Quality description Greenhouse gases

1. Relevance of statistical information

As a Party to the Kyoto Protocol, Finland is committed to decreasing its greenhouse gas emissions in line with the EU burden sharing agreement to the so-called base year levels (the base year for carbon dioxide, methane and nitrous oxide is 1990, for F-gases the base year is 1995). The obligation must be fulfilled during the 2008-2012 period.

The reporting of emissions has been agreed on in UNFCCC and Kyoto Protocol decisions. The reporting of countries which have ratified the Kyoto Protocol is monitored closely. In addition to emissions data, the reporting also includes the removals of greenhouse gases from the atmosphere (the so-called sinks). However, only the anthropogenic emissions and sinks are taken into account. UNFCC and Kyoto Protocol reporting takes place annually.

The reporting covers six actual greenhouse gases (HFC and PFC compounds include several gases)

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- HFC compounds
- PFC compounds
- sulphur hexafluoride (SF_6).

In addition, the emissions of carbon monoxide (CO), nitrogen oxides (NO_x), sulphur dioxide (SO_2) and non-methane volatile organic compounds (NMVOCs) are reported. The Kyoto Protocol obligations, however, apply only to the actual greenhouse gases listed above.

The estimation of emissions and their reporting are performed according to international guidelines. Within the European Union the reporting is guided also by the Decision concerning a mechanism for monitoring Community greenhouse gas emissions (280/2004/EC). The annual greenhouse gas inventory consists of reporting tables and the National Inventory Report which describes, among other things, the methodologies applied, source data and the related uncertainties. The emissions tables and the National Inventory Report are produced in English. As from spring 2007 a short summary in Finnish has also been published on the development of greenhouse gas emissions in Finland. This report contains information on the estimated future development of emissions according to the scenarios compiled by the Ministry of Employment and the Economy. The inventories are inspected by international investigative teams every year.

On 30 January 2003 the Government made a decision on principle on the organisation of climate policy activities. According to the decision, Statistics Finland is the national responsible unit of the greenhouse gas inventory. Statistics Finland guides the inventory work and compiles and sends the data to the UNFCCC and the Kyoto Protocol. A part of the inventory calculations are done outside Statistics Finland. Data for the inventory are produced by the Finnish Environment Institute, Agrifood Research Finland, the Finnish Forest research Institute, the Technical Research Centre of Finland and Finavia.

2. Methodological description of the statistical survey

According to decisions of the UNFCCC meetings of the parties, the following IPCC calculation Guidelines have been adopted: *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (1997), Good Practice Guidance and Uncertainty Management for National Greenhouse Gas Inventories (2000) ja Good Practice Guidance for Land Use, Land-Use Change and Forestry (2003)*. Emissions are typically calculated with the help of activity data and emission factors. In addition to administrative registers, activity data are obtained from the Finnish Forest Research Institute's forest inventory and the Finnish Environment Institute's inquiries to actors. Emission factors are based on national research and the default emission factors in the IPCC Guidelines. The methodologies applied in the calculation of emissions are described in detail in the sectoral chapters of the National Inventory Report.

3. Correctness and accuracy of data

The greenhouse gas inventory describes emissions, in the light of the best available knowledge, with the delimitations and definitions agreed on in the UNFCCC and the Kyoto Protocol. When drawing up the guidelines, the objective has been to employ scientifically valid and objective methodologies.

The reliability of the emission estimates is assessed with uncertainty investigations. The results of the uncertainty analyses have been reported in the publication series of VTT Technical Research Centre of Finland and in the National Inventory Report.

The uncertainty analysis is conducted with a computer simulation. The uncertainties derived from the simulation results for the emission volumes of 2006 are given in Table 1. The indicator used is a variation coefficient, which is the ratio of the standard deviation and the average of the simulation results.

Table 1. Greenhouse gas inventory uncertainties (variation coefficient of simulated results, %) by sector and gas, 2006

Sectors	CO_2	CH_4	N_2O	F-gases[1]
Energy	2	32	60	.
Industrial processes	3	7	7	8
Solvents	.	.	18	.
Agriculture	.	11	30	.
Land use, land use change and forestry sector	35	45	150	.
Waste treatment	.	20	82	.

1 F-gases are a common nomer for HFCs and PFCs as well as SF_6.

4. Timeliness and promptness of published data

Greenhouse gas emissions are reported annually to the European Commission and the UNFCCC. According to the reporting rules, the most recent statistics are from two years previously.

The national greenhouse gas inventory is delivered to the European Commission by 15 January. The Commission is responsible for compiling the European Union inventory. A Member State can complement and update their delivery until 15 March. The EU inventory is compiled from the deliveries of the Member States and delivered to the UNFCCC Secretariat by 15 April. By that same date Finland delivers its own final inventory to the UNFCCC Secretariat.

5. Accessibility and transparency of data

Basic data on the emission development of Finland's greenhouse gases are published annually on Statistics Finland Internet pages by the end of April. Preliminary emission data are published in December. The quality description of the release and the National Inventory Report offer basic information on the methodologies, classifications and concepts applied.

On the Internet pages of Statistics Finland's the greenhouse gas inventory pages are supplemented by thematic pages. These pages introduce the activities of the greenhouse gas inventory unit and the Finnish national greenhouse gas monitoring mechanism. The annual English-language reporting is also available in its entirety on the thematic pages.

6. Comparability of statistics

The international comparability of Finland's inventory is ensured by using the IPCC methodologies, classifications and reporting format agreed on in the meeting of the parties.

The reported data cover all the key emission sources, sinks and gases in Finland, which are mentioned in the IPCC Guidelines. Possible deviations in coverage are indicated in connection with data on each sector in the *Common Reporting Format* tables and the National Inventory Report.

The time series of the inventory start from the year 1990, which is the Kyoto Protocol base year, apart from F-gases for which the base year is 1995. The comparability of the time series over time is a basic principle of the inventory compilation. If the calculation methods change, earlier years will be recalculated or the comparability of the time series is confirmed with methodologies according to the IPCC Guidelines.

7. Coherence and consistency/uniformity

The CO_2 emissions of energy use make up the most significant part of the greenhouse gas inventory emissions. They are reported also in Statistics Finland's Energy Statistics and Preliminary Energy Statistics. The Energy Statistics and the Preliminary Energy Statistics are also published annually.

The estimate published in the Preliminary Energy Statistics is calculated with a coarser method than the corresponding greenhouse gas inventory figure. The earlier years in both the Preliminary Energy Statistics and the CO_2 time series of the Energy Statistics are harmonised with the inventory data.

Energy use and production data are reported as part of the inventory. These data also make up a part of the Energy Statistics. The Energy Statistics and the inventory differ in terms of source data, classifications and level of detail, but development work on harmonising the common parts is continuously underway.

When comparing the Energy Statistics data to those of the greenhouse gas inventory, the following differences and similarities must be taken into account:

- total consumption of fuels and the ensuing CO_2 emissions describe the same phenomenon in both sets of data; efforts are made to harmonise these

- total consumption of fuels in the greenhouse gas inventory does not include other energy sources (e.g. nuclear power, hydro power, etc.)

- the Energy Statistics CO_2 emissions do not include carbon dioxide from other sources or other greenhouse gases.