

# State's efforts of reducing greenhouse gas emissions

*Does Estonia attend to alleviating climate changes?*



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## Summary of audit results

### What did we audit?

The National Audit Office (NAO) audited whether the state has used its competence and resources to contribute to the reduction of greenhouse gas emissions generated in Estonia.

### Why is it important?

Over the past decade global warming has become a serious global environmental problem. The climate change influences vital aspects for people throughout the world: access to water, food production, health care and the environment, bringing about the lack of water, famine, floods, extreme weather conditions, and the loss of species.

The international public has generally accepted that there is a connection between the climate change and the rise in the greenhouse gas emissions generated by mankind. In order to stop the climate change it is attempted, under the leadership of the UN and the EU, to reduce greenhouse gas (GHG) emissions generated throughout the globe. Being a member of the European Union and the UN Framework Convention on Climate Change and the Kyoto Protocol, Estonia has expressed its readiness to contribute to the prevention of the climate change.

In the Kyoto Protocol Estonia agreed to reduce GHG emissions by 8% in comparison with the level of 1990. In fact, by the time of signature of the protocol the emissions had fallen by nearly a half due to the collapse of the Soviet economic system. This gave Estonia an advantage in trading with greenhouse gases, because the allowance obtained at the expense of the previously fallen pollution quantities could be sold. In spite of apparent achievement of the objective the Estonian economy is still very carbon-intensive: per capita we are one of the greatest polluters in Europe.

Both the international climate policy as well as the EU climate policy are moving towards higher goals. For Estonia it means that the GHG emissions generated here must be reduced in comparison with the current level. Therefore the state has the duty to guide the entire process in such a manner that investments and reorganizations would benefit the environment and improve our competitiveness.

### What did we find and conclude based on the audit?

**According to the NAO, the state has not set GHG emissions reduction policy targets and the Minister of the Environment has failed to take the lead in reducing GHG emissions.** Therefore other ministers who have to reduce GHG emissions in their field and thus in the entire state have not considered the matter important either. Since the goal set out in the Kyoto Protocol had been achieved already at the time of setting it, the state never started attending to the climate policy. Also, by trading with greenhouse gases in the European Union the state promoted earning of

short-term profits, but GHG emissions did not decrease as a result of the trading. Due to the aforementioned omissions by the state the competitiveness of Estonia has suffered in the conditions of the gradually stricter international climate policy.

Main observations of the NAO:

- **The state has no proper action plan for coordinating the area of greenhouse gases nor agreed on any clear objectives.** Although in 2002 the long-term program for reduction of GHG emissions is outdated, it has so far not been updated. The target of limiting GHG emissions cannot be found in the development plans of the areas that influence generation of emissions. The absence of a supranational action plan poses an obstacle to preparation of realistic GHG emissions projections and submission of reports.
- **The state does not know how effective the measures for reduction of GHG emissions have been thus far and cannot project future emissions.** These deficiencies complicate considerably the planning of activities for GHG emissions reduction. The absence of projections created problems for preparation of an allocation plan 2008–2012 for trading in greenhouse gases, because upon setting the allowance allocated to the state the European Commission wants to take into account projections as well.
- **The actual GHG emissions in Estonia could be higher than reported. Emissions calculation needs improving.** The audit showed that although inventories of greenhouse gases have been carried out for a long time, it has so far not been ensured that the emissions of all branches of the economy have been considered. . In addition, the calculation methodology and the quality control of the inventories need further improving as well. The quality of the inventories determines the capacity of development of the state's climate policy, fulfillment of the requirements established by the EU and the UN, projecting GHG emissions as well as Estonia's ability to implement joint GHG emissions reduction projects with other states and sell the units under the Kyoto Protocol.
- **The state has not used emissions trading for the purposes of promoting companies to reduce pollution.** Due to the practice of allowance allocation and issue of trading permits the state has not managed to use the measure for reduction of GHG emissions. Companies received an allowance exceeding the actual emissions and they did not use the money gained from the sale of the allowances for environmental investments. The state itself transferred over two billion kroons earned from the sale of the GHG emissions allowance of Eesti Energia to the state budget as dividends.
- This gave companies the wrong signal that the state does not expect them to invest in emission reductions. The European Commission cut the allowances given in the allocation plan for 2008–2012 by a half, thus giving a negative assessment to the practice so far. The disputes following the decision cause uncertainty in the traders and the companies involved in the trading system suffer due to the omissions of the state.

- **In the field of government of the Ministry of the Environment it is not checked whether companies have given the correct information about emissions in their emission reports.** According to the NAO, the emissions of the companies participating in the Emissions Trading Scheme of the European Union are not verified in full accordance with the rules – this may result in the suspension of trading. Furthermore, the trading permits issued by the Ministry of the Environment to companies and the Estonian legal acts regulating trading do not fully take into account the rules of emissions trading of the European Union. Due to the insufficiency of verification the participants in the trading system are not treated equally and there may be causes where companies have sold or bought available GHG emissions allowances that do not actually exist. In terms of money this may mean millions of kroons of unjustified profit or loss.

**The Minister of the Environment** agreed with the recommendations of the NAO and explained that by 2010 it is planned to draw up a new action plan for reduction of GHG emissions. In addition, activities are planned for improving projections and calculation of GHG emissions, assessment of the impact of action plans affecting GHG emissions, and proper evidencing of the emissions of the companies participating in the system of trading in GHG emissions.

**The Minister of Economic Affairs and Communications** agreed with the recommendations of the NAO in principle. According to the Minister, the lack of source data is an obstacle to assessment of the impact of action plans, projecting GHG emissions, and establishment of measurable targets for sectors.

**The Minister of Agriculture** noted regarding the recommendations of the NAO that the commissioning of fundamental research covering the impact of GHG emissions is impeded by the lack of money. The Minister finds that in order to assess the scope and impact of activities on GHG emissions in the framework of the strategic environmental assessment of development plans there should be a clear duty to do so arising from law.

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## Overview

### Human-induced greenhouse gases affect climate

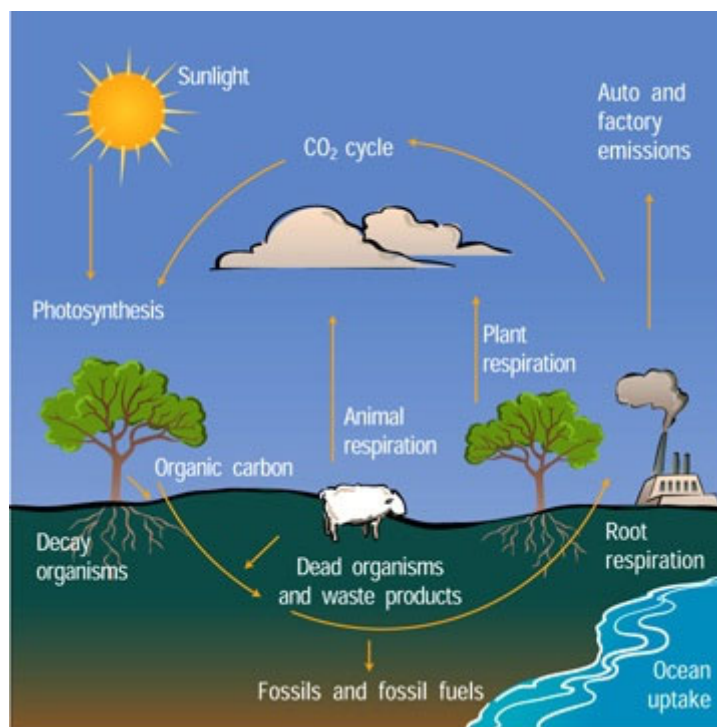
1. The slow rise in the average temperature, the melting of glaciers and polar icecaps, frequent storms and changes in precipitation in recent decades refer to changes in the climate of the Earth. The increasing amount of greenhouse gases (hereinafter also GHG emissions) emitted to the atmosphere is considered one of the co-factors of global warming (see Chart 1).
2. Human activity plays a significant role in GHG emissions generation, especially through burning fossil fuels in energy production, transport and industry as well as in logging and agriculture. According to the 2007 report of the *Intergovernmental Panel on Climate Change* which unites thousands of researchers throughout the world, human-induced GHG emissions should be limited much more, because otherwise the average temperature of the atmosphere may rise more than projection.<sup>1</sup> The European Commission has also admitted that if the temperature rises more than 2°C, the lack of food and water and the likelihood of weather phenomena with serious consequences will rise and unique ecosystems will be in much greater jeopardy.<sup>2</sup>
3. GHG emissions can be reduced in various fields. For instance, one can transfer to energy production generating less greenhouse gases (renewable energy, nuclear energy, combined heat and power plants, etc.) and environmentally friendly technologies can be applied in other industries, energy can be saved, public transport developed, and car fuels containing less carbon can be introduced, and carbon can be caught and deposited, preserved and forests binding carbon can be restored and land use can be changed.

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<sup>1</sup> IPCC 2007 synthesis report.

<sup>2</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: "Towards a comprehensive climate change agreement in Copenhagen," Brussels, 28.1.2009 COM (2009) 39 final, p. 3.

**Chart 1. CO<sub>2</sub> generation and binding in the environment**



Source: <http://www.youcontrol-climatechange.com>

### **Estonia is bound to the international duty to reduce GHG emissions**

4. For the purpose of coping with the climate change the developed industrial countries have assumed the obligation to reduce the current emissions in reality. Less developed countries are expected to, even if their total emission does not decrease or even rises, have their existing polluters modernize the production process and have their new companies introduce an environmentally friendly technology right from the start. Thus, the common goal is to reduce the GHG emissions per production unit, i.e. to contribute to making the economy less carbon-intensive.

5. According to the UN Framework Convention on Climate Change signed in 1992 and ratified by Estonia in 1994 and the Kyoto Protocol ratified by Estonia in 2002, Estonia is obligated to reduce through 2008–2012 GHG emissions by 8% in comparison with 1990. Estonia has achieved the percentage required in the Kyoto Protocol: in comparison with the level of 1990 the GHG emissions have dropped nearly 47%. The main reason lies in the considerable decrease of industrial output. However, our economy still remains highly carbon-intensive.

6. In addition to the obligations imposed by the Kyoto Protocol, the European Union (EU) has also established in the Climate Package approved in 2008 the goal of reducing GHG emissions by 20% by 2020 in comparison with 1990 (by 30% if the parties to the Convention on Climate Change come to such an agreement at a conference in Copenhagen in December 2009). Estonia, especially the local energy production, is affected not so much by the reduction obligation, but by the stricter rules of trading in GHG emissions: due

to the need to buy the GHG emissions allowance the production of electricity from oil shale will be more expensive as of 2013 and thus it will be less competitive in the open energy market of the EU.

### Trading in GHG emissions allowances must contribute to the prevention of global warming

#### With the Clean Development

**Mechanism** a developed state invests in reduction of GHG emissions in a developing state, receiving allowances in return.

#### With the Joint Implementation

**Mechanism** a developed state invests in reduction of GHG emissions, also receiving allowances in return.

**Trading in GHG emissions** means that countries sell and buy GHG emissions allowances.

#### Did you know that

the price of an emission allowance in the trading system of the European Union has fluctuated from a couple of dozens cents to nearly 30 euros.

7. The Kyoto Protocol established three flexible mechanisms for reduction of GHG emissions: **Clean Development Mechanism**, **Joint Implementation Mechanism** and **Emissions Trading Scheme**. They all are aimed at achieving reduction of GHG emissions with the minimum of expense. Both the UN Climate Secretariat as well as the EU consider the flexible mechanisms very important tools for prevention of the climate change. Estonia has participated in joint implementation projects and the state plans to sell allowances as well.

8. According to the trading system of the Kyoto Protocol introduced in 2008 only states can buy and sell Assigned Amount Units (AAU). The possibility of selling the units arises if the state's GHG emissions (identified based on an inventory report) have decreased in comparison with the base year. Mostly, the buyers of the AAUs want a guarantee that the money paid by them is used for alleviating the climate change. Through 2008–2012 Estonia can sell AAUs worth nearly 85 million megatons of the CO<sub>2</sub> equivalent and the state is looking for possible buyers.<sup>3</sup> In the next trading period the states will have the chance to also trade in units obtained at the account of changes in land use and forestry (Removal Units (RMU)).

9. In addition to the trading system under the Kyoto Protocol, in 2005 the European Union created its own trading system where **emissions allowances** can be sold and purchased by companies. The price of the allowances is determined in the market. The first trading period was through 2005–2007 and the second one began in 2008 and lasts until 2012.

10. For Estonia the EU's measure of trading in GHG emissions allowances is very important, because the decisions made at the EU level influence the competitiveness of the entire Estonian economy. It is because the majority of the Estonian industrial companies participate in trading (50 installations whose emissions account for 64% of the total emission).

11. In order to participate in the EU trading system the emission allowances are allocated to the Member States (the European Commission decides on the basis of the applications of the states) and states have the right to sell the allowances to companies in an auction or distribute them free of charge. In the first two trading periods all the emission allowances were given to companies free of charge in Estonia. According to the agreement reached in the Council of the European Union in December 2008, in the third trading period beginning in 2013 companies will have to buy emissions in a Europe-

<sup>3</sup> A memo of the Minister of the Environment added to the materials of the cabinet meeting of the Government of the Republic on 27.08.2009.

### Did you know that

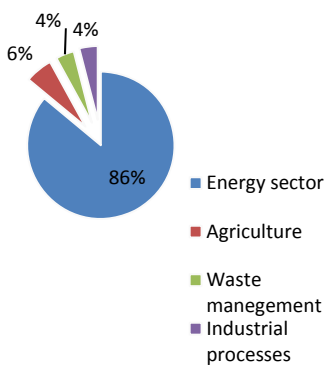
the Estonian allocation plan for trading in GHG Emissions allowances<sup>4</sup> currently comprises 50 installations, including

- 42 energy production companies;
- 6 mineral industries;
- 2 belong under the so-called other fields of activity, i.e. paper and cellulose industries.

**The CO<sub>2</sub> equivalent** expresses the impact of other substances in causing the greenhouse effect when converted into the impact caused by CO<sub>2</sub>. For example:

- the impact of 1 ton of methane is equal to that of 22 tons of CO<sub>2</sub>;
- the impact of 1 ton of nitrous oxide is equal to that of 310 tons of CO<sub>2</sub>.

**Chart 2. GHG emissions by industries**



Source: Greenhouse Gas Inventory Report 2008

wide auction. However, it has been agreed that in exceptional circumstances a state may distribute 70% of the allowances to companies free of charge and it is likely that electricity production in Estonia will fit under this exception as well.

12. In order to distribute emissions allowances to companies within the EU trading system, each state draws up the **allocation plan** for trading in GHG emissions allowances, stating how much each company participating in the system may emit greenhouse gases without having to buy more allowances in the market. If the company emits less greenhouse gases than indicated in the allocation plan, it can sell the remaining allowances. The price of the allowances is developed in the market. One ton of the CO<sub>2</sub> equivalent has cost approx. 15 euros in 2009. In the first period Estonian companies earned substantial sums through the sale of allowances. For instance, the largest trading company, Eesti Energia, earned nearly 2.8 billion Estonian kroons in the first trading period and the state, the owner, had it transferred to the state budget.

### The GHG emissions per capita in Estonia is higher than in the EU on average

13. The greenhouse gases are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and other compounds that harm the ozone layer (e.g. F-gases). Some facts and figures about GHG emissions in 2006:

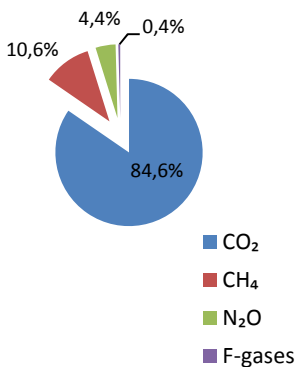
- 18.9 million tons of the CO<sub>2</sub> equivalent was emitted in Estonia, i.e. 14 tons of the CO<sub>2</sub> equivalent per resident (22 million tons and 17 tons in 2007, respectively).
- Over 5 billion tons of the CO<sub>2</sub> equivalent was emitted in the 27 Member States of the EU, i.e. 10.4 tons a year per resident.
- Estonian greenhouse gas emissions amount to 0.4% of the quantity of the greenhouse gas emissions of the EU 27, but the emission per resident is higher than the average of the European Union.

14. In Estonia most of the GHG emissions are generated in producing electricity and heat, because the main raw material is oil shale that contains a lot of carbon. The industries where GHG emissions are generated and their share in the overall GHG emissions is indicated in Chart 2. CO<sub>2</sub> is emitted the most, but it must be kept in mind that other substances are more harmful as greenhouse gases. The CO<sub>2</sub> equivalent quantities of other substances emitted in Estonia in 2006 have been given in Chart 3.

15. Photosynthesizing plants and forests help to reduce GHG emissions by removing carbon. The greenhouse gases removed by photosynthesis are deducted from the GHG emissions emitted in a

<sup>4</sup> Government of the Republic Regulation "Total Allowance of Greenhouse Gases Emitted by Stationary Sources of Pollution and Allocation Plan Thereof for 2008-2012."

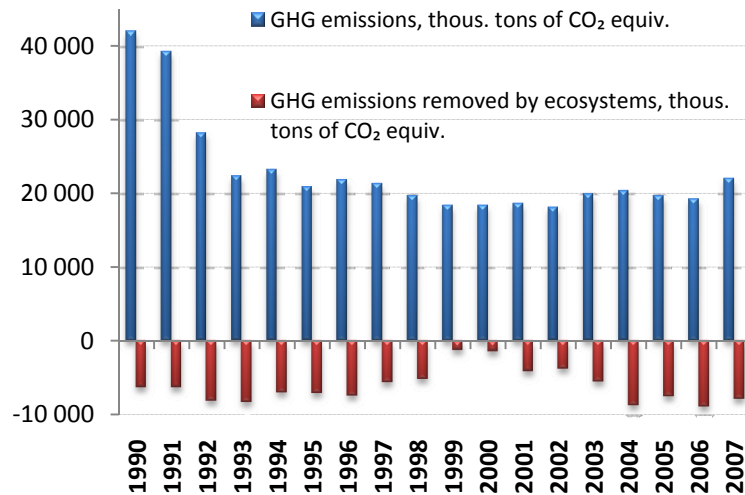
**Chart 3. Generation of greenhouse gases by substances (CO<sub>2</sub> equivalents)**



Source: Greenhouse Gas Inventory Report 2008

state. The GHG emissions generated and bound by photosynthesis in Estonia have been given in Chart 4.

**Chart 4. Emissions given in greenhouse gas inventory reports 1990–2007**



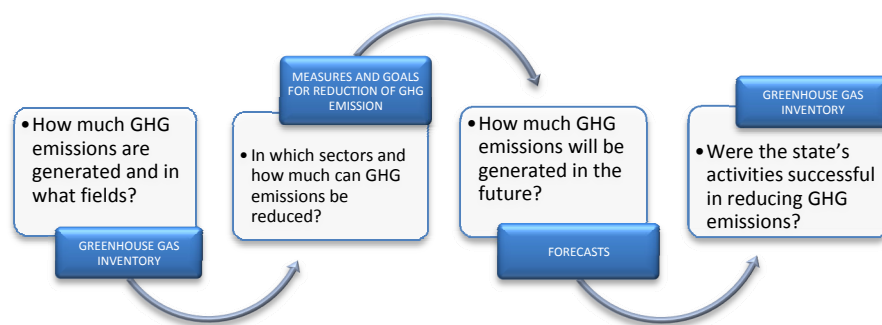
Source: Greenhouse Gas Inventory Reports

16. In the course of the audit the NAO assessed how the state has coordinated the activities for reduction of GHG emissions, whether the information required for decision-making has been correct and whether projections have been prepared and the GHG emissions trading within the EU has been implemented in Estonia. Participation in the Kyoto trading system was not analyzed, because trading has been practiced for a short while and Estonia has not sold a single unit so far.

### Coordination of activities aimed at reduction of greenhouse gases

17. When setting goals for reduction of GHG emissions Estonia must take into account the joint efforts of the European Union and the states that have signed the UN Framework Convention on Climate Change. Upon setting specific goals, the calculation of currently emitted greenhouse gases, projections, certain economic indicators, companies' abilities of modernizing production, and other circumstances influencing GHG emissions have to be taken into account. The relationships between GHG emissions and the activities and tools for reducing them are shown in Chart 5.

**Chart 5. Climate policy coordination cycle**



Source: National Audit Office

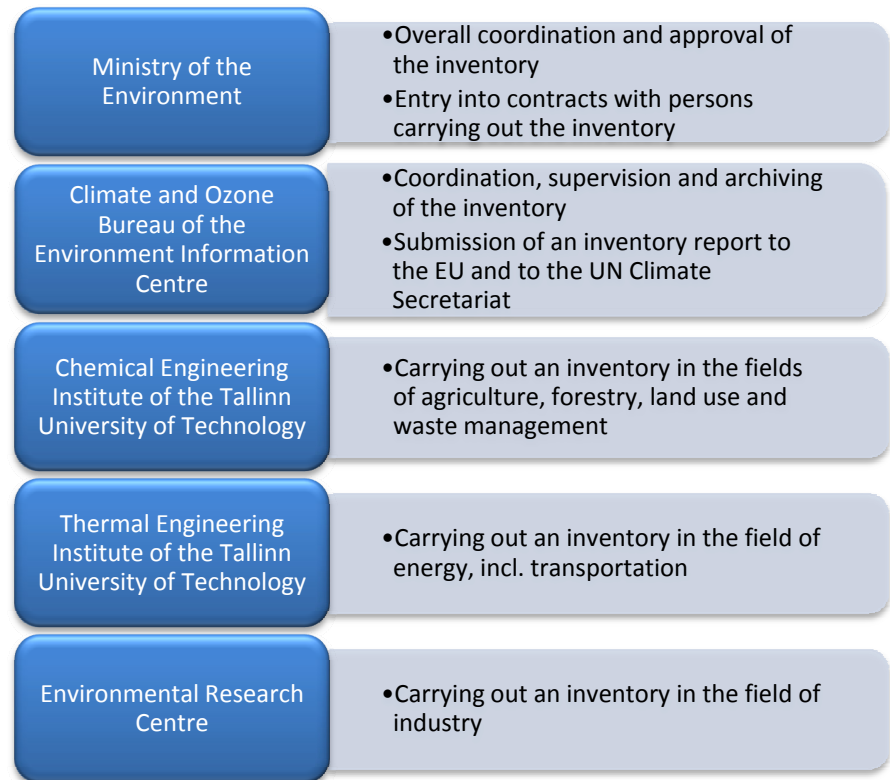
18. Reliable and accurate accounting of GHG emissions is necessary for the state so that the state could plan effective measures for reducing GHG emissions, draw up realistic projections and evaluate the impact of activities. The state cannot reduce GHG emissions itself, but it can, through various measures, motivate polluters to reduce emissions, for instance, by supporting reorganization of carbon-intensive production and the use of renewable energy sources or by higher taxes on more polluting production. Thus, the more accurate the accounting of GHG emissions and the better information on the reasons for changes in the quantities, the easier the planning of GHG emissions reduction and drawing up projections. Exhaustive and reliable information is necessary for participating in emissions trading pursuant to the Kyoto Protocol. The quantity of AAUs allocated to Estonia and the ability to participate in the flexible mechanisms depend on the accounting of GHG emissions.

#### Did you know that

- GHG emissions accounting data have been published on the website of the Environment Information Centre (EIC) in the climate web ([www.keskkonnainfo.ee](http://www.keskkonnainfo.ee));
- the Statistical Office also publishes overall quantities of greenhouse gases ([www.stat.ee](http://www.stat.ee)).

#### State's overview of greenhouse gas emissions needs enhancement

19. Besides the need to develop a climate policy and ensure the right to participate in the trading system, Estonia needs a proper overview of GHG emissions also because, being a party to the UN Framework Convention on Climate Change, we have the obligation to calculate out emissions and removals by ecosystems based on the economic sectors (inventory of greenhouse gases). The Ministry of the Environment is responsible for carrying out inventories and drawing up the reports. The Ministry outsources the inventories. The institutions participating in the inventories and their functions have been illustrated in Chart 6.

**Chart 6. The institutions participating in the inventories and their functions**

Source: National Audit Office

20. The calculation (inventory) of GHG emissions is accurate and reliable if:

- the emissions or removals of greenhouse gases are calculated on the basis of all sectors where they may be generated;<sup>5</sup>
- the inventory report complies with the requirements of the manual of the UN Climate Secretariat.<sup>6</sup> The manual limits the possibility to correct the GHG emissions inventory report in comparison with the inventory reports to be submitted in the coming years. Correction of the data is within the required limits if it does not exceed 7% a year of the total emission (excl. forestry and land use), 20% throughout the Kyoto trading period (data to be submitted on 2008–2013);
- the uncertainty of the GHG emissions data describing the possible inaccuracy of the data has been calculated reliably. According to the IPCC manual, the permitted uncertainty of inventory reports is approx. 20%;<sup>7</sup>

### Did you know that

in an inventory the following emissions must be calculated:

- carbon dioxide (CO<sub>2</sub>),
- methane (CH<sub>4</sub>),
- nitrous oxide (N<sub>2</sub>O),
- nitric oxide (NO<sub>x</sub>),
- carbon monoxide (CO),
- volatile organic compounds (NMVOC),
- sulphur dioxide (SO<sub>2</sub>), and
- fluorinated gases.

<sup>5</sup> Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reporting Instructions.

<sup>6</sup> Kyoto Protocol Reference Manual on Accounting of Emissions and Assigned Amount: The document also sets out additional conditions.

<sup>7</sup> IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories.

**The actual GHG emissions are higher than assessed in the inventory**

**The calculation of the forestry-related carbon removal leads to 25–30% lower assessment of the GHG emissions in Estonia**

- quality control systems are used.<sup>8</sup>

21. During audit it appeared that Estonia's GHG emissions may be higher than presented. One of the reasons for the problem is that the GHG emissions have not been taken into account in all branches of the economy or not all pollutants have been covered. For instance, the GHG emissions caused upon the use of solvents, in the metal industry and upon production of glass have not been assessed. Also, in the field of land use and land use change, not all emissions or removals by ecosystems have been assessed in accounting CO<sub>2</sub>. According to the specialists who carried out the inventory the reasons for not covering the data include poor availability of source data and lack of methodology.

22. According to the NAO, the wrong assessment of GHG emissions can largely be attributed to forestry data. The ability of forestry to bind carbon has been taken into account in the greenhouse gas inventory based on the data that indicate that in recent years the growth of forests has exceeded the logging volume.<sup>9</sup> Therefore the inventory has proceeded from the assumption that forestry binds approximately 30% of the state's total emission and this figure has been subtracted from the emission in the state's GHG emissions balance sheet. According to the NAO, forestry has not bound such a big quantity of GHG emissions, because the quantity of growing forest has not increased during the period and the afforested area has been declining since 2004.<sup>10</sup> Thus, the total emission indicated in the GHG emissions balance sheet is nearly a third smaller than in reality.

23. Although for the time being the information about carbon removed by forestry and land use does not affect trading under the Kyoto Protocol (accounting the quantity of AAUs), as of 2010 it will have a greater role in accounting GHG emissions and later trading in them: the quality of forestry data will determine the right to trade in the removal units (RMU).<sup>11</sup> The quality of the inventory data is reduced by the use of generalized calculation methodologies. In the framework of its checks the UN Climate Secretariat has for several years in a row pointed out that Estonia uses country-specific (TIER 2) methodologies too little upon carrying out inventory of forestry and land use as well as in other areas.<sup>12</sup> According to the specialists conducting the inventories, the Ministry of the Environment should commission additional surveys for implementation of more complex methodologies for improving the quality of inventories. According to the Ministry they do not have enough money for that.

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<sup>8</sup> 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 6 "Quality Assurance/Quality control and verification."

<sup>9</sup> Data of statistical forest inventory.

<sup>10</sup> Data of statistical forest inventory and data by the Statistical Office.

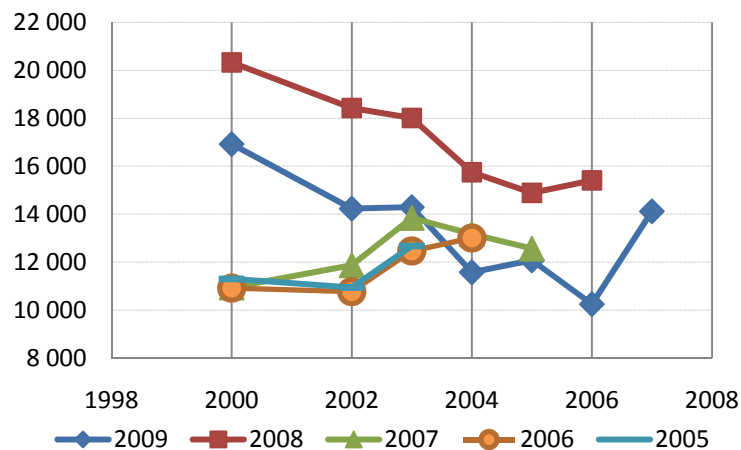
<sup>11</sup> Kyoto Protocol Reference Manual.

<sup>12</sup> Reports of the individual review of the greenhouse gas inventory of Estonia submitted in 2006, 2007 and 2009.

## Reported GHG emissions data have been changed in later reports

24. Over the years the inventory data has been changed and made more precise. Due to numerous recalculations the GHG emissions trends have extensively changed from year to year, at times, even taking the opposite turn (see Chart 7). For instance, the GHG emissions calculated for 2000 has been changed by 46% in recent years and the GHG emissions calculated for 2006 by 33%. Changes have been made, for instance, due to changes in the calculation methodologies or national statistics as well as due to updating databases, but not always the fluctuations of the trends have been explained in the inventory reports.

**Chart 7. Emissions given in greenhouse gas inventory reports 2005–2009 The difference in CO<sub>2</sub> emissions is caused by correction of the data in following years.**



Source: National Audit Office, based on greenhouse gas inventory reports

25. Corrections of the data have been caused first of all by changes in the calculations as to how much the change in the land use and forestry remove carbon, because if we exclude these sectors, the biggest difference in the data is 8.3% in the GHG emissions of 2003. At the same time it is important to keep in mind that the binding of carbon related to forestry and land use accounts for nearly 30% of the total GHG emissions. Due to constant retroactive changes in the data one cannot be certain that the actual GHG emissions are known.

26. Calculation of the state's GHG emissions is related to huge amounts of data. Thus, the final result always contains a mistake that is expressed through uncertainty. The **uncertainty of the inventory data** of Estonian greenhouse gas emissions is relatively high (e.g. 44.38% in the inventory carried out in 2008), which shows that the data is not accurate. However, state-specific data has not been used in calculating the uncertainties and therefore the calculations do not show the actual uncertainty of the data. Thus, it is unknown how big an error may be contained in the GHG inventory. For further information on the uncertainty-related problems see Appendix A.

27. The expert who checks the quality of the inventories of GHG emissions was involved for the first time in 2008, but it should have been done a lot sooner. For several years in a row the UN Climate Secretariat has in its control report drawn attention to the fact that Estonia does not sufficiently check the quality of GHG inventory.

**The uncertainty of the inventory data** expresses the most likely location of the true value: there is 95% probability that the actual value is within the range found.

## Quality control has not managed to find mistakes in the inventories

## GHG emissions accounting has not been a priority for the Ministry of the Environment

### Did you know that

information for compilation of the inventory reports is gathered from the Statistical Office, the Agricultural Registers and Information Board, the Environment Information Centre, the Centre for Forest Protection and Silviculture, and the Animal Recording Centre.

### Did you know that

as late as in 2008 the Ministry of the Environment entered into a contract for outsourcing the inventories, giving the contractor half a year to do the job. In the past, the contract deadlines did not give virtually any time at all for doing the job: in 2007 it was zero days and in 2006 it was one day. In reality, the contractors have started their work earlier, before entry into a contract, thereby not being certain whether their work will be financed or not.

28. Inspection of the quality of the inventory has not ensured the detection of substantive errors, because mainly the compliance of the numerical part of the inventory with the textual part, not the completeness or the origin of the data has been checked. Since the quality expert single-handedly checks all the areas covered by the inventory, the involvement of experts of various specialties may be required in certain instances. Although, the facts of the inventories carried out in 2008 and 2009 were examined by specialists of the departments of the Ministry of the Environment, but various recommendations were not taken into account due to the lack of time according to the quality expert.

29. According to the NAO, the main reason for the quality problems of the inventories is the fact that the Ministry of the Environment has not considered the field important: there has been the lack of coordination as well as resources. Information about GHG emissions has been gathered mainly for submission of reports to the EU and to the UN Climate Secretariat, not for actually using it in decision-making in various policy areas in reality.

30. The Environment Information Centre of the Ministry of the Environment has so far not coordinated the gathering of information or resolution of the problems arising therefrom. The gathering of data has been the duty of the experts who carry out the inventories and it has been based on personal contacts in quite a few instances. As a follow-up to an f-gases cooperation project with Germany 2007–2008 the Ministry of the Environment initiated a cooperation project between Estonia and Finland for overall improvement of the quality of the inventories and harmonization of gathering data. Finnish experts analyzed Estonian inventory reports, identified the problems of the inventories and made recommendations for resolution of problems, simplification of data collection and processing, calculation of GHG emissions, calculation of uncertainties, and archiving. In the course of the project the Finnish experts also made recommendations as to how to create a common database that will be introduced in the framework of the annual inventory in 2011. According to the NAO, the implementation of the recommendations made as a result of the cooperation project helps to considerably improve the quality of the inventories.

31. The improvement of the quality of the inventories is also hampered by the fact that experts are involved annually only for the period of preparation of the inventory report. Although the Ministry of the Environment has entered into a framework contract in climate-related cooperation with the Tallinn University of Technology, the Ministry enters into separate contracts with the persons who actually carry out the inventories. However, these contracts do not include the obligation to continuously gather information required for the inventory or to supplement them at the time outside the inventory. It is also problematic, that the contracts are made too late and the funds are lacking. Therefore the contractors cannot be certain that they will get the job next year, because another institution may become the successful tenderer in the public procurement. In the course of the checks carried out by the UN Climate Secretariat attention has been drawn to the fact that Estonia has not sufficiently involved experts in

**The poor quality of the inventories is an obstacle for making wise decisions**

the inventories. The little attention paid to the area can also be derived from the fact that the funds allocated to the preparation of the inventory report in 2010 has been cut by a half due to budget cuts.

32. Since the GHG emissions in Estonia may be higher than known so far, the NAO finds that there is a risk that the state sells more units under the Kyoto trading scheme than allowed. As of 2010 sanctions will be imposed on the state for excessive correction of the inventory data. A possible sanction is the prohibition to participate in the flexible mechanisms of Kyoto (Emissions Trading Scheme, Joint Implementation), which will result in financial harm to companies participating in emissions trading and to developers of joint implementation projects.

33. Development and improvement of the inventories has not been a priority for the Ministry of the Environment nor been constantly covered by expert work. Therefore the NAO finds that it is difficult to achieve a good quality of the inventory by 2010.

**34. National Audit Office's recommendations to the Minister of the Environment:**

- Since the accounting of GHG emissions serves as the basis for making climate and energy policy decisions the Ministry of the Environment must ensure, in addition to its area of government (Environment Information Centre, Centre for Forest Protection and Silviculture, Land Board), that the data gathered by the Ministry of Economic Affairs and Communications, the Ministry of Agriculture and the Ministry of Finance and their sub-agencies (the Statistical Office, the Animal Recording Centre, etc.) would be available and usable for the inventory, and that any changes in the data would be reasoned. To that end an inter-institutional work group should be created, involving the experts carrying out the inventories.
- Since the inventories of GHG emissions constitute a constant national obligation, long-term contracts have to be made with the institutions carrying out the inventories in order to ensure that the obligation is performed. To that end the Ministry should carry out a public procurement procedure for a longer period than the current one-year practice. It would help to ensure that the institutions attend to collecting and improving inventory data throughout the year, not simply in the period preceding submission of the report. In order to ensure funding for the inventories, as of 2013 a portion of the funds obtained from auctions of allowances under the EU's emission trading scheme should be channeled for this purpose. To prevent a situation where due to a change of an expert of an area the competence is lost, the present work organization must be documented and archived (methodology, method of gathering and processing data, etc.) in the Environment Information Centre or in the Ministry of the Environment.
- In order to ensure that the accounts include all GHG emissions in Estonia:

- take into account GHG emissions by all sectors. Where necessary, commission additional surveys in order to determine, for instance, Estonia-specific emission factors and assess the uncertainty of the data;
- improve, first of all, the accounting of GHG emissions in the areas of forestry and land use (data gathering, calculation methodology, identification of emission factors, etc.), because the problems with the data of these areas create the biggest fluctuations in the state's GHG emissions.
- Pay special attention to the implementation of the recommendations made in the course of the inspections carried out by the UN Climate Secretariat and correction of the errors detected.
- Implement the recommendations made in the course of the cooperation project between Estonia and Finland for the purpose of improvement of the quality of the inventories of GHG emissions.
- To ensure that quality control compliant with the UN requirements is exercised over the inventories of GHG emissions. To that end, to commission more through-going random checks (e.g. audits) from area experts and take into account the time spent on the audit operations in the timetable of the inventories. The person exercising quality control must demand that the persons carrying out the inventories always explain why the trends in the GHG emissions have changed.

**Reply of the Minister of the Environment:** An inter-institutional work group would allow for better organization of the gathering of the data required for preparation of the GHG inventories and contribute to increasing the quality of the inventories. The establishment of the work group has been discussed in meetings between the specialists carrying out the inventories and the coordinator and the idea has been approved unanimously. The establishment of the work group will commence in the beginning of 2010.

Sufficient and permanent solutions have to be found for financing the inventories as a national obligation. When the revenues of the auctions of the EU emissions trading scheme will be planned, the possibility of channeling a portion of the income for financing the inventories will certainly be considered. Upon organization of public procurement for carrying out the inventory of the next year, it is investigated whether it is possible to organize and plan the public procurement for the first time for a period longer than a year. This would help to ensure the consistency of the inventories and prevent a loss of competence arising from a change of experts.

The archive of the GHG inventory is maintained by the Environment Information Centre. In the framework of the Twinning Light project "Improvement of Estonian GHG Inventory" between Finland and Estonia in the summer of 2009 a more transparent and more user-friendly archiving system was developed. Experts implement it during the reporting period (autumn 2009 – spring 2010) and as a result

thereof archives with the entire GHG inventory (1990–2008) placed in a new structure will be handed over to the EIC in April 2010. The archives are the direct tool for prevention of the loss of competence arising from the change of experts.

In the meetings between the GHG inventory experts, the coordinator (EIC) and a representative of the Ministry of the Environment it has been agreed to prepare a plan for development of the GHG inventories. The plan will be submitted to the Ministry of the Environment by 15 December 2009 and it contains prioritized information for development of the inventories (improvement of the forestry and land use sector, use of state-based emission factors in the key categories, implementation of the recommendations of the UN review team, implementation of the recommendations of the cooperation project).

The GHG inventory sector trends and their descriptions are submitted for the first time in the inventory report for 2010 and it remains a part of the report on the annual basis.

For the purpose of improvement of the quality control of the GHG inventory a new and through-going quality control plan was developed in the framework of the cooperation project and, if properly implemented, the UN review team does not see any need for random audits. A detailed inventory timetable is part of the new quality control plan and it ensures sufficient time for the inventory's control operations.

### **The state does not know how much the greenhouse gas emissions could and should be reduced**

#### **Did you know that**

GHG emissions can be reduced by:

- introducing energy-saving technologies;
- making production of electricity more effective;
- preferred development of public and railway transport;
- reducing heat losses;
- afforestation of land not used for agriculture.

#### **There is virtually no action plan for reduction of GHG emissions**

35. Planning and implementing activities for reducing the carbon-intensity of the economy is complicated, time-consuming and expensive. Therefore a long-term action plan that contains, among other things, measureable goals for each area and persons in charge thereof are necessary for managing them. The obligation to draw up an action plan also arises from the UN Framework Convention of Climate Change.

36. Adequate and realistic goals related to GHG emissions can be set only if various ministries cooperate and the impact of the implemented and planned activities on the total GHG emissions as well as future projections are known. Activities of a greater impact should be implemented first, because otherwise the state's as well as companies money is wasted. Since the climate policy is closely related to the economy, upon planning the activities it must be identified how these influence the price of energy, the security of supply, and the social sphere.

37. Estonia lacks a proper action plan for reduction of greenhouse gas emissions as well as the goal of how much the emissions should change in the future. In the reports submitted to the UN Climate Secretariat and the EU the Ministry of the Environment consistently refers to the GHG emissions reduction program approved in 2003 and

the measures described therein. However, in the context of drawing up the national allocation plan<sup>13</sup> the same ministry has already in 2006 said to the European Commission that the document requires immediate updating, because the source data about the economy and emissions used upon making calculations are not up to date and the existing measures for reduction of GHG emissions should be reviewed as well. The non-existence of an action plan means that no decision has been made at the state level as to what extent the GHG emission should be controlled and how to arrange this.

38. The Ministry of the Environment has promised to the European Commission that the new program will be ready by 2009, but so far only one survey has been commissioned. Considering that GHG emissions are generated in many sectors of the economy, as a result of which various surveys and consultations with various parties are required, it is, according to the NAO, impossible to prepare the new program for the time promised. The absence of an updated action plan thus impedes the coordination of cooperation between various fields of various ministries.

**Most of area development plans do not contain any goal of reducing GHG emissions**

39. The absence of a long-term GHG emission reduction plan and the fracturing of activities arising therefrom would not be such a huge problem if each action plan affecting the GHG emissions would set out its own GHG emissions-related goals. However, the NAO's analysis showed that there are no clear GHG emissions-related numerical goals in the documents. Six of the audited 24 action plans contain GHG emissions indicators (see Table 2), but it is not clear on what basis the indicators have been established and with regard to energy production the indicators are not in accordance with one another. For instance, the Energy Sector Development Plan stipulates the possibility of reducing energy sector emissions by 2020 twice in comparison with 2007, although the greenest scenarios under the Strategic Environmental Impact Assessment has not projected any remotely similar result.

**Table 2. Indicators related to GHG emission reduction in various action plans**

Action plan	Indicator related to GHG emission reduction	GHG emission referred to in the indicator
GHG emission Reduction Program	By 2010 GHG emissions will fall 21% in comparison with 1999	By 2010 9.13 million tons of CO <sub>2</sub> equivalent
Long-term Public Fuel and Energy Sector Development Plan until 2020	By 2020 energy sector emissions are two times lower than in 2007	By 2020 7.85 million tons of CO <sub>2</sub> equivalent
Development Plan of the Estonian Electricity Sector until 2020	Energy sector emissions have fallen to 5 million tons by 2020	By 2020 5 million tons of CO <sub>2</sub> equivalent

<sup>13</sup> Explanatory memorandum of the Government of the Republic Regulation "Total Allowance of Greenhouse Gases Emitted by Stationary Sources of Pollution and Allocation Plan Thereof for 2008-2012." in English, which was submitted to the European Commission, p. 20.

Estonian Environmental Strategy until 2030	GHG emission upon energy production remains at the level of 2005	By 2030: CO <sub>2</sub> 18,532,000 tons, CH <sub>4</sub> 35,000 tons, N <sub>2</sub> O 140 tons
Development Plan 2007–2013 for Enhancing the Use of Biomass and Bioenergy	Emissions deriving from agriculture remain at the level of 2006 until 2013	By 2013 702,000 tons of CO <sub>2</sub> equivalent
Estonian Rural Development Strategy 2007–2013	Emissions deriving from agriculture remain at the level of 2004 until 2013	By 2013 702,000 tons of CO <sub>2</sub> equivalent

Source: National Audit Office

40. Transport, oil shale, forestry, waste management and various other development plans do not contain any target figures related to GHG emissions, as a result of which it is not known how extensively the emissions generated in these sectors influence the state's total GHG emissions. In development plans GHG emissions have been in general terms been mentioned next to activities which potentially have a GHG emissions-reducing impact: for instance, according to the Rural Development Plan, the growing of energy wood has a positive impact on the reduction of GHG emissions; according to the Transport Development Plan, development of public transport reduces emissions. According to the NAO, such a status of the development plan shows that the Ministry of the Environment has been unable to coordinate the setting of goals for reduction of GHG emissions in various development plans.

**The impact of the contents of the development plans has not been assessed**

41. The absence of goals and objectives can partially be attributed to the fact that the ministries do not know which GHG emissions the present activities lead to. Upon analyzing development plans it became evident that the Ministry of the Environment, the Ministry of Economic Affairs and Communications as well as the Ministry of Agriculture coordinate numerous activities that could reduce GHG emissions, but so far it has not been assessed how much. For instance, it is not clear to what extent GHG emissions are reduced by renewable energy or biomass assistance or energy savings measures. In the national strategic documents analyzed by the NAO the GHG emission reduction potential had been assessed only in the case of the energy sector development scenarios. In some development plans the authors have merely stated that as a result of the activity the GHG emission decrease, but there are no specific calculations as to how much and at what cost.

42. The development plans also contain activities in the case of which it is already known that these bring about a rise in GHG emissions, but in such events no measures reducing the negative impact have been planned and mostly the scope of the impact has not been assessed at all. For instance, in the strategic environmental impact assessment of the Development Plan for the Use of Oil Shale it has been said that by increasing the mining of oil shale to 20 million tons a year the emissions into air will rise 35%, but the development plan itself does not elaborate on the problem. The Development Plan of the Estonian Electricity Sector states that drained swamps influence GHG quantities, but the scope of the impact has not been assessed. The more extensive cutting of forests and the rising number of vehicles

**The requirement of strategic environmental impact assessment has not been fulfilled with regard to greenhouse gases**

**Absence of goals disperses responsibilities**

caused by urban sprawl and the lack of public transport connections increase GHG emissions, but so far no one has assessed how much.

43. One opportunity for assessing the impact of the measures of development plans is to do it in the course of strategic environmental impact assessment. According to the NAO, in most cases it has not been used upon preparation of action plans. For example, the Estonian Environmental Strategy until 2030, the Estonian Environmental Action Plan 2007–2013, the National Energy Efficiency Action Plan 2007–2013 or the Development Plan 2007–2013 for Enhancing the Use of Biomass and Bioenergy have not been assessed from the aspect of environmental impact. The ministries in charge could not explain why a strategic environmental impact assessment has not been carried out. In the events where the environmental impact has not been assessed matters pertaining to greenhouse gases have not been analyzed. The Development Plan for the Use of Oil Shale and the new public fuel and energy sector as well as energy sector development plans are an exception.

44. The absence of a clear national goal and the non-coordination of the area have resulted in the failure of specialists coordinating the preparation of various development plans to understand that in the course of assessment of the plan attention must be paid to GHG emissions. Therefore they do not demand that the environmental impact assessors take GHG emissions into account and do not commission any additional surveys that are necessary. This is further enhanced by the fact that making connections between GHG emissions with the impacts of one or another national measure requires through analyses.

45. The state's failure to coordinate the activity results in the risk that emissions cannot be controlled and instead of the lead gained at the expense of the reduction of production in comparison with the 1990's the stricter EU requirements will start to hamper the development of the economy and carbon-intense production will no longer be competitive. For instance, according to the recent inventory report, GHG emissions rose by 2007 by 17% in comparison with 1999. The goals formulated in the EU's Climate Package and recent decisions to cut the GHG emissions trading allocation plan showed that the EU is demanding that all the Member States make efforts to reduce GHG emissions. In spite of clear signals various Estonian ministries have not yet come to a common understanding that GHG emissions must be reduced.

46. Coordination of the issue of climate change is the duty of the Ministry of the Environment which so far has been unable to develop an inter-ministerial form of cooperation involving constant exchange of information. The Ministry of the Environment attends to the subject more intensively only at the level of specialists, but there is a lack of horizontal planning. Since there is no clear national goal or any long-term plan for joint action and no coordination, the parties do not know their functions and in the conditions of stricter EU's policies it will be difficult to quickly change the focus of state's activities. Instead of joint action the development plans of various areas work against one another.

### Did you know that

The projection of GHG emissions prepared in 2009 is largely based on the data of the Program for Reduction of Greenhouse Gas Emissions made in 2002, and even the Ministry of the Environment admits that it is outdated.

### Lack of impact assessments leads to the wrong choices

47. Besides Estonia's lack of a goal as to how much GHG emissions should be reduced, the submission of reports to the UN Climate Secretariat and the European Commission as well as the drafting of new development plans is impeded by the outdated State Program for Reduction of Greenhouse Gas Emissions. Since, according to the Ministry of the Environment, the program is the only official document coordinating the field, the EU and the UN Climate Secretariat are provided with outdated information, for instance, about the target levels of reduction of GHG emissions or about the measures of reduction of GHG emissions and the impact of the measures. There are no required starting platforms for making GHG emission projections or any common platform for drawing up development plans for other fields.

48. Due to the lack of proper numerical performance indicators there is a risk that unconsidered and wrong choices will be made. For instance, since production of electricity from oil shale will no longer be competitive in the future due to its high carbon intensity, the state is considering supporting nuclear energy for billions; at the same time the state does not know how much of the future energy needs could be covered through saving energy or using renewable energy sources. It is difficult to improve the current situation quickly, because given the state budget cuts the ministries' possibilities of commissioning new surveys have considerably decreased. The state should not hope that accidental choices and chaotic policy will bring the desired results. The state should focus on the activities that bring the most benefits to people and nature. For instance, making production less carbon-intensive (incl. through technology innovations) usually brings about greater effectiveness.

### Projections of greenhouse gas emissions are not realistic

49. The state needs GHG emission projections in order to know whether it is moving in the right direction in controlling GHG emissions through the existing measures. The EU and the UN Climate Secretariat use the projections submitted by states in order to project and evaluate climate change and assess whether the GHG emissions will decrease to the desired extent or it is necessary to develop new measures or make the existing ones stricter. Projections are one of the elements of calculation of the national total allowance in the EU's emissions trading scheme. The EU and the UN Climate Secretariat demand that national report set out a list of the implemented measures and the measures to be implemented for reduction of the GHG emission quantities. Figures on how much the emissions will potentially decrease as a result of the measures are requested as well.

### The Ministry of the Environment has been unable to ensure proper projections

50. Although future scenarios have been submitted to the UN Climate Secretariat since 1998, no thorough analyses have been carried out in Estonia yet. The first projections were general scenarios that did not take Estonia's actual situation (e.g. conditions in the energy sector) into account. The representatives of the University of Tallinn who participated in analyzing the former trends explained to the NAO that due to the lack of funds the projections turned out very general. In 2007 Estonia undertook to submit to the European Commission more detailed projections (so called projections report) which would, among

other things, separately describe the impact of each measure on the GHG emissions and generation of GHG emissions by sources in 2010, 2015 and 2020. The submitted projections did not comply with the requirements of the EU legislation as a result of which the European Commission brought an infringement procedure against Estonia in October 2007.<sup>14</sup>

51. Estonia accepted the accusations of the Commission and promised to eliminate the deficiencies of the report by the end of 2008. For the purpose of more thorough analyses a total of four contracts were made with the Chemical Engineering Department, the Department of Electrical Power Engineering and the Thermal Engineering Department of the Tallinn University of Technology and it was promised that an inter-ministerial work group will be established to analyze the national policy and measures that could influence GHG emissions. The final report was compiled by the Ministry of the Environment and the Environment Information Centre. The projections submitted to the Commission are based on two papers that should have supported one another, yet these are not connected to one another in any way. The task of one paper was to give a list of the measures and their impact assessments. In the course of the other work energy sector projections for 2010, 2015 and 2020 were made using model data and as such it should have contained the impact of the measures given in the first paper.

**Even the newest projections are not realistic**

52. According to the NAO, the Ministry of the Environment has not been able to keep the promise given to the European Commission: the measures have not been analyzed in a joint work group, research institutions have not been provided with sufficient source information about what the state has planned to do about reduction of GHG emissions for making projections, and contractual work that does not comply with the initial task has been accepted. Through 2005–2008 impact analyses and analyses of GHG emission trends have been commissioned from research institutions in the amount of EEK 1.5 million in total. The last updated version of projections was submitted to the European Commission in May 2009, but the report does not indicate how much could GHG emissions be reduced with the help of the currently implemented policies.

53. The audit showed that there have been mistakes in process management. For instance, a projection based on model calculation was commissioned before an overview of the policies and measures and their impact has been made; the suitability of the model for Estonian circumstances could not be assessed beforehand and the work obtained under the contracts could not be associated. The Ministry of the Environment is not pleased with the result either. According to the NAO, the recent projections submitted to the European Commission do not reflect Estonia's actual future developments and these are thus not usable for making political choices. For instance, according to the report the Estonian energy sector emissions will be smaller than in the case of the Estonian Energy Sector Development Plan's scenario with the smallest amount

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<sup>14</sup> Infringement procedure No. 2007/2349.

of emissions. Thereby not even the data of the base year matches (see Table 3).

**Table 3. GHG emissions in various scenarios of the energy sector**

Year	GHG emissions projection: scenario with measures (million tons of CO <sub>2</sub> )	Energy sector development plan scenario A/6 (million tons of CO <sub>2</sub> )
2006	16,3	18,9
2010	13,4	17,6
2015	13,8	18,8
2020	13,1	14,6

Source: National Audit Office

54. According to the NAO, Estonia's GHG emission projections for 2009 contain the following substantial deficiencies:

- The work that covers the reduction of gas emissions contains the list of existing measures, but there is no numerical assessment as to how much one or the other activity impacts GHG emissions and what the joint effect of the activities is. The expert who assessed the measures used the data of the 2002 GHG emission program thereby admitting that the document is no longer relevant and much more thorough research is required for making actual projections.
- In the work based on model calculation the trends of GHG emissions are given, but the activities prescribed in development plans have not been taken into account. The main indicators have been possible share of various energy sources (based on draft energy development plans) and economic indicators. Another problem is that the source data of the model originates from 2000, which has been corrected according to the Eurostat data of 2005.
- The modeling of the GHG emission projections only included projecting the future structure of the energy sector, not other sectors. In addition, known developments in the energy sector are not taken into account: the opening of the electricity market, the distribution of the allowances in auctions as of 2013, the higher-than-planned use of oil shale, electricity export, etc. The wind energy capacities were included in the model to the maximum extent as well.
- The projections were modeled only on the basis of the macroeconomic model which focuses on the energy sector and where Estonia's conditions cannot be fully taken into account, because the data is too generalized.

### Lack of cooperation between ministries impedes preparation of projections

55. The GHG emission projections are in principle similar to impact assessments of development plan activities. If the GHG emission reduction action plan or sector development plans had evaluated how much the planned activities may impact GHG emissions, the future figures could be put together quite easily on the basis of this data. But since this has not been done, it is the duty of the Ministry of the

Environment to organize the assessment of the effectiveness of the measures affecting GHG emission quantities in the short term and long term. Other ministries have so far not contributed to preparation of the projections. For instance, in Finland an inter-ministerial committee is responsible for the same obligation and it receives area-based performance indicators from all relevant ministries.

56. The Ministry of the Environment is in a closed circle, because without knowing the trends it cannot prepare a new action plan for reduction of GHG emissions. This is illustrated by the fact that for obtaining the fundamental analysis for preparation of the action plan the Ministry of the Environment commissioned a work the task-setting of which is virtually the same as that of the work of the experts who made the projections. But according to the NAO even this analysis did not produce the desired result.

57. The audit showed that for performance of international obligations the state has spent money on submitting reports that distort information about GHG emission trends in Estonia and that the state itself cannot use. In the current situation it is impossible to assess where the state is going in terms of setting the allocation plans and Estonia's overall allowance and updating the GHG emission reduction action plan.

58. The European Commission will approve a Member State's allocation plan once the state has explained the impact of the relevant policies and measures and shown progress made in implementing them.<sup>15</sup> Thus, it is likely that the European Commission will use the submitted projections as the basis for assessment of the allowance granted to Estonia as of 2013. The negotiations of the allocation plan for the current period have indicated that the European Union is demanding great efforts from the Member States for optimizing their GHG emissions and in the light of the former omissions the Estonian economy will be forced to carry out the necessary reorganizations very urgently. This will be much more difficult without proper impact analyses.

**59. National Audit Office's recommendations to the Minister of the Environment:**

- To submit to the Government of the Republic for discussion and decision-making which minister has the overall responsibility for achievement of the goals of reduction of GHG emissions. It is necessary to make the decision at the level of the Government of the Republic, because the subject concerns the areas of activity of several ministries (the Ministry of the Environment, the Ministry of Economic Affairs and Communications, the Ministry of Agriculture) and harmonized goals and objectives need to be established in all of them.

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<sup>15</sup> Communication from the Commission "Further guidance on allocation plans for the 2008 to 2012 trading period of the EU Emission Trading Scheme," 22.12.2005, COM(2005)703, p. 7.

- A new long-term action plan for reduction of GHG emissions should be prepared immediately. To that end an inter-ministerial work group should be formed with the goal of analyzing the measures described in the existing development plans and their compliance with the goals of reduction of GHG emissions. Based on the work results of the work group a list of measures and policies that are being implemented and planned should be made and used as the basis for making GHG emission projections. The action plan must be prepared by 2011 and it must contain a clear and measurable national goal of reducing GHG emissions.
- Upon making model projections of GHG emissions, updated and as accurate source data as possible about the Estonian circumstances must be used. Also, the national measures developed for influencing the GHG emissions must be taken into account.
- The long-term action plan for reduction of GHG emissions must be updated based on changes in sector policies or development plans or even projections of GHG emissions.
- The Ministry of the Environment as the supervisor of the strategic assessment of environmental impact must make certain the case of development plans made in the future that if the activities of the development plan may influence the GHG emissions created in the state, the impact on the GHG emissions must be calculated in the course of the strategic environmental impact assessment as well.

**60. Recommendations of the NAO to the Minister of the Environment, the Minister of Economic Affairs and Communications and the Minister of Agriculture:**

- In order to support the preparation of the long-term action plan for reduction of the environmental impact research should be carried out in all relevant economic sectors as to how GHG emissions have changed in these sectors and what are the main reasons for the changes. Information about long-term trends can be obtained, among other things, from GHG emissions inventory data. Knowing the trends in previous years and the reasons thereof, one can project future trends, incl. prepare projections complying the EU and UN requirements.
- Upon preparation of action plans, require the identification and assessment of the activities affecting GHG emissions as part of strategic environmental assessment.
- A clear and measurable goal for reduction of GHG emissions should be established in the action plans of all sectors affecting GHG emissions.

**Reply of the Minister of the Environment:** According to § 117 (Organization of activities to reduce climate change) of the Ambient Air Protection Act, the Ministry of the Environment organizes activities for reduction of climate change on the basis of the requirements for restriction of the limit values of emissions of GHG

provided by the United Nations Framework Convention on Climate Change and the Kyoto Protocol. A reference to the legislation of the European Union has been included in the draft Ambient Air Protection Act Amendment Act that is being discussed. The draft work plan of the Ministry of the Environment for 2010 includes coordination of the preparation of strategy/action plan for reduction of GHG emissions, guidance of a work group, collection and processing of information, processing of the document.

The impact of existing strategic documents related to climate change on GHG emissions has so far been assessed in general. The goal is to prepare, in cooperation with the institutions in charge, suggestions for assessment of the existing plans so that it would be possible to indicate the numeric value of GHG emission changes based on the choices made in the strategy document. In terms of further activities we are considering the possibility of drawing up an action plan for successful implementation of the climate policies arising from the Climate and Energy Packages and other requirements. Representatives of other institutions would be involved in the preparation of the action plan and it would contain the possibilities and the timeframe for performance of specific duties.

Thereby it must be taken into account that upon making GHG emission model projections the model has to take into account updated source data and this must comply with the circumstances in Estonia, taking into account measures to be planned and implemented in various scenarios. Since at the moment the impact of the measure on changes in GHG emissions has not been clearly analyzed, it is difficult to make projections. So far projections have been outsourced, but previous practice has shown that it is not the wisest solution. Thus, we are looking for better opportunities for cooperation with ministries of various fields; one possibility is to bind the preparation of projections to the GHG emission inventory activities and the respective work group.

In section 59 of the audit it has been indicated that the Ministry of the Environment must exercise supervision over strategic environmental assessment. The Ministry of the Environment exercises supervision over the strategic environmental assessment arising from the implementation of a strategic planning document (incl. action plans) only in events where the environmental impact presumably arising from the implementation of the strategic planning document may be cross-border impact. In other events the supervisor is the Environmental Board.

According to the Environmental Impact Assessment and Environmental Management System Act, a strategic environmental assessment report must set out an assessment of the potential significant direct, indirect, cumulative, synergistic, short and long-term, positive and negative environmental impact, including impact on climate change. Thus, in the course of strategic environmental assessment the issues relating to greenhouse gases must be covered as well.

We consider the possibility of preparation of harmonized guidelines which the experts of environmental impact could take into account

upon assessment of changes in GHG emissions. Additionally, we are planning activities for increasing the competence of the officials engaged in strategic environmental assessment and ambient air protection so that in the course of strategic environmental assessment they would be able to adequately handle the impact of the planned activities on climate change (calculation of GHG emissions, impact on the state's total GHG emissions, reduction/increase of GHG emissions, etc.).

**Reply of the Minister of Economic Affairs and Communications:**

*Recommendation of the National Audit Office to conduct fundamental research*

Most of CO<sub>2</sub> emissions are generated in Estonia by the energy sector. This aspect has been taken into account upon development of the Estonian energy policy (Development Plan of the Estonian Electricity Sector until 2018, approved by the Government of the Republic on 26 February 2009; Long-term Public Fuel and Energy Sector Development Plan until 2020, approved by the Riigikogu on 15 June 2009) and assessments concerning the CO<sub>2</sub> emissions resulting from one or another scenario have been projected in Estonia. Due to the level of generalization of the problems that need to be resolved and the vague restrictions (e.g. how is electricity imported to Estonia, what will be the price of (CO<sub>2</sub>) allowances in the EU's emissions trading scheme, what measures will be applied for limited emissions after 2012, etc.), relatively primitive calculation models were used for projecting energy sector-related CO<sub>2</sub> emissions. Although in principle we agree with your recommendations, the reliability of these fundamental surveys will remain modest due to the uncertainty related to consumption projections (e.g. addition of a individual large company may increase the energy consumption by more than 1%) or energy production structure (the development of the latter is the most affected by the EU emission trading scheme).

The position that projecting GHG emission is possible and can be done at a relatively general level extends to other areas in the area of responsibility of the Ministry of Economic Affairs and Communications (MEAC) (transport, encouragement of development of companies).

*Recommendation of the NAO to assess factors affecting GHG emissions*

We find that the level of strategic environmental assessment developed in Estonia is not sufficient to demand that the impact of the measures of the plan on GHG emissions be assessed in the framework of strategic environmental assessment in all action plans. Rather one should focus on the assessment of GHG emissions in the framework of strategic environmental assessment in the action plans of individual areas (e.g. energy and transport); the plans for other areas should take into account the need to assess the impact on GHG emissions upon organization of the later monitoring of the implementation of the measures.

*NAO's recommendation to set a clear and measurable goal for reduction of GHG emissions*

The MEAC is not against to the recommendation, but we have to admit that there is an urgent need for development of databases for monitoring the attainment of the said goals. If the state is prepared to contribute more to the respective data retrieval, the recommendation can be fulfilled.

**Reply of the Minister of Agriculture:**

*Recommendation of the National Audit Office to conduct research*

The Ministry of Agriculture takes your proposal into account. However, we consider it necessary to note that the Ministry of Agriculture is not engaged in carrying out research, but outsources it, where necessary. We do admit that due to the global financial crisis which has left its mark on the Estonian economy it is difficult to say whether and to what extent the Ministry of Agriculture could afford outsourcing research.

*Recommendation of the NAO to assess factors affecting GHG emissions*

According to subsection 40 (2) of the Environmental Impact Assessment and Environmental Management System Act, upon a strategic environmental assessment, it is required to explain, describe and assess the significant environmental impact resulting from implementation of the strategic planning document and the main alternative measures, activities and tasks, having regard to the objectives and territory of the strategic planning document. We find that in the given matter the Ministry of the Environment should assess whether and to what extent the activities influencing GHG emissions and the assessment of the scope of their impact is covered by the Environmental Impact Assessment and Environmental Management System Act. The Ministry of Agriculture finds that the obligation to assess the activities influencing GHG emissions and their impact upon preparation of development plans can rise only from respective acts.

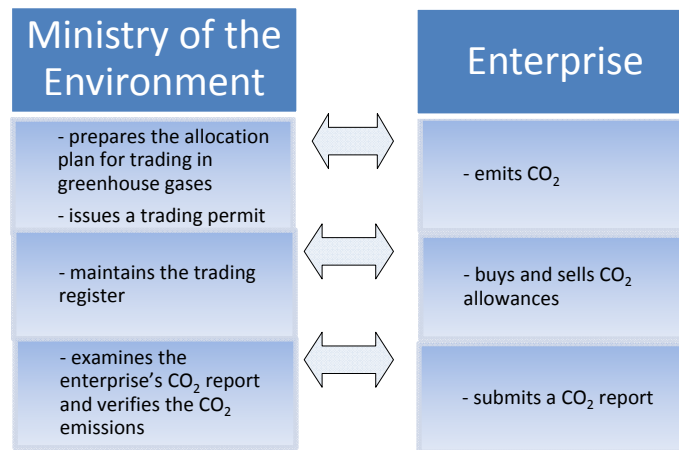
*NAO's recommendation to set a clear and measurable goal for reduction of GHG emissions*

The Ministry of Agriculture draws your attention to the fact that in the framework of Estonian Rural Development Plan 2007–2013 the following indicators have been established for assessment of the impact of climate change: production of renewable energy in agriculture and forestry, the arable land used for production of renewable energy and GHG emissions originating from agriculture.

## Trading in emission allowances

61. The system of trading in emission allowances gives the state a powerful tool for motivating companies to reduce GHG emissions. The state can guide traders through deciding in the allocation plan<sup>16</sup> how many allowance units to grant them. In addition to the preparation of the allocation plan, the state's duty is to issue trading permits, create a trading environment in the form of a register and verify the emissions of the companies participating in trading. The latter means identifying that no company would receive unfair profit, indicating lower emissions than the actual ones and selling the rest. The duties of the participants in the emissions trading scheme and their sequence has been given in Chart 8.

**Chart 8. Steps, sequence and mutual impact of emissions trading**



Source: National Audit Office

### Did you know that

the two largest companies participating in the trading scheme are AS Eesti Energia and AS Kunda Nordic Tsement. The GHG emissions emitted by these two companies account for nearly 87% of the entire allocation plan.

62. The allocation plan of the EU's first trading period was prepared on the initiative of the Ministry of the Environment in 2004 and it set a total allowance of 56,859,003 tons of the CO<sub>2</sub> equivalent for a period of three years (approx. 20 million tons a year). Since companies emitted much less, they could sell the emission allowances. Since various other Eastern European states were also selling their allowances, there was an abundance of the allowances in the market, reducing the market price of the quota from nearly 30 euros to 8 cents per ton of the CO<sub>2</sub> equivalent. When the EU Member States submitted to the European Commission their allowance applications for the upcoming trading period beginning in 2008, the applications of many states (incl. Estonia) were not approved, because it was found that the emission levels applied for were too high.

<sup>16</sup> Government of the Republic Regulation No. 257 of 20.12.2007 "Total Allowance of Greenhouse Gases Emitted by Stationary Sources of Pollution and Allocation Plan Thereof for 2008-2012."

### **The state has failed to influence companies to reduce greenhouse gas emissions through the allocation plan**

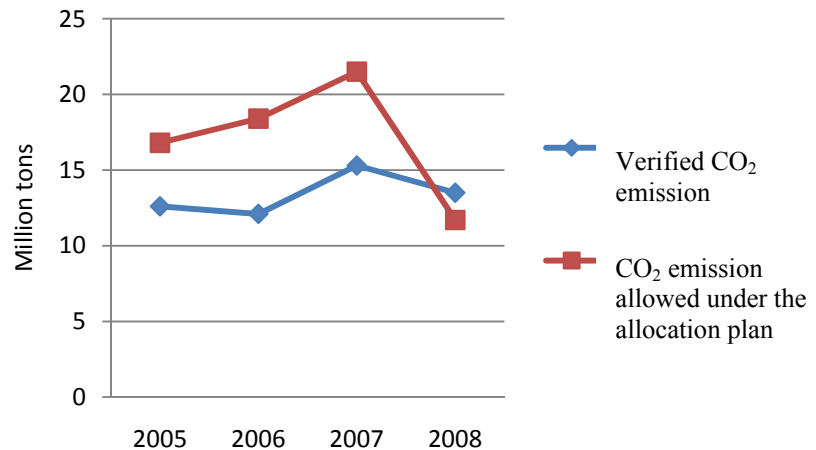
63. The EU Emissions Trading Directive demands that an allocation plan of the Member State must derive from the goal of reduction of carbon intensity of economy, i.e. the allowances must be distributed according to the actual potential of companies for reduction of emissions. A reserve must be planned for newcomers and joint implementation projects, in order not to restrict the implementation of the planned investments or the planning of new ones.

64. Under the leadership of the Ministry of the Environment Estonia has prepared two allocation plans by now. In the second trading period the state applied to the European Commission for an allowance that was nearly 25% higher than that of the first period. In both periods the national total amount of emission allowances was set in the proposal for the allocation plan using the bottom-up method, i.e. based on the amount of emissions that the companies asked for their activities. The companies' possibilities of reducing pollution were not analyzed. In the second trading period the growth rate resulting from the expected growth of power consumption and power exports and expansion of production was added to the emissions of installations. The emission allowances reserve was also prepared with a high spare capacity, adding to the planned projects nearly a portion of the entire reserve based on hypothetical development opportunities (e.g. rise in the production of shale oil and additional combined heat and power plants).

### **The requirements of the EU directive were overlooked upon preparing the allocations plans**

65. According to the NAO, the Ministry of the Environment has not used emissions trading according to the purpose, i.e. reduction of GHG emissions. In the first trading period many companies received additional funds from the sale of allowances, because their emissions were much smaller than the allowances granted to them (see Chart 9), but the state did not promote them to spend the money on environmental investments. The NAO questioned the companies participating in the trading scheme (the respondents accounted for 90% of the installations belonging to the allocation plan). Over half of the respondents that had sold the allowances (10 out of 18 respondents) informed that they did not invest the profit from trading in the allowances in the reduction of emissions. Since in the proposal for the second allocation plan Estonia applied for an even higher total allowance, the state virtually approved such practice. The state failed to consider the possibility that the additional funds generated could have been used for reduction of emissions of GHG or other pollutants as required by the EU. Instead, the state gave a poor example, transferring over two billions of income earned by state owned power plant (AS Eesti Energia) from allowance trading to the state budget as dividends.

**Chart 9. Allowances permitted under the allocation plan and the actual emissions of companies**



Source: Environment Information Centre

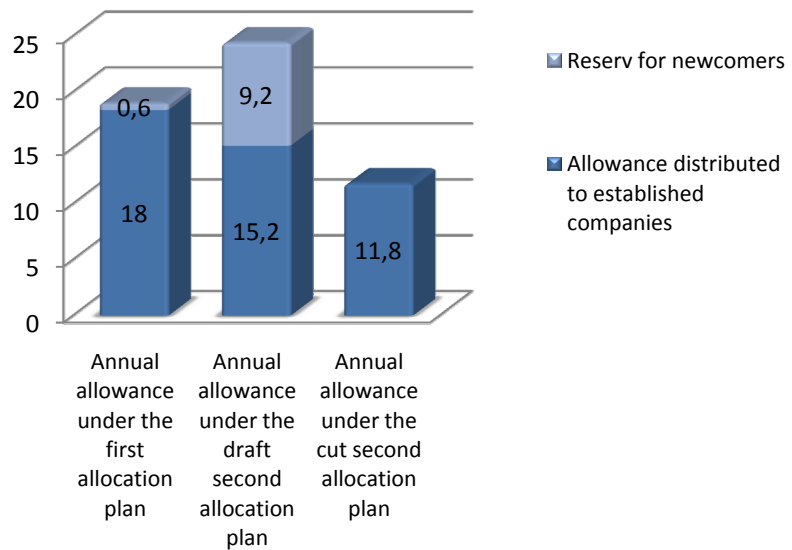
66. None of the minutes of the meetings of the committee established for preparation of the allocation plan indicates that the Ministry of the Environment proceeded from its goal of reducing carbon-intensive production in the negotiations. Other Eastern European states also had the desire to bargain "hot air" under the allocation plans, but due to the European Commission's decision to cut the allowances they had to quickly change their allocation plans.

67. The European Commission did not approve the allowances applied for by Estonia under the second allocation plan, because according to the Commission, the verified emissions of 2005 indicated much smaller emissions and the growth rates of the electricity sector, incl. export, were not sufficiently reasoned and the total allowance was not in compliance "with the potential of the areas of activity covered by the emissions reduction system of the Community."<sup>17</sup>

68. Therefore the Commission found that Estonia's allocation plan did not comply with the goals of the EU's Emission Trading Directive nor the requirements thereof and cut the total allowance applied for by nearly a half (see Chart 10).

<sup>17</sup> European Commission Decision of 4 May 2007 concerning the national allocation plan for the allocation of greenhouse gas emission allowances notified by the Republic of Estonia in accordance with European Parliament and Council Directive 2003/87/EC.

**Chart 10. Proportions of total allowances in allocation plans, million tons**



Source: National Audit Office

**The draft second allocation plan had to be amended quickly**

69. Since trading in emission allowances was to start already in January 2008, the Ministry of the Environment had to revise its former decisions in only a few months. The overall allowance for Estonia had been prescribed by the European Commission by the decision to cut the allocation plan and it was the duty of the Ministry of the Environment to decide how to divide it between companies. A negative consequence of rushing was that the Ministry of the Environment failed to sufficiently analyze the decision to cut and the European Commission did not approve the allowance reserve. Eventually the companies do not know what kind of efforts the state is expecting of them or what can be expected in the future. The Ministry of the Environment managed to briefly consult companies, the Ministry of Economic Affairs and Communications and the European Commission, but failed to carry out a new disclosure procedure. The allocation plan of the second trading period was finally approved by the European Commission nearly a year after the actual deadline. The reserve for newcomers has not been determined to date, which means that new companies will have to buy the required allowance in the market.

**Did you know that**

- the trading register cost the state EEK 4.3 million through 2005–2008 in connection with the acquisition, running and maintenance;
- other costs of preparation and financing of the allocation plan during the same period amounted to EEK 1.9 million;
- the verification of the allowances cost annually EEK 0.5 million;
- in 2005–2007 Eesti Energia financed the preparation of the allocation plan by EEK 100,000.

70. Estonia contested the allowance cutting decision of May 2007 in the European Court of Justice based on the reasoning that the European Commission may approve or reject national allowance proposals, but does not have the competence to prescribe the total allowance. In September 2009 the ECJ confirmed the correctness of Estonia's positions and annulled the decision to cut. However, this does not automatically mean that the allowance of Estonian companies will increase: commenting on the judgment, the EU's Commissioner for Environment said that in allowance negotiations the Commission proceeds from verified allowances and based on the verifications of 2005–2008 it can be claimed that the effective division is correct.

### The opportunities of financing the trading system have not been made use of

71. In both allocation plans the Ministry of the Environment did not limit the allowances to be granted, because the state wanted to give the companies the chance to profit from allowance trading. The state also failed to seize the opportunity to keep a portion of the quota and finance the maintenance of the system for the money derived from sale (for instance, Germany has seized such opportunity) or channel it to supporting technology innovation through, for instance, the Environmental Investment Centre. Instead, it was decided to pay for the maintenance of the expensive trading register from the state budget in both trading periods. Besides Estonia, the use of the trade register is free of charge for the parties only in Cyprus, Italy and Luxembourg. Allowance dealers of other Member States also profit from the free-of-charge register of Estonia. The state budget also covers the costs of verification of the emission allowances, which in other states are paid by companies.

72. Deficiencies in verifying emissions also affect preparation of the allocation plan. If the potential of each company to reduce emissions is not assessed (e.g. how much emission could be cut by changing the technology or raw material), the method chosen by Estonia for deciding the total allowance under the allocation plan does not contribute to the reduction of CO<sub>2</sub>. The failure to take the potential of companies into account was also one of the reasons why the plan was not approved by the European Commission. This significant issue could not be taken into account, because the state does not have any exhaustive overview or analysis of the possibilities of companies. In fact, the information about the potential of reduction of emissions should accrue to the Ministry of the Environment through verification of emissions, because the certifiers should thoroughly examine the production process. But since the verification of GHG emissions is not in accordance with the requirements in Estonia (see sections 79–95), no required input can be obtained from there.

### The Ministry of the Environment admitted that there are problems with data

73. The Ministry of the Environment has admitted to the European Commission itself that the source data for preparation of the allocation plan was not adequate: in the explanatory memorandum of the second allocation plan it was admitted that the calculations of the impact of the measures submitted in the GHG emissions reduction program were based on outdated data, the GDP growth projection did not correspond to the actual situation, various energy data originated from the year 2001 and the projections of the GHG emissions were not reliable. Furthermore, Estonia admitted in the same document that emission allowances have been granted to companies based on the growing economy, electricity export as well as at the expense of the environmental investments made before the trading period.

### Did you know that

in the explanatory memorandum of the national allocation plan for 2008-2012 the Ministry of the Environment has explained to the European Commission: „As no adequate data on greenhouse gas emissions projections is available for making assessment of various policies and measures [---] one should just hope that the next calculations will be performed in the near future. Thereafter only, it would be possible to [---] follow the most appropriate path.

74. The Ministry of the Environment did not have time to analyze or discuss whether the method of making allocation plan cuts was justified nor analyze or discuss the impact of the cuts, because the allocation plan needed to be approved urgently. The cuts were made more difficult by the fact that the European Commission did not explain the principles or bases of its cut. Since the main goal was to set allowances for the existing installations, there was not enough time for attending to reserve quotas.

75. The worst consequence of the present organization of preparation of allocation plans is that the state gave companies the wrong signal as if trading was an easy way to earn money and the state does not expect the companies to reduce GHG emissions. But the postponed environmental investments will still have to be made and it may be much more difficult to find money for that purpose in the present situation.

76. The decision of the European Commission showed that the Estonian state was not able to justify the allowance applied for under the draft allocation plan and as a result thereof companies had to quickly change their plans considering that instead of selling the allowance quite a few of them may have to start buying the quota. Thereby the Ministry of the Environment and the Ministry of Economic Affairs and Communications did not manage to redistribute the allowance so that the companies that reduced their emission would get an advantage. This placed installations that had made environmentally friendly investments at a disadvantage.

77. In addition, the reserves of allowances have not been approved either. Thereof it is not possible to commence new joint implementation projects based on renewable energy sources (e.g. wind parks), which would bring additional funds to Estonia through environmentally friendly investments. Expansion of existing production or creation of new production units is limited due to the absence of a reserve, placing the so-called newcomers at a disadvantage in comparison with the existing companies.

78. According to the NAO, the allocation plans made in Estonia are too much focused on short-term business interests and the Ministry of the Environment has been unable to guide the process in such a manner that GHG emission trading would benefit from the point of view of alleviating climate change. As a result of trading Estonia's total GHG emission or the GDP's carbon intensity have not decreased, indicating that the state has spent money and time on maintaining the whole system without getting the required result.

### **Control over the emissions of the companies included in the allocation plan is insufficient**

79. According to the trading permit issued on the basis of the allocation plan, companies must annually submit a report on the GHG emissions. The reports undergo examination, i.e. verification, which must guarantee the truthfulness of the emitted and thus, traded GHG. Among other things the trading permits must contain information about how the company must assess the CO<sub>2</sub> emissions.

80. Verification is a means for ensuring the trustworthiness of the trading system, giving the participants in the market the "guarantee of genuineness." As of 2008 the verifier under the Estonian Ambient Air Protection Act is the Environment Information Centre (EIC) of the Ministry of the Environment.

81. The verifier must check whether the CO<sub>2</sub> emission data submitted by a company is correct and identified in practice in such a manner as prescribed by the trading permit and the EU's GHG emissions

**Verifier** is a competent, independent, recognized institution or person who is responsible for verification and preparation of a report on verification in accordance with the requirements of the Emissions Trading Directive.

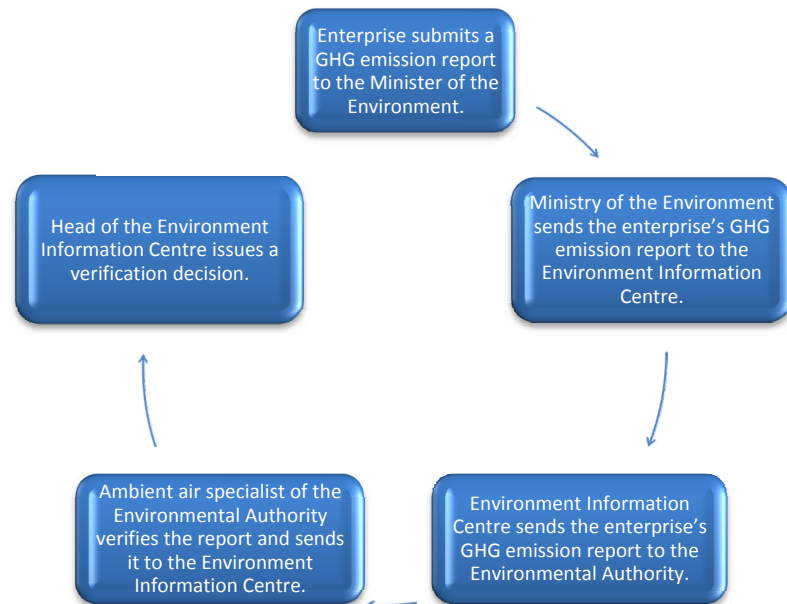
EU monitoring and reporting manual

monitoring and reporting guideline<sup>18</sup>. The verifier must make certain that the certificates and documents of the measuring equipment, weighing instruments, laboratories, etc., are correct and valid, and the calculations of CO<sub>2</sub> quantities are without errors. Verification must be done pursuant to the monitoring and reporting manual of the European Union.<sup>18</sup> The uncertainty of determining the GHG emissions must be within the permitted limits (2.5–5%) in order to ensure equal treatment of all the companies participating in the trading scheme upon buying and selling allowances.

**The appointed verifier – Environment Information Centre – does not actually verify the correctness of the emissions of the companies**

The Environment Information Centre that is the verifier by law does not verify the GHG emission reports in reality. The Ministry of the Environment has delegated the substantive verification to the ambient air specialists of the Environmental Board by way of a letter, ministerial directive or, in 2009, by an e-mail of a Deputy Secretary-General. There are no written documents on involvement of regional environmental authorities in 2008. By legal acts the Environmental Board is not liable for the correctness of the companies' reports and the Environment Information Centre does not have the powers to demand from them to ensure it. Thus, the head of the Environment Information Centre issues final verification decisions on the CO<sub>2</sub> emissions of the companies without checking the correctness of the reports of verifiers. The verification procedure takes place as shown in Chart 11.

**Chart 11. Institutions participating in verification of GHG emission reports**



Source: National Audit Office based on the information of the Ministry of the Environment

**82.** An analysis of verification carried out by the NAO showed that in the first year of the first trading period (2005) the emissions generated by companies were not verified in accordance with the EU's rules. Separate CO<sub>2</sub> reports that would contain the information required for verification were not requested from the companies. The Director of

<sup>18</sup> EU Decision 2007/87/EC.

the EIC signed the verification decisions merely on the basis of general emission reports signed by specialists of regional environmental authorities. The NAO notes that in the emission reports the companies merely give the CO<sub>2</sub> emission; the reports do not require information on the CO<sub>2</sub> identification methodology or the uncertainty level of the measurements. Therefore it was not possible to check the reports in accordance with the rules of emissions trading and also no training in verification had been organized for ambient air specialists by the time.

### Verification has not always been carried out properly

83. As of 2006 the system changed: the companies were supposed to start submitting GHG emission reports whose accuracy is confirmed by the Environmental Board in a verification report. However, present audit showed that following the amendments of the system verification has not always been properly carried out and does not, according to the National Audit Office, provide certainty in the correctness of the CO<sub>2</sub> emissions reported by the companies. The audit showed that the practice of the ambient air specialists in verifying GHG emission reports is different and in many instances confined to a comparison between a company's GHG emission report and quarterly pollution reports:

- the ambient air specialists of two counties have not examined the accounting of CO<sub>2</sub> on the spot in companies. These verifiers have to check 13 companies in total. The specialists of other counties have examined documents and conducted interviews with employees in the course of on-the-spot checks. Only two officials referred to checking measuring instruments on the spot.
- When listing the steps taken upon verification, one official mentioned merely the checking of emissions calculations given by a company and comparison of CO<sub>2</sub> data contained in company's quarterly emission reports and in GHG emission reports.
- According to the rules of emissions trading, verification must be based on the EU's monitoring and reporting guideline that was mentioned by only two specialists in the questionnaire of verifiers.

84. In addition, it became evident that the verifiers have approved GHG emission reports of companies that do not comply with the emissions trading requirements of the EU:

- examination of companies' GHG emission reports showed that the data contained therein is often insufficient and does not contain information required for verification. For instance, in 18 out of 46 reports submitted on emissions in 2008 there was no reference to the methodology of assessing CO<sub>2</sub> emissions. Questionnaire in the companies indicated that in most cases (14 respondents) the specialists of the Environmental Board have not asked for any additional information from the companies in addition to the GHG emission report;

### Did you know that

the uncertainty contained in the companies' GHG emissions comprises the uncertainty of the measuring instruments upon determining the **raw material (fuel) quantities, calorific values and special emissions**, calibration of measuring instruments and the actual use;

**upon determining the fuel quantity**, consumption meters can be used in the case of gas and liquid fuel, while solid fuel needs to be weighed;

**calorific value** or the energy content of fuel is determined by way of laboratory tests. In the case of smaller companies it is permitted to use in the calculations the values submitted in the last national inventory;

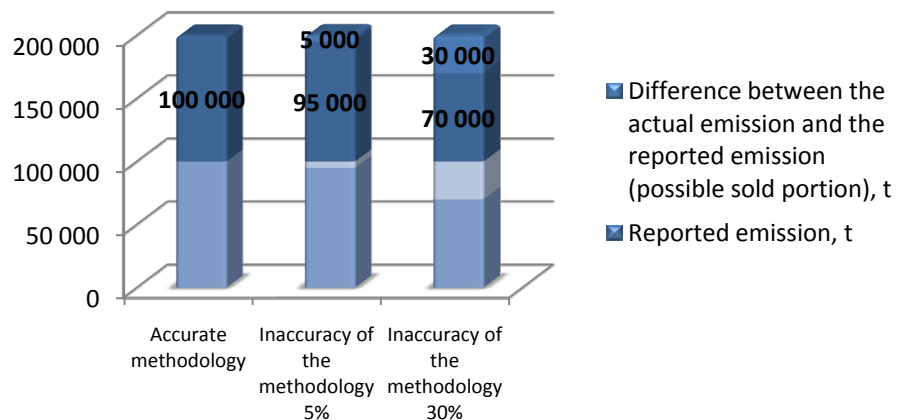
**special emission** or the carbon-content of the fuel is determined by way of laboratory tests. In the case of smaller companies it is permitted to use in the calculations the values submitted in the last national inventory?

- GHG emission reports whose verification reports admitted that the installation does not adhere to the EU's monitoring and reporting manual upon GHG emission monitoring were accepted in 2007;
- There were also verification reports where not all the required fields had been filled in. Thus, it is not clear whether the company's CO<sub>2</sub> monitoring complies with the requirements or not.

85. According to the NAO, it is not possible to verify whether the company's monitoring is in accordance with the requirement solely on the basis of GHG emission reports, because they do not describe how the data required for calculation of the CO<sub>2</sub> emission has been obtained.

86. Similarly to national GHG inventories, an important indicator upon assessment of the CO<sub>2</sub> emissions of a company is the uncertainty of the determination of the emissions, which characterizes the accuracy of the measurement results. The value of a measurable parameter is never known exactly, nor is the calculation result, regardless of whether measurement results have been used in the calculations or not.<sup>19</sup> Thus, GHG emission data are reliable only if an assessment of the uncertainty is enclosed. The example given in Chart 12 illustrates how the emission given in a company's report depends on the accuracy of the methodology. Using an inaccurate assessment methodology, a much smaller figure than actually emitted CO<sub>2</sub> may be given in the report. Thus, the company may earn unfair additional profits. In the cases given in the example the income obtained upon sale of 5,000 tons of may be EEK 1.2 million and upon sale of 30,000 tons of nearly EEK 6.9 million. The estimated price of the CO<sub>2</sub> allowance is the price of 18 August 2009, i.e. EUR 14.75, i.e. EEK 231 per ton (www.pointcarbon.com).

**Chart 12. Dependence of the CO<sub>2</sub> quantity given in a company's report on the accuracy of the assessment methodology based on the example of a company generating 100,000 tons of CO<sub>2</sub> a year**



Source: National Audit Office

<sup>19</sup> T. Kübarsepp, V. Vabson 2006. Kuidas müüa õhku. – Keskkonnatehnika, No. 1.

### Assessment of the accuracy of GHG emissions is insufficient

87. The analysis of the NAO showed that attention is not paid to the accuracy of assessing emissions. Many companies do not themselves assess the uncertainty of assessment the GHG emissions and neither the Environment Information Centre nor the regional environmental authorities have requested that in case the data was missing in the company's GHG report. The verifiers' skills of assessment and checking of the uncertainty are little. The following examples can be given to illustrate the problem:

- It became evident in questionnaire conducted in the companies that many companies have not assessed the uncertainty of calculation of GHG emissions: 6 respondents said that the verifier must assess the uncertainty; 6 respondents said that they used the values given in the guidelines for assessment of uncertainties prepared by AS Metrosert.<sup>20</sup> Thereby the values given in the guidelines are the highest inaccuracies of data permitted under the EU's monitoring and reporting manual, which are not related to determining the CO<sub>2</sub> emissions of Estonian companies;
- From the responses of the ambient air specialists of the Environmental Board it became evident that six verifiers do not assess the uncertainty of assessing companies' CO<sub>2</sub> emissions, but also rely on the values given in the guidelines prepared by AS Metrosert. Two verifiers admitted that they have not attended to the uncertainties of emissions at all;
- in some reports of county verifiers the uncertainties of GHG emissions of all installations are the same. For instance, the uncertainty of 2% has been attributed to the CO<sub>2</sub> emission of almost all installations in Harju County and Tallinn (regardless of the area of activity and technology). Also, the uncertainties of GHG emissions of a couple of companies that have a complicated production process are very small, many times smaller than the limit values given in the EU's manual.

### Estonian legal acts and trading permits issued to companies do not fully take into account the rules of emissions trading of the European Union

88. Assessment of GHG emissions in accordance with the requirements is aggravated for companies by the fact that the trading permits issued by the Ministry of the Environment do not establish any requirements for assigning activity data, calorific values or emission coefficients. Thus the issued permits are not in accordance with the EU's Emissions Trading Directive. In all the trading permits issued by the Ministry of the Environment the approved method of assessing GHG emissions is the calculation method.<sup>21</sup> Although some permits also refer to measurements, these do not include CO<sub>2</sub> measurement, but are related to assessing other pollutants or pollution source parameters. Only some trading permits include the requirement to measure the consumption of natural gas. Deficiencies in trading permits pose a problem in verification.

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<sup>20</sup> Guidelines for assessment of uncertainties by AS Metrosert.

<sup>21</sup> Minister of the Environment Regulation No. 94 of 2004.

**Did you know that**

the 30% of allowed inaccuracy in assessing the verified emissions in 2008 (13.5 million tons) may result in profit/loss of EEK 1 billion at the price of EEK 231 per ton for companies.

**The competence of verifiers is not evaluated and their activities are not checked**

89. In addition to trading permits, Estonian legal acts also disregard the EU's requirements regulating emissions trading. For instance, the Regulation on verification<sup>22</sup> does not follow the EU's monitoring and reporting guideline upon assessing emissions, because it states that the total GHG emissions given in the verifier's report and the company's report must not differ more than 30% from one another. The EU's monitoring and reporting manual allows for 2.5–5% uncertainty in installation reports, depending on the size of the installation. Thus, Estonian companies' reports may contain 30% inaccuracy, because the verifiers have proceeded from Estonian legal acts in their activity. This fact has, according to the NAO, already resulted in infringement of the rules of the GHG emission market. The Ministry of the Environment has promised to update the requirements and bring them in accordance with the EU's requirements in 2009.

90. One of the risks of the verification applied by the Ministry of the Environment is the fact that the competence of the ambient air specialists of the Environmental Board has not been evaluated or acknowledged. Estonia is the only state in Europe where there is no system for accreditation of independent verifiers. Accreditation gives the certainty that the verifiers are able to perform verification in accordance with the rules of the European Union and are able to identify the actual emissions of the companies included in the allocation plan. Other European states have created a system for accreditation of verifiers and exercise state supervision over the activities of the verifiers.

91. According to a survey carried out by the NAO, the four ambient air specialists of the Environmental Board considered themselves competent in verification (three considered their knowledge sufficient and one good) and four respondents considered their knowledge poor. In addition, it became evident from the survey that three verifying ambient air specialists have not undergone any verification training at all. Trainings were organized only in March 2006 and February 2007: one for introduction of verification rules and the other for evaluation of uncertainties. Thus, in Estonia emissions can be verified by persons who do not have adequate training.

92. The Ministry of the Environment and the Environment Information Centre do not check the activities of verifiers. The EIC formally examines reports, but does not carry out substantive checks, because they trust the knowledge of the specialists of the Environmental Board. The Ministry of the Environment justifies the involvement of the Environmental Board by the fact that the experience obtained upon verification of pollution reports is sufficient for carrying out verification. The NAO's audit report "Impact of Pollution Charges on Reduction of Environmental Pollution" made in 2008 indicated that the regional environmental authorities were in many instances confined to trusting the data signed by the executive of the company when verifying ambient air pollution reports.

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<sup>22</sup> Minister of the Environment Regulation No. 5 of 3 February 2005.

**The Ministry of the Environment wished to save the costs of companies without reason**

93. Involvement of independent, accredited verifiers would have resulted in an increase of the costs of the companies included in the allocation plan, because a fee would have been charged for verification of emissions. The position of the Ministry of the Environment upon development of the system was that GHG emission reports would be verified for the pollution charge that companies have paid.<sup>23</sup> According to the NAO, such subsidizing is not justified, because companies who do not participate in the trading system also pay pollution charges. Furthermore, verification is also important from the point of view of the companies, because on the basis of verified emissions it becomes evident how much allowances the company can sell or has to buy.

94. Due to the flawed verification system the companies participating in the EU's Emissions Trading Scheme are not treated equally and there may be events where companies have sold or bought available GHG emission allowances which do not actually exist. In terms of money, this may mean millions of kroons of unjustified profit or loss. According to the NAO, the company GHG emission report verification system applied in Estonia does not comply with the rules the EU's emissions trading and cannot ensure the correctness of the GHG emissions emitted.

**Participants in the Emissions Trading Scheme and the state may fall victims of fraud**

95. In addition to companies, verification is also important for the state upon making strategic decisions. Under the current system of verification the state does not get an overview of the actual GHG emissions of the companies in the allocation plan. At the same time the European Commission considers the verified emissions the most reliable GHG emissions data and recommends them as the basis for drawing up new allocation plans. For instance, the cut allocation plan was prepared on the basis of the verified GHG emissions of 2006. According to the NAO, the consequences of verifying the emissions of installations transfer to national policy and both the state as well as the companies included in the allocation plan will be affected.

**96. National Audit Office's recommendations to the Minister of the Environment:**

- In order to enhance the performance of the state in the EU's Emissions Trading Scheme, cooperation between ministries and the exchange of information must be improved. To that end the work group of ministries and authorities formed by the Government of the Republic must be activated. The involvement of various authorities in the work group must ensure that the awareness of the rules of trading in greenhouse gases, the problems related to implementing them, and the possible effects of trading on Estonia exist on a broader scale than at the level of individual officials or experts. Since both the EU as well as Kyoto Protocol's rules for trading in greenhouse gases are being revised, all authorities whose area of administration is influenced by revision have to be kept up to speed with the changes.

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<sup>23</sup> An interview conducted with the Ministry of the Environment at the stage of preliminary explanations.

- In order to ensure the availability of sufficient funds for maintaining the EU's GHG emission trading register a fee must be charged for using the trading register to an extent that covers the costs of maintenance of the register.
- The GHG emission must be verified by competent impartial persons who are clearly responsible for verification results. To that end the system of verification of emissions must be revised in such a manner that only persons accredited by the state whose activities are randomly checked by the Ministry of the Environment would be able to carry out verifications. Companies participating in the Emissions Trading Scheme have to pay for verifying emissions, because verification is in their interests.
- The Ministry of the Environment must reorganize the current chain of responsibilities for verification of GHG emission (before the system of accredited verifiers is introduced). The Ministry of the Environment must ensure that specialists of the Environmental Board verify emissions in accordance with the manuals and methodologies of the EU, incl. verify in each instance whether the source data used in the GHG emission calculations of companies are gathered in accordance with requirements.
- In order to check in the course of verification whether a company's GHG emission monitoring methodology complies with the trading permit, the GHG emission trading permits must be supplemented with a description of the monitoring methodology. The permit must describe how companies have to determine the source data for calculation of GHG emissions (activity data, calorific value, emission factor). In addition, it must be demanded that companies fill in the GHG emission report form correctly.
- To bring Estonia's legal acts in compliance with the requirements of the EU Emissions Trading Scheme, incl. the accuracy of determining emission allowed in the reports of the companies.
- To notify the companies participating in the Emissions Trading Scheme of the monitoring and reporting requirements of the scheme, incl. to introduce how the company must gather the source data serving as the basis for calculation of GHG emissions, assess the uncertainty and report. In addition, companies must be notified of changes in the Emissions Trading Scheme as of 2013 and the related impact, incl. the auction system. Notification sends the companies a clear message that GHG emissions must be reduced in order to ensure competitiveness. Information days must be organized for companies in order to inform them.

**Reply of the Minister of the Environment:** We agree that the exchange of information and involvement of state authorities engaged in climate change policy is of great importance. At times, cooperation between specialists has been very good. Nevertheless, the work organization and involvement of respective institutions could be better. At the same time the usefulness of activating the committee of experts for implementation of the flexible mechanisms of the Kyoto Protocol of the UN Framework Convention on Climate Change formed by the Government of the Republic in 2003 must be

considered. At the time of formation of the committee the range of subjects was different and focused on establishment of the Kyoto Protocol implementation system. This committee includes climate experts from state authorities, larger companies as well as non-governmental organizations. By today the problems have become more specific and we considered revising the work organization of the committee. Cooperation would probably be even more effective upon covering more specific subjects between respective experts.

More extensive exchange of information should take place through public climate change websites such as Kliimaveeb. In addition, an intra-institutional mailing list of a group of people engaged in climate change has been created for the purpose of operative exchange of information and it is functioning well. Additionally, organization of seminars for various target groups must be continued for the purpose of raising awareness.

EEK 4.3 million has been spent on the acquisition, maintenance and of the EU's emissions trading register through 2005–2008. In many other Member States of the European Union certain transactions can be executed for a fee in the register. The Ministry of the Environment is considering the possibility to introduce a fee for using the register and to cover the costs of administration of the register out of the fee in part. Considering, that currently there are approx. 80 accounts in the register, it is unrealistic to presume that a fee could cover all costs of administration of the register. A calculation shows that through 2005–2008 one account holder of the register should pay over EEK 13,000 simply for using the register. For instance, it would be possible to charge a fee for opening an account and for transactions, depending on the result of the transaction.

The Ministry of the Environment has prepared the draft Ambient Air Protection Act and the draft legislation for amendment of the regulations regulating the trading system in the course of which the requirements of the EU Emissions Trading Scheme are clarified (incl. uncertainty, monitoring conditions) and the verification system is amended.

The data of trading permits must be updated and it has been planned in the Ambient Air Protection Act that an inseparable part of an ambient air pollution permit is the permitted emissions project which contains all the required data, incl. the monitoring measures of the activity. If the data required in the permitted emissions project is not sufficient for monitoring the GHG emissions, Regulation No. 119 of the Minister of the Environment of 22 September 2004 must be modified in order to fulfill the monitoring requirements set forth in Article 6(2) of Directive 2003/78/EC.

The existence of an ambient air pollution permit is the prerequisite for obtaining a trading permit. According to the trading procedure, the monitoring method, monitoring frequency, measurable parameters, and special conditions must be established in the trading permit. In the course of development of the system the respective role of trading permits must be performed better, paying more attention to the permitted emissions project and to the terms and conditions of the ambient air pollution permit in the procedure of applying for a trading

permit. The first step in processing and checking emission reports of the Emissions Trading Scheme is the examination of the existence of all the required data. In the case of deficiencies the required information must be clarified by communicating with the company.

The amendment provisions of verification of emissions under the Emissions Trading Scheme have been included in the draft Ambient Air Protection Act. According to the draft act, companies themselves should organize the verification of the emissions reports of the Emissions Trading Scheme through accredited verifiers. According to the system, companies submit to the Ministry of the Environment verified reports which may be subjected to random checks. The accreditation centre makes preparations for accreditation of verifiers. If verification is carried out by accredited verifiers, installations will pay for the service pursuant to the price criteria, which will be generated. Based on the experience of other states these criteria may be related to the number of tons of emissions to be verified.

On October 30 a climate change seminar was held in the Ministry of the Environment. One part of it was dedicated to verification, incl. practical organization of verification. Additionally, an overview was given of the new requirements which enter into force in 2013. The Ministry of the Environment also plans to organize additional verification training before carrying out the 2009 verification of emissions, involving the current verifiers and representatives of companies.

/Signed digitally/

Tarmo Olgo  
Audit Director, Performance Audit Department

## Recommendations of the National Audit Office and replies of the Minister of the Environment, the Minister of Economic Affairs and Communications, and the Minister of Agriculture

The National Audit Office made various recommendations to the Ministry of the Environment, the Ministry of Economic Affairs and Communications, and the Ministry of Agriculture. 19–25 November 2009 the Ministers sent their replies to the recommendations of the National Audit Office.

National Audit Office's recommendations	Ministers' replies
<p><b>Accounting greenhouse gas emissions</b></p> <p>34. Recommendations to the Minister of the Environment:</p> <ul style="list-style-type: none"> <li>■ Since the accounting of GHG emissions serves as the basis for making climate and energy policy decisions the Ministry of the Environment must ensure, in addition to its area of government (Environment Information Centre, Centre for Forest Protection and Silviculture, Land Board), that the data gathered by the Ministry of Economic Affairs and Communications, the Ministry of Agriculture and the Ministry of Finance and their sub-agencies (the Statistical Office, the Animal Recording Centre, etc.) would be available and usable for the inventory, and that any changes in the data would be reasoned. To that end an inter-institutional work group should be created, involving the experts carrying out the inventories.</li> <li>■ Since the inventories of GHG emissions constitute a constant national obligation, long-term contracts have to be made with the institutions carrying out the inventories in order to ensure that the obligation is performed. To that end the Ministry should carry out a public procurement procedure for a longer period than the current one-year practice. It would help to ensure that the institutions attend to collecting and improving inventory data throughout the year, not simply in the period preceding submission of the report. In order to ensure funding for the inventories, as of 2013 a portion of the funds obtained from auctions of allowances under the EU's emission trading scheme should be channeled for this purpose. To prevent a situation where due to a change of an expert of an area the competence is lost, the present work organization must be documented and archived (methodology, method of gathering and processing data, etc.) in the Environment Information Centre or in the Ministry of the Environment.</li> <li>■ In order to ensure that the accounts include all GHG emissions in Estonia: <ul style="list-style-type: none"> <li>■ take into account GHG emissions by all sectors. Where necessary, commission additional surveys in order to determine, for instance, Estonia-specific emission factors and assess the uncertainty of the data;</li> <li>■ improve, first of all, the accounting of</li> </ul> </li> </ul>	<p><b>Reply of the Minister of the Environment:</b> An inter-institutional work group would allow for better organization of the gathering of the data required for preparation of the GHG inventories and contribute to increasing the quality of the inventories. The establishment of the work group has been discussed in meetings between the specialists carrying out the inventories and the coordinator and the idea has been approved unanimously. The establishment of the work group will commence in the beginning of 2010.</p> <p>Sufficient and permanent solutions have to be found for financing the inventories as a national obligation. When the revenues of the auctions of the EU emissions trading scheme will be planned, the possibility of channeling a portion of the income for financing the inventories will certainly be considered. Upon organization of public procurement for carrying out the inventory of the next year, it is investigated whether it is possible to organize and plan the public procurement for the first time for a period longer than a year. This would help to ensure the consistency of the inventories and prevent a loss of competence arising from a change of experts.</p> <p>The archive of the GHG inventory is maintained by the Environment Information Centre. In the framework of the Twinning Light project "Improvement of Estonian GHG Inventory" between Finland and Estonia in the summer of 2009 a more transparent and more user-friendly archiving system was developed. Experts implement it during the reporting period (autumn 2009 – spring 2010) and as a result thereof archives with the entire GHG inventory (1990–2008) placed in a new structure will be handed over to the EIC in April 2010. The archives are the direct tool for prevention of the loss of competence arising from the change of experts.</p> <p>In the meetings between the GHG inventory experts, the coordinator (EIC) and a representative of the Ministry of the Environment it has been agreed to prepare a plan for development of the GHG inventories. The plan will be submitted to the Ministry of the Environment by 15 December 2009 and it contains prioritized information for development of the inventories (improvement of the forestry and land use sector, use of state-based emission factors in the key categories, implementation of the recommendations of the UN review team, implementation of the recommendations of the cooperation project).</p> <p>The GHG inventory sector trends and their descriptions are submitted for the first time in the inventory report for 2010 and it remains a part of the report on the annual basis.</p> <p>For the purpose of improvement of the quality control of the GHG inventory a new and through-going quality control plan was developed in the framework of the cooperation project and, if properly implemented, the UN review team does not see any need for random audits. A detailed inventory timetable is part of the new quality control plan and it ensures sufficient time for the inventory's control operations.</p>

National Audit Office's recommendations	Ministers' replies
<p>GHG emissions in the areas of forestry and land use (data gathering, calculation methodology, identification of emission factors, etc.), because the problems with the data of these areas create the biggest fluctuations in the state's GHG emissions.</p> <ul style="list-style-type: none"> <li>▪ Pay special attention to the implementation of the recommendations made in the course of the inspections carried out by the UN Climate Secretariat and correction of the errors detected.</li> <li>▪ Implement the recommendations made in the course of the cooperation project between Estonia and Finland for the purpose of improvement of the quality of the inventories of GHG emissions.</li> <li>▪ To ensure that quality control compliant with the UN requirements is exercised over the inventories of GHG emissions. To that end, to commission more through-going random checks (e.g. audits) from area experts and take into account the time spent on the audit operations in the timetable of the inventories. The person exercising quality control must demand that the persons carrying out the inventories always explain why the trends in the GHG emissions have changed.</li> </ul> <p>(sec. 19–33)</p>	
<p><b>Planning to reduction of greenhouse gas emissions</b></p> <p>59. Recommendations to the Minister of the Environment:</p> <ul style="list-style-type: none"> <li>▪ To submit to the Government of the Republic for discussion and decision-making which minister has the overall responsibility for achievement of the goals of reduction of GHG emissions. It is necessary to make the decision at the level of the Government of the Republic, because the subject concerns the areas of activity of several ministries (the Ministry of the Environment, the Ministry of Economic Affairs and Communications, the Ministry of Agriculture) and harmonized goals and objectives need to be established in all of them.</li> <li>▪ A new long-term action plan for reduction of GHG emissions should be prepared immediately. To that end an inter-ministerial work group should be formed with the goal of analyzing the measures described in the existing development plans and their compliance with the goals of reduction of GHG emissions. Based on the work results of the work group a list of measures and policies that are being implemented and planned should made and used as the basis for making GHG emission projections. The action plan must be prepared by 2011 and it must contain a clear and measurable national goal of reducing GHG emissions.</li> <li>▪ Upon making model projections of GHG emissions, updated and as accurate source data as possible about the Estonian circumstances must be used. Also, the</li> </ul>	<p><b>Reply of the Minister of the Environment:</b> According to § 117 (Organization of activities to reduce climate change) of the Ambient Air Protection Act, the Ministry of the Environment organizes activities for reduction of climate change on the basis of the requirements for restriction of the limit values of emissions of GHG provided by the United Nations Framework Convention on Climate Change and the Kyoto Protocol. A reference to the legislation of the European Union has been included in the draft Ambient Air Protection Act Amendment Act that is being discussed. The draft work plan of the Ministry of the Environment for 2010 includes coordination of the preparation of strategy/action plan for reduction of GHG emissions, guidance of a work group, collection and processing of information, processing of the document.</p> <p>The impact of existing strategic documents related to climate change on GHG emissions has so far been assessed in general. The goal is to prepare, in cooperation with the institutions in charge, suggestions for assessment of the existing plans so that it would be possible to indicate the numeric value of GHG emission changes based on the choices made in the strategy document. In terms of further activities were are considering the possibility of drawing up an action plan for successful implementation of the climate policies arising from the Climate and Energy Packages and other requirements. Representatives of other institutions would be involved in the preparation of the action plan and it would contain the possibilities and the timeframe for performance of specific duties.</p> <p>Thereby it must be taken into account that upon making GHG emission model projections the model has to take into account updated source data and this must comply with the circumstances in Estonia, taking into account measures to be planned and implemented in various scenarios. Since at the moment the impact of the measure on changes in GHG emissions has not been clearly analyzed, it is difficult to make projections. So far projections have been outsourced, but previous practice has shown that it is not the wisest solution. Thus, we are looking for better opportunities for cooperation with ministries of various fields; one possibility is to bind the preparation of projections to the GHG emission inventory activities and the respective work group.</p> <p>In section 59 of the audit it has been indicated that the Ministry of the Environment must exercise supervision over strategic environmental</p>

National Audit Office's recommendations	Ministers' replies
<p>national measures developed for influencing the GHG emissions must be taken into account.</p> <ul style="list-style-type: none"> <li>▪ The long-term action plan for reduction of GHG emissions must be updated based on changes in sector policies or development plans or even projections of GHG emissions.</li> <li>▪ The Ministry of the Environment as the supervisor of the strategic assessment of environmental impact must make certain the case of development plans made in the future that if the activities of the development plan may influence the GHG emissions created in the state, the impact on the GHG emissions must be calculated in the course of the strategic environmental impact assessment as well.</li> </ul> <p>(sec. 35–58)</p> <p>60. Recommendations to the Minister of the Environment, the Minister of Economic Affairs and Communications and the Minister of Agriculture:</p> <ul style="list-style-type: none"> <li>▪ In order to support the preparation of the long-term action plan for reduction of the environmental impact research should be carried out in all relevant economic sectors as to how GHG emissions have changed in these sectors and what are the main reasons for the changes. Information about long-term trends can be obtained, among other things, from GHG emissions inventory data. Knowing the trends in previous years and the reasons thereof, one can project future trends, incl. prepare projections complying the EU and UN requirements.</li> <li>▪ Upon preparation of action plans, require the identification and assessment of the activities affecting GHG emissions as part of strategic environmental assessment.</li> <li>▪ A clear and measurable goal for reduction of GHG emissions should be established in the action plans of all sectors affecting GHG emissions.</li> </ul> <p>(sec. 35–58)</p>	<p>assessment. The Ministry of the Environment exercises supervision over the strategic environmental assessment arising from the implementation of a strategic planning document (incl. action plans) only in events where the environmental impact presumably arising from the implementation of the strategic planning document may be cross-border impact. In other events the supervisor is the Environmental Board.</p> <p>According to the Environmental Impact Assessment and Environmental Management System Act, a strategic environmental assessment report must set out an assessment of the potential significant direct, indirect, cumulative, synergistic, short and long-term, positive and negative environmental impact, including impact on climate change. Thus, in the course of strategic environmental assessment the issues relating to greenhouse gases must be covered as well.</p> <p>We consider the possibility of preparation of harmonized guidelines which the experts of environmental impact could take into account upon assessment of changes in GHG emissions. Additionally, we are planning activities for increasing the competence of the officials engaged in strategic environmental assessment and ambient air protection so that in the course of strategic environmental assessment they would be able to adequately handle the impact of the planned activities on climate change (calculation of GHG emissions, impact on the state's total GHG emissions, reduction/increase of GHG emissions, etc.).</p> <p><b>Reply of the Minister of Economic Affairs and Communications:</b></p> <p><i>Recommendation of the National Audit Office to conduct fundamental research</i></p> <p>Most of CO<sub>2</sub> emissions are generated in Estonia by the energy sector. This aspect has been taken into account upon development of the Estonian energy policy (Development Plan of the Estonian Electricity Sector until 2018, approved by the Government of the Republic on 26 February 2009; Long-term Public Fuel and Energy Sector Development Plan until 2020, approved by the Riigikogu on 15 June 2009) and assessments concerning the CO<sub>2</sub> emissions resulting from one or another scenario have been projected in Estonia. Due to the level of generalization of the problems that need to be resolved and the vague restrictions (e.g. how is electricity imported to Estonia, what will be the price of (CO<sub>2</sub>) allowances in the EU's emissions trading scheme, what measures will be applied for limited emissions after 2012, etc.), relatively primitive calculation models were used for projecting energy sector-related CO<sub>2</sub> emissions. Although in principle we agree with your recommendations, the reliability of these fundamental surveys will remain modest due to the uncertainty related to consumption projections (e.g. addition of a individual large company may increase the energy consumption by more than 1%) or energy production structure (the development of the latter is the most affected by the EU emission trading scheme).</p> <p>The position that projecting GHG emission is possible and can be done at a relatively general level extends to other areas in the area of responsibility of the Ministry of Economic Affairs and Communications (MEAC) (transport, encouragement of development of companies).</p> <p><i>Recommendation of the NAO to assess factors affecting GHG emissions</i></p> <p>We find that the level of strategic environmental assessment developed in Estonia is not sufficient to demand that the impact of the measures of the plan on GHG emissions be assessed in the framework of strategic environmental assessment in all action plans. Rather one should focus on the assessment of GHG emissions in the framework of strategic environmental assessment in the action plans of individual areas (e.g. energy and transport); the plans for other areas should take into account the need to assess the impact on GHG emissions upon organization of the later monitoring of the implementation of the measures.</p> <p><i>NAO's recommendation to set a clear and measurable goal for reduction of GHG emissions</i></p> <p>The MEAC is not against the recommendation, but we have to admit that</p>

National Audit Office's recommendations	Ministers' replies
	<p>there is an urgent need for development of databases for monitoring the attainment of the said goals. If the state is prepared to contribute more to the respective data retrieval, the recommendation can be fulfilled.</p> <p><b>Reply of the Minister of Agriculture:</b></p> <p><i>Recommendation of the National Audit Office to conduct fundamental research</i></p> <p>The Ministry of Agriculture takes your proposal into account. However, we consider it necessary to note that the Ministry of Agriculture is not engaged in carrying out research, but outsources it, where necessary. We do admit that due to the global financial crisis which has left its mark on the Estonian economy it is difficult to say whether and to what extent the Ministry of Agriculture could afford outsourcing research.</p> <p><i>Recommendation of the NAO to assess factors affecting GHG emissions</i></p> <p>According to subsection 40 (2) of the Environmental Impact Assessment and Environmental Management System Act, upon a strategic environmental assessment, it is required to explain, describe and assess the significant environmental impact resulting from implementation of the strategic planning document and the main alternative measures, activities and tasks, having regard to the objectives and territory of the strategic planning document. We find that in the given matter the Ministry of the Environment should assess whether and to what extent the activities influencing GHG emissions and the assessment of the scope of their impact is covered by the Environmental Impact Assessment and Environmental Management System Act. The Ministry of Agriculture finds that the obligation to assess the activities influencing GHG emissions and their impact upon preparation of development plans can rise only from respective acts.</p> <p><i>NAO's recommendation to set a clear and measurable goal for reduction of GHG emission</i></p> <p>The Ministry of Agriculture draws your attention to the fact that in the framework of Estonian Rural Development Plan 2007–2013 the following indicators have been established for assessment of the impact of climate change: production of renewable energy in agriculture and forestry, the arable land used for production of renewable energy and GHG emissions originating from agriculture.</p>
<p><b>Trading in Emission Reduction Units</b></p> <p>96. Recommendations to the Minister of the Environment:</p> <ul style="list-style-type: none"> <li>■ In order to enhance the performance of the state in the EU's Emissions Trading Scheme, cooperation between ministries and the exchange of information must be improved. To that end the work group of ministries and authorities formed by the Government of the Republic must be activated. The involvement of various authorities in the work group must ensure that the awareness of the rules of trading in greenhouse gases, the problems related to implementing them, and the possible effects of trading on Estonia exist on a broader scale than at the level of individual officials or experts. Since both the EU as well as Kyoto Protocol's rules for trading in greenhouse gases are being revised, all authorities whose area of administration is influenced by revision have to be kept up to speed with the changes.</li> <li>■ In order to ensure the availability of sufficient funds for maintaining the EU's GHG emission trading register a fee must be</li> </ul>	<p><b>Reply of the Minister of the Environment:</b> We agree that the exchange of information and involvement of state authorities engaged in climate change policy is of great importance. At times, cooperation between specialists has been very good. Nevertheless, the work organization and involvement of respective institutions could be better. At the same time the usefulness of activating the committee of experts for implementation of the flexible mechanisms of the Kyoto Protocol of the UN Framework Convention on Climate Change formed by the Government of the Republic in 2003 must be considered. At the time of formation of the committee the range of subjects was different and focused on establishment of the Kyoto Protocol implementation system. This committee includes climate experts from state authorities, larger companies as well as non-governmental organizations. By today the problems have become more specific and we considered revising the work organization of the committee. Cooperation would probably be even more effective upon covering more specific subjects between respective experts.</p> <p>More extensive exchange of information should take place through public climate change websites such as Kliimaveeb. In addition, an intra-institutional mailing list of a group of people engaged in climate change has been created for the purpose of operative exchange of information and it is functioning well. Additionally, organization of seminars for various target groups must be continued for the purpose of raising awareness.</p>

National Audit Office's recommendations	Ministers' replies
<p>charged for using the trading register to an extent that covers the costs of maintenance of the register.</p> <ul style="list-style-type: none"> <li>■ The GHG emission must be verified by competent impartial persons who are clearly responsible for verification results. To that end the system of verification of emissions must be revised in such a manner that only persons accredited by the state whose activities are randomly checked by the Ministry of the Environment would be able to carry out verifications. Companies participating in the Emissions Trading Scheme have to pay for verifying emissions, because verification is in their interests.</li> <li>■ The Ministry of the Environment must reorganize the current chain of responsibilities for verification of GHG emission (before the system of accredited verifiers is introduced). The Ministry of the Environment must ensure that specialists of the Environmental Board verify emissions in accordance with the manuals and methodologies of the EU, incl. verify in each instance whether the source data used in the GHG emission calculations of companies are gathered in accordance with requirements.</li> <li>■ In order to check in the course of verification whether a company's GHG emission monitoring methodology complies with the trading permit, the GHG emission trading permits must be supplemented with a description of the monitoring methodology. The permit must describe how companies have to determine the source data for calculation of GHG emissions (activity data, calorific value, emission factor). In addition, it must be demanded that companies fill in the GHG emission report form correctly.</li> <li>■ To bring Estonia's legal acts in compliance with the requirements of the EU Emissions Trading Scheme, incl. the accuracy of determining emission allowed in the reports of the companies.</li> <li>■ To notify the companies participating in the Emissions Trading Scheme of the monitoring and reporting requirements of the scheme, incl. to introduce how the company must gather the source data serving as the basis for calculation of GHG emissions, assess the uncertainty and report. In addition, companies must be notified of changes in the Emissions Trading Scheme as of 2013 and the related impact, incl. the auction system. Notification sends the companies a clear message that GHG emissions must be reduced in order to ensure competitiveness. Information days must be organized for companies in order to inform them.</li> </ul> <p>(sec. 63–95)</p>	<p>EEK 4.3 million has been spent on the acquisition, maintenance and of the EU's emissions trading register through 2005–2008. In many other Member States of the European Union certain transactions can be executed for a fee in the register. The Ministry of the Environment is considering the possibility to introduce a fee for using the register and to cover the costs of administration of the register out of the fee in part. Considering, that currently there are approx. 80 accounts in the register, it is unrealistic to presume that a fee could cover all costs of administration of the register. A calculation shows that through 2005–2008 one account holder of the register should pay over EEK 13,000 simply for using the register. For instance, it would be possible to charge a fee for opening an account and for transactions, depending on the result of the transaction.</p> <p>The Ministry of the Environment has prepared the draft Ambient Air Protection Act and the draft legislation for amendment of the regulations regulating the trading system in the course of which the requirements of the EU Emissions Trading Scheme are clarified (incl. uncertainty, monitoring conditions) and the verification system is amended.</p> <p>The data of trading permits must be updated and it has been planned in the Ambient Air Protection Act that an inseparable part of an ambient air pollution permit is the permitted emissions project which contains all the required data, incl. the monitoring measures of the activity. If the data required in the permitted emissions project is not sufficient for monitoring the GHG emissions, Regulation No. 119 of the Minister of the Environment of 22 September 2004 must be modified in order to fulfill the monitoring requirements set forth in Article 6(2) of Directive 2003/78/EC.</p> <p>The existence of an ambient air pollution permit is the prerequisite for obtaining a trading permit. According to the trading procedure, the monitoring method, monitoring frequency, measurable parameters, and special conditions must be established in the trading permit. In the course of development of the system the respective role of trading permits must be performed better, paying more attention to the permitted emissions project and to the terms and conditions of the ambient air pollution permit in the procedure of applying for a trading permit. The first step in processing and checking emission reports of the Emissions Trading Scheme is the examination of the existence of all the required data. In the case of deficiencies the required information must be clarified by communicating with the company.</p> <p>The amendment provisions of verification of emissions under the Emissions Trading Scheme have been included in the draft Ambient Air Protection Act. According to the draft act, companies themselves should organize the verification of the emissions reports of the Emissions Trading Scheme through accredited verifiers. According to the system, companies submit to the Ministry of the Environment verified reports which may be subjected to random checks. The accreditation centre makes preparations for accreditation of verifiers. If verification is carried out by accredited verifiers, installations will pay for the service pursuant to the price criteria, which will be generated. Based on the experience of other states these criteria may be related to the number of tons of emissions to be verified.</p> <p>On October 30 a climate change seminar was held in the Ministry of the Environment. One part of it was dedicated to verification, incl. practical organization of verification. Additionally, an overview was given of the new requirements which enter into force in 2013. The Ministry of the Environment also plans to organize additional verification training before carrying out the 2009 verification of emissions, involving the current verifiers and representatives of companies.</p>

## Characterisation of audit

### Purpose of audit

The purpose of the audit was to assess whether the state has done everything that it can to contribute to the reduction of greenhouse gas emissions generated in Estonia.

*In addition, by the audit Estonia contributes to the cooperation audits of INTOSAI and EUROSAI covering the same subject.*

### Assessment criteria

Upon giving the assessment, the National Audit Office proceeded from the following criteria:

1. GHG emission accounting or inventory is accurate and reliable when the emissions or absorbed quantities of greenhouse gases are taken into account from all areas where they may be generated. Upon carrying out an inventory of greenhouse gases, accurate and reliable methodologies are used and a quality control is applied that ensures substantive correctness;
2. for the purpose of planning and implementing activities reducing carbon intensity, a long-term action plan has been developed, incl. measurable goals and persons in charge of implementation have been set for each area. Activities are planned in cooperation between ministries;
3. the impact of activities affecting GHG emissions on the state's total GHG emissions, energy prices, security of supply and social affairs is assessed. Realistic projections are made;
4. the state has used the EU's Emissions Trading Scheme as a measure for reduction of emissions. Companies have been promoted to reduce emissions through the principles of preparation of an allocation plan. The Emissions Trading Directive of the EU demands that upon drawing up an allocation plan the Member State must proceed from the goal of reduction of carbon intensity;
5. The reports of companies participating in the trading system of the European Union regarding CO<sub>2</sub> emissions undergo examination, i.e. verification, which must guarantee the truthfulness of the GHG emissions emitted and thus, traded by the companies. Companies must determine the CO<sub>2</sub> emission in the manner prescribed by the trading permit and the European Union's GHG emission monitoring and reporting manual.

### Scope and focus of audit

The audit analyzed the activities of the Ministry of the Environment upon management of the state's climate policy and the use of the European Union Emissions Trading Scheme as a measure reducing greenhouse gases. In the case of the Ministry of Economic Affairs and Communications and Ministry of Agriculture it was assessed whether the strategic documents drawn up by them have taken into account the needs and objectives of the climate policy.

The audit focused on three main issues:

- Does the state have the information about greenhouse gas levels (emissions + absorption) for climate policymaking?
- Is the climate policy managed and planned in a coordinated manner and have measures been developed for reduction of GHG emissions?

- Does GHG emission trading help to efficiently reduce emissions?

The audit covers years 2005–2008. The audit views greenhouse gas inventories, measures planned by the state for reduction of greenhouse gases and their impact, and projections. In addition, the audit focused on the EU's Emissions Trading Scheme, because this measure for reduction of greenhouse gases affects Estonian companies and thus the entire economy the most.

In order to answer the main questions of the audit the following activities were performed:

- Estonian and EU legislation, policy documents, guidelines developed by the European Union, the UN Climate Secretariat (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC), and the practice of other states upon carrying out inventories and implementing the EU waste management system were analyzed;
- the following persons were interviewed and explanations were asked from them:
  - Rein Raudsep, Head of the Environmental Management and Technology Department of the Ministry of the Environment;
  - Viktor Grigorjev, the Head of the Ambient Air and Radiation Safety Bureau of the Environmental Management and Technology Department of the Ministry of the Environment;
  - Reet Pruul, the Executive Officer of the Ambient Air and Radiation Safety Bureau of the Environmental Management and Technology Department of the Ministry of the Environment;
  - Karin Radiko, the Executive Officer of the Ambient Air and Radiation Safety Bureau of the Environmental Management and Technology Department of the Ministry of the Environment;
  - Erkki Meikas, Deputy Director of the Environment Information Centre of the Ministry of the Environment;
  - Eve Tamme, Head of the Climate and Ozone Bureau of the Environment Information Centre of the Ministry of the Environment;
  - Inga Kindsigo, GHG emissions Reporting Officer of the Climate and Ozone Bureau of the Environment Information Centre of the Ministry of the Environment;
  - Getlyn Makke, GHG emissions Trade Register Administrator of the Climate and Ozone Bureau of the Environment Information Centre of the Ministry of the Environment;
  - Madis Laaniste, Head of the Sustainable Energy Division of the Energy Department of the Ministry of Economic Affairs and Communications;
  - Sigrid Vesiallik, Head of the Energy Market Division of the Energy Department of the Ministry of Economic Affairs and Communications;
  - Raivo Vilu, Head of the Chair of Biotechnology of the Department of Chemical Engineering of the Tallinn University of Technology;
  - Olga Gavrilova, Research Fellow of the Chair of Biotechnology of the Department of Chemical Engineering of the Tallinn University of Technology;

- Triin Randla, Assistant of the Chair of Biotechnology of the Department of Chemical Engineering of the Tallinn University of Technology;
  - Inge Roos, Research Fellow of the Chair of Thermal Power Equipment of the Department of Thermal Engineering of the Tallinn University of Technology;
  - Sulev Soosaar, Research Fellow of the Chair of Thermal Power Equipment of the Department of Thermal Engineering of the Tallinn University of Technology;
  - Olaf Terno, preparation of projections using the NEEDS model (Faculty of Power Engineering of the Tallinn University of Technology);
  - Mihkel Kangur, Director of the Institute of Ecology of the University of Tallinn;
  - Raimo Pajula, Assistant of the Institute of Ecology of the University of Tallinn;
  - Margus Pensa, Head of Department of the Institute of Ecology of the University of Tallinn;
  - Jaanus Terasmaa, Senior Research Fellow of the Institute of Ecology of the University of Tallinn;
  - Tiit Kallaste, Director of SEI-T CEA Program;
  - Toomas Kübarsepp, AS Metrosert;
  - Tõnis Meriste, Environmental Manager of Eesti Energia.
- Installations included in the EU's allocation plan (50 installations) were questioned. Questionnaires were sent to 49 installations, because one installation was a complete a novice who lacked the experience of participating in the Emissions Trading Scheme. The number of respondents was 25 and they were in charge of 45 installations belonging to the allocation plan.
  - The ambient air specialists of the Ministry of the Environment that carry out verifications were questioned (11 specialists). Eight ambient air specialists of the Environmental Board replied.
  - In the Ministry of the Environment CO<sub>2</sub> reports submitted by companies in 2008 were examined.
  - In the Environment Information Centre of the Ministry of the Environment CO<sub>2</sub> emission report verification reports of 2006, 2007 and 2008 and pollution reports submitted by companies regarding emissions in 2005 were examined.
  - The following documents were analyzed:
    - Estonian greenhouse gas inventory reports (2008–2009) to the UN Climate Secretariat and their appendices;
    - inventory audit reports by the UN Climate Secretariat (2005–2008);
    - projections submitted by Estonia to the European Union regarding greenhouse gas emissions;
    - area-based development plans (the environment, energy, forestry, agriculture, waste, transport, etc.);

- the EU's allocation plans for trading in greenhouse gases, their explanatory memoranda, minutes of the committee of experts of implementation of the flexible mechanisms of the Kyoto Protocol of the UN Framework Convention on Climate Change, decisions of the European Commission in connection with preparation of the allocation plan for 2008–2012 and Estonia's action in the European Court of Justice in connection with the aforementioned decision of the European Commission;
- contracts made for preparation of the inventories and projections of the Ministry of the Environment and the Environment Information Centre and for other development activities of the area;
- costs of the Ministry of the Environment, the Environment Information Centre and the Environmental Board related to the GHG emission system.
- trading permits issued to the companies included in the allocation plan.

### **Time of completion of audit**

The audit operations were carried out from March to June 2009.

### **Audit team**

The audit team consisted of Tuuli Rasso (Audit Manager), Airi Andresson (Senior Auditor), and Kaire Kuldperre and Lauri-Indrek Tummeleht (Auditors).

### **Contact us**

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An electronic copy of the audit report (PDF) is available at [www.riigikontroll.ee](http://www.riigikontroll.ee).

A summary of the audit report is also available in English.

The number of the audit report in the record management system of the NAO is TAO-2-1.4/09/72.

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## **Previous ambient air audit by the National Audit Office**

6.10.2008 – Impact of pollution charges on reducing environmental pollution

**All reports are available on the website of the National Audit Office at [www.riigikontroll.ee](http://www.riigikontroll.ee).**

## Appendix A. Uncertainty of inventory data of greenhouse gases

The total quantities of greenhouse gases emitted by the state cannot be measured directly, but they are calculated using suitable calculation methods. The result of calculation is affected by the accuracy of the source data and their processing. Therefore inventory data always include uncertainty, i.e. the doubt as to whether the result is accurate. According to the inventory manual, the uncertainty level of determining GHG emissions in developed industrialized countries is 20%.<sup>24</sup> Assessment of the uncertainty of the data of the areas of GHG emissions and absorption gives the chance to find the sectors whose data quality should be improved in the inventory.

Mostly, values<sup>25</sup> generalized on the basis of the data of various states and given in international manuals are used as the uncertainties of GHG emissions arising from various industries, as a result of which the uncertainty calculated for the general quantity (see Table 4) does not indicate the actual accuracy of Estonian GHG emissions data. Since the generalized values of uncertainties given in international manuals are high, the uncertainty calculated for the Estonian GHG emissions is also very high. For instance, in the Estonian report for 2006 the GHG emissions amounted to 15.4 million tons with the uncertainty of 44%. This shows that the true GHG emission value remains between 2–28 million tons with 95% probability.

The GHG emission uncertainty was calculated for the first time in 2007 by AS Metroserit.<sup>26</sup> Later, the uncertainty assessments have been prepared by the persons carrying out the inventories in cooperation with the EIC and the uncertainty has fallen to 28% in the inventory prepared for 2007 (See Table 4). In fact, the uncertainties of some forestry and land use data have not been taken into account in the last calculation and therefore the uncertainty rate decreased and the actual accuracy of the GHG emission data is unknown. The inventory audit reports of the UN have for several years in a row drawn attention to the need for improvement of the assessment of uncertainty, incl. the use of country-specific data. Due to the complexity of assessment of uncertainty the Ministry of the Environment is unable to calculate uncertainty on its own. Also, no additional surveys have been commissioned, because the issue has not been important.

**Table 4. Uncertainty calculated for greenhouse gas inventory data**

	In the data for 2005	In the data for 2006	In the data for 2007
Uncertainty of GHG emission (excl. the area of land use and forestry)	69	6,46	7,17
Uncertainty of GHG emission (incl. the area of land use and forestry)	77	44,38	28,66

Source: Estonian Greenhouse Gas Inventory Reports

<sup>24</sup> Guidelines for assessment of uncertainties by AS Metroserit.

<sup>25</sup> An interview with the person carrying out the inventory.

<sup>26</sup> Agreements between the Ministry of the Environment and AS Metroserit.