1 Questions of implementation relating to Lithuania's national systems

Lithuania takes it obligations as an Annex 1 Party to the Convention and an Annex B Party to the Kyoto Protocol very seriously. However, in comparable terms, although a Member State of the EU, Lithuania's circumstances do not match those of many other Annex B Party's to the Kyoto Protocol. Lithuania is a country undergoing the process of transition to a market economy and has faced economical recession. In 2009 GDP per capita decresed by 20%, which negatively influenced financing of certain technical, institutional and organizational arangments and had some negative effect on data collection and research activities aimed at improvement of the NIR submission 2010. Lithuania's GHG emissions consits of less than 0.05% of the global GHG emissions and the Party successfully implements its Kyoto protocol GHG reduction target – to reduce emissions 8% for the period 2008-2012 in comparison with the 1990. In 2009, Lithuania's GHG emissions were approximately 53% lower than the base year level. Notwithstanding, the technical and economical limitations that Lithuania faces, it has always sought to apply itself if meeting its reporting obligations under Article 7 of the Kyoto Protocol.

In the recent past, including for its 2010 Inventory Submission, Lithuania had used external service providers, under the responsibility of the Ministry of Environment, for the purposes of preparing its annual inventory submissions. This was clearly not an efficient method nor one which provided consistent information or was conducive for co-ordination between the various departments collecting the required information. This has now been replaced by the detailed arrangements and changes to the system that are described in Chapter 2 of this Written Submission and described in greater detail **in Annex 3**.

The fruits of these relatively recent changes to Lithuania's national system are clearly not instantaneous and will take time to flow though fully. However, based on the response received to date from the ERT's "in-country review" team on the 2011 Inventory Submission, the benefits are already visible. As previously referred to in the Paragraph 2.9 of Chapter 2 of this Written Submission, the ERT has already expressed a view that "Lithuania has put in place all of the mandatory elements for a national system" (see **Annex 14**) under Article 5, paragraph 1 of the Kyoto Protocol and that the national system "is generally prepared in accordance with the guidelines for national systems under Article 5, paragraph 1 of the Kyoto Protocol".

The Ministry of Environment for Lithuania is encouraged by the acknowledgement of the ERT of its efforts to address the various issues identified by the 2010 ERT on its 2010 Inventory Report. Such acknowledgment will enforce the Ministry's efforts to ensure future Inventory Submissions are smoother with even fewer issues that in previous years.

We therefore submit that, as evidenced by the positive feedback from the ERT on its 2011 Inventory Submission, that the questions of implementation relating to Lithuania's national system as listed in paragraphs 1.2.1 and 1.2.2 do not justify the Enforcement Branch to declare non-compliance on the Party of Lithuania. We therefore invite the Enforcement Branch to adopt a decision not to proceed further with any question of implementation on these particular questions of implementation.

4.2 Questions of implementation relating to KP-LULUCF

The Government of Lithuania is nonetheless aware that a question of implementation remains with respect to Lithuania's reporting obligations under the Article 7 of the Kyoto Protocol

particular to the KP-LULUCF sector. We recognise that there has been an historic issue with respect to the timely delivery of data or the national system functions being well adapted to the KP-LULUCF reporting. As discussed above and more specifically in Chapter 3 of this Written Submission, the outsourcing of the annual Inventory Submission to contracting entities has contributed to this issue. The steps described in Chapter 3 (in particular as summarised in paragraph 3.7 and more expressly detailed in the relevant Annexes herein (in particular **Annex 15**) are intended to overcome these issues. The Ministry of Environment, has already therefore taken the necessary steps to implement the recommendations made by the ERT during its 2010 Inventory Report and is also incorporating within such actions, any recommendations made by the ERT as part of its in-country review for the 2011 Inventory Submissions. With consideration to the information provided **in Annex 8** which shows substantial improvements in each of Lithuania's GHG inventory submissions since 2006, we have proven that we consistently take the ERT's recommendations into account and implement these suggestions in an effective manner. In the same vein, we intend to implement the planned measures set out in the Action Plan to present our annual submissions in an efficient, comprehensive, transparent and timely manner to ensure compliance with the Kyoto Protocol and the associated guidelines. The Norway Grants Partnership Project will also help overcome any data collection and reporting issues that Lithuania currently faces regarding its KP-LULUCF Information (as further described **in Annex 5**).

We therefore submit that, as evidenced by the positive feedback from the ERT on its 2011 Inventory Submission, that the questions of implementation relating to Lithuania's national system as listed in paragraphs 1.2.1 and 1.2.2 do not justify the Enforcement Branch to declare non-compliance on the party of Lithuania. We therefore invite the Enforcement Branch to adopt a decision not to proceed further with any question of implementation on these particular questions of implementation.

The Government of Lithuania, as both an Annex B Party to the Kyoto Protocol as well as a Member State participating in the EU Emissions Trading Scheme, has rights and obligations that will be seriously impacted if its eligibility is (temporarily or otherwise) suspended. Any such suspension will therefore, not just have a detrimental economic impact on entities participating in the EU Emissions Trading Scheme (who as subject to the suspension will not be able to participate in cross border trading of EU allowances), but will also have a political and reputational impact on the Government of Lithuania.

We hope that these Written Submissions have demonstrated sufficient willingness, action and allocation of resources by the Government of Lithuania to comply with its obligations under the Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1 of the Kyoto Protocol and the Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. We request the Enforcement Branch to take into account the national conditions and specific circumstances of Lithuania in reaching any decision under paragraph 4, section X of the annex to decision 27/CMP.1

4.3 **Action requested of the Enforcement Branch**

The Government of Lithuania requests that the Enforcement Branch of the Compliance Committee determines not to proceed further with any of the questions of implementation raised in 2010 Inventory Report and Decision On Preliminary Examination of 4 October 2011 (CC-2011-3-2/ Lithuania /EB).

However, should the Enforcement Branch not be minded to make a decision as requested above, then to:

a) defer any decision until the draft report from the ERT's "in-country review" of the 2011 Inventory Submission of Lithuania is available as permitted under paragraph 11, section IX, of the Annex to decision 27/CMP.l.; or

b) taking into account its national conditions and specific circumstances, refer any question of implementation that the Enforcement Branch considers to remain with respect to Lithuania to the Facilitative Branch for consideration under paragraph 12, section IX, Annex to Decision 27/CMP.l with the view to the Facilitative Branch providing Lithuania with advice and assistance relating to its KP-LULUCF reporting and information obligations. The Enforcement Branch is requested to take note of the ERT's "in-country review" comments on Lithuania's 2011 Inventory Submission that Lithuania has put in place all of the mandatory elements for a national system and therefore, there are no impediments to a referral under paragraph 12, section IX, Annex to Decision 27/CMP.l.

ANNEX 1

Key Regulatory Acts to Implement National System

The Government of Lithuania and the Minister of Environment have issued a number of key regulatory legal acts in order to address the issues raised by the ERT:

(a) By the Order No D1-1017 of Minister of Environment of 22 December 2010, the Lithuanian Environmental Protection Agency under the Ministry of Environment was nominated as an institution responsible for GHG inventory preparation. The Agency's responsibilities include monitoring of environmental quality, collection and storage of environmental data and information as well as assessment and forecasting of environmental quality. Aiming to ensure consistent long-term-financing, the preparation of the NIR is included in the State Environment Monitoring Programme for the 2011-2016 year, which was approved by the Government of Lithuania on 2 March 2011 (Resolution No 315). The Environmental Protection Agency under the Ministry of Environment is a responsible authority for the implementation of the State Environment Monitoring Programme and coordinates all issues related to this programme.

(b) Aiming to set up the system to ensure better data collection for the preparation of NIR, the amendment No 1540 of the Government Resolution No 388 of 7 April 2004 On Confirmation of Rules for the Reporting on the Implementation of the European Union Legal Acts to the European Commission and the Provision of Information Required for the Preparation of Reports to the European Environmental Protection Agency was adopted on 3 November 2010. The Government Resolution determines responsibilities of other ministries and their subordinated institutions, as well as other institutions and the state science research institutes to provide data which they collect and possess and are required for the inventory compilation (**Fig 1**). In the Government Resolution each ministry is assigned to collect more precise information from institutions and agencies within their jurisdiction and provide all this information to Ministry of Environment and its authorised institution - Environmental Protection Agency. The state science research institutes are authorised to perform new scientific researches, necessary for the improvement of data collection in the sectors where lack of data is identified, and to provide information required for the preparation of the NIR.

(c) On 29 of July 2010 the Order No D1-666 of the Minister of Environment was approved, which determines the responsibilities to the State Forest Service to collect, analyse and estimate forestry data for the reporting of information on anthropogenic GHG by sources and removals by sinks from land use, land-use change and forestry activities under Article 3, p. 3, forest management under Article 3, p. 4 and supplementary information under Article 7 of the Kyoto Protocol (KP-LULUCF). The State Forest Service prepares the National Forest Inventory of Lithuania. The National Forest Inventory is based on the method of continuous, combined, multi-stage with partial replacement sampling. Sampling of units is carried out systematically at random start by combining repeated inventory of permanent plots with the measurements of temporary plots, and by combining overground measurements with the measurements and assessment on satellite image maps and aerial photos. The same methods and data which they use for the National Forest Inventory is used for the national GHG inventory, calculated under requirements of the UNFCCC guidelines.

(d) The Government Resolution No 683 on establishing permanent GHG inventory preparation working group and determining their rules, responsibilities and financing

provisions was approved on 8 June 2011. Working group for inventory preparation is set up for unlimited time and the State's budget financing for the national GHG inventory preparation is determined by this Resolution.

The institutions involved in this working group have experience in GHG emissions and removals estimation (Centre for Environmental Policy, Institute of Animal Science, State Forest Service, Energy Institute) and new institutions have also been set up (State Land Fund, Institute of Physics). The permanent working group works in close cooperation with the Environmental Protection Agency under the supervision of Climate Change Division of the Ministry of Environment, to ensure reliability of the national system and continuity of expertise in these various sectors.

(e) Minister of Environment Order No D1-538 on the approval of the personal composition of the working group for the preparation of the national GHG inventory report was approved on 1 July 2011. Working group members and their relevant experience are listed in **Annex 4**.

The Resolutions and Orders as described above are set out in full in **Annex 16**.

Fig 1. Summary of institutions responsibilities to provide data under the amendment No 1540 of 3 November 2010 to the Government Resolution No 388 of 7 April 2004.

Institution	**Data**
Ministry of Agriculture and it's subordinates	Information on land use and land use change areas and other relevant information Information on cattle population, age and other relevant information required for inventory's Agriculture sector's estimates preparation
Ministry of Energy and it's subordinates	All the available information required for GHG inventory's Energy sector's estimates preparation
Statistics Lithuania	All the available information required for GHG inventory preparation, including energy and fuel balance, economical development indicators, e.g. GDP, etc.
State science research institutes	All the available information required for GHG inventory preparation possessed by the Lithuanian Energy Institute, Agriculture Institute, Institute of Agrarian Economics, Institute of Animal Science, Institute of Physics, etc.
State Road Transport Inspectorate under the Ministry of Transport and Communications	Information on average CO_2 emission from different type of vehicles
Ministry of Interior and it's subordinates	Information on annually registered number of vehicles, their models, types, engine capacity and fuels used

ANNEX 2. Changes to National System (2010-2011)

National inventory system (up to 2011, NIR submission 2006 – 2010)	Present National inventory system (2011 onwards)
Ministry of Environment (MoE)	**Ministry of Environment (MoE)**
• Overall responsibility and coordination of the process • CRF database • Final approval and submission of the report	• Supervision and coordination of the process • Final approval and submission of the reports
GHG inventory compiler – Centre for Environmental Policy • Contracted annually following the public procurement Law • Sub-contracting sectoral experts • QA/QC manager	**Environmental Protection Agency - GHG inventory compiler** • Coordination of GHG inventory preparation process • QA/QC manager, data checks, archiving • Compilation of NIR • Cross-cutting issues • Maintain CRF database
	State Forest Service • Responsible for emission and removals estimates for LULUCF and KP-LULUCF sector
	Permanent GHG inventory working group - 7 sectoral experts involved from 6 institutions (Institute of Physics, Lithuanian Energy Institute, Institute of Animal Science, State Land Fund, State Forest Service, Centre for Environmental Policy) - State budget financing secured • Identification, on the basis of the IPCC good practice guidelines, of methodologies for calculation of GHG emissions setting priority to key categories and categories with high uncertainty level • Determination of activity data • Determination of appropriate emission factors • Calculation of emissions • Data quality control • Completing CRF tables for corresponding sectors, drafting relevant NIR sectoral chapters
	Institutional – human capacities increased twice

National system for the Lithuanian GHG inventory is changing and improving over the time: until the year 2011 one of the key institutions involved in the national GHG inventory preparation was the Centre for Environmental Policy (see Fig. 1). It was assigned on the contract basis annually as a GHG inventory compiler. Aiming to increase institutional capacity for

inventory preparation and continuity of the inventory preparation process in compliance with Guidelines for National systems under Article 5 paragraph 1 of the Kyoto Protocol (decision 19/CMP.1) starting from the year 2011, the Environmental Protection Agency under the Ministry of Environment was designated as an inventory compiler. Earlier last year, the State Forestry Service undertook responsibility to prepare annually the national GHG inventory part related to LULUCF and supplementary information required under Article 7, paragraph 1 (KP-LULUCF articles 3.3 and 3.4).

Fig. 2. National GHG inventory system institutional set-up for the GHG inventory preparation up to 2011

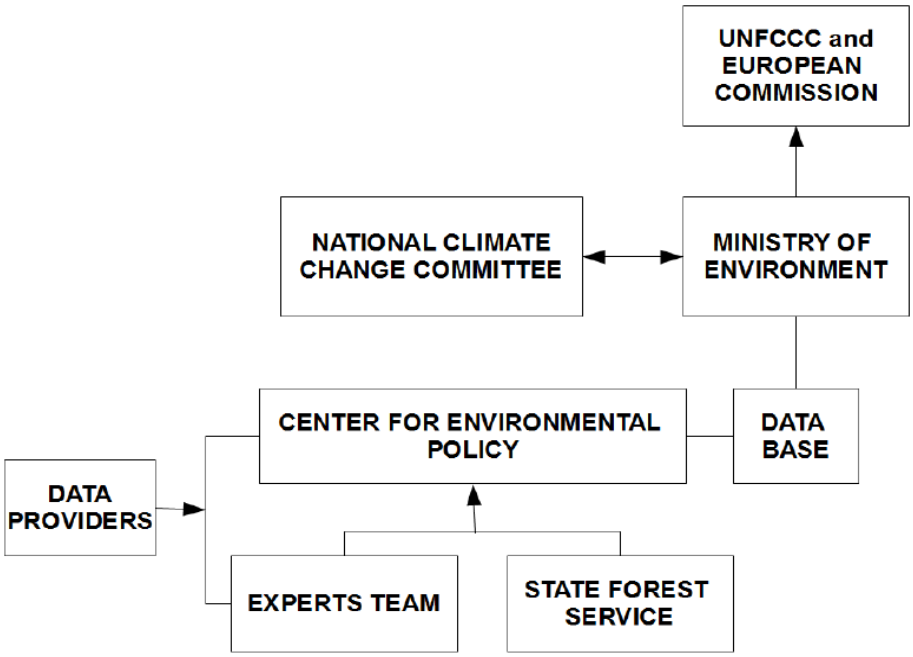
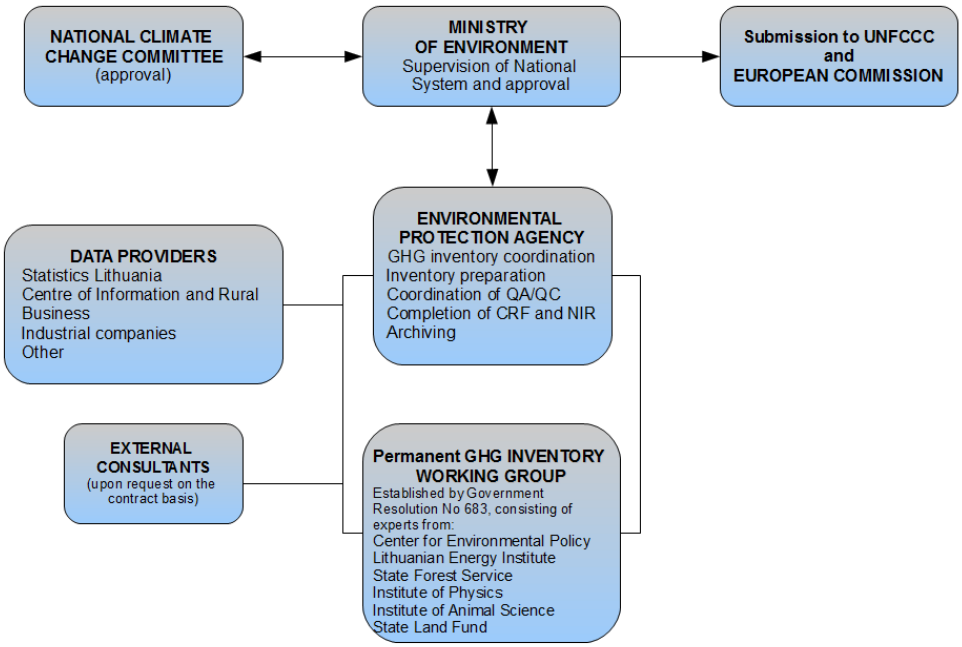


Fig. 3. National GHG inventory system institutional set-up for the GHG inventory preparation from 2011



The principle diagram shows which institutions responsible for the preparation of the national GHG inventory in Lithuania. The interaction between the departments from 2011 onwards is shown in Figure 3. The entities participating in this scheme are:

- Ministry of Environment
- Environmental Protection Agency
- State Forestry Service
- Permanent GHG inventory working group
- National Climate Change Committee
- Data providers
- External consultants

ANNEX 3

Responsible Institutions

1. Ministry of Environment

The ultimate responsibility for the preparation of the annual GHG inventory report and its submission to the European Commission and the Secretariat of the UNFCCC is placed on the Ministry of Environment of the Republic of Lithuania (the **"MoE"**) within which the inventory is coordinated by the Climate Change and Hydrometeorology Division of the Pollution Prevention Department.

The MoE is a National Focal Point to the UNFCCC. The Ministry of Environment is designated as *single national entity* responsible for the national GHG inventory. It has overall responsibility for national system for GHG inventory and is in charge of the legal, institutional and procedural arrangements for the national system and the strategic development of the national GHG inventory. Within the Ministry of Environment, the Climate Change and Hydrometeorology Division of the Pollution Prevention Department administers this responsibility by supervising the national system. The Division will continue to supervise and coordinate the preparation of the NIR, including the final checking of draft inventory reports and archiving of data and submissions of the Environmental Protection Agency (the "**EPA**").

Among the MoE responsibilities related to GHG inventory include the following:

(a) Overall coordination of GHG inventory process;
(b) Preparation of legal basis necessary for national system functioning;
(c) An official consideration and approval of the national GHG inventory;
(d) Approval of QA/QC plan and procedures;
(e) Timely submission of the national GHG inventory to the UNFCCC Secretariat and the European Commission;
(f) Coordination of the UNFCCC inventory reviews in Lithuania;
(g) Keeping of archive of official submissions to the UNFCCC and the European Commission; and
(h) Informing the inventory compilers about relevant requirements for the national system.

2. The Lithuanian Environmental Protection Agency (EPA)

From 2011, Lithuanian Environmental Protection Agency the EPA under the Ministry of Environment was nominated as an entity responsible for the national GHG inventory preparation by the Order of Minister of Environment No D1-1017. Before this assignment EPA was one of, the principal supplies of activity data and other relevant information for the national GHG inventory‘s Waste sector and F-gases.

At present the EPA collects data on the use of water resources, discharges of waste water, waste generation and treatment, pollution of ambient air and surface water, chemicals and fluorinated gases; manages the available registers, e.g. the Ambient Air Quality, the European Pollutants Releases and Transfer Register and various databases. The staff within Environment Status Assessment Department, Pollution and Waste Management Account Division already have experience of coordination of the preparation of Air emissions inventory and reporting under the Convention on Long-range Transboundary Air Pollution (LRTAP) and the EU National Emission Ceilings (NEC) Directive. Currently 2 specialists (1 full time, 1 part time) are working with the national GHG inventory issues. During the first half of 2012, a separate division for the

national GHG inventory will be established within the EPA. In 2012 human resources for the national GHG inventory preparation are planned to increase by 3 officials, this has already been taken into account in the 2012-2014 Strategic plan of the Ministry of Environment.

As the coordinator of the national GHG inventory preparation process, EPA will have the following specific functions and responsibilities:

(a) Development and implementation of QA/QC plan and specific QA/QC procedures;
(b) Identification of data providers for specific information and collection of activity data and emission factors used to calculate emissions;
(c) Cooperate with sectoral experts on the selection of methods complying with IPCC Good Practice Guidance for calculation of emissions giving the priority to key categories and categories with high uncertainty;
(d) Checking and archiving of supplied input data, prepared inventory and used materials;
(e) Key categories analysis;
(f) Uncertainty assessment;
(g) Preparation of Common Reporting Format (CRF) tables and compilation of NIR;
(h) Maintaining the national GHG inventory database;
(i) Providing the final inventory (CRF tables and NIR) for Ministry of Environment;
(j) Evaluating requirements for new data, based on internal and external reviews;
(k) Other activities.

3. The State Forest Service (SFS)

The State Forest Service compiles the National Forest Inventory and the forest information system, monitors the status of Lithuanian's forest, collects and manages statistical data. The Service functions under the Ministry of Environment.
Since 2010 the SFS has been responsible for the LULUCF (forestry part) sector and Kyoto protocol 3.3 and 3.4 removals and emission calculations for the LULUCF sector in the national GHG inventory preparation process. A SFS representative is also a member of a recently established working group for the national GHG inventory preparation under the Government Resolution No 683. In this framework, the State Forest Service has the following responsibilities:

(a) Collection of activity data and emission factors used to calculate emissions and removals for LULUCF sector and KP-LULUCF;
(b) Selection of methods (complying with IPCC Good Practice Guidance for LULUCF) for calculation of emissions and removals giving the priority to key categories and categories with high uncertainty;
(c) Emission and removals estimates for LULUCF sector and KP-LULUCF;
(d) Uncertainty assessment for LULUCF sector;
(e) Checking and archiving of input data, prepared estimates and used materials;
(f) Preparation of Common Reporting Format (CRF) tables and NIR parts for LULUCF and KP-LULUCF;
(g) Implementation of QA/QC plan and specific QA/QC procedures related to LULUCF;
(h) Providing the final estimates (CRF tables and NIR part) for the Environmental Protection Agency;
(i) Evaluating requirements for new data, based on internal and external reviews.

Currently 2 officials (part-time) are working on LULUCF inventory issues. By the end of 2011, additional 2 officials (full-time) will be employed in the SFS (responsible for data collection and GHG emission and removals estimates from LULUCF sector). The Governmental Resolution

No1222 has the ability to increase the number of the employees at the State Forest Service which has already been approved on 19 October 2011.

4. Permanent National GHG inventory preparation working group

The Permanent National GHG inventory preparation working group is established by the recently approved Governmental Resolution No 683 and MoE Order No DI 538. According to Governmental Resolution No 683, working group (commission) for the preparation of the national GHG inventory report consists of representatives from:

- Ministry of Environment (Chairman of the Commission);
- Environmental Protection Agency (Deputy Chairman of the Commission);
- Institute of Physics of the Centre for Physical Sciences and Technology (energy, transport);
- Lithuanian Energy Institute (energy, except transport);
- Animal Science of the Lithuanian University of Health Sciences (agriculture);
- state-owned enterprise National Land Fund (LULUCF, except forestry);
- State Forest Service (LULUCF, forestry);
- public body Centre for Environmental Policy (Industrial processes and waste).

Institutions, (listed in Governmental Resolution No 683), nominated experts (who have experience in areas related to GHG emissions accounting) and the personal composition of the permanent the National GHG inventory working group was approved by MoE Order No DI-538.

Functions and responsibilities of the working group for the national GHG inventory preparation as a whole are defined as follows:

(a) Evaluation of requirements for new data based on internal and external reviews;
(b) Search and identification of specific data providers;
(c) Preparation of requests for new data;
(d) Identification, on the basis of the IPCC good practice guidelines, of methodologies for calculation of GHG emissions setting priority to key categories and categories with high uncertainty level;
(e) Determination of activity data;
(f) Determination of appropriate emission factors;
(g) Calculation of emissions;
(h) Data quality control;
(i) Filling CRF tables for corresponding sectors, drafting relevant NIR sectoral chapters;
(j) Preparation of comments and answers to the questions and comments received during the EC and UNFCCC reviews;
(k) Other activities.

Group members meet at least twice a year to discuss issues relating to the national GHG inventory.

5. The National Climate Change Committee

Before final submission of the NIR to the UNFCCC Secretariat and the European Commission, a vigorous checking process is undertaken. NIR is forwarded to **the National Climate Change Committee** for the comments and final approval. The National Committee on Climate Change was set up in 2001 in the first instance and renewed in April 2010. It consists of experts from government, academia and non-governmental organizations (NGOs) and has an advisory role.

The main objective of the Committee is to ensure attainment of the goals related to the restriction of GHG emissions as set in the National Sustainable Development Strategy and implementation of the measures for attaining such goals. Also, the Committee has to coordinate the issues related to formulation and implementation of the national policy on climate change management, to advise on the implementation of the provisions of the UNFCCC and coordinate compliance with the requirements of the Kyoto Protocol and the EU legal acts related to the UNFCCC. Also, the Committee submits proposals regarding the annual priorities for the financing of climate change management measures under the Special Program for Climate Change, which is set up by the Law on Financial Instruments for Climate Change Management adopted on 7 July 2009.

6. Data providers

Data providers are responsible for collection of activity data, applying QC procedures for their data and evaluation of uncertainties of the initial data. The Government Resolution No 388 (as amended in 2010) determines responsibilities of the ministries and their subordinated institutions, as well as other institutions and the state science research institutes to provide data which they collect and possess and are required for the inventory compilation.

The principal data Providers for the Lithuanian GHG inventory are:

a) Statistics Lithuania publishes Lithuanian annual statistical publications (annual statistical data on energy balance, agriculture, production and commodities);

b) State Forest Service under the Ministry of Environment publishes annual statistical data on forestry (Lithuanian Statistical Yearbook of Forestry (2001-2009); Lithuanian Country Report on Global Forest Resources Assessment (2005, 2010));

c) The National Land Service under the Ministry of Agriculture provides data on the Lithuanian Land Fund including data on forest land area;

d) Environmental Protection Agency collects data and maintains database on wastewater and waste, F-gases;

e) Industrial companies (AB Achema (ammonia, nitric acid production data and natural gas consumption data, AB "Orlen Lietuva" (CO_2 Efs for fuel combustion), AB "Akmenes cementas" (activity data and CaO/MgO content), AB "Naujasis Kalcitas" (limestone composition data), glass production companies (dolomite, soda ash, potash and chalk, UAB "Paroc" (rock wool production data, etc.));

f) Institute of Physics is annually calculating precursors (NOx, SO_2, CO, NMVOC) emissions under Convention of Long-range Transboundary Air Pollution;

g) Centre of Information and Rural Business of Ministry of Agriculture (data on livestock);

h) State Medicines Control Agency (data on metered dose inhalers, N_2O use in medicine);

i) Annual EU ETS data reports by the operators.

ANNEX 4

Expert Capacity and Qualifications

The members of the National GHG inventory preparation working group as from 1 July 2011 (as approved by MoE Order No D1-538) are as follows:

Mr. Vitalijus Auglys – Chairman of the working group;
Dr. Mindaugas Gudas – Deputy Chairman of the working group;
Dr. Inga Konstantinavičiūtė – energy sector (except road transport);
Dr. Steigvilė Byčenkienė – energy sector (road transport);
Dr. Simonas Valatka – industry sector (industrial processes, solvents and other products use);
Dr. Remigijus Juška – agriculture sector;
Mr. Audrius Petkevičius – LULUCF (land use other than forestry);
Dr. Ričardas Beniušis – LULUCF (forestry); and
Dr. Romualdas Lenkaitis – waste sector.

The working group is coordinated by **Mr. Vitalijus Auglys**, who is a Director of the Pollution Prevention Department at the Ministry of Environment and **Mr. Mindaugas Gudas** is a Director Environment Status Assessment Department of the Environmental Protection Agency. Their function is to coordinate the national GHG inventory preparation process, administrate and supervise of the national system for GHG inventory preparation and coordination of the meetings of the working group.

Dr. Inga Konstantinavičiūtė is a Senior Scientist at Lithuanian Energy Institute. She has passed UNFCCC Training programme for members of expert review teams for the technical review of greenhouse gas inventories examination and participated as a reviewer in several centralised reviews (as a generalist) coordinated by the UNFCCC secretariat.

Dr. Steigvilė Byčenkienė's scientific work has focused on trace gases and aerosols, estimation and modelling of traffic emission, studies of black carbon aerosol emission due to biomass burning. As well as undertaking local and national projects in these areas, she has made considerable contributions to national guidance for LT local authorities. Building upon 5 years of experience with compounds inventorying under the reporting to LRTAP Convention and EU NEC Directive she has served as the air quality and emissions specialist for preparing the national program of national emission limits set by the NEC directive forecast for 2020 and plans of it control (reduction target) by the year 2020. Dr. Byčenkienė is involved in an international project dealing with the impact of transport emissions on human health in Europe and improving the knowledge of transport related airborne particulate matter (PM) to develop and implement assessment tools for scales ranging from city to Europe (TRANSPHORM). She attended the Institute of Physics (Vilnius University) where she received a PhD in physics. She has published 13 peer reviewed journal articles (ISI Web of Science), made contributions to two books and presented at 25 international conferences.

Dr. Simonas Valatka has a wide range of experience in legal, institutional and technical issues in the environmental sector, especially in water, noise, territorial planning and environmental impact assessment (EIA). Simonas Valatka has graduated from two international MSc programmes in Lund (Sweden) and Turku (Finland). In 2003 Simonas Valatka has produced a PhD theses on water resource management at Kaunas Vytautas Magnus University.

Dr. Valatka has more than eleven years experience transposition, strategic planning and implementation of the EU requirements to Lithuanian legislation. He worked as project coordinator for Phare funded projects on the development of approximation programme for water

sector directives and Danish Environmental Protection Agency (DEPA) funded project on transposition and implementation of Nitrates directive, Dangerous Substances, Urban Waste Water Treatment and Water Framework Directive. Simonas Valatka was the deputy team leader for the projects on implementation of the EU INSPIRE directive, development of strategic noise maps for two Lithuanian municipalities, development of territorial planning and EIA documents for high voltage transmission lines.

Simonas Valatka has a broad experience in institutional capacity building, development of environmental strategies and plans, experience in feasibility studies, environmental impact assessment, territorial planning. He also has deep knowledge and practical experience in GIS.

Dr. Valatka is world renowned in his field. He provided the input on the implementation of the EC Water Framework Directive in Latvia, development of Directive specific implementation and financing plans for water sector directives in Turkey. He has also experience in data evaluation and emission calculation based on benchmarks in the EU Emission Trading System (ETS) for the period 2013-2020. Dr. Simonas Valatka prepared the national GHG inventory for Energy int eh 2011 submission.

Dr. Remigijus Juška is the Head of the Zoo Hygiene and Ecology Department of the Institute of Animal Science of the Lithuanian Veterinary Academy. He graduated from the Lithuanian Veterinary Academy with a degree in zoo engineering. In 1990, he received the Doctor's degree in biomedical sciences at the Latvian Academy of Agriculture. The experience of Dr. R. Juška includes swine breeding technologies, physiological processes in animal organism, ecology of animal breeding, environmental protection in stockbreeding. Dr. R. Juška has completed training course for the leading Lithuanian agriculture specialists at the Stadtrode Agriculture School in Germany. He has published 63 articles in scientific and recognised publications.

Dr. Ričardas Beniušis is the Group Leader at the Department of National Forest Inventory of the Lithuanian State Forest Service. He graduated from the Faculty of Forestry of the Lithuanian University of Agriculture in 2000. Mr. Beniušis has extensive experience in forest monitoring and forest inventory including sample design, methods, data processing. Mr. Beniušis is also involved in investigation of forest soils, soil classification, contamination of soils, influence of vegetation on soil type and composition. He has four scientific publications on soil investigation.

Mr. Audrius Petkevičius is a Director of the state-owned enterprise National Land Fund. National Land Fund is an institution responsible for the data on land use collection, monitoring, analysis and maintaining the State's land use database and GHG estimations of land use and land use change in the LULUCF sector for the national GHG inventory.

Dr. Romualdas Lenkaitis has a wide range of experience in legal, institutional and technical issues in the environmental sector. He has a diploma in chemistry from Vilnius University and the PhD degree from the Institute of Hydrochemistry, Russia. Dr. Lenkaitis has been extensively involved in transposition of the EU requirements to Lithuanian legislation, including drafting of the Lithuanian Waste Management Law, Packaging and Packaging Waste Management Law, Waste Management Regulations, Regulations on Construction, Operation, Closure and Aftercare of Waste Landfills, etc., institutional capacity building, development of environmental strategies and plans on both national and local levels, feasibility studies for development of hazardous and municipal waste management systems. He has an extensive knowledge of industrial activities and their impacts on the environment, and was involved in training of environmental inspectors on implementation of IPPC requirements. His experience also includes EIA, environmental due diligence, data collection and management. Dr. Romualdas Lenkaitis coordinated the national GHG inventory preparation for the 2006-2010 submissions.

ANNEX 5

The Norway Grants Partnership Project

The Norway Grants partnership project: "**Cooperation on the national GHG inventory**" between Lithuania and Norway under the programme No25 "Capacity-building and institutional cooperation between beneficiary state and Norwegian public institutions, local and regional authorities" based on the Memorandum of Understanding of the implementation of the Norwegian financial mechanism for the period 2009-2014 between the Kingdom of Norway and the Republic of Lithuania, which is in force of 6 April 2011 (p. 10 part C paragraph 3) (found on http://www.eeagrants.org/id/2453.0) is scheduled to begin in 2012. The partner of this programme will be the Norwegian Climate and Pollution Agency (Klif), which is national entity responsible for GHG inventory preparation in Norway.
The objective of this partnership is to further improve Lithuania's national system to ensure the preparation of GHG inventory so that it further complies with the relevant UNFCCC and Kyoto protocol reporting requirements. Expected outcomes of the project activities are:

- A training programme for Lithuanian inventory experts to further raise the technical competence of sectoral experts involved in the inventory development process. Lithuanian experts lack in depth knowledge related to general as well as specific sectoral GHG reporting requirements. This is important, to ensure that the members of the permanent working group for GHG inventory gain experience in reporting GHG calculations.
- Establishing and reviewing existing Quality assurance/Quality control (QA/QC) procedures as well as documenting, and improving the current archiving system. This is to be progressed as a direct response to the ERT's recommendation to improve Lithuania's QA/QC Plan.
- Implementation of studies to fill in the reporting gaps in particular inventory areas:

(a) *Study to determine the quantity of fluorinated gases (HFCs, PFCs and SF_6) used in Lithuania, development of the methods for emissions calculations and recommendations to improve F-gases data collection system.* Lithuania's emission inventory for consumption of F-gases is based on a survey which was conducted in 2008. The scope of the survey was incomplete as only commercial and industrial refrigeration and air conditioning were covered. Due to a lack of historical activity data, emissions from the number of F-gases sources are not evaluated in Lithuania's GHG inventory therefore further analysis is needed in order to provide missing estimates and complement GHG inventory. In accordance with the Order of the Minister of Environment issued in 2008, users of F-gases provided initial data on imports and use of F-gases in 2009. However, the data is not complete and data providers from industrial companies have misunderstood certain requirements included in the Order of the MoE. Review and analysis of set reporting requirements is required with a view of compiling an additional explanatory note for data providers with detailed explanations on how the reports should be compiled and what information should be provided.

(b) *National emission factors (EF) for energy sector development study*. For calculation of emissions from the fuel combustion, some emission factors based on study conducted in 1997 are used, some EF were developed in 2009 based on research data from the Lithuanian oil refinery and the rest are default IPCC emission factors. Given that emissions from combustion of fuels are amongst the most important key categories, a study to develop country specific EFs which accurately reflect the carbon content and other physical properties of fossil fuel consumed in country is required.

(c) *A harmonized methodology for the estimation of removals and emissions for the LULUCF sector according to the UNFCCC and the Kyoto Protocol requirements*. Lithuania's information about land areas for estimating carbon stocks, emissions and removals of GHG associated with LULUCF activities is not complete. Additional collection and analysis of information available in various institutions is required in order to fill in reporting gaps and avoid possible overlaps and omissions in reporting land areas, as identified in the 2010 Inventory Report. For the collection of annual information on forest specified areas of afforested, reforested, deforested territories with attribute data (including afforested, reforested, deforested object size, year of origin, etc.) for the period 1990-2012 should be conducted in the study "Forest land changes in Lithuania during 1990-2012". With the aim of identifying the land areas and develop the specified matrix of land use annual changes during 1990-2012, a study in "Changes of areas of croplands, grasslands, wetlands, settlements and other lands in Lithuania during 1990-2012" will be developed.

(d) *A study on research and analysis of methane emissions from waste water and sludge* will be performed in order to ensure the correct calculations of GHG emissions in the waste sector.

(e) *A study on research and evaluation of methane producing capacity* in the Lithuanian manure management systems will be performed in order to ensure the correct calculations of GHG emissions in agriculture sector.

The expected outcomes of the project are as following:

1. A training programme for Lithuanian GHG inventory experts.

   (a): Sectoral experts and specialists of the Environmental Protection Agency, reponsible for the national GHG compilation, will be trained in the study tour to the Norwegian Climate and Pollution Agency (Klif) and the Norevegiant Statictic Department.

2. QA/QC system development.

   (a) The QA/QC and National inventory improvement plan are updated;
   (b) Data archive is improved.

3. Development of the studies for GHG inventory and purchase software for the data calculation.

   (a) Study to determine the quantity of F-gases use in Lithuania, development of methods for emissions calculations and recommendations to improve F-gases data collection system.
   (b) Study of National emission factors for energy sector development;
   (c) Harmonize the methodology to estimate removals and emissions for the LULUCF sector according to the UNFCCC and the Kyoto Protocol requirements.
   (d) Studies entitled "Forest land changes in Lithuania during 1990-2012" and "Changes of areas of croplands, grasslands, wetlands, settlements and other lands in Lithuania during 1990-2012" are undertaken.
   (e) A study on research and analyses of methane emissions from wastewater and sludge.
   (f) A study on research and evaluation of methane producing capacity in the Lithuanian manure management systems.

(g) Purchasing software for the COPERT 4 modelling research based variables input parameters and TRENDS software application which used to make projections of the vehicle stock development up to the 2030.

The project will be implemented during 2012 and 2013 with the specific objective in enabling the more accurate reporting of Lithuania's inventory in time for the end of the first commitment period under the Kyoto Protocol. The budget allocated for this project is EUR 772 500.

ANNEX 6

Key Sources Categories analysis (for the years 1990, 2009 and 1990-2009)

KEY category	Green house Gas	Level with LULUCF 1990	Level without LULUCF 1990	Level with LULUCF 2009	Level without LULUCF 2009	Trend (1990-2009) with LULUCF	Trend (1990-2009) without LULUCF
Stationary Combustion, liquid fuel	CO_2	x	x	x	x	x	x
Stationary Combustion, gaseous fuel	CO_2	x	x	x	x	x	x
Road transportation	CO_2	x	x	x	x	x	x
Stationary Combustion, solid fuel	CO_2	x	x	x	x	x	x
Enteric Fermentation, domestic livestock	CH_4	x	x	x	x	x	
Direct Soil Emissions	N_2O	x	x	x	x	x	x
Other transportation	CO_2	x	x	x	x	x	x
Indirect Soil Emissions	N_2O	x	x	x	x		x
Cement Production	CO_2	x	x	x	x	x	x
Manure Management	CH_4	x	x	x	x		
Ammonia Production	CO_2	x	x	x	x	x	x
Nitric Acid Production	N_2O	x	x	x	x	x	x
Manure Management	N_2O	x	x	x	x		
Waste-water Handling	CH_4	x	x	x	x	x	x
Solid Waste Disposal on Land	CH_4	x	x	x	x	x	x
Pasture, Range and Paddock Manure	N_2O	x		x			
Fugitive Emissions from Oil and Gas Operations	CH_4			x	x	x	x
Forest Land	CO_2	x		x		x	
Other land	CO_2			x		x	
Other industries	CO_2					x	x
Settlements	CO_2					x	
Lime production	CO_2					x	
Consumption of HFCs	HFC						x

ANNEX 7

Summary Report for Methods and Emission Factors Used

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
1. Energy	**T1,T2**	**CR,CS,D**	**T1,T2**	**CS,D**	**T1,T2**	**CR,CS,D**						
A. Fuel Combustion	T1,T2	CR,CS,D	T1,T2	CS,D	T1,T2	CR,CS,D						
1. Energy Industries	T1,T2	CR,CS,D	T1	D	T1,T2	CR,CS,D						
2. Manufacturing Industries and Construction	T1,T2	CR,CS,D	T1	D	T1,T2	CS,D						
3. Transport	T1,T2	CS,D	T1,T2	CS,D	T1,T2	CS,D						
4. Other Sectors	T1,T2	CS,D	T1,T2	CS,D	T1,T2	CR,CS,D						
5. Other	T1	D	T2	CS	T2	CS						
B. Fugitive Emissions from Fuels	T1	D	T1	D	T1	D						
1. Solid Fuels	NA	NA	NA	NA	NA	NA						
2. Oil and Natural Gas	T1	D	T1	D	T1	D						
2. Industrial Processes	**CS,T1,T2**	**CS,D,PS**	**NA**	**NA**	**T2**	**PS**	**D,T1,T2**	**CS,D,OTH**	**NA**	**NA**	**T1,T2**	**CS**
A. Mineral Products	CS,T1,T2	CS,D,PS	NA	NA	NA	NA						
B. Chemical Industry	T2	PS	NA	NA	T2	PS	NA	NA	NA	NA	NA	NA
C. Metal Production	T1	D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
D. Other Production	NA	NA										
E. Production of Halocarbons and SF_6							NA	NA	NA	NA	NA	NA
F. Consumption of Halocarbons and SF_6							D,T1,T2	CS,D,OTH	NA	NA	T1,T2	CS
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	**CR**	**D**			**D**	**D**						
4. Agriculture			**T1,T2**	**CS,D,OTH**	**T1,T1a**	**D**						
A. Enteric Fermentation			T1,T2	CS,D,OTH								
B. Manure Management			T1,T2	CS,D	T1	D						
C. Rice Cultivation			NA	NA								

D. Agricultural Soils			NA	NA	T1,T1a	D						
E. Prescribed Burning of Savannas			NA	NA	NA	NA						
F. Field Burning of Agricultural Residues			NA	NA	NA	NA						
G. Other			NA	NA	NA	NA						
5. Land Use, Land-Use Change and Forestry	**T1,T2**	**CS,D**	**T1**	**D**	**T1**	**D**						
A. Forest Land	T1,T2	CS,D	T1	D	T1	D						
B. Cropland	NA	NA	NA	NA	NA	NA						
C. Grassland	NA	NA	NA	NA	NA	NA						
D. Wetlands	T1	D	NA	NA								
E. Settlements	T1	D	NA	NA	NA	NA						
F. Other Land	T1	D	NA	NA	NA	NA						
G. Other	NA	NA	NA	NA	NA	NA						
6. Waste	**T1**	**D**	**D,T1,T2**	**D**	**T1**	**D**						
A. Solid Waste Disposal on Land	NA	NA	D,T2	D								
B. Waste-water Handling			T1	D	T1	D						
C. Waste Incineration	T1	D	NA	NA	T1	D						
D. Other	NA	NA	NA	NA	NA	NA						
7. Other (as specified in Summary 1.A)	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Use the following notation keys to specify the method applied:

D (IPCC default) **T1a, T1b, T1c** (IPCC Tier 1a, Tier 1b and Tier 1c, respectively) **CR** (CORINAIR)

RA (Reference Approach) **T2** (IPCC Tier 2) **CS** (Country Specific)

T1 (IPCC Tier 1) **T3** (IPCC Tier 3) **OTH** (Other)

If using more than one method within one source category, list all the relevant methods. Explanations regarding country-specific methods, other methods or any modifications to the default IPCC methods, as well as informa source category where more than one method is indicated, should be provided in the documentation box. Also use the documentation box to explain the use of notation OTH.

Use the following notation keys to specify the emission factor used:

D (IPCC default) **CS** (Country Specific) **OTH** (Other)

CR (CORINAIR) **PS** (Plant Specific)

Where a mix of emission factors has been used, list all the methods in the relevant cells and give further explanations in the documentation box. Also use the documentation box to explain the use of notation OTH.

ANNEX 8

Improvements in Lithuania's 2006-2011 GHG Inventory Submissions

Area of improvements	Improvements made in 2006-2011 NIR submissions
2006 submission	
National system	
QA/QC	Complete time series 1990-2004 of GHG estimates developed.
Energy	Emissions for all years were recalculated using revised energy balance with consistent data set. GHG emissions from manufacturing subcategories of the Manufacturing Industries and Construction category level were reported in the CRF tables at the specific disaggregated level (previously reported only at the total). In 1990 CRF tables the disaggregated emissions from all combustion sources were reported (previously reported only in total). A number of missing fugitive emissions sources were reported for the first time: emissions from oil exploration, oil production, oil refining & storage, natural gas distribution, natural gas transmission, oil venting and flaring, gas venting.
Industry	CO2 emissions from cement production were recalculated due to updated AD and CaO content, provided by cement plant. Emission from nitric acid production and ammonia production were reported using estimations provided by national chemical companies. Emission from soda ash use was introduced for the first time. For the first time SF6 emission from electrical equipment was incorporated in the inventory.
Solvents	
Agriculture	Direct N2O emissions from agricultural soils were supplemented estimating nitrogen from animal manure application, nitrogen fixed by N-fixing crops, nitrogen in crop residues returned to soils and emission from organic soils (histosols). For estimation of emission from synthetic fertilizer application, revised AD was used. For the first time indirect soils emission from atmospheric deposition and nitrogen leaching and runoff were estimated.
LULUCF	
Waste	IPCC Tier 2 method was applied for calculation of CH_4 emission from waste disposal sites. National values of DOC were applied. Updated AD, separated for managed and unmanaged waste disposal sites was used for emission calculation. Revised emission estimates methodology (updated MCF) for wastewater handling emissions was introduced. For the first time waste incineration emissions and emissions from human sewage were incorporated in the inventory.
2007 submission	
National system	
QA/QC	QA/QC plan was developed and implemented.
Energy	
Industry	Emissions from glass, bricks, ceramics and mineral wool production were included in the inventory for the first time. Tier 2 method Guidelines has been used for estimation of carbon dioxide emissions in glass production.
Solvents	CO2 emissions were estimated in accordance with the EMEP/CORINAIR methodology approach based on per capita data for several source categories for the first time.
Agriculture	Direct N2O emissions from mineral N fertilisers applied to soils were recalculated using updated data on consumption of mineral N fertilisers. Direct and indirect N2O emissions associated with atmospheric deposition were recalculated using new data on application of mineral fertilisers and including emissions from animal manure.
LULUCF	Transparency in describing and documenting GHG emissions in LULUCF sector was upgraded by including detailed national definitions for all categories used in the inventory, providing information on extension of unmanaged forest and grassland, description of estimation method of carbon stock change in organic soil related to drainage of organic soil in forest land, detailed description of procedure used for calculation of average annual increment in volume.
Waste	

2008 submission	
National system	Center for Environment Policy was contracted as GHG inventory compiler.
QA/QC	QA/QC plan was updated and implemented.
Energy	Estimates of emissions for all years are recalculated using revised energy balance data provided by the Statistics Lithuania.
Industry	
Solvents	
Agriculture	CH4 emissions from enteric fermentation by dairy cattle and non-dairy cattle were recalculated using Tier 2 methodology in accordance with the GPG 2000. Emissions of both CH_4 and N_2O from AWMS for dairy and non-dairy cattle and pigs were estimated using Tier 2 methodology.
LULUCF	
Waste	Activity data of solid waste disposal on land for 1950-1990 period were updated using correlation analysis of recorded data and considering the population growth and GDP dynamics. Additional data were provided on composition of municipal waste.
2009 submission	
National system	
QA/QC	QA/QC plan was updated.
Energy	The data on fuel consumption were checked and verified with the data available at the Statistics Lithuania and adjusted accordingly.
Industry	The data on lime production from the previous submissions were reviewed and corrected in accordance with the latest statistical information. The data on soda CO_2 emissions from soda ash use were recalculated taking into account separately soda ash consumption in glass production and other use of soda ash. CO_2 emissions from glass production were recalculated based on new data provided by glass production companies. CO_2 emissions from rock wool production were recalculated using new more accurate and reliable data provided by the production company. The emissions from „Bricks and tiles (decarbonising)" were recalculated using corrected AD. Recalculation of data to mass units was made by applying average conversion factors based on information provided by the largest ceramic brick and pipe producer in Lithuania. Emission data from nitric acid production for 2004-2007 were recalculated using latest revised production data. Emissions from methanol production were recalculated using data obtained from the Statistics Lithuania publications. A survey of fluorinated gases in Lithuania was conducted in 2008 and the results of the survey were used as a basis for recalculation of emissions.
Solvents	
Agriculture	MCF for liquid/slurry and pit storage below confinements/deep bedding manure storage systems was corrected from previously used 10% to 39%, as provided in the IPCC GPG (2000) Considering the livestock productivity in the years 2000- 2008 the annual amount of N excretion per head of dairy cows was recalculated.
LULUCF	
Waste	
2010 submission	
National system	State Forest Survey designated as responsible for LULUCF and KP-LULUCF emissions and removals estimates.
QA/QC	
Energy	Public electricity and heat production, consumption of natural gas. Natural gas used for methanol production was excluded from calculations. Public electricity and heat production, consumption of wood/wood waste. Use of wood for charcoal production was excluded from energy production and included in manufacture of solid fuels. Petroleum refining, consumption of refinery gas. The data on consumption of refinery gas for 2007 were corrected by the Statistics Lithuania and emissions were recalculated accordingly. Road transportation, consumption of gasoline, LPG, Diesel oil, bioethanol and biodiesel in road transportation. The data on consumption of gasoline, LPG, Diesel oil, bioethanol and biodiesel in road transportation in 2007 were updated by the Statistics Lithuania and emissions were recalculated accordingly. Other transportation: natural gas transportation in pipelines. New category added. International bunkers, Marine, Residual fuel oil. From 2000 low sulphur HFO was used in international bunkers which was not included in previous submissions. Corresponding recalculations

	were made. Fugitive emissions from fuels, oil transportation by pipelines. Data for 2006-2007 recalculated using corrected statistics data. Peat production and consumption: Peat used for manufacture of solid fuels was excluded from calculations. Entire time series were reviewed together with the Statistics Lithuania and recalculated. Coke used for cast iron production was subtracted from energy production in other non-specified category and added to cast iron production category. Some emission factors for CH_4 and N_2O emissions were reviewed and corrected.
Industry	CO_2 emissions from cast iron production were evaluated for the first time. Emissions of F-gases from fire extinguishing equipment and potential emissions of F-gases were added.
Solvents	Emissions were recalculated using more accurate annual average population data provided by the Statistics Lithuania (population at the end of the year was used in earlier submissions).
Agriculture	Productivity of cows grown principally for meat production was specified in the report. In the group of the cattle over 2 years of age net energy for growth was recalculated according to methodology in the IPCC GPG (2000). IEF for non-dairy cattle was also recalculated. Data of application of synthetic N fertilizers in 2006-2007 were corrected in accordance with the new information received from UAB Agrochema. The data on fractions of N in N-fixing and non N-fixing crops Frac NCRBF and FracNCRO were corrected in accordance with the IPCC Guidelines, 1996. Data on area of cultivated organic soils were revised. The change of MCF for manure management systems also had influence on the change of data.
LULUCF, KP-LULUCF	All data related to forestry including releases and sinks of GHG were recalculated using NFI database maintained at the State Forest Service. Recalculation has taken into account changes recorded during forest inventory and afterwards, including forest felling and reforestation/deforestation activities as well as changes in forest ownership. Information on anthropogenic greenhouse gas emissions by sources and removals by sinks from LULUCF activities under Article 3, paragraph 3, and on forest management under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF) is submitted for the first time.
Waste	6.A.1: Solid waste disposal on land, Managed waste disposal. Waste disposal data were recalculated based on expert judgement. As methane emissions calculated using first order decay model depend on the amounts of waste disposed of in the past, obtained emission results had changed for the whole period up to 2008. 6.A.2.1: Unmanaged waste disposal on land, deep (>5 m). Waste disposal data was recalculated based on expert judgement. 6.B. Wastewater handling. BOD load from this fraction of population was evaluated according to methodology provided in Revised 1996 IPCC Guidelines using default BOD5 generation value. Methane emissions from wastewater generated by population not connected to sewerage systems were evaluated additionally.
2011 submission	
National system	Environmental Protection Agency designated as GHG inventory compiler. GHG inventory preparation group, consisting of 7 sectoral experts, is established. All changes to the National system are clearly described in the NIR.
QA/QC	QA/QC plan updated. GHG inventory improvement plan developed. GHG inventory archiving improvement plan is developed in response to the Saturday paper 2011.
Energy	Emission from fuel consumption by off-road vehicles and machinery was calculated. CO_2 emissions from combustion of motor gasoline, jet kerosene, gas/diesel oil, residual fuel oil, LPG and non liquefied petroleum gas were recalculated using revised country specific emission factors. Additional recalculations were made due to change of statistical data on use of specific fuels (revision of energy balance by Statistics Lithuania). Emission factors for CO_2, CH_4 and N_2O emissions from international bunkers were reviewed and corrected. EFs for all fuels between the sectoral and reference approach were made consistent. Emissions of CO_2 and CH_4 from natural gas transmission are included. In response to the Saturday paper 2011, CO_2 emission from peat combustion was recalculated. CO_2 emissions from gaseous fuels by the reference approach, appropriately taking into account the full use of natural gas for feedstocks and non-energy use (considering ammonia and methanol production) were recalculated.

Industry	For the years 2005-2009 CO_2 emissions from cement production have been recalculated using data provided in the EU ETS reports of the plant. CO_2 emission from ammonia production was recalculated for all time series using updated data on natural gas consumption and carbon content of natural gas as provided by the company. Emission from the nitric acid production was recalculated using plant specific emission factors for all time series. F-gases from the following sources were calculated for the first time: - Domestic refrigerators; - Mobile air conditioners; - Metered dose inhalers; - Other applications using ODS substitutes. Emissions from stationary refrigeration were disaggregated into industrial and commercial. Notation keys "NE" were changed to "NO" for 2.F.5 and 2.F.7 subcategories. HFC emission from transport refrigeration was estimated in response to the Saturday paper 2011.
Solvents	N_2O emissions from N_2O use in anaesthesia were calculated for the first time.
Agriculture	CH_4 emissions from enteric fermentation were recalculated using new, more accurate data on swine fodder composition. CH_4 emission from enteric fermentation from fur-bearing animals, rabbits and nutria was added. In the chapter "Cultivations of histosols" new data for the area of cultivated organic soils had been implemented. CH_4 and N_2O emission from manure management of fur-bearing animals, rabbits, nutria was added. Average weight of non-dairy cattle was corrected in accordance with the latest available data resulting in slight changes of methane emissions. As data of cattle manure management systems for the period 1991-2007 were interpolated, there were two recalculations made in the 2011 submission – emissions of dairy cattle and emissions of non-dairy cattle N-excretion for swines was recalculated using new data on animal herd structure and protein consumption. Recalculations in the subsector "Direct emissions from agricultural soils" and "Indirect emissions from agricultural soils" were performed following the recalculations made in manure management subsector.
LULUCF, KP-LULUCF	Recalculation of emissions/removals using Method 2 (stock change method) in the LULUCF sector. Information on anthropogenic greenhouse gas emissions by sources and removals by sinks from LULUCF activities under Article 3, paragraph 3, and on forest management under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF) is reviewed and amended. In response to the Saturday paper 2011, Lithuania developed action plan to improve reporting on KP-LULUCF. The basis of information for activity under Article 3, paragraphs 3 and 4 of the Kyoto Protocol is Lithuanian National Forest Inventory (NFI) by sampling method. It is in agreement with Reporting Method 1 for Lands subject to Article 3.3 and 3.4 activities in IPCC Good Practice Guidance for LULUCF (the geographical locations of the boundaries of assessable areas match with the border of country)
Waste	Biodegradable wastes of industrial and commercial origin were included in calculations of CH_4. N_2O emission from waste incineration was calculated for the first time.

ANNEX 9

Work Plan for Preparation and Submission of National GHG Inventory in 2011-2012

Activity	Organisation responsible	Deadline
Submission of 1990-CRF tables, xml file and elements of the NIR to European Commission	MoE	15 January 2011
Possible CRF and NIR updates and final approval by MoE	CEP, MoE	March 2011
Sending NIR to NCCC for comments and final approval, QA procedures	MoE, NCCC	15 March 2011
Submission of updated CRF tables, xml file and NIR to European Commission	MoE	15 March 2011
Submission of CRF tables, xml file and NIR to UNFCCC secretariat	MoE	15 April 2011
Updated QA/QC plan	EPA, MoE	August 2011
Data collection – sending of official letters to data providers; Methods development; QC procedures, data archiving	EPA, sectoral experts	September-October 2011
Meetings of all involved institutions for defining specific areas for improvements and recalculations; Data transfer from MoE & CEP to EPA	MoE, EPA, SFS, sectoral experts	September 2011
Sectoral experts input results to EPA	Sectoral experts	October-November 2011
Emission estimates, filling CRF Reporter database, QC procedures, data archiving	EPA	November 2011
Prepare CRF tables and NIR part on LULUCF and KP-LULUCF and sending to EPA, data archiving	SFS	November - December 2011
Prepare draft NIR and send to MoE and other institutions for comments	EPA	December 2011
Comments from MoE and others to EPA	MoE	15 December 2011
Submission of CRF tables, xml file and elements of the NIR to European Commission	MoE	15 January 2012
Possible CRF and NIR updates and final approval by MoE	EPA, MoE	March 2012
Sending NIR to NCCC for comments and final approval, QA procedures	MoE	March 2012
Submission of updated CRF tables, xml file and NIR to European Commission	MoE	15 March 2012
Submission of CRF tables, xml file and NIR to UNFCCC secretariat	MoE	15 April 2012

Abbrevations used: MoE – Ministry of Environment, EPA – Environmental Protection Agency, SFS – State Forest Service, CEP – Center for Environmental Policy, NCCC - National Climate Change Committee.

This schedule does not include the timeframe for the EU consistency checks, possible UNFCCC reviews and Lithuania's responses and the Work Plan may be updated during the year. Possible legislation to improve the National System have not been included in this scheme, but will be considered during the next year and will be drafted by the Ministry of Environment.

ANNEX 10

Quality Assurance /Quality Control

The Environmental Protection Agency, as the coordinator of the national GHG inventory and QA/QC Manager, has the following functions and responsibilities:

(a) Checking and archiving supplied input data,
(b) Checking assumptions and data selection criteria,
(c) Checking data inputs and references,
(d) Checking data processing procedures and emission calculations,
(e) Checking units, conversion and adjustment factors, etc.,
(f) Ensuring adequate documentation,
(g) Checking consistency of data between source categories,
(h) Checking data aggregation and transcription,
(i) Coordinating QA/QC activities, preparing QC and QA procedures,
(j) Providing the final inventory (CRF tables and NIR) for Ministry of Environment

QC involves the following:

1. Evaluation of the data collection procedure, to establish if:

(a) the necessary methods, activity data and emission factors (i.e. those in conformity with the IPCC Good Practice Guidance) have been used;
(b) the calculations have been made correctly;
(c) all time series data has been provided and calculated;
(d) the data and results for the current year have been compared with the data and results of the previous years;
(e) the notes and comments contain all necessary information on the data sources, calculation methods, etc.

2. Evaluation of the emission calculation, to establish:

(a) consistency of the emission factors used;
(b) reliability of the emission parameters, units, conversion factors;
(c) reliability of the data transferred from spreadsheets to CRF tables;
(d) reliability of repeat calculations.

3. Evaluation of the preparation of respective chapters of the NIR, to establish:

(a) integrity of the structures of the inventory data;
(b) completeness of the inventory;
(c) consistency of time series;
(d) if the emission estimates have been compared with previous estimates;
(e) if the data tables of the National Inventory Report correspond to the text;
(f) if all necessary information on the data sources, assumptions and calculation methodology have been provided.

The results of the review are to be recorded in a verification-data correction protocol, the form of which is approved. Tier 1 General inventory QC procedures are presented in the table below.

After the review, the protocol is to be given back to the sectoral experts who will respond to the comments of the QC Manager and, if necessary, correct the data, calculation methodology or the

NIR accordingly.

Tier 1 general inventory level QC procedures

QC Activity	Procedures
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	• Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.
Check for transcription errors in data input and reference	• Confirm that bibliographical data references are correctly cited in the internal documentation. • Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.
Check that emissions are calculated correctly.	• Reproduce a representative sample of emissions calculations. • Selectively copy complex model calculations with abbreviated calculations to judge relative accuracy.
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	• Check that units are properly labelled in calculation sheets. • Check that units are correctly carried through from beginning to end of calculations. • Check that conversion factors are correct. • Check that temporal and spatial adjustment factors are used correctly.
Check the integrity of database files.	• Confirm that the appropriate data processing steps are correctly represented in the database. • Confirm that data relationships are correctly represented in the database. • Ensure that data fields are properly labelled and have the correct design specifications. • Ensure adequate documentation of database and model structure and operation are archived.
Check for consistency in data between source categories.	• Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.
Check that the movement of inventory data among processing steps is correct.	• Check that emissions data is correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.

	• Check that emissions data is correctly transcribed between different intermediate products.

It is understood that the GHG inventory data documentation (archive) is required to be sufficiently comprehensive and clear for independent experts to be able to obtain and review the references used and to restore the emission calculations. We recognise that complete and accessible documentation of the methods, data and data sources, spreadsheets, telephone recordings and other data contacts is very important for compilation and provision of a correct and exhaustive inventory.

Similarly, we are aware that it is necessary to ensure that the information, including the sources of data references used for the emission calculations in relation to the inventory, is sufficient for independent experts to reproduce the inventory calculations. Therefore with this awareness, the documentation shall also contain information on all changes made with respect to the data sources or methodological modifications in the current year. We intend to ensure that both the inventory spreadsheets and the inventory document are thoroughly checked to be able to judge the completeness, accuracy and consistency of the references. The analyst of the inventory and QC personnel will be well acquainted with the above-listed procedures to ensure high quality of the inventory.

Quality Assurance (QA). We recognize that this includes an objective review to assess the quality of the inventory, and also to identify areas where improvements could be made. The objective for the QA implementation is to involve reviewers that can conduct an unbiased review of the inventory. In general, reviewers that have not been involved in preparing the inventory are used. They will be independent experts from other agencies or a national or international expert or group independent of the national inventory compilation.

ANNEX 11

Lithuania's GHG inventory Archive Improvement Plan

Introduction

"GHG inventory archive improvement plan was developed as a part of the Lithuania's answers to the Potential problems and Further Questions from the ERT formulated in the course of the 2011 review of the GHG inventories of Lithuania submitted in 2011".

In the list of potential problems and further questions, the ERT recommended that Lithuania develop, within 6 weeks, a comprehensive plan on how the archive will be improved by the next annual submission so that it conforms with the requirements related to the archived inventory information contained in the annex to decision 19/CMP.1.
In accordance with paragraph 16 of the annex to decision 19/CMP.1 each Party included in Annex I, as part of its inventory management, shall:

(a) Archive inventory information for each year in accordance with relevant decisions of the COP and/or COP/MOP. This information shall include all disaggregated emission factors, activity data, and documentation about how these factors and data have been generated and aggregated for the preparation of the inventory. This information shall also include internal documentation on QA/QC procedures, external and internal reviews, documentation on annual key sources and key source identification and planned inventory improvements;

(b) Provide review teams under Article 8 with access to all archived information used by the Party to prepare the inventory, in accordance with relevant decisions of the COP and/or COP/MOP;

(c) Respond to requests for clarifying inventory information resulting from the different stages of the review process of the inventory information, and information on the national system, in a timely manner in accordance with Article 8.

Paragraph 11 of the annex to decision 19/CMP.1, states that in order to meet the objectives and perform the general functions of the national system described above, each Party included in Annex I shall undertake specific functions relating to inventory planning, preparation and management.

General archiving and documentation principles

In this chapter are described basic archiving and documentation principles which should be followed when archiving inventory information. Those principles are also incorporated in the Lithuania's GHG inventory QA/QC plan 2012.

Documentation has a key role in the inventory quality management.

As a part of its inventory management, each Party included in Annex I shall archive inventory information for each year in accordance with relevant decisions of the COP/MOP. This information shall include:

- Disaggregated EFs used, including references to the IPCC document for default factors or to published references or other documentation
- Activity data or sufficient information to enable activity data to be traced to the referenced source

- Worksheets and interim calculations for source category estimates and aggregated estimates and any recalculations of previous estimates
- QA/QC plans and outcomes of QA/QC procedures (external and internal reviews, checklists, planned inventory improvements)
- Data on key source identification, uncertainty assessment.

It is necessary to ensure that the information, including the sources of data references used for the emission calculations in relation to the inventory, is sufficient and clear for independent experts to reproduce the inventory calculations. The documentation shall also contain information on all changes made with respect to the data sources or methodological modifications in the current year. Both the inventory spreadsheets and the inventory document must be thoroughly checked to be able to judge the completeness, accuracy and consistency of the references. The analyst of the inventory and QC personnel should be well acquainted with the below-listed procedures that enable ensuring high quality of the inventory.

In the spreadsheets, all input data (activity data, emission factors, carbon coefficients, etc.) must have references to the published or unpublished data sources. The spreadsheets may not contain any uncountable data without any references, except for standard conversion factors or similar information:

- In the spreadsheets, references to the sources used shall be entered as Excel comments, or another marking system should be used. Abbreviated references may be given only when a comprehensive reference list is presented in a separate worksheet.
- Each reference in the spreadsheet (published or unpublished) shall have a documented copy either in the current inventory file or in the archive of former inventories.
- Oral references shall be based on the *Contact Report* which shall provide information on the date of the respective phone call or meeting.
- Each reference given in the spreadsheets shall also be indicated in the list of the references of the inventory document using the same form of presentation of the reference in question.
- All information (records, contact reports, comments, and, especially, printouts from the spreadsheets) must be dated.
- References or short logical clarifications, or assumptions and criteria used by personnel responsible for individual sectors with respect to selection of the activity data and emission factors must be documented in a specified place of the spreadsheet or in comment cells.
- Changes in assumptions, methodologies or data sources as compared to the previous year may be given in comments.

After each reporting cycle, all database files, spreadsheets and electronic documents should be archived as ‘read-only’ mode.

When checking the spreadsheets, the following should be checked:

- Spreadsheet books: is there sufficient data for primary data sources;
- All references in the spreadsheets and the inventory documents: is the list given complete; are all documents referred to in the spreadsheets also given in the inventory;
- Documents listed in the reference section: do all these documents actually exists (in archives or in the current inventory file);
- All contact sheets, fax messages, other storages, printed documents or other information of unpublished documents shall be carefully checked;
- The inventory and spreadsheet references shall be randomly checked to make sure that correct information is presented from the document indicated in the reference and that there are no transcription errors;

- Assumptions and criteria for selection of the activity data: have they been discussed and documented in respective comment cells of the spreadsheets.

If possible, all references in the inventory documents and spreadsheets should be presented in the same form. The proposed types of references are listed below.

Telephone or meeting contacts. Individual persons, organisations, and companies that provide information shall be identified giving their full name, telephone and fax numbers as well as indicating the date of the provision of information.

Fax messages, letters, electronic messages and other written or unpublished information. Such information shall be presented together with complete contact information of the provider, i.e. name, address, telephone and fax numbers, email address, etc.

Published data. This information shall be provided together with complete bibliographical source data, including the author, title, publisher, town, publication date, etc. as well as the number of pages.

Electronic data. The name, abbreviation, address, telephone, and email address of the data provider as well as other important information shall be indicated. The source information of the data obtained from the internet shall be as comprehensive as possible, including the webpage address and the date when the data was downloaded.

Comments. Here it is very useful to indicate the date of the comment as well as the name or the initials of the person who has made the comment (tip – set the Excel program on automatic display of the *UserName* in the comment).

Existing archiving system and planned improvements

The main archives of the GHG inventory are placed within the Ministry of Environment. After each GHG inventory compilation cycle former GHG inventory compiler (Center for Environmental Policy) was completing GHG inventory archive and transferring it to the Ministry of Environment annually. The archived documents are stored on an server and/or in the inventory archive (paper). In addition to the main archive, sectoral experts have archives located in their own facilities. Original National Forest Inventory data is archived in the State Forest Service. Data input in the existing archive at the Ministry of Environment is organised by inventory reporting year and contains information on:

- Official Lithuania's GHG inventory information submissions (NIR, CRF, SEF);
- QA/QC plans, QC checklists;
- calculation sheets with references to AD and disaggregated EFs, referenced documentation, classified by each sector (energy, industrial processes, agriculture, waste , LULUCF);
- key categories estimates and uncertainty evaluation;
- GHG inventory reviews documentation (EC and UNFCCC).

However, existing archive is not complete - some materials (especially this is related to references to AD and EFs and referenced documentation) are missing in the central archive and are still kept at the other institutions involved in the GHG inventory preparation (Center for Environmental Policy, State Forestry Survey etc.).

According to recently improved national system for GHG inventory preparation, Lithuanian Environmental Protection Agency was nominated as GHG inventory compiler and QA/QC coordinator (starting from 2012 submission preparation process). GHG inventory archive is already transmitted to EPA from the Ministry of Environment for further enhancement and completion. One of the main tasks now is to identify and fill in the gaps in the existing archive. Inventory documentation must be sufficiently comprehensive, clear and sufficient for all present and future experts to be able to obtain and review the references used and reproduce the inventory calculations. This is especially important now when National system is ongoing major changes.

In the Table 1 is provided list of specific tasks which will be implemented during 2012 to improve GHG inventory archiving.

Table 1. GHG inventory archive planed improvements

Tasks	Responsible institution	Deadline
To develop checklists for each CRF category (examples in the Tables 3-5)	Environmental Protection Agency	2011 November
To perform comprehensive quality checks over the each CRF category to identify missing references to AD and EFs used in the existing GHG inventory archive. Fill in the documentation quality checklists	Environmental Protection Agency	2012 February
According to the checklists results provide all the missing references and documentation to the EPA	All sectoral experts	2012 March
To complete GHG inventory archive with the documentation provided by the sectoral experts	Environmental Protection Agency	2012 April
To fill in recalculation protocol (Table 2) after the each NIR submission in 2012 and provide to EPA	All sectoral experts	During 2012
To develop a manual describing a common archiving procedures (archive data structure, timing, data security etc.)	Environmental Protection Agency	2012 June
Participation in the Norway Grants partnership project "Cooperation on GHG inventory" between Lithuania and Norway (one among the other tasks – archiving procedures development)	Environmental Protection Agency, all sectoral experts	During 2012

Table 2. Recalculation protocol

Date:
Sector:
QC Manager:
Manager of the sector:

Category	Subcategory	Recalculation due to changes in:			Addition/Removal/ Reallocation	Other changes in data	Comment
		Methods	AD	EFs			

Table 3. Protocol of Documentation Quality Control (example „Energy“)

Date:
Sector: **Energy**
QC Manager:
Manager of the Sector:

Category	Subcategory	Fuel type	Activity data		Emission factor		Calculation workbook	QC Manager comment	Response to the comment
			Reference to the source	Documentation	Reference to the source	Documentation			
1AA3 Transport	1AA3A Civil aviation	Aviation gasoline							
		Jet kerosene							
	1AA3B Road transportation	Gasoline							
		Diesel oil							
		LPG							
		Bioethanol							
		Biodiesel							
	...	...							
1AA4 Other	1AA4A Commercial/ Institutional	Motor gasoline							
		Shale oil							
		Residual fuel oil							
		...							
	1AA4B Residential	Residual fuel oil							
		...							
	...	...							

Table 4. Protocol of Documentation Quality Control (example „Industrial processes“)

Date:

Sector: **Industrial processes**

QC Manager:

Manager of the Sector:

Category	Subcategory	Activity data	Reference to the source	Documentation	Calculation workbook	QC Manager comment	Response to the comment
2.A Mineral products	2.A.1 Cement production	Clinker production					
		CaO weight fraction					
		MgO weight fraction					
		Cement kiln dust (CKD)					
		CKD fraction calcinated					
	...	…					
2.B Chemical industry	2.B.1 Ammonia production	Ammonia production					
		Natural gas consumption					
		Carbon content of natural gas					
	…	…					

Table 5. Protocol of Documentation Quality Control (example „Agriculture“)

Date:

Sector: **Agriculture (N_2O from manure management)**

QC Manager:

Manager of the Sector:

	Data on livestock population		N excretion per head of animal		Data on AWMS		Calculation workbook	QC Manager comment	Response to the comment
	Reference to the source	Documentation	Reference to the source	Documentation	Reference to the source	Documentation			
Dairy cattle									
Non-dairy cattle									
Swine									
Horse									
Sheep									
Goats									
Poultry									
Rabbits									
Nutria									
Fur-bearing animals									

ANNEX 12

List of Planned Improvements for GHG Inventory 2012

Tasks	Responsible experts	Deadline
Cross-cutting		
Preparation of NIR following the structure of the annotated outline of the NIR	All experts (sectoral and EPA)	December 2011
To improve transparency and provide more detailed descriptions of the methods, EFs and AD used as the source, to include analysis and explanation of the trends in GHG emissions for the specific subsectors	All experts (sectoral and EPA)	December 2011
Provision of clear information and rationale on recalculations performed	All experts	December 2011
To provide answers and perform recalculations in response to Saturday paper, which can be received after the in-country review week 2011	All experts (sectoral and EPA)	During October 2011
To address sector-specific and crosscutting issues raised in the review report 2011	All experts (sectoral and EPA)	2012 submission
Development of schedule for implementation of Tier 1 QC procedures across all categories giving priority to key categories	Egle Kairiene	October 2011
Improvement of the archiving system according to Lithuania's GHG inventory archive improvement plan	All experts (sectoral and EPA)	During 2011-2012
Revision and harmonization of used notation keys in the CRF	Egle Kairiene Sectoral experts	November 2011
Implementation of the Norway Grants partnership project "Cooperation on GHG inventory" between Lithuania and Norway	All experts (sectoral and EPA)	During 2012-2013
Energy		
To provide more explanations for the difference between the emission estimates in sectoral and reference approach	Inga Konstantinaviciute	2012 submission
In cooperation with the specialists from Statistics Department, to address time-series inconsistency in the AD on international bunker fuels used for aviation	Inga Konstantinaviciute	2012 submission
To reassess uncertainty of activity data and emission factors used for uncertainty calculation	Inga Konstantinaviciute	2012 submission
Calculation of emissions from road transport using Copert 4 programme	Steigvile Bycenkiene	2012 submission
To investigate the possibility of using data provided in the EU ETS, reported by the operators for the energy sector emission estimates	Inga Konstantinaviciute	2012 submission
Industrial processes		
To include results of category-specific QA/QC	Simonas Valatka	2012 submission

activities accomplished during the preparation of the inventory in the category descriptions	Egle Kairiene	
To verify data used in inventory and production and Efs data provided by the industry using data from the EU ETS	Simonas Valatka	2012 submission
To verify the reported 5 per cent calcinated fraction in cement production and provide an explanation for the difference between plant-specific CKD correction factor and the default value from the IPCC GPG	Simonas Valatka	2012 submission
To estimate transport refrigeration HFCs emissions	Simonas Valatka	2012 submission
To calculate HFCs emission from foam blowing for the whole time series using national data	Simonas Valatka	2012 submission
To collect all necessary activity data needed to report emission from mobile air conditioners for the 1990-2005 period	Simonas Valatka	2012 submission
To fill in the gaps of reporting on F-gases emissions for the years 1990–1994 (if the analysis will show that emissions occurred during this period, to calculate emissions using extrapolation)	Simonas Valatka	2012 submission
To fill in the gaps of reporting on F-gases potential emission (domestic refrigeration, mobile air conditioning, foam blowing, transport refrigeration)	Simonas Valatka	2012 submission
To review the rates of refrigerant consumption and leakage, including SF_6 from electrical equipment as recommended by the ERT in 2010	Simonas Valatka	2012 submission
Agriculture		
Experimental evaluation of country specific methane producing capacities (B_0)	Remigijus Juska	End of 2013
Collection of more accurate data on manure storage systems used in the Lithuanian agriculture.	Remigijus Juska	2012 submission
LULUCF, KP-LULUCF		
Additional collection and analysis of information required to estimate all mandatory categories in LULUCF sector, available in various institutions	Ricardas Beniusis	2012 submission
To provide for State Forest Service experts information on land use changes available at National Land Fund, which is necessary to estimate GHG emissions and removals from LULUCF sector	Audrius Petkevicius	October 2011
Participation in EC DG Climate action initiated project focused on solving technical problems in GHG inventory with emphasis on LULUCF	Ricardas Beniusis	During 2012
Waste		
To improve descriptions on explanations on	Romas Lenkaitis	2012 submission

the methodology and assumptions used in the uncertainty analysis for each category in the waste sector		
To elaborate sector-specific QA/QC procedures in waste sector	Romas Lenkaitis Egle Kairiene	2012 submission
To update the estimation equation used to estimate CH_4 emissions from wastewater handling	Romas Lenkaitis	2012 submission
To provide detailed description of the wastewater handling AD trends from 1990 to 2009	Romas Lenkaitis	2012 submission
To collect national data to estimate CH_4 emission from sludge	Romas Lenkaitis	2012 submission

ANNEX 13

Legislation and Surveying of Carbon Stock in Lithuanian Forests

1. LEGISLATION ENFORCING PRINCIPLES AND DETERMINING STANDARDS IN CARBON STOCK ASSESSMENT

The main legislative acts, laying down principles and determining standards when assessing carbon stock in Lithuanian forests are:

- **Forest Law**[1], the main legal instrument regulating forestry matters in Lithuania, issued on 22 November 1994 and its later amendments. It frames forest policy and strategy foreseeing measures for their implementation and supervision. Forest Law covers all the main issues pointed out by the forest policy, i.e.: trends of forestry policy, forest ownership, forest inventory, forest management, planning and supervision, economic regulation of forestry, forest use, regeneration, growing and felling, forest protection. It establishes a legal framework for the forest management in all types of forest ownership, based on common principles of sustainable development,
- **Order on National forest inventory**[2], issued on 17 March 1998, later replaced by **Regulation of National forest inventory by sampling method**[3], issued on 08 November 2004,
- **Manual of National forest inventory** – the document regulating execution and QZ/QC of NFI, approved by director of State Forest Service,
- **Instruction of Standwise forest inventory execution**[4] – the document regulating execution of SFI, issued on 29 December, 2006, approved by director of State Forest Survey Service,
- **Methodology on rating of quality of forest inventory works and forestry measures planning**[5] – the document setting QA/QC standards of SFI, issued on 05 July 2011, approved by Minister of Environment,
- **Methodology on LULUCF forestry data collection and processing,** issued on 29 October 2010, approved by director of State Forest Service.

Some cases of application of forest legislation when assessing carbon stock in Lithuanian forests:

"Forest" – is a minimum area of land of 0.1 hectares with tree crown cover of more than 30 per cent with trees with the potential to reach a minimum height of 5 meters at maturity in situ. Temporarily unstocked – cleared or burned areas, are assigned to forest land.

Following Forest Law all registered (in State Forest Cadastre) forest land, independently of current coverage level, are under Forest Law protection, what means that temporarily unstocked areas must be regenerated during 3 years.

"Forest management" – includes forestry planning (covering forest inventory and recording), execution of forest growing measures and its efficiency control system, analysis of forest condition, use and economic activities and forestry organising and development project preparation. All Lithuanian forests are under forest management. All forests are divided into four forest groups and eighteen subgroups characterized by different protection level and type of use.

"Direct human induce" (in case of A/R) – (i) initiative of owner (manager) to convert land that has not been forested before to forested land through its objective voluntary acting or (ii) State actions through legislation in obliging the owner to restore forest on a land which was recognized conforming forest definition (Lithuanian Forest Law states that in case

[1] found on: http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=402139&p_query=&p_tr2= (*in Lithuanian*)
[2] found on: http://www.amvmt.lt/Images/Veikla/NMI/leidiniai/NMI%202003/5%20Order_22.pdf (*in Lithuanian*)
[3] found on: http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=246012&p_query=&p_tr2= (*in Lithuanian*)
[4] latest edition found on: http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=370142 (*in Lithuanian*)
[5] found on: http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=403238 (*in Lithuanian*)

non forest land grow up naturally by forest trees and during 20 years reaches the parameters indicated in Forest Law, this land becomes forest land and landowner is responsible for its restoring in any case of its damage). In the latter case State acts as "human inducer" and stimulates increasing of forest areas.

"**Afforestation/reforestation/deforestation (A/R/D)**" – definitions presented in Kyoto Protocol are followed for KP - LULUCF assessment in Lithuania. Some country specific rules are used for A/R/D: We consider that afforestation/reforestation is human-induced artificial planting or natural seeding of croplands, grasslands, wetlands. Separation of afforestation and reforestation areas requires more efforts in studying of archive data of SFI and aerial photography up to the 1940s (studies are foreseen in 2012). Deforestation is under very strict regulation and control of forest lands by the Forest Law and Sep 28, 2011 Lithuanian Republic Government Resolution No 1131. According to this forest land can be converted to non-forest land only using special procedure of compensation. Main way of compensation is re-establishment of forest land on non-forest land on area up to 3 times larger as compared with area of converted forest land.

Forest Law regulates afforestation process in agricultural lands and other lands (swamps, peatlands) too. Afforestation of these lands could be done by artificial way as well as by natural way. The legitimation of changes of agricultural and other land to forest land by natural afforestation are obligatory if trees crown cover attains 30% of an area not less than 0.1 ha and age of trees exceed 20 years. Afforestation is fixed during standwise forest inventory and legitimized registering data at State Forest Cadastre.

More detailed national definitions and rules of forest inventory are provided in the Statute of Lithuanian State Forest Cadastre (Government of Lithuania Republic 2003), the Manual of National forest inventory (Kuliešis at all. 2009), and the Instruction of standwise forest inventory execution (State Forest Service, 2010).

2. SOURCES OF INFORMATION

There are two main data sources used to assess Carbon stock in country forests[6]: (i) National forest inventory (NFI), and (ii) Standwise forest inventory[7] (SFI). Both forest inventories are based on regular direct all country field measurements.

Table 1. The main characteristics of NFI and SFI

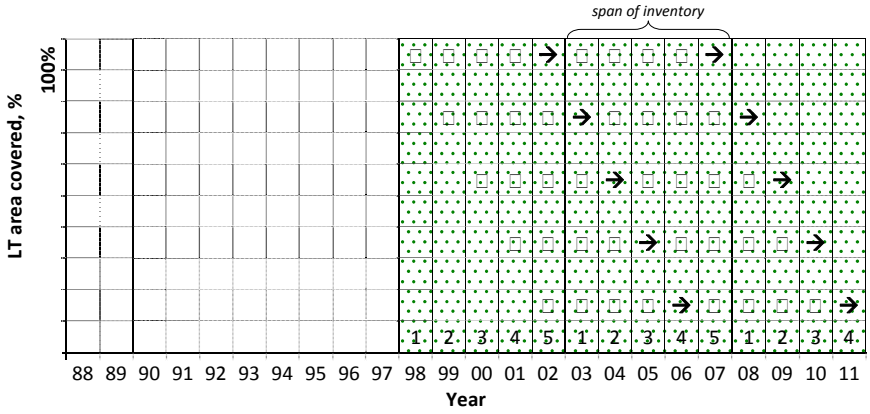
Characteristic	NFI	SFI
Entity responsible for execution of inventory	State Forest Service	Institution determined by tendering (mostly Lithuanian Forest Inventory and Management Planning Institute)
Scale	national	regional, management unit level
Inventory cycle	5 years	10 years
Frequency	annual	once every ten years
Land use categories covered	managed forest land, ARD, OWL (bushes category)	managed forest land, ARD
Extent of check assessments, executor	5% executed by NFI control team	2% executed by independent company determined by tendering, also by Regional Environment Protection Departments

[6] Forest – as defined in Lithuanian Forest Law, 2011.
[7] http://www.slu.se/Documents/externwebben/s-fak/skoglig-resurshallning/fjarranalys/SNS/Country%20report%20-%20Lithuania.pdf

(i) NFI by sampling method

directly measured forest land area during 1 year – 0.0025%,

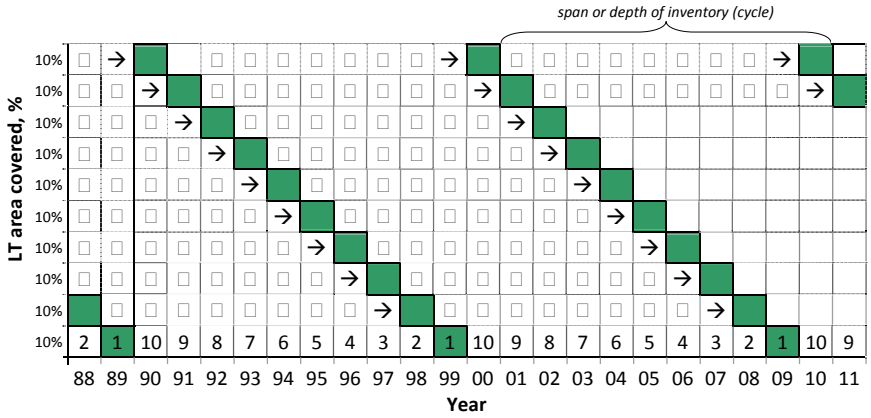
directly measured forest land area during 5 year cycle – 0.0125%.



(ii) SFI by entire land survey

directly measured forest land area during 1 year – 10.0%,

directly measured forest land area during 10 year cycle – 100%.



3. INVENTORY DESIGNS, DATA COLLECTION AND PROCESSING, QA/QC

3.1 National Forest Inventory sampling design

The main object of Lithuanian NFI is forest land area including all forestry related activities taking place on it. Art. 4 of the Forest Law indicates that State Forest Inventory is carried out by sampling method. It is dedicated for the strategic planning of the forest sector and for control of its efficiency at the national level and is executed by THE State Forest Service.

NFI is based on continuous, multistage sampling and GIS integrated technology and is organized in the same manner for all forests of Lithuania. Lithuanian NFI started in 1998. The systematic grid of the NFI of Lithuania covers all land classes (Fig. 1) including inland waters.

Sampling is conducted using a 4-km × 4-km systematic grid with a random starting point. The systematic grid assures a uniform distribution of plots over the entire country and regular monitoring of conversion amongst land use categories. The sample units are arranged to square shape clusters and include four permanent, regularly measured and temporary plots.

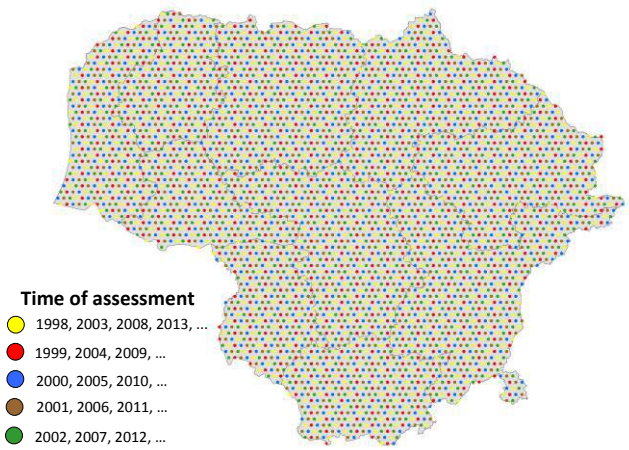


Fig. 1. Distribution of NFI clusters on Lithuanian territory

Taking into account the number of homogeneous stands (strata), minimal growing stock volume and increment estimation accuracy, 5,600 permanent

sample plots were established on forest land over a 5-year period. Approximately 1,120 permanent sample plots are remeasured each year. The NFI plots annually to cover the entire country each year with the total number of plots measured over the 5-year inventory cycle reaching a sampling intensity of one sample plot per 400 ha. The inventory cycle is five years. Additional temporary plots are established every year during the fol-lowing 5-year period. The number of temporary plots in each 5-year period is 1/3 the number of permanent plots and averages 380 plots per year.

The aim of establishment of permanent plots is to estimate reliably (by direct measurements) growing stock volume, gross increment, mortality and cut trees, to control the dynamics of forest areas (A/R/D) in the country.

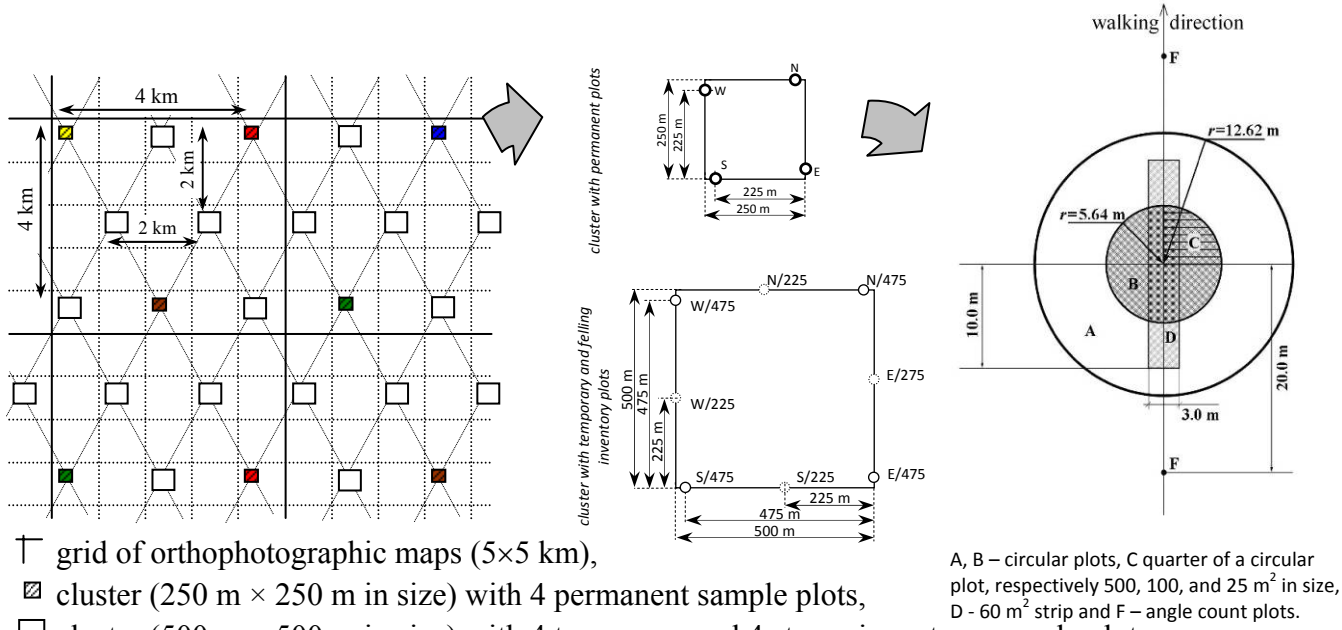


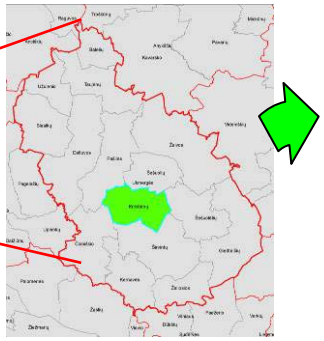
Fig. 2. Distribution of permanent and temporary clusters and design of the main sample plot

The principal sample unit is a permanent (or temporary) plot of 12.62 m radius and area of 500 m^2 (Fig. 2). The radius of a plot on sloping terrain is increased to accommodate the sloping surface. The sample plot consists of different concentric circles which are used to measure trees and stumps of certain parameters (Fig. 2). Sample plots are grouped into clusters, which are square shaped with 250-m (permanent clusters) and 500-m (temporary clusters) long edges orientated in the north–south and east–west directions.

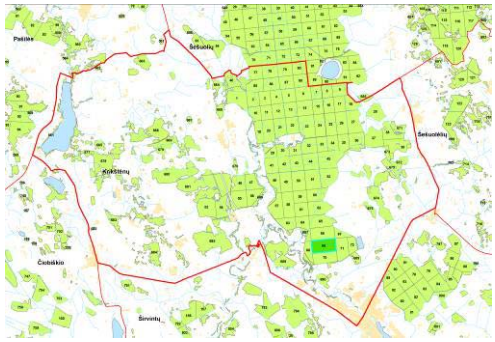
3.2 Execution of Standwise Forest Inventory by stand level surveying techniques

Large scale Standwise Forest Inventory is financed from so called "Forest Fund" and it has a "State" status. SFI is carried out regularly already 90 years in Lithuania. The stand level forest inventories are the basis for forest management planning and regular forest resources assessment. According to Lithuanian Forest Law, stand level forest inventories and mapping should be executed regularly in 10 years cycle throughout the country independently of forest ownership. Thus every year one tenth of the country's territory is inventoried and managed forest land and A/R/D are mapped. Forest mapping, using geographical information system (GIS) techniques, was started in 1995. Now all country forests are digitally mapped and second GIS based SFI cycle already has passed a halfway. Since 2003 geographical and attribute information collected on forest compartment level in the course of State SFI constitute databases of Lithuania's State Forest Cadastre, which is managed by the State Forest Service.

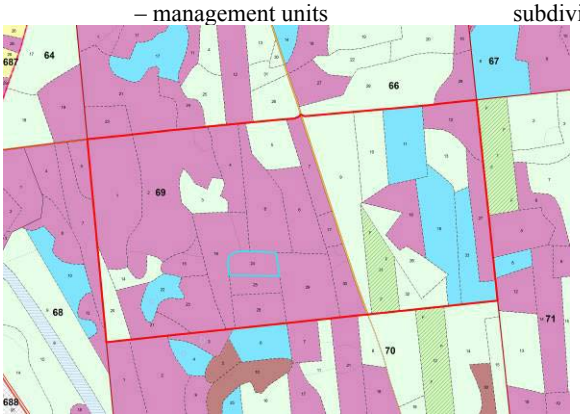
Division of Lithuania into forest enterprises blocks – management units



Forest Enterprise – management unit subdivided into forest districts



Forest district subdivided into forest



Delineation of forest stands – primary management unit (GIS based)

Characteristic/variable	Value 10 yrs ago	Value today
Block N^{o}	69	69
Stand N^{o}	24	24
Area, ha	0,8	0,8
Forest type	5E/5B/D	6E/4B/D
Age, year	57/62/60	67/72/70
Height, m	20/23/-	23/27/-
Diameter, cm	21/26/-	25/30/-
Volume, m^3/ha	370	426
Total volume m^3	296	341
Forest group	commercial	commercial

Short forest stand information

Fig. 3. Principal Standwise forest inventory execution scheme

All Lithuanian territory for the general forestry purposes is divided into management units – forest enterprises, subsequently they are divided into forest districts and at least forest districts – into forest blocks. Forest blocks (size 50-100 ha) are stable and convenient units for the major forestry activities, standwise forest inventory and mapping. All forests per each unit are distributed into state, private owned and reserved for restitution.

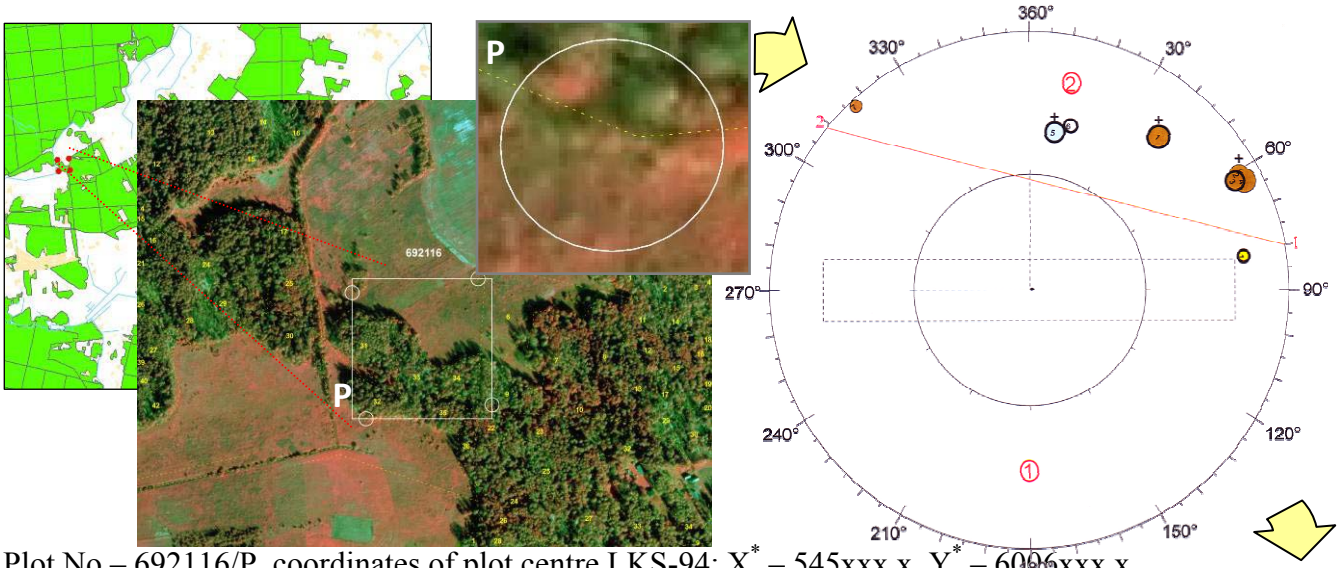
3.3 Data collection

NFI is carried out every year on the whole territory of Lithuania. Over the first five years the network of permanent sample plots was consistently thickened. During every following five-year periods permanent plots are remeasured and time span between remeasurements of permanent sample plots is 5 years ±20 days. The observation cycle of a stand ceases when the stand containing the permanent plot is felled. At the same time and location of a plot a new observation cycle of forest regeneration and its further growth starts. Every five-years the appearance of new forests is controlled according to available recent mapping material obtained from SFI, satellite and aerial photos, forest management records, and forest owners declarations, new temporary and permanent sample plots are established according to the accepted sampling design.

Field works in every plot are stated from the detection of their centers and analysis of their locations. Orthophoto maps, forest maps and GPS receivers are used to identify plot centers. Seeking to integrate information obtained in NFI permanent sample plots with information received from aerial or satellite images, attempts to identify the centers of plots with not less than

±2-3 m accuracy are made.

Sample plots occurring on the boundaries of several forest compartments or different land use categories are divided into smaller units, i.e. sectors (Fig. 4). Each sector is described separately, with trees being measured in a separate sampling unit. Singling out of sectors increases the representativeness of a sample plot and analysis of sample plot data is based on ration estimation.



Plot No – 692116/P, coordinates of plot centre LKS-94: X* – 545xxx.x, Y* – 6006xxx.x.
Area of forest stand: in 500 m^2 plot – 121.8371 m^2, in 100 m^2 plot – 1.1560 m^2.
Area of grassland: in 500 m^2 plot – 378.1629 m^2, in 100 m^2 plot – 98.8440 m^2.

Sector No	Land category	Tree No	Tree species	LKS-94 X*	LKS-94 Y*	Age, year	DBH, cm	Measured height, m	Modelled height, m	Tree volume, m^3 yr. 2009	Tree volume, m^3 yr. 2004	Tree volume, m^3 yr. 1999
1	grassland	1	grey alder	545xxx.x	6006xxx.x	11	14.2	6.7	6.70	0.057994	-	-
2	forest land	1	black alder	545xxx.x	6006xxx.x	30	26.6	16.7	16.66	0.449517	0.328749	0.235133
2	"	2	black alder	545xxx.x	6006xxx.x	30	23.9		16.02	0.350923	0.242370	0.161294
2	"	3	black alder	545xxx.x	6006xxx.x	30	22.5	15.6	15.64	0.304618	0.215661	0.179603
2	"	4	black alder	545xxx.x	6006xxx.x	30	28.1		16.97	0.509571	0.341704	0.208951
2	"	5	birch	545xxx.x	6006xxx.x	40	23.3	15.4	15.40	0.291851	0.163239	-
2	"	6	sallow	545xxx.x	6006xxx.x	29	15.8	9.8	9.80	0.093125	0.084469	-
2	"	7	black alder	545xxx.x	6006xxx.x	30	14.8		12.61	0.108970	-	-

*coordinates of plots and trees are nullified for the confidentiality purposes

Fig. 4. Example of area and growing stock volume (GSV) data record in NFI database

Within a sample plot the various measurements are carried out: mapping of trees (Fig. 4), callipering of trees and stumps, measurement of sample trees height, tree increment, description of soil, inventory of understorey and underbrush, inventory of cuttings for the previous 5 years, and assessment of other parameters.

Plots of various size and forms depending on the parameters of measured trees or stumps are allocated in the same sample plot (Fig. 2– ABCD, Fig. 5). On the main 500 m² plot all trees over 14.0 cm in diameter are measured. In the centre of the plot another 100 m² circular plot is singled out, where all trees over 6.0 cm in diameter are measured. In the first quarter of the 100 m² plot, i.e. on 25 m² area, naturally growing saplings, shoots over 2.0 cm in diameter at 1.3 m height as well as all planted trees, independently of their dimensions, are measured and mapped (Fig. 5).

Undergrowth and underbrush are taken into account in a 3×20 m strip-like plot allocated within the main plot in the direction of movement. Inventory of trees of required diameter is carried out describing tree species, storey, state and other tree parameters, measuring diameter at 1.3 m height from root collar by caliper. The position of calipers is ascertained precisely at the height 1.3 m from tree root collar with points of calipers direct towards plot center.

To estimate the parameters of individual trees in sample plots measured by overground method, sample trees according to a predefined system are chosen for the evaluation of their height. On an average one sample tree represents 4-7 trees per plot.

During mesurements in the permanent sample plot distance to the plot centre and azimuth are recorded for each sampled tree. This ensures identification of all previously inventoried trees in the remeasurement process (Fig. 5).

Previously not assessed trees, reached thresholds of diameter (Fig. 2) between two successive inventories, are assessed in sample plot as ingrowth (Fig. 5). These trees increase total growing stock volume. Continuously assessed in sample plot trees, which have reached new threshold of diameter, change their plot (e.g. from 100 m^2 to 500 m^2) and decrease total growing stock volume for the same value as ingrowth in the statistically sufficient group of plots.

All standing and laying dead trees are remeasured after their dying and assessed up to their full destruction. The destruction level of all dead trees is assessed identifying not decayed part of course woody debris in the forest.

Using data from measured sample plots, the most important quantities are estimated: area, land use category, volume of growing stock and its increment, mortality and cuttings and other characteristics.

3.4 Estimation of the main stand parameters

Area estimation. Estimation of the total forest land area, and areas by land use categories, forest types and other characteristics provides using data from annual plot measurements for a certain number of years. Area represented by one plot according to 1 year permanent plot measurement data is equal to 2,000 ha, 2 years – 1,000 ha, 3 – 666 ⅔ ha, 4 – 500 ha, 5 years – 400 ha. The value of one permanent plot for area estimation during 5 years period is 400 ha, together with temporary plots – 300 ha.

Growing stock volume estimation. For each tree in a sample plot, tree species, storey, and state are observed and diameters at 1.3 m height are measured. For sample trees heights are measured. Using sample tree measurement data and standard models, the heights and growing stock volume of all trees as well as volume of felled and dead trees are estimated. The growing stock volume of stand storey, tree species is ascertained by summarizing the volume of trees having corresponding features in corresponding area of plot.

Gross annual increment estimation. Gross annual increment estimated from direct measurement on permanent plots consists from three main parts: change of growing stock volume, volume of dead trees and

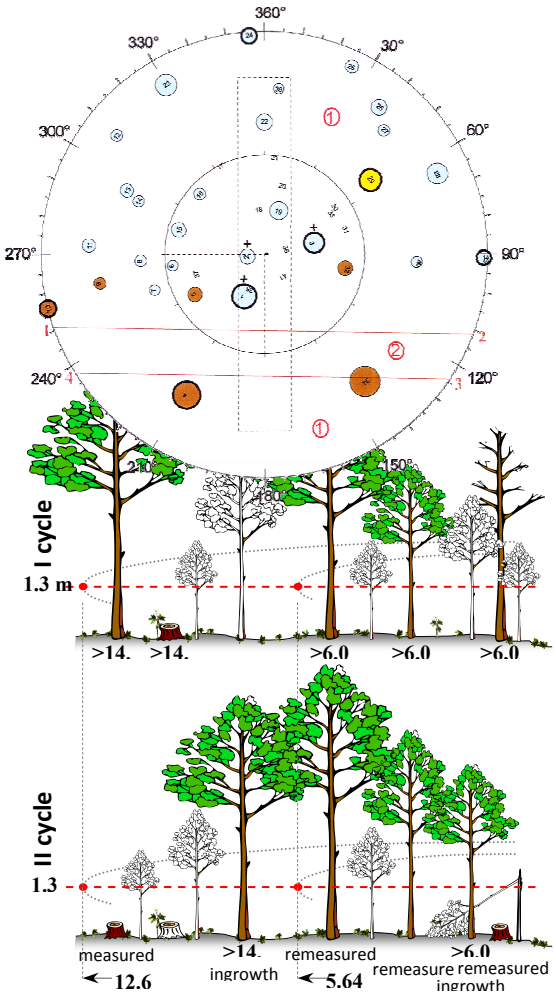


Fig. 5. Principal scheme: continuous measurement of trees and stumps in the permanent

volume of felled trees by final or intermediate fellings during two successive inventories. The mean annual change of growing stock volume is estimated using differences of tree volumes during two successive inventories.

Estimation of tree age. Trees on permanent plots are not bored protecting them from artificial damages by surveyor. Borings of similar trees outside permanent plot are used for tree age analysis in the plot and estimation of origin of stand. Results of tree age analysis are used for identification of afforestation/reforestation process.

3.5 Assessment of afforestation, reforestation and deforestation

Assessment of A/R/D is performed on the grid of NFI permanent sample plots. Continuous visits and remeasurements of sample plots allow detecting relatively small forest land area changes (Fig. 6).

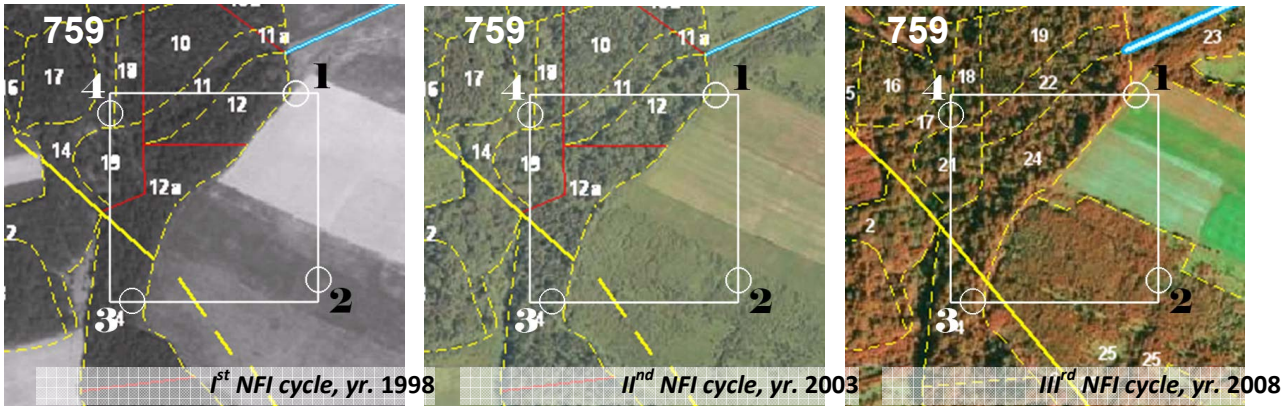


Fig. 6. Continuous remeasurement of NFI sample plots

Areas of forest land and their changes are repeatedly assessed in 5 year NFI cycle. During the Ist cycle (yrs. 1998-2002) more than 5.5 thousand sample plots were established on forest land for permanent monitoring. During next cycles of inventory, narrow examination of non-forest land is performed before the beginning of every year field measurement season.

Sampling of the plot starts from the planning phase. At this phase all permanent plots (totally 16 325) allocated on Lithuanian territory (65.3 thousand ha) were analyzed checking their status with all available at that moment material: ortophoto maps (S 1:10 000), satellite image map[8] (LMZ 1:50 000), SFI stand maps, agriculture planning maps, forest management records, afforestation records, etc. In the result of this analysis (Fig.7) the list of sample plots attributed as "forest/measurable", "uncertain or close to forest/to be revised in the field", "non-forest/non-measurable", was prepared.

During the second - field measurement phase all the plots attributed to "forest" or "to be revised" are measured in the field. The positioning of sample plots centres is carried out strictly according to predefined sampling design using precise GPS equipment (Trimble® Pro XRS) with real time navigation feature. This guarantees less than 2-3 meters deviation from theoretical coordinates in positioning of sample plot centres and eliminates subjective shift of the plots and consequently bias induced by surveyor.

In case a sample plot falls on a boundary between different land-use, forest-use categories, stand types, etc., it is subdivided into corresponding number of different sectors. The allowable size of a smallest sector is 2.5 m^2 (statistically represents 2 ha) in case of neighbouring different land use

[8] Kasperavičius A., Kuliešis A., Mozgeris G., 2000. Satellite imagery based forest resource information and its application for designing the national forest inventory in Lithuania. Proceedings of the IUFRO conference on remote sensing and forest monitoring: June 1–3, 1999, Rogow, Poland / edited by T. Zawila–Niedzwiecki, M. Brach. Luxembourg: Office for official publications of the European Communities, p. 50–58. Web link: http://rogow99.sggw.waw.pl/03_poster_session/06/

categories and 50 m^2 (statistically represents 40 ha) in case of neighbouring different forest types.

Than assessing sample plots or their sectors on "non-forest land" (if they are visited[9]) surveyor applies some additional measures in order to describe ongoing sprouting of trees or progress of land conversion to forest if it appears. The main parameters are: tree age (measured with borer or assessed counting whorls), mean height and diameter, stocking level (at a sprouting stage assessed following density of trees), area overgrown by trees (GPS equipment is used if needed), tree species composition, primary/former land category, its state, etc. Following the described characteristics, resolution for further measurements and establishment of new sample plot (sector) is given.

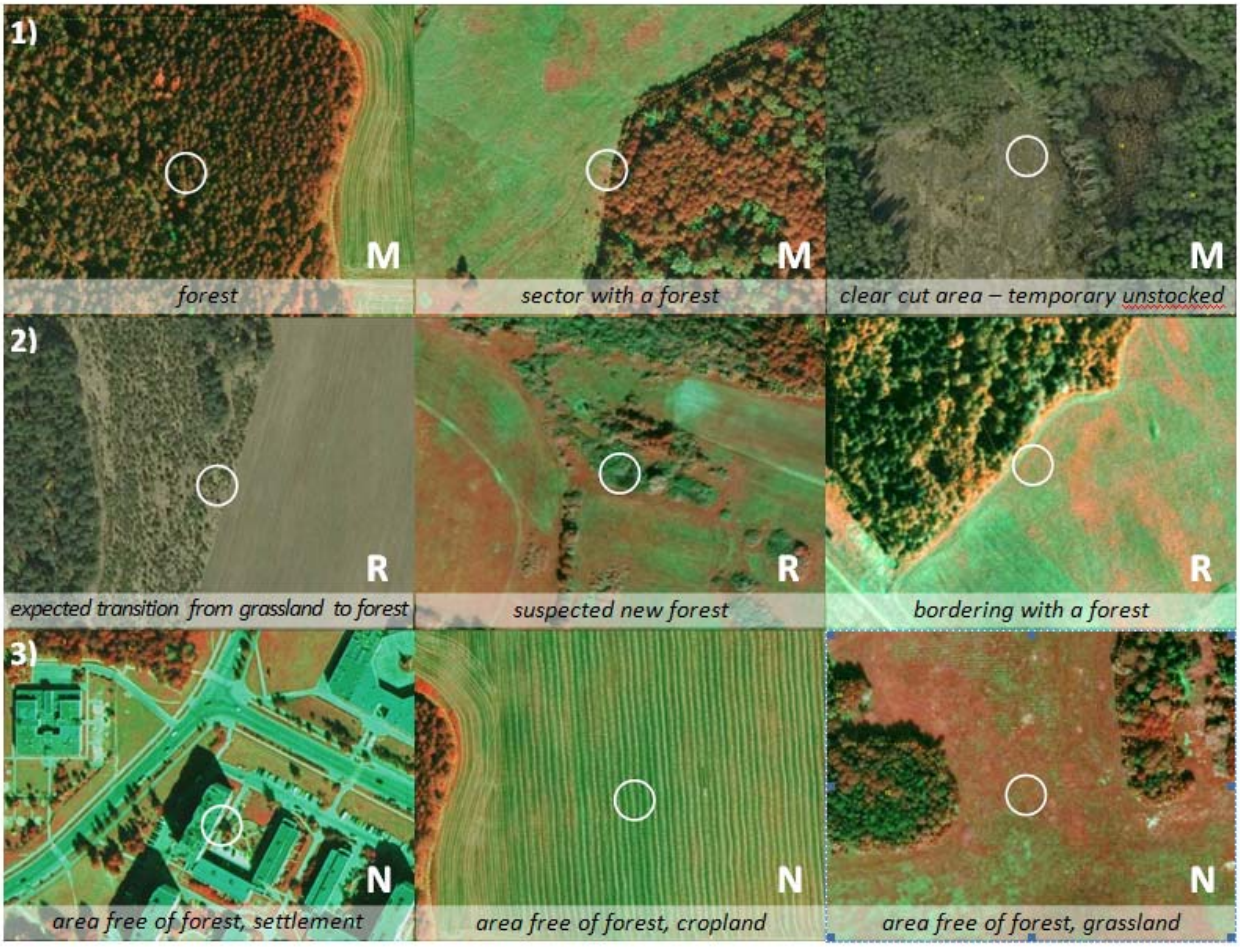
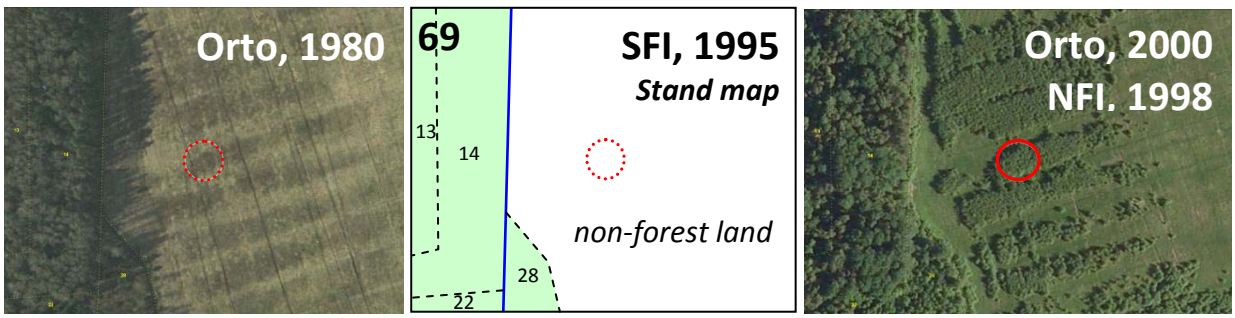


Fig. 7. (example). Classification of sample plots according to ortophoto map analysis: 1) forest/measured in the field ("M"), 2) uncertain or close to forest/to be revised in the field ("R"), 3) non-forest/non-measurable, land use category identified using Land fund data ("N").



[9] according to the NFI manual: if any single sample plot (or its sector) in the tract is classified as "to be visited", all the plots in the tract are mandatory revised in order to verify a presence of a forest.

Fig. 8. (example). Principle scheme: identification of afforestation/reforestation based on State Forest cadastre archive (SFI database) information.

If an area newly overgrown by trees already conforms to forest definition, except mean stand age, which is reduced up to 10 years in case of NFI (required minimal age for natural regeneration appearing on non-forest land is 20 years – according to Forest Law, 2011), establishment of new sample plot begins. Primary land category is recorded beside other mandatory described attributes. For the next ten years such a sample plot will be classified as transiting to forest land. If the young stand successfully passes 20 years age, the area automatically switches to forest land and the protection embedded in Forest Law take place.

More sophisticated analysis is proceed dealing with areas which were afforested, reforested or deforested before the start of NFI in 1998 in the period 1990-1997. The decision on A/R/D is based on integrated analysis of collected NFI data (present stand age, soil condition, signs of former cuttings of mature trees, land use, etc.) and historical SFI data (Fig.8). The SFI forest maps cover all Lithuania's territory (independently from the ownership) and are very valuable source of additional informatikon from the historical point of view in determining the assignment of an area to forest, agriculture or any other land use category.

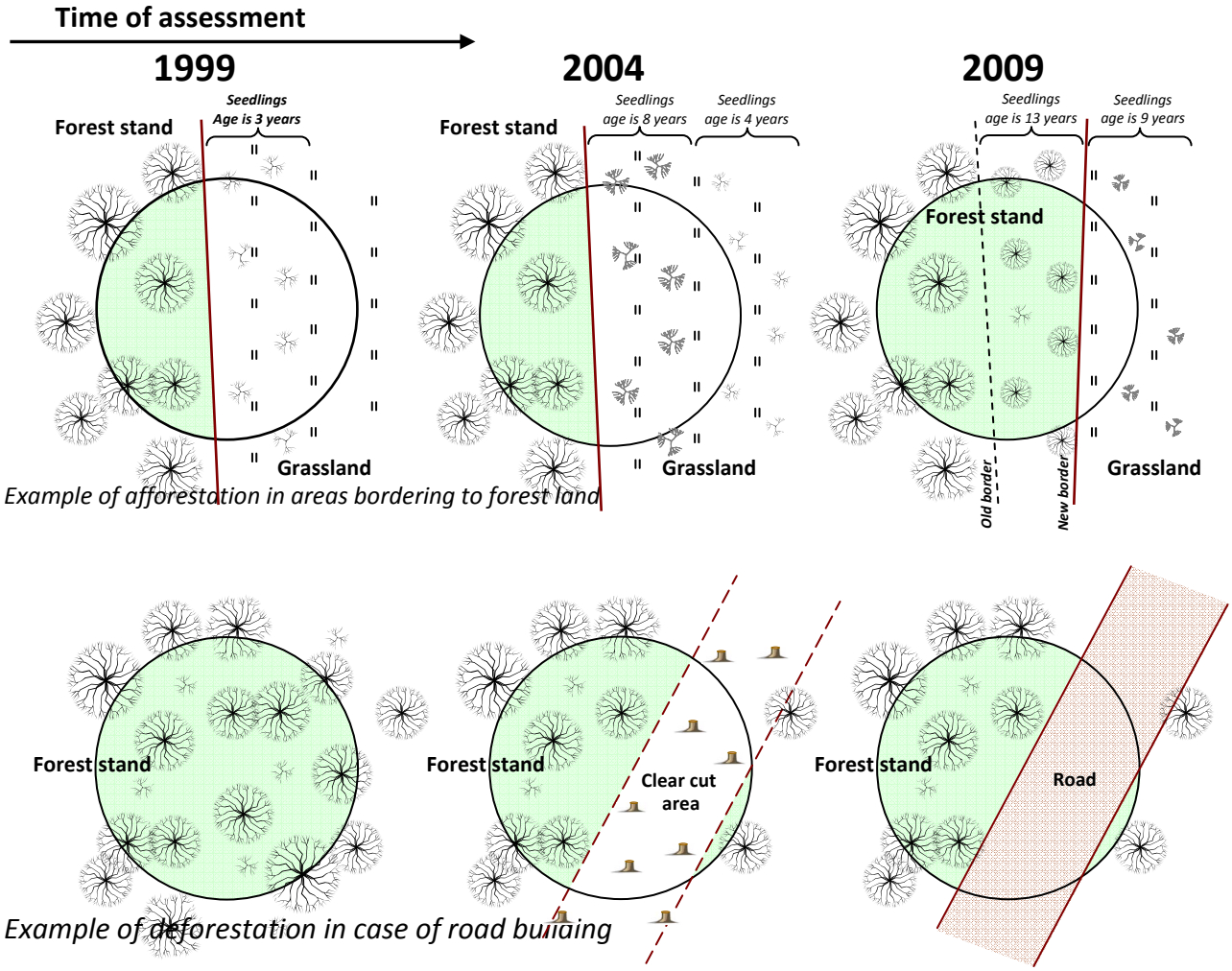


Fig. 9. Assessment of afforestation and deforestation by sampling method

Databases and data processing

All measurement data every 2 weeks of field works are brought to the office and loaded on PC. Using correlations, logical and parametrical control of the data is performed. Inaccuracies, found in the data are sent back to the field measurement groups for checking and correction. Specified and finally checked data comprise primary database, which is kept in PC. They are used for the production of statistics, any corrections afterwards are not allowed.

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Table 2. NFI major data structure

NFI data structure		
Dimensions of plants	State of plants	Aerial characteristics
Trees Diameter 1,3 m 0,0 m Height Length of crown Age Volume $V=f(D,H,F_{DH})$ Increment $Z_V=f(V_A,V_{A-n})$ Understorey Height Age Underbrush Height	Species Storey Growing Dead Cutted Quality class Damages - type - cause - position - intensity Defoliation	Ownership Land use category Protective status (forest group, subgroup) Administrative regions Site type Forest type Age class Site index H_{AB}, D_{AB} Stocking level Species composition

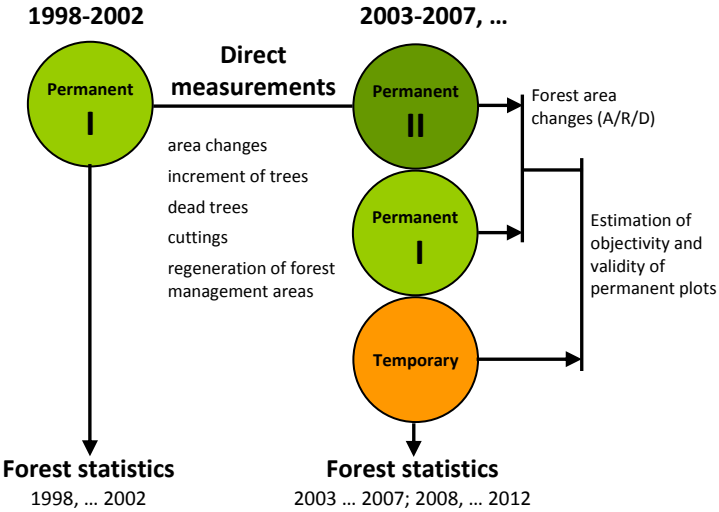

Fig. 10. Estimation of forest statistics and forest changes using NFI sample plots

Primary data, separately on permanent and temporary sample plots, are stored according to the measurement year. Each year the database is supplemented with the data of measurement years. Primary data are stored in the original form and are used for data processing.

Primary data are copied and temporary databases are formed during data processing. While processing the data of recent years, data of the last five-year period on permanent and temporary sample plots are combined with the data on permanent sample plots over the previous five-year period (Fig. 10). Analysis of changes on permanent plots enables to estimate efficiency of forest management, changes of biodiversity, and to estimate land use changes.

Statistics of current year are produced using data of NFI measurements during last 5 years. The statistics lets say for 01 Jan 2010 will be generated using NFI data from 2005 to 2009, accordingly for the next 01 Jan 2011 – NFI data of 2006-2010 years are used.

The various statistics and its accuracy on all Lithuanian forests by ownership categories, counties, site types and other administrative division are estimated on the NFI data base.

Having the data of remeasured sample plots, the changes of forest areas due to cuttings, forest stand decline or transformation into other land use categories are estimated. The area of cuttings, removed growing stock volumes, their distribution by types of cuttings, tree species and diameters, the volume of dead trees and their structure are estimated, a reliable balance of gross volume increment is elaborated out. According to newly allocated permanent plots, forest spreading on non-forest land is estimated (Fig. 10). Remeasurement data of permanent plots

allow evaluating the main changes which occurred over the period 1998-2010 in Lithuanian forests.

Management system "NMI-07" of data bases has been designed on the basis of FoxPro software set and is used for NFI data processing at the State Forest Service. It consists of 145 programs, 45 screen-type and over 200 auxiliary subprograms. This system is very helpful compiling data bases, controlling collected data, preparing statistical reports, evaluation in Lithuanian forest, including reports for Carbon stock.

The NFI supplies the data necessary for preparation of various forest statistical reports, necessary for strategic, and for forest management decisions. Sampling conducted by the NFI is considered objective in the sense that instrumental methods are assumed to be reliable and of known precision. Thus, the data collected over the course of NFI form the basis for objective Lithuanian forest monitoring which can be used to reliably solve very wide range of matters.

3.6 Quality assurance and quality control

The system of QA/QC consists from different quality control levels:

- periodical trainings of field crews, and individual training of new staff.
- data consistency and completeness control – carried out during measurements by field crews automatically entering data with handheld Tablet PC, and during processing of data after field works; entered data should conform the requirements of standards[10], be within the allowable limits of the parameter, pass the logical tests, satisfy relationship between various inventories data, etc.;
- independent internal check assessments – carried out on 5% of measured sample plots by NFI control team; quality control results are used to estimate the quality of work done and the competence of employees, to improve the methodology of measurement, and to correct major inaccuracies.
- independent external check assessments and judgments of used in the course of NFI data processing procedures nad algorithms, elaborated models, uncertainties etc. – carried out by third parties[11] (e.g. certified wood measurers, universities, Ministry of Environment, etc.);
- cross checking of statistics gathered from permanent and temporary sample plots, comparison of NFI and SFI results,
- domestic and external expert analysis and reviews,
- data archiving (maintenance and storage) in several forms and copies in order to recover lost or corrupted data etc.

  Applied QA/QC system ensures accuracy of reported informatikon and is in agreement with the QA/QC system requirements described in IPCC Good Practice Guidance for LULUCE.

The QA/QC system is documented and regulated by:

- documentation of field and data processing methods, models and algorithms (Kuliešis et al., 2003);
- Regulation of Lithuanian NFI, approved in 2004 by Ministry of Environment;
- NFI field manuals for the years 1998, 1999, 2000, 2004, 2005, 2009;
- Methodology on rating of quality of forest inventory works and forestry measures planning, approved by Minister of Environment.

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ANNEX 14

United Nations Framework Convention on Climate Change

LITHUANIA IN-COUNTRY REVIEW: 2011 SUBMISSION UNDER THE KYOTO PROTOCOL

Cross-cutting issues
Vilnius, Lithuania, 30 September 2011

Suvi Monni

Overview

OVERVIEW

- 2011 annual submission
- National system and changes to national system
- Specific findings on cross-cutting issues
- National Registry and changes to National Registry
- KP-units and CPR
- Minimization of adverse impacts in accordance with Article 3.14
- Potential problems

2011 ANNUAL SUBMISSION

- 2011 annual submission was submitted on 15 April 2011. NIR was resubmitted in 20 September and CRF Tables on 16 September.
- 2011 annual submission includes all mandatory reporting requirements under Convention and KP
  a) GHG inventory (CRF tables, NIR)
  b) information on Article 3.3 and 3.4
  c) national system and changes thereof
  d) national registry and changes thereof
  e) KP-units, CPR
  f) Article 3.14

National System and Changes to National System

NATIONAL SYSTEM

- Lithuania has put in place all of the mandatory elements for a national system under Article 5.1
  a) NS is generally prepared in accordance with the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1)
- Institutional arrangements are well described in the NIR
  a) However, it was not clear from the NIR what is the current status of the transition to the new national system. During the review Lithuania further clarified the institutional arrangements.
- During the previous review, the ERT recommended that Lithuania improve its national system in such a way as to ensure that appropriate methods can be used to estimate emissions and removals for key categories.
  a) The ERT noted that several improvements in methods, emission factors and activity data sources have been put in place since the previous inventory submission, but that additional improvements are still necessary.

CHANGES TO NATIONAL SYSTEM

- Lithuania has reported changes to its national system in the NIR
  a) The ERT considers these changes to be in accordance with the requirements of national systems as defined in the annex to decision 19/CMP.1.
  b) The ERT noted that due to new arrangements of the national system, the preparation of the 2012 submission had not fully started at the time of the review.

- **The ERT welcomed the changes to the national system, which are likely to strengthen its functions**
- **The ERT recommends that the Party ensure, through coordination by the MoE, that there is sufficient time and resources available for inventory preparation.**
- **The ERT recommends that the Party carefully monitor the functioning of the national system to ensure that it is able to perform all the functions as required in 19/CMP.1. The ERT recommends that the Party, in its next annual submission, report any changes in its national system, and any challenges faced in putting in operation the new national system.**

Findings on specific cross-cutting issues

Cross-cutting issues

TRANSPARENCY

- Transparency has improved in some sectors
  a) Methodological descriptions in IP improved
- Needs for improvement in transparency identified, in particular:
  a) In the energy sector, regarding information on data sources and background information used; and regarding documentation
  b) In agriculture sector, regarding explanations of trend, background data for the entire time series, explanation of methodology, EFs and recalculations
  c) In the waste sector, regarding methodologies, assumptions and activity data used
  d) In the LULUCF sector, several improvements in transparency required, in particular regarding recalculations and harmonization of different data sources

ERT recommends that the Party improve transparency in the next annual submission

COMPLETENESS

- Completeness has improved considerably
- Complete coverage of years, sectors and gases
- Almost complete coverage of categories
  a) HFCs from transport refrigeration not estimated
  b) Cropland and grassland not estimated in LULUCF sector

✍ **ERT recommends that the Party estimate emissions from HFCs from transport refrigeration within 6 weeks time**

RECALCULATIONS AND TIME-SERIES CONSISTENCY

- Recalculations in 2011 inventory submission
  a) Several recalculations: improved accuracy and completeness of the inventory
  b) Total effect of these calculations (without LULUCF): 0.2 per cent decrease for 2008 and a 3 per cent decrease for 1990
  c) The rationale for these recalculations is in many cases provided in CRF table 8(b) and the NIR.
     - There is room for improvement in transparency
     - LULUCF sector: recalculations have not been explained, even though their impact on emissions and removals is significant
  d) Estimates are generally time-series consistent
     - In agriculture sector, different methods used for different years (t-s not consistent)

✍ **ERT recommends that the Party improve transparency regarding individual impacts of and justification for recalculations, and ensure time-series consistency in the next annual submission.**

QA/QC AND VERIFICATION (1)

- Lithuania has elaborated a quality assurance/quality control (QA/QC) plan in accordance with the IPCC GPG
- Plan did not include quality objectives, as required by IPCC GPG and decision 19/CMP.1
  a) During the review, the Party provided an updated plan which included quality objectives
- No category-specific QC procedures are included in the plan or reported in the NIR for categories in industrial processes and waste sectors, even though these sectors include categories previously adjusted and recalculated for this submission.

- **The ERT encourages the Party to develop and implement category-specific QC procedures for key categories and those individual source categories in which significant methodological and/or data revisions have occurred, in accordance with the IPCC good practice guidance.**

QA/QC AND VERIFICATION (2)

- The ERT noted that the NIR was not in all cases updated to include the information in latest resubmission of CRF Tables, and that several typos and mistakes in the NIR, including unjustified recalculations (in LULUCF) indicate lack of proper QA/QC activities.

- The ERT noted that the Party does not have and has not planned national QA procedures.

- **The ERT recommends that the Party further strengthen the QA/QC system, and report more transparently, how QA/QC is integrated as part of the functions of the national system, and how is its implementation ensured in the new national system.**
- **The ERT encourages that the Party further consider developing national, permanent QA procedures, and include them in the QA/QC plan**

Cross-cutting issues

KEY CATEGORIES

- Key categories
  a) Lithuania provided a tier 1 key category analysis (KCA)
  b) KCA is generally in line with IPCC GPG and IPCC GPG for LULUCF
  c) The results of the key category analysis do not seem to be a driving factor for the improvement of the inventory, particularly in the choice of method and QC procedures
  d) There are inconsistencies in the reporting of key categories between CRF Tables and the NIR

- **The ERT recommends that the Party more closely follow the GPG and GPG LULUCF in disaggregation level used for KCA taking into account country-specific issues (e.g. level of EFs), and report on that in the next submission**
- **The ERT recommends that the Party report KC consistently in NIR and CRF Tables**
- **The ERT recommends that the Party use key category analysis to guide methodological choice and QA/QC activities in line with IPCC GPG, and report on that in the next submission**

Cross-cutting issues

UNCERTAINTIES

- Uncertainties
  a) Lithuania provided a tier 1 uncertainty analysis
  b) The information provided on uncertainties is generally appropriate and as required by the UNFCCC reporting guidelines and IPCC good practice guidance
  c) Lithuania does not seem to be using the results of uncertainty analysis to prioritize improvements in the inventory
  d) Lithuania has not improved transparency as recommended in the previous reviews
  e) Uncertainty estimates do not cover solvent and other product use

- **The ERT reiterates the recommendation that Lithuania improve transparency by providing more information on the uncertainty estimates for each category.**
- **The ERT recommends that the Party include solvent and other product use in uncertainty analysis**

RECORD KEEPING AND ARCHIVING

- Lithuania has a centralized archiving system in the MoE.
- The ERT noted that the archive included GHG inventory submissions since 2006; cross-cutting issues such as key category analyses, QA/QC plan and checklists.
- The ERT also noted that the archive did not include all the disaggregated emission factors, activity data, and documentation about how these factors and data have been generated and aggregated for the preparation of the inventory, as required by the Decision 19/CMP.1, and as recommended by 2009 and 2010 reviews
  a) Improvements are being planned.

- **The ERT concluded that the archive in its current form does not fulfill the requirements of 19/CMP.1**
- **The ERT recommends that the Party present a plan of improvements in the archiving system within 6 weeks time**

National Registry
and
Changes to National Registry

NATIONAL REGISTRY

- Lithuania's national registry continues perform the required functions (set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1) and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the CMP
- In the previous review, the ERT recommended that the Party specifically reference required public information that is considered confidential and cite the regulation that supports its confidentiality in its next annual submission and on its public website.
  a) At the public website on the registry, the Party also provides reference to Commission Regulation No 2216/2004, which supports the confidentiality of the information. This information was not included in the NIR.

✍ **The ERT reiterates the recommendation of the previous ERT that the Party include the information on the regulation that supports confidentiality also in its NIR.**

CHANGES TO NATIONAL REGISTRY

- Lithuania has not reported on any changes to its national registry in the 2011 annual submission.
- During the review, the ERT noted two changes to the national registry:
  a) the registry administrator changed
  b) new security measures were implemented (the 4-eye transaction verification mechanism as an administrative countermeasure against Phishing and Session-hijacking; the Website was enhanced by SSL)
- The ERT considers these changes to be in accordance with the requirements of national registries as defined in the annex to decision 13/CMP.1.

✍ **The ERT strongly recommends that Lithuania report in the NIR on the changes to the national registry in future inventory submissions**

KP-units, including CPR

KP UNITS, INCLUDING CPR

- KP units
  a) Lithuania has reported Standard Electronic Format tables
  b) This information is consistent with that contained in the national registry and with the records of the ITL and the CDM registry and meets the requirements (set out in paragraph 88 (a–j) of the annex to decision 22/CMP.1.)
  c) No discrepancy has been identified by the ITL and no non-replacement has occurred. The national registry has adequate procedures in place to minimize discrepancies.

KP UNITS, INCLUDING CPR

- CPR
  a) Lithuania has provided information on its CPR in the NIR
  b) The calculation is based on 5 times the latest reviewed inventory (inventory year 2009)
  c) The Party's reported CPR (in the 2011 submission) is 101 952.05 Gg CO2 equivalent
     - **The ERT disagrees with this figure**
  d) The CPR calculated by the ERT equals 101 952 048 tonnes CO2 equivalent
     - The difference is due to different units used. Already the previous review recommended that Lithuania report on CPR in tonnes CO2 equivalent.

The ERT strongly recommends that the Party report the CPR in tonnes of CO2 eq.

Minimization of adverse impacts in accordance with Article 3, paragraph 14

Article 3.14

MINIMIZATION OF ADVERSE IMPACTS IN ACCORDANCE WITH ARTICLE 3, PARAGRAPH 14

- Lithuania has provided information relating to minimization of adverse impacts in accordance with Article 3, paragraph 14, in the NIR, but has not provided information on changes.
- During the review, the Party explained that even though completely new actions to minimize adverse impacts were not initiated since the previous inventory submission, the efforts of Lithuania have been intensified in relation to the use of fast start financing
- Information in the NIR was submitted on time but was not complete and not transparent
  a) Lack of information on changes significantly reduces transparency, in particular as in the last inventory submission (dated November, 2010), the chapter on information related to Article 3.14 was completely missing

✍ **The ERT strongly recommends that the Party, in its next annual submission, transparently report any changes in its information provided under Article 3, paragraph 14, in accordance with chapter I.H of the annex to decision 15/CMP.1.**

Potential problems

POTENTIAL PROBLEMS

- National system:
  a) Archiving not in line with 19/CMP.1
  b) KP-LULUCF areas and annual changes not fully identifiable (including 1990)
- Inventory, potential underestimates:
  a) Energy sector emission factor lower than IPCC default and the source for EF not documented
  b) Differences between sectoral approach and reference approach for natural gas consumption reveal a potential underestimate of emissions from fuel combustion
  c) HFC emissions from transport refrigeration missing
  d) HFC emissions from foam blowing: calculated using the methodology for adjustments last year (not in line with IPCC GPG), and lack transparency
     - emissions drop from 13.3 Gg CO2-eq to 3.9 Gg CO2 eq between 2008 and 2009

- **The ERT will formulate guidance on how to solve these issues (on Saturday). The Party will have 6 weeks to address the issues**

Thank you very much!

ANNEX 15

ACTION PLAN
to improve LULUCF reporting of Lithuania

07 November 2011

Action plan to improve LULUCF reporting of Lithuania is developed as a part of Lithuania's answers in response to the ERT report "Potential Problems and Further Questions from the ERT formulated in the course of the 2011 review of the greenhouse gas inventories of Lithuania submitted in 2011".

In the list of potential problems and further questions, the ERT recommended that Lithuania submit, within 6 weeks, a comprehensive action plan aimed to improve its existing legal, institutional and/or administrative arrangements, as necessary, in such a way that the Party is able to identify the land areas subject to the activities under Article 3, paragraph 3, of the Kyoto Protocol.

Acting institutions:
Environmental Protection Agency

Environmental Protection Agency (with the supervision of the Ministry of Environment) is responsible for coordination of LULUCF reporting and promotion of the cooperation in the activities related to the LULUCF reporting between the State Forest Service, State Land Fund, Ministry of Agriculture, National Paying Agency, etc.

State Forest Service

The State Forest Service is an institution functioning under the Ministry of Environment and responsible for the compilation of the National Forest Inventory and the forest information system, carries out forest condition monitoring, collects and manages statistical data etc. Since year 2010 State Forest Service in the national GHG inventory preparation process is responsible for LULUCF (forestry part) sector and Kyoto protocol 3.3 and 3.4 removals and emission calculations for the LULUCF sector. Representative of the State Forest Service is also a member of the recently established working group for the national GHG inventory preparation under the Government Resolution No 683.

State Land Fund

State Land Fund is a state-owned institution, responsible for the data on land use collection, monitoring, analysis and maintaining the State's land use database. Since year 2011 representative of the State Land Fund is a member of the recently established working group for the national GHG inventory preparation under the Government Resolution No 683.

The issues raised in the list of Potential Problems and Further Questions from the ERT and Lithuania's planned improvements in response to those issues

Issue (1): *Paragraph 6(b) of the annex to decision 15/CMP.1 requests that "general information to be reported for activities under Article 3, paragraph 3, and any elected under Article 3, paragraph 4, shall include the geographical location of the boundaries of the areas that encompass: (i) Units of land subject to activities under Article 3, paragraph 3; (ii) Units of land subject to activities under Article 3, paragraph 3, which would otherwise be included in land subject to elected activities under Article 3, paragraph 4, under the provisions of paragraph 8 of the annex to decision 16/CMP.1; (iii) Land subject to elected activities under Article 3, paragraph 4."*

Planned improvement (1):
Data source for activity under Article 3, paragraphs 3 and 4 of the Kyoto Protocol is Lithuanian National Forest Inventory (NFI) by sampling method. It is in agreement with Reporting Method 1 for Lands subject to Article 3.3 and 3.4 activities in IPCC Good Practice Guidance for LULUCF (the geographical locations of the boundaries of assessable areas match with the border of country). Information on land units subject to above indicated activities (*i.e. activities under Art 3 para 3, Art 3, para 3, which would otherwise be included in land subject to elected activities under Art 3, para 4, under the provisions of para 8 of the annex to decision 16/CMP.1, Art 3 para 4*) will be collected using the systematic grid of more than 16 thousand NFI permanent sample plots, which cover whole national territory (65.3 thousand ha) and are measured in 5 year cycle. Plots selected on areas subject to "forest management" and "afforestation/ reforestation/ deforestation" will be inventoried using direct measurements in the field.

In order to get information about land units subject to activities under Art 3 para 3, Art 3 para 4 or else on annual base for the period 1990-2012, it is planned to launch and implement the following studies and measures in 2011-2012:

(i) The State Forest Service will launch the study "Forest land changes in Lithuania during 1990-2012" (resources foreseen – **100 000€)**. Outcome of this study will be following annual information for the period 1990-2012:
- identified areas of afforested, reforested, deforested territories;
- distinguished units of land subject to activities under Article 3, paragraph 3, which would otherwise be included in land subject to elected activities under Article 3, paragraph 4, under the provisions of paragraph 8 of the annex to decision 16/CMP.1;
- separated lists of annually afforested, reforested, deforested objects with attribute data.

The following activities/ timeline are foreseen during the development of the study

Task	Deliverables	Responsible agency/person	Estimated date of the outcome
To retrieve ARD areas on NFI plots for 1998-2011	list of sample plots subject to ARD	Institution selected by tendering under the supervision of State Forest Service	December 31, 2011
To retrieve ARD areas for 1990-1997 on NFI plots intersecting NFI sample plots with SFI	--"--	--"--	January 31, 2012

and other available data			
To split AR areas into three groups: 1) human induced afforested areas, 2) natural forest expansion (natural afforestation), 3) reforested areas	separate list of sample plots subject to A^h, A^n, R	--"--	June 30, 2012
To make area calculations and prepare land use change matrix	land use change matrix with areas of FM and ARD	--"--	August 31, 2012
To prepare report showing considered land unit changes on annual base for 1990-2012 period	report	--"--	December 31, 2012

(ii) The State Land Fund will launch the study "Changes of areas of croplands, grasslands, wetlands, settlements and other lands in Lithuania during 1990-2012". Outcome of the study would be development of the specified matrix of land use annual changes during 1990-2012 (resources foreseen – **100 000€)**.

For the implementation of this task, all available historical data on land uses in statistical and graphical form will be analyzed and historical data collection methods will be assessed. In addition, analysis of the requirements of the legislation on land use categories accounting which was in force during the 1990-2012 period and the changes of the definitions of the land use categories during 1990-2012 period will be performed.

The following activities/ timeline are foreseen during the development of the study

Task	Deliverables	Responsible agency/person	Estimated date of the outcome
Identify changes of areas of crops in Lithuania according to historical statistical data and available paper maps and digital data	Land use change matrix (annual change of areas of croplands, grasslands, wetlands, settlements and other lands) in Lithuania during 1990-2012	Institution selected by tendering under the supervision of the State Land Fund	1 July, 2012
	Accuracy evaluation of land use change matrix	State Land Fund	1 July, 2012
To prepare report on land use definitions harmonization used 1990-2012	Report	State Land Fund	1 August, 2012

(iii) The State Forest Service and the State Lund Fund in cooperation with the Environmental Protection Agency, the Ministry of Environment (the Forest Department and the Pollution Prevention Department) and Ministry of Agriculture (Land Policy Department) will develop the

Harmonized methodology for the data evaluation and estimation of removals and emissions for LULUCF sector according to the UNFCCC and the Kyoto Protocol requirements (resources foreseen – **80 000€)**.

All these measures will be implemented in the frame of the **Norway Grants partnership project** "Cooperation on the national GHG inventory" (total budget of the project - **772 500**€) between Lithuania and Norway under the Programme No 25 „Capacity-building and institutional cooperation between beneficiary state and Norwegian public institutions, local and regional authorities" based on the Memorandum of Understanding of the implementation of the Norwegian financial mechanism for the period 2009-2014 between the Kingdom of Norway and the Republic of Lithuania, which is in force of 6 April 2011 (p. 10 part C paragraph 3)[12]. The partner of this programme will be the Norwegian Climate and Pollution Agency (Klif), which is national entity responsible for GHG inventory preparation in Norway. Project scope, activities and financial arrangements were discussed and agreed with the Norwegian counter-partners in 3 bilateral meetings arranged on 7 June, 28 August and 28 October 2011.

(iv) In 2012 the State Land Fund will launch a long-term project on land use areas identification. The data on land areas will consist of the layers (graphic and attribute information). Graphic objects type – plots, the minimum area – 0.1 ha. For the identification of land areas, the following databases will be used:

- Digital orthophotographs, developed according to 2009, 2010 aerial photography data;
- Georeference background data of the Republic of Lithuania;
- Forest cadastre data of the Republic of Lithuania;
- Address registry digital data of the Republic of Lithuania;
- Lithuania's regional land fund inventory database;
- 2010 and 2011 agricultural lands, croplands and other declaration data;
- 2010 spectral satellite images, with the resolution of 5 m;
- Lithuanian Geological Survey data on wetlands, peatlands and quarries;
- Corine land cover data;
- Other data.

As a result of this work, Lithuania will have comprehensive land use, land use changes database covering all territory of Lithuania in graphical form for 2009-2012. This measure is already included in the State Land Fund's work plans and financing of the work is already ensured from the State's budget. The first results of this project will be ready in 2013.

The preliminary results of these projects will be included in the 2013 annual submission with the view to include the final results in the 2014 annual submission.

Issue (2): *"During the in-country review the ERT visited the archive and noted that it does not include all the information required. The ERT concluded that the archive in its current form does not fulfill all the above-mentioned requirements contained in decision 19/CMP.1."*

Planned improvement (2):

- to improve existing sample based archive (following the Reporting Method 1 for lands subject to Article 3.3 and 3.4 activities in IPCC Good Practice Guidance for LULUCF) with all the information used to estimate GHG emissions and removals from the

[12] found on http://www.eeagrants.org/id/2453.0

LULUCF and KP-LULUCF sectors following the requirements described in decision 19/CMP.1.

Management sampling based data bases are handled by the State Forestry Service. It is ensured that data in possession are available and further collected information, including the sources of data references used for the emission/removal calculations in relation to the inventory, are and will be sufficient and clear for independent experts to reproduce the inventory calculations. The documentation will also contain information on all changes made with respect to the data sources or methodological modifications in the current year.

- to provide ERT with access to required archives and databases;
- to provide ERT with on-line access to Lithuanian Forest Cadastre up-to-date GIS database;
- to present State Forest Service resources and capacities in place during country visits.

Improvement of the sample based archiving is envisaged to be implemented during the 2011-2012 year by the State Forest Service in close cooperation with the Environmental Protection Agency.

Issue (3): *"improve its existing legal, institutional and/or administrative arrangements, as necessary, in such a way that the Party is able to identify the land areas subject to the activities under Article 3, paragraph 3, of the Kyoto Protocol"*

Planned improvement (3):

(i) State Forest Service under the coordination of Forest Department at the Ministry of Environment and the State Land Fund take under the coordination of Lund Policy Department at the Ministry of Agriculture take responsibility to organize improvements of juridical acts, allowing identification and registering of forest land areas subject to the activities under Article 3, paragraph 3, of the Kyoto Protocol. The planned legislative amendments are related to the identification of afforested agricultural areas with the EU financial support under the certain Rural development programmes.

- *Regulation of National forest inventory by sampling method*, adopted by the Order No D1-570 of Minister of Environment of the Republic of Lithuania on 08 November 2004. Object of NFI by sampling methods including assessment of all wooded land areas outside forest management areas to be expanded, adopting amendment of the Order by the end 2011.

- *Regulation of State Forest Cadastre*, approved by the Resolution No 1255 of Government of the Republic of Lithuania on 09 October 2003. Exchange of information on ARD between state cadastres to be ensured, adopting amendment of the Regulation in January-February 2012 .

- *Rules for afforestation of non-forest land*, adopted by the Order No 3D-130/D1-144 of Agriculture and Environment ministers of the Republic of Lithuania on 29 March 2004. To enable owners to register newly afforested non-forest land into the State Forest Cadastre after afforestation a draft amendment of the Order will be adopted by July 2012.

- *Rules for national accounting of the land, introducing provisions on land use and land use changes accounting in graphical form,* adopted by the Order No 302 of the Minister of Agriculture of the Republic of Lithuania on 07 August 2002. Provisions on land use and land use changes accounting in graphical form will be introduced adopting amendment of the Order in 2012.

(ii) Aiming to increase institutional capacity for the GHG inventory LULUCF part report preparation, two officials responsible for the LULUCF reporting issues will be employed at the State Forest Service by the end of 2011. The Governmental

Resolution No1222 with the provisions to increase the number of the employees at the State Forest Service is already approved on 19-October 2011.

Issue (4): *"the national system of Lithuania could not ensure that all lands subject to the afforestation/reforestation activities*[13] *under Article 3, paragraph 3, of the Kyoto Protocol are identifiable since 1990."*

Planned improvement (4):

- to harmonize definitions of land use categories between the existing independent databases and definitions of the Kyoto Protocol;

This will be achieved in a close cooperation between the State Forest Service, the State Land Fund, the National Paying Agency under the Ministry of Agriculture and other institutions responsible for the data on land uses collection and management. Definitions will be harmonized also during the implementation of the study "Changes of areas of croplands, grasslands, wetlands, settlements and other lands in Lithuania during 1990-2012".

- *Technical issues and approach and data sources are* as described above in (1) and (3).

Issue (5): *"the national inventory systems under Article 5, paragraph 1, that shall ensure that areas of land subject to the KP-LULUCF activities are identifiable, and information about these areas should be provided by each Party included in Annex I in their national inventories in accordance with Article 7*"

Planned improvement (5):

as described above in (1) and (2). Furthermore ensuring transparency of collected data, Lithuania is ready to recover locations for any selected sample plots from nearly 6000 sample plots distributed on country's forest territory for any field checks and cross measurements if needed by ERT or adequate experts.

Issue (6): "QA/QC"

Planned improvement (6): All collected and processed forest related data are under supervision of the State Forest Service. Applied QA/QC system ensures accuracy and reliability of reported forest related information and it is in agreement with the QA/QC system requirements described in IPCC/GPG for LULUCF. Improving existing QA/QC system it is planned to elaborate methods and quality assurance & control principles for non forest data collection and analysis in 2011-2012.

Issue (7): *"ERT recommends that the Party report, in its next annual submission, on the steps taken towards implementing the action plan submitted"*

Planned improvement (7):

The State Forest Service and the State Land Fund with a coordination of the Environmental Protection Agency take responsibility to report on implementation of this action plan in the next annual submission (NIR 2012).

Measures presented at sections of "Planned improvements" No 2-7 are of short term character and will be implemented during 1 year.

[13] Note that according to decision 16/CMP.1 reforestation and afforestation refers to conversion of non-forest land or land that has not been forested for at least 50 years to forest land, respectively.

ANNEX 16. Government Resolutions and Orders to Enact Institutions and Procedures to Improve Lithuania's National System

MINISTER OF ENVIRONMENT OF THE REPUBLIC OF LITHUANIA

ORDER ON THE GRANTING OF AUTHORITY FOR PREPARING AND SUBMITTING THE NATIONAL GREENHOUSE GAS INVENTORY REPORT

22 December 2010, No. D1-1017
Vilnius

Pursuant to points 1^1.1 and 1^1.2 of Chapter I^1 of the Annex "Submission of reports related to the implementation of Community legislation in the environment sector and of information necessary for the preparation thereof" to the Procedure for the reporting to the European Commission on the implementation of Community legislation in the environment sector approved by Resolution No. 388 of the Government of the Republic of Lithuania of 7 April 2004 (Official Gazette, 2004, No. 53-1804; 2008, No. 112-4266; 2010, No. 130-6632):

I hereby grant the authority to:

1. The Environmental Protection Agency to prepare the annual National Greenhouse Gas Inventory Report and the biannual projections of greenhouse gas emissions. In accordance with the prescribed procedure and time frame and on agreement with the Climate Change and Hydrometeorology Division of the Pollution Prevention Department of the Ministry of Environment, to submit them to the secretariat of the United Nations Framework Convention on Climate Change and to the European Commission.

2. The administrative divisions of the Ministry of Environment, agencies under the Ministry and institutions assigned to the jurisdiction of the Ministry according to competences to submit to the Environmental Protection Agency data and summary information necessary for preparing the greenhouse gas emission reports and projections referred to in paragraph 1 of this Order.

Minister of Environment Gediminas Kazlauskas

GOVERNMENT OF THE REPUBLIC OF LITHUANIA

RESOLUTION No 388

ON THE APPROVAL OF THE PROCEDURE FOR THE SUBMISSION OF REPORTS TO THE EUROPEAN COMMISSION AND THE EUROPEAN CHEMICALS AGENCY AS REGARDS THE IMPLEMENTATION OF THE EUROPEAN UNION ENVIRONMENTAL LEGISLATION, AND SUBMISSION OF INFORMATION REQUIRED FOR REPORTING TO THE EUROPEAN ENVIRONMENT AGENCY

7 April 2004
Vilnius

For the purpose of implementing measure 3.22.1-T32 of the legal harmonization measure plan 2003, as approved by Resolution No 292 of the Government of the Republic of Lithuania of 5 March 2003 (*Valstybės žinios* (Official Gazette) No 25-1019, 2003; No 65-2965), the Government of the Republic of Lithuania has r e s o l v e d:

1. To approve the procedure for the submission of reports to the European Commission as regards the implementation of the European Union environmental legislation (as appended).

2. To delegate the Ministry of Environment, the Ministry of Energy, the Ministry of Transport and Communications, the Ministry of Health, the Ministry of Economy, the Ministry of Agriculture, the Fire and Rescue Department under the Ministry of Interior, and the State Food and Veterinary Service, or their authorized bodies, with the task of submitting reports, within their competence, to the European Commission as regards the implementation the European Union environmental legislation, and gathering as well as processing the requisite information in accordance with the procedure referred to in paragraph 1.

3. To obligate ministries, governmental bodies, subordinated bodies of ministries, other public institutions and bodies, within their competence, to submit:

3.1. the requisite information to the institutions and bodies referred to in paragraph 2, who are responsible for the submission of reports to the European Commission as regards the implementation of the European Union environmental legislation;

3.2. to the Ministry of Environment or its authorized body the environmental information necessary for the preparation of the reports to be submitted to the European Environment Agency.

4. To recommend that the municipalities and the Water Suppliers Association follow the procedure specified in this Resolution as they provide the requisite information to the institutions and bodies referred to in paragraph 2, who are responsible for the submission of reports to the European Commission as regards the implementation of the European Union environmental legislation.

5. This resolution shall come into effect as of the date of the accession of the Republic of Lithuania to the European Union.

Prime Minister Algirdas Brazauskas

Minister of Environment Arūnas Kundrotas

I [1]. CLIMATE CHANGE

1[1]. The Ministry of Environment and/or its authorized body shall provide the European Commission with reports and relevant information in pursuance with the following documents:

1[1].1. Decision No 280/2004 /EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2004, Special Edition, Chapter 15, Volume 8, p. 57) (hereinafter referred to as Decision 280/2004 /EC);

1[1].2. Decision No 2005/166/EB of the European Commission of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2005 L 55, p. 57);

1[1].3. Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases (OJ 2006 L 161, p. 1);

1[1].4. Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO 2 emissions from light-duty vehicles (OJ 2009 L 140, p. 1) (hereinafter - the Regulation No 443/2009/EC);

1[1].5. Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 (OJ 2009 L 140, p. 114);

1[1].6. Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (OJ2009 L 140, p 88).

1[2]. The Ministry of Agriculture and/or its subordinated body shall provide, within their competence, to the Ministry of Environment and/or its authorized body with:

1[2].1. information about land use areas, land use changes in the area, as well as other information related to the change of land use, which is gathered and/or is available and which is required for the preparation of reports to the European Commission in accordance with Decision No 280/2004/EC and Directive 2001/81/EC;

1[2].2. information about farmed animals, their number, age, and other information related with the farmed animals, which is gathered and/or is available and which is required for the preparation of reports to the European Commission in accordance with Decision No 280/2004/EC and Directive 2001/81/EC.

1[3]. A body authorized by the Ministry of Environment shall provide information related to land use, land use change, forestry, as well as other information related to forest

condition, which is gathered and/or is available and which is required for the preparation of reports to the European Commission in accordance with Decision No 280/2004/EC.

1^4. The Ministry of Energy and/or its authorized body shall submit to the Ministry of Environment and/or its authorized body information relating to the energy sector, which is gathered and/or is available and which is required for the preparation of reports to the European Commission in accordance with Decision No 280/2004/EC.

1^5. Public research institutions shall gather and provide the Ministry of Environment with data obtained in the process of research, which is required for keeping inventory of greenhouse gas emissions and for the related reporting in accordance to the European Union legislation requirements as specified in paragraph 1^1. The nature, extent and timing of the data shall be agreed between the Ministry of Environment and the public research institutions as well as the Ministry of Education and Science.

1^6. The Statistics Lithuania shall provide the Ministry of Environment and/or its authorized body with the data which is gathered and/or is available and which is required for the preparation of reports to the European Commission in accordance with Decision No 280/2004/EC.

1^7. The State Road Transport Inspectorate under the Ministry of Transport and Communications shall provide the Ministry of Environment and/or its authorized body with information which is gathered and/or is available and which is required for the reporting on relative CO2 emissions by type of vehicle, fuel, wheelbase, and track width in accordance with Regulation No 443/2009/EC, as well as other information which may be requested by the European Commission.

1^8. The Ministry of Interior and/or its subordinate bodies provide the Ministry of Environment and/or its authorized with information about the number, model, type, capacity and type of fuel consumed of new vehicles registered each year in the Republic of Lithuania, which is gathered and/or is available and which is required for the reporting in accordance with Regulation 443/2009/EC, as well as other information which may be requested by the European Commission.

1^9. The State Tax Inspectorate under the Ministry of Finance shall provide the Ministry of Environment and/or its authorized bodies with information about the number of gas stations that sell fuel mixture containing 85 per cent ethanol (E85), which is gathered and/or is available and which is required for the preparation of reports to the European Commission in accordance with Regulation 443/2009/EC.

MINISTER OF ENVIRONMENT OF THE REPUBLIC OF LITHUANIA

ORDER ON THE COLLECTION OF DATA RELATED TO LAND USE, LAND-USE CHANGE AND FORESTRY AND THE SUBMISSION OF INFORMATION

29 July 2010, No. D1-666
Vilnius

With a view to ensuring the effective implementation of the provisions of the United Nations Framework Convention on Climate Change ratified by Resolution No. I-812 of the Parliament of the Republic of Lithuania of 23 February 1995 "On the ratification of the United Nations Framework Convention on Climate Change" (Official Gazette, 1995, No. 18-413), paragraphs 3 and 4 of Article 3 and paragraph 1 of Article 7 of the Kyoto Protocol thereto ratified by the Law of the Republic of Lithuania on the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Official Gazette, 2002, No. 126-5728) and Decision No 80/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ *2004 special edition*, Chapter 15, Volume 8, p. 57):

1. I hereby decree that the State Forest Survey Service shall collect and store forestry data and use these data for preparing summary information related to the inventories of greenhouse gas emissions and removals by sinks in the land use, land-use change and forestry sector in accordance with this Community legislation, the decisions adopted at the conferences of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and at the meetings of the Parties to the Kyoto Protocol and the guidelines prepared by the secretariat and the Intergovernmental Panel on Climate Change (IPCC):

1.1. Commission Decision No 2005/166/EC of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2005 L 55, p. 57);

1.2. UNFCCC secretariat decision 15/CMP.1. The guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol (FCCC/KP/CMP/2005/8/Add.2);

1.3. IPCC good practice guidance for land use, land-use change and forestry; IPCC 2003.

1.4. Lithuania's Initial Report under the Kyoto Protocol, July 2007;

1.5. Annotated outline of the the National Inventory Report including reporting elements under the Kyoto protocol, UNFCCC secretariat;

1.6. Annual reports prepared by the secretariat of the United Nations Framework Convention on Climate Change on the National Greenhouse Gas Inventory Reports submitted that provide recommendations and identify errors.

2. I hereby obligate the State Forest Survey Service, by 1 December of each year, to submit to the Ministry of Environment and/or an institution authorised by the Ministry forestry data and summary information related to inventories of greenhouse gas emissions and removals

by sinks in the land use, land-use change and forestry sector, which are collected and/or stored by the Service and necessary for preparing reports submitted to the secretariat of the Parties to the United Nations Framework Convention on Climate Change and to the European Commission.

3. I hereby obligate the Climate Change and Hydrometeorology Division of the Pollution Prevention Department of the Ministry of Environment to submit to the State Forest Survey Service legislation of the European Union referred to in point 1 of this Order, the decisions adopted at the conferences of the Parties to the United Nations Framework Convention on Climate Change and at the meetings of the Parties to the Kyoto Protocol and the guidelines prepared by the secretariat and the Intergovernmental Panel on Climate Change, and to submit regularly the most up-to-date information related to the inventories of greenhouse gas emissions and removals by sinks in the land use, land-use change and forestry sector.

Minister of Environment Gediminas Kazlauskas

GOVERNMENT OF THE REPUBLIC OF LITHUANIA
RESOLUTION No 683
SETTING UP A COMMISSION FOR THE PREPARATION OF A NATIONAL GREENHOUSE GAS INVENTORY REPORT

8 June 2011
Vilnius

In accordance with Articles 27 and 28 of the Law on the Government of the Republic of Lithuania (Official Gazette No. 43-772, 1994; No. 41-1131, 1998; No. 92-2843, 2000; No. 72-2831, 2007; No. 117-4442, 2008; No. 85-3576, 2009), for the purpose of implementing the requirements of the United Nations Framework Convention on Climate Change, ratified by Resolution No I-812 of the Seimas of the Republic of Lithuania of 23 February 1995 on the Ratification of the United Nations Framework Convention on Climate Change (Official Gazette No. 18-413, 1995) and its Kyoto Protocol, ratified by the Republic of Lithuania Law on the Ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Official Gazette No. 126-5728, 2002), Decision 280/2004 /EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2004, Special Edition, Chapter 15, Volume 8, p. 57) and Article 6(1) of Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, the Government of Lithuania has r e s o l v e d:

1. to set up a commission for the preparation of a greenhouse gas inventory report (hereinafter, the Commission), consisting of:

a representative of the Ministry of Environment (Chairman of the Commission);

a representative of the Environmental Protection Agency (Deputy Chairman of the Commission);

a representative of the Institute of Physics of the Centre for Physical Sciences and Technology;

a representative of the Lithuanian Energy Institute;

a representative of the Institute of Animal Science of the Lithuanian University of Health Sciences;

a representative of the state-owned enterprise National Land Fund;

a representative of the State Forest Service;

a representative of the public body Centre for Environmental Policy.

2. to instruct the Commission:

2.1. to carry out an expert data analysis, calculate greenhouse gas emissions and removals in the energy, transport, industry and the solvent use, agriculture, waste, land-use change and forestry sectors; to draft an annual national greenhouse gas inventory report and a biannual greenhouse gas emissions projections, and submit this information to the Ministry of Environment and/or its authorized institution;

2.2. to submit to the Ministry of Environment and/or its authorized body information and data on greenhouse gas emissions and removals in the energy, transport, industry and the solvent use, agriculture, waste, land-use change and forestry sectors, in reply to questions from the European Commission and its authorized institutions, and the Secretariat of the United Nations Framework Convention on Climate Change related to greenhouse gas inventories and projections;

2.3. to draft statements for the Ministry of Environment and/or its authorized institution

and provide information relating to questions asked during the review visits of the European Commission and its authorized institutions and the Secretariat of the United Nations Framework Convention on Climate Change to assess the National greenhouse gas emissions inventory report.

3. to charge the Minister of the Environment with the task of approving the composition of the Commission and its rules of procedure.

4. to establish that allocations required for the remuneration for the members of the Commission (other than its Chairman, Deputy Chairman and other members who are civil servants and perform their functions related to greenhouse gas emissions reporting) for the fulfilment of the tasks specified in 2.1-2.3, have to be made in the general appropriations of the Ministry of Environment for a relevant year and shall be disbursed subject to the following conditions:

4.1. the Ministry of Environment shall draw up an estimate of the costs of the expert data analysis, taking into account the complexity and scope of efforts as well as the deadlines, and other considerations. The maximum remuneration for the expert data analysis per member of the Commission per month shall not exceed an equivalent of four base salaries of a Lithuanian state politician, a judge, a public officials and a civil servant;

4.2. the Ministry of Environment and members of the Commission shall conclude an agreement regarding the expert data analysis (hereinafter, the agreement);

4.3. the Ministry of Environment shall remunerate members of the Commission for the work completed following the procedure prescribed by the agreement and taking into account the Chairman's recommendation regarding the disbursement to be made in direct proportion to the importance, complexity, quantity and quality of the work carried out by each member of the Commission as well as the time required to complete the task;

4.4. in pursuance with the principles set forth in paragraph 4.3 of this Resolution, following the recommendation of the Chairman, the remuneration of some members of the Commission may be reduced or increase up to 50 per cent of the payment specified in paragraph 4.1. The total remuneration shall not exceed the amount specified in the estimate of the expert data analysis;

4.5. following the completion of the expert data analysis, the Ministry of Environment and the members of the Commission shall sign work transfer and acceptance form.

Prime Minister Andrius Kubilius

Minister of Transport and Communications
as Acting Minister of Environment Eligijus Masiulis

MINISTER OF ENVIRONMENT OF THE REPUBLIC OF LITHUANIA

ORDER ON THE APPROVAL OF THE PERSONAL COMPOSITION OF THE COMMISSION FOR PREPARING THE NATIONAL GREENHOUSE GAS INVENTORY REPORT AND OF THE RULES OF PROCEDURE THEREOF

1 July 2011, No. D1-538
Vilnius

Pursuant to point 3 of Resolution No. 683 of the Government of the Republic of Lithuania of 8 June 2011 "Setting up a commission for the preparation of a National Greenhouse Gas Inventory Report" (Official Gazette, 2011, No. 73-3508) and points 3.1 and 4 of Resolution No. 388 of the Government of the Republic of Lithuania of 7 April 2004 "On the approval of the procedure for submitting to the European Commission and the European Chemicals Agency reports related to implementation of Community legislation in the environment sector and information necessary to prepare reports to the European Environment Agency" (Official Gazette, 2004, No. 53-1804; 2010, No. 130-6632):

1. I hereby approve the personal composition of the commission for preparation of the National Greenhouse Gas Inventory Report (hereinafter "the Commission"):

Vitalijus Auglys – Director of the Pollution Prevention Department of the Ministry of Environment, Chairman of the Commission;

dr. Mindaugas Gudas – Director of the Environment Status Assessment Department of the Environmental Protection Agency, Deputy Chairman of the Commission.

Members:

dr. Ricardas Beniusis – Deputy Head of the National Forest Inventory Division of the State Forest Survey Service;

dr. Steigvile Bycenkiene – Scientist of the Institute of Physics of the Centre for Physical Sciences and Technology;

dr. Remigijus Juska – Senior Scientist of the Institute of Animal Science of the Lithuanian University of Health Sciences;

dr. Inga Konstantinaviciute – Senior Scientist of the Lithuanian Energy Institute;

dr. Romualdas Lenkaitis – Consultant of the public body Centre for Environmental Policy;

Audrius Petkevicius – Director of the state-owned enterprise National Land Fund;

dr. Simonas Valatka – Consultant of the public body Centre for Environmental Policy.

2. I hereby approve the Rules of Procedure of the commission for preparation of the National Greenhouse Gas Inventory Report (attached).

Minister of Environment Gediminas Kazlauskas

APPROVED
by Order No. D1-538 of the Minister of
Environment of the Republic of Lithuania
of 1 July 2011

THE RULES OF PROCEDURE OF THE COMMISSION FOR PREPARING THE NATIONAL GREENHOUSE GAS INVENTORY REPORT

I. GENERAL PROVISIONS

1. The Rules of Procedure of the commission for preparation of the National Greenhouse Gas Inventory Report (hereinafter "the Rules of Procedure") shall lay down the procedure for organising the work of the commission for preparation of the National Greenhouse Gas Inventory Report (hereinafter "the Commission").

2. The Commission shall operate under the provisions of the United Nations Framework Convention on Climate Change (UNFCCC) ratified by Resolution No. I-812 of the Parliament of the Republic of Lithuania of 23 February 1995 "On the ratification of the United Nations Framework Convention on Climate Change" (Official Gazette, 1995, No. 18-413), the Kyoto Protocol thereto ratified by the Law of the Republic of Lithuania on the ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Official Gazette, 2002, No. 126-5728), the decisions adopted at the conferences of the Parties to the United Nations Framework Convention on Climate Change and at the meetings of the Parties to the Kyoto Protocol thereto, Decision No 80/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ *2004 special edition,* Chapter 15, Volume 8, p. 57) and Commission Decision No 2005/166/EC of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2005 L 55, p. 57), and these Rules of Procedure.

3. The Chairman and the Deputy Chairman of the Commission shall be responsible for coordinating the preparation of the draft National Greenhouse Gas Inventory Report and of the draft projections. Experts of the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors shall be responsible for preparing expert data analyses and calculations of greenhouse gases emissions and removals by sinks in individual sectors.

II. TASK AND FUNCTIONS OF THE COMMISSION

4. The task of the Commission shall be to ensure the performance of expert data analyses and calculations of greenhouse gas emissions and removals by sinks in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors, and the preparation of the annual draft National Greenhouse Gas Inventory Report and of the draft biannual projections of greenhouse gas emissions within the set time frame.

5. The Commission shall perform the following functions:

5.1. collect and store data necessary for carrying out calculations of greenhouse gas emissions in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors and for preparing the projections of greenhouse gas emissions;

5.2. carry out expert data analyses, calculations and recalculations of greenhouse gas emissions and removals by sinks for the reporting year in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors, prepare the draft annual National Greenhouse Gas Inventory Report in the English language and the draft biannual

projections of greenhouse gas emissions, and submit them to the Ministry of Environment and/or an institution authorised by the Ministry;

5.3. prepare the draft Quality Control and Assurance Plan for the greenhouse gas inventory, submit the plan to the Ministry of Environment and/or an institution authorised by the Ministry and implement the quality requirements laid down therein for carrying out calculations of greenhouse gas emissions and removals by sinks in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors;

5.4. submit information and data to the Ministry of Environment and/or an institution authorised by the Ministry on greenhouse gas emissions and removals by sinks in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors, in reply to questions from the European Commission and its authorised institutions and from the secretariat of the United Nations Framework Convention on Climate Change (hereinafter "the secretariat of the Convention") related to the greenhouse gas inventories and projections;

5.5. prepare draft presentations and submit information to the Ministry of Environment and/or an institution authorised by the Ministry related to questions put by experts of the European Commission and its authorised institution and of the secretariat of the Convention during review visits assessing the National Greenhouse Gas Inventory Report;

5.6. make proposals to the Ministry of Environment, the Environmental Protection Agency under the Ministry of Environment, other ministries and national research institutes regarding the improvement of the preparation of the National Greenhouse Gas Inventory Report and of the projections, the need for additional expert data analyses and research necessary to carry out calculations of greenhouse gas emissions and removals by sinks in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors;

5.7. perform other tasks set by the Ministry of Environment and/or an institution authorised by the Ministry related to the preparation of the National Greenhouse Gas Inventory Report and of the projections, as prescribed by legislation of the Republic of Lithuania and of the European Union and the decisions of the conferences of the Parties to the United Nations Framework Convention on Climate Change and to the Kyoto Protocol thereto;

5.8. in the performance of the function defined in point 5.2 of these Rules of Procedure, the Commission shall use the following legislation of the European Union, the decisions adopted at the conferences of the Parties to the United Nations Framework Convention on Climate Change and at the meetings of the Parties to the Kyoto Protocol and the guidelines prepared by the secretariat of the Convention and the Intergovernmental Panel on Climate Change (IPCC):

5.8.1. Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ *2004 special edition,* Chapter 15, Volume 8, p. 57);

5.8.2. Commission Decision No 2005/166/EC of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (OJ 2005 L 55, p. 57);

5.8.3. UNFCCC secretariat decision 15/CMP.1. The guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol (FCCC/KP/CMP/2005/8/Add.2);

5.8.4. Annotated outline of the National Inventory Report including reporting elements under the Kyoto protocol, UNFCCC secretariat;

5.8.5. Updated UNFCCC guidelines on annual inventories following incorporation of the provisions of decision 14/CP.11 (FCCC/SBSTA/2006/9);

5.8.6. Revised 1996 IPCC guidelines for national greenhouse gas inventories; IPCC 1997;

5.8.7. IPCC good practice guidance and uncertainty management in national greenhouse gas inventories; IPCC 2000;

5.8.8. IPCC good practice guidance for land use, land-use change and forestry; IPCC 2003.

III. RIGHTS AND OBLIGATIONS OF THE COMMISSION

7. In the performance of the task and functions assigned, the Commission shall have the right to:

7.1. under the procedure prescribed by laws and other legal acts of the Republic of Lithuania related to the procedure for the reporting to the European Commission on the implementation of Community legislation in the environment sector approved by Resolution No. 388 of the Government of the Republic of Lithuania of 7 April 2004 "On the approval of the procedure for submitting to the European Commission and the European Chemicals Agency reports related to implementation of Community legislation in the environment sector and information necessary to prepare reports to the European Environment Agency" (Official Gazette, 2004, No. 53-1804; 2010, No. 130-6632), receive all required information and data from the ministries, national agencies, other national and municipal institutions and offices and national research institutes necessary for the performance of the Commission's task and functions;

7.2. where special area expert knowledge and/or data are necessary for expert data analysis and calculations of greenhouse gas emissions in the energy, transport, industry and solvent use, agriculture, waste, land-use change and forestry sectors, apply to these experts regarding the submission of the necessary data and/or information;

7.3. request that the parties submitting data and information referred to in points 7.1 and 7.2 above review the data and information submitted and, where appropriate, invite them to meetings of the Commission solving questions related to the performance of the Commission's task and functions.

8. In the performance of the functions assigned hereunder, the Commission shall fulfil the requirements provided for in legislation of the Republic of Lithuania and of the European Union and the decisions of the conferences of the Parties to the United Nations Framework Convention on Climate Change and to the Kyoto Protocol thereto related to the preparation of the National Greenhouse Gas Inventory Report and projections.

9. With a view to performing the functions assigned hereunder with due quality, members of the Commission shall improve their qualifications at seminars, training sessions, conferences and other events in Lithuania or abroad.

2.2 IV. ORGANISATION OF THE WORK OF THE COMMISSION

10. Meetings shall be held to take decisions on organisational issues of the preparation of the National Greenhouse Gas Inventory Report and projections and on issues related to the performance of the Commission's other functions.

11. The Commission shall take decisions at meetings. A meeting shall be deemed lawful if attended by more than a half of all members of the Commission. Meetings of the Commission shall be chaired by the Chairman of the Commission or, on assignment by the Chairman of the Commission, by the Deputy Chairman of the Commission.

12. Notice of the time and place of a meeting of the Commission shall be given to members of the Commission at least 5 working days before the date of the meeting.

13. Meetings of the Commission shall be open. Members of the Commission and other persons attending a meeting shall be entitled to express their opinion at the meeting.

14. The Commission shall take decisions by a simple majority open vote. In case of a tie vote, the Chairman's vote shall be decisive. In case of absence of any objection to a decision, the decision may be taken without a vote by consensus.

15. Decisions of the Commission shall be formalised in minutes. Minutes of meetings shall be taken by the secretary of the Commission designated by the Chairman of the Commission. Minutes shall contain the motives for the Commission's decision, explanations and opinions of

each member of the Commission and of persons attending. Minutes of meetings of the Commission shall be signed by the person chairing the meeting and by the secretary. Decisions of the Commission shall be in the nature of a recommendation.

16. The Ministry of Environment and/or an institution authorised by the Ministry shall register and store documents on the activities of the Commission (minutes, correspondence, draft statements, conclusions, proposals, etc.) under the procedure prescribed by legislation.