ANNEX 1. Description of the Individual Source Category Checklists of the Energy, Industrial Processes, Agriculture, LULUCF and Waste sector

Table A. Tier 1: Individual Source Category Checklist – CO_2, N_2O and CH_4 emissions from Fuel Combustion

Inventory Report:	1990 - 2006
Source/Sink Category:	**1.A Fuel Combustion Activities**
Estimates prepared by:	Inge Roos (Tallinn University of Technology) with the data from ESO and Estonian Energy AS

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
1	2	3	4	5	6	7
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	I. Roos	05.02.2008	Check that the description of activity data, emission factors is properly recorded and archived.	The description of activity data, emissions factors and methodology used is recorded in the internal documentation and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	I. Roos	05.02.2008	Check that all bibliographical data references are cited and documented.	All data (activity data, emission factors and methods used) are cited to references in the internal documentation and the NIR.	none

	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	I. Roos	05.02.2008	Check for transcription errors.	No transcription errors were noted.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	I. Roos	05.02.2008	CO_2 emission from combustion of fuels for Public electricity and heat has been calculated using figures of 2006.	The value calculated was 12103.035 Gg; the value of CO_2 emission from Public electricity and heat reported in the Reporter was 12103.035 Gg. The test passed.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	I. Roos	05.02.2008	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	I. Roos	05.02.2008	Check that units are appropriate.	The correct units have been used in the estimates and reported in the NIR tables.	none
	Check that units are correctly carried through from beginning to end of calculations.	I. Roos	05.02.2008	Check that units are correctly used through calculations	Correct SI units were used in order to estimate CO_2, CH_4 and N_2O emissions from Fuel Combustion.	none
	Check that conversion factors are correct.	I. Roos	05.02.2008	Check that conversion factors used are correct.	Conversion factors used for the estimation of CO_2 CH_4 and N_2O emissions are correct.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	I. Roos	05.02.2008	Check that all steps needed are represented.	All steps needed for data processing are represented properly and documented.	none

	Ensure that data fields are properly labeled and have the correct design specifications.	I. Roos	05.02.2008	Check t data fields	The data fields are correctly labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	I. Roos	05.02.2008	Check that documentation of database is archived.	All required documentation of database has been archived by the expert. A copy of datasets is stored in the Information Centre of the Ministry of the Environment.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	I. Roos	05.02.2008	Check for consistency in dataset related to the estimation of CO_2, CH_4 and N_2O emissions from fuel combustion.	Activity data in fuel combustion from 1990 to 2006, and emission factors used in estimations are consistent.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	I. Roos	05.02.2008	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	I. Roos	05.02.2008	The check was not undertaken.		
Check that uncertainties in emissions and removals are	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					

estimated or calculated correctly.	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	I. Roos	05.02.2008	Check for the detailed internal documentation.	The detailed internal documentation exists and is archived in the Information Centre of the Ministry of the Environment.	none
1	2	3	4	5	6	7
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	I. Roos	05.02.2008	Check that all data required estimating CO_2, CH_4 and N_2O emissions from fuel combustion are documented and archived.	Activity and supporting data, emission factors are documented and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	I. Roos	05.02.2008	The check was not undertaken.		
Check methodological and data changes resulting in	Check for temporal consistency in time series input data for each source category.	I. Roos	05.02.2008	Check for consistency in input data by looking at graphs in the Reporter.	Input data and CO_2, CH_4 and N_2O emissions are consistent for years 1990 – 2005.	none

recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	I. Roos	05.02.2008	Check for consistency in the algorithm used.	The method used to estimate CO_2, CH_4 and N_2O emissions from fuel combustion has been taken from the IPCC Guidelines.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	I. Roos	05.02.2008	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	I. Roos	05.02.2008	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	I. Roos	05.02.2008	Inventories/CO2 emissions from fuel combustion were compared in order to trace for significant changes in 1990 – 2005.	No significant changes in CO2 emissions from fuel combustion years 1990 – 2005 were noted.	none

Table B. Tier 1: Individual Source Category Checklist –CH_4 emissions from Fugitive Emissions from Fuel

Inventory Report:	1990 - 2006
Source/Sink Category:	**1.B Fugitive Emissions from Fuel**
Estimates prepared by:	Inge Roos (Tallinn University of Technology) with the data from ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
1	2	3	4	5	6	7
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	I. Roos	05.02.2008	Check that the description of activity data, emission factors is properly recorded and archived.	The description of activity data, emissions factors and methodology used is recorded in the internal documentation and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	I. Roos	05.02.2008	Check that all bibliographical data references are cited and documented.	All data (activity data, emission factors and methods used) are cited to references in the internal documentation and the NIR.	none

	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	I. Roos	05.02.2008	Check for transcription errors.	No transcription errors were noted.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	I. Roos	05.02.2008	CH_4 emission from fugitive emissions from fuels has been calculated using figures of 2006.	The value calculated was 37.398 Gg CH_4; the value of CO_2 emission from Public electricity and heat reported in the Reporter was 37.398 Gg CH_4. The test passed.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	I. Roos	05.02.2008	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	I. Roos	05.02.2008	Check that units are appropriate.	The correct units have been used in the estimates and reported in the NIR tables.	none
	Check that units are correctly carried through from beginning to end of calculations.	I. Roos	05.02.2008	Check that units are correctly used through calculations	Correct SI units were used in order to estimate CH_4 emissions emission from fugitive emissions from fuels.	none
	Check that conversion factors are correct.	I. Roos	05.02.2008	Check that conversion factors used are correct.	Conversion factors used for the estimation of CH_4 emissions are correct.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	I. Roos	05.02.2008	Check that all steps needed are represented.	All steps needed for data processing are represented properly and documented.	none

	Ensure that data fields are properly labeled and have the correct design specifications.	I. Roos	05.02.2008	Check t data fields	The data fields are correctly labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	I. Roos	05.02.2008	Check that documentation of database is archived.	All required documentation of database has been archived by the expert. A copy of datasets is stored in the Information Centre of the Ministry of the Environment.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	I. Roos	05.02.2008	Check for consistency in dataset related to the estimation of CH_4 emissions emission from fugitive emissions from fuels	Activity data in emission from fugitive emissions from fuels from 1990 to 2006, and emission factors used in estimations are consistent.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	I. Roos	05.02.2008	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	I. Roos	05.02.2008	The check was not undertaken.		
Check that uncertainties in emissions and removals are	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					

estimated or calculated correctly.	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	I. Roos	05.02.2008	Check for the detailed internal documentation.	The detailed internal documentation exists and is archived in the Information Centre of the Ministry of the Environment.	none
1	2	3	4	5	6	7
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	I. Roos	05.02.2008	Check that all data required to estimate emission from fugitive emissions from fuels are documented and archived.	Activity and supporting data, emission factors are documented and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	I. Roos	05.02.2008	The check was not undertaken.		
Check methodological and data changes resulting in	Check for temporal consistency in time series input data for each source category.	I. Roos	05.02.2008	Check for consistency in input data by looking at graphs in the Reporter.	Input data and CH_4 emissions are consistent for years 1990 – 2005.	none

recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	I. Roos	05.02.2008	Check for consistency in the algorithm used.	The method used to estimate CH_4 emission from fugitive emissions from fuels has been taken from the IPCC 1996 Guidelines.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	I. Roos	05.02.2008	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	I. Roos	05.02.2008	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	I. Roos	05.02.2008	Inventories/CH_4 emissions from fugitive emissions from fuels were compared in order to trace for significant changes in 1990 – 2005.	No significant changes in CH4 emissions from fugitive emissions from fuels years 1990 – 2005 were noted.	none

Table C. Tier 1: Individual Source Category Checklist – CO_2 emissions from Industrial Processes Sector

Inventory Report: 1990 - 2006

Source/Sink Category: **Industrial Processes**

Estimates prepared by: **Kristina Kaar,** Estonian Environmental Research Centre with the data from Estonian Statistical Office and from the ammonia production factory AS Nitrofert; cement production factory AS Kunda Nordic Cement and Lime production factory AS Nordkalk

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
1	2	3	4	5	6	7
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	K. Kaar	13.03.2008	Check that the description of activity data, emission factors is properly recorded and archived.	The description of activity data, emissions factors and methodology used is recorded in the internal documentation and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	K. Kaar	13.03.2008	Check that all bibliographical data references are cited and documented.	Activity data and emission factors are cited to references and documented in the internal documentation and the Reporter.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	K. Kaar	13.03.2008	Check for transcription errors.	No transcription errors were noted.	none

Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	K. Kaar	13.03.2008	CO_2 emission from cement production has been calculated using figures of 2006.	The value calculated was 413.648Gg; the value of CO_2 emission from cement production (2.A.1) in the Reporter it was 413.648Gg. The test passed.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	K. Kaar	13.03.2008	The check was not undertaken.		
Check that parameter and	Check that units are properly labeled in calculation sheets.	K. Kaar	13.03.2008	Check that units correctly used and properly reported.	There are correct units used in tables.	none
emission units are correctly recorded and that	Check that units are correctly carried through from beginning to end of calculations.	K. Kaar	13.03.2008	Check that units are used properly.	Correct SI units used to estimate CO_2 emissions from Industrial Processes sector are reported correctly.	none
1	2	3	4	5	6	7
appropriate conversion factors are used.	Check that conversion factors are correct.	K. Kaar	13.03.2008	Check that conversion factors used are correct.	Conversion factors used for the estimation of CO_2 emissions are correct.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	K. Kaar	13.03.2008	Check that all required data processing steps are properly represented.	All steps needed for data processing are represented properly and documented.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	K. Kaar	13.03.2008	Check that data fields are properly labeled.	The data fields are correctly labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	K. Kaar	13.03.2008	Check that documentation of database is archived.	All required documentation of database has been archived by the expert.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	K. Kaar	13.03.2008	Check for consistency in dataset related to the estimation of CO_2 emissions from Industrial Processes sector are reported correctly	Emission factors are consistent.	none

Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	K. Kaar	13.03.2008	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	K. Kaar	13.03.2008	The check was not undertaken.		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	K. Kaar	13.03.2008	Check for the detailed internal documentation.	The detailed internal documentation exists and is archived.	none
1	2	3	4	5	6	7
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	K. Kaar	13.03.2008	Check that all data required to estimate CO_2 emissions are documented and archived.	Activity and supporting data, emission factors are documented and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	K. Kaar	13.03.2008	The check was not undertaken.		
Check methodological and data changes	Check for temporal consistency in time series input data for each source category.	K. Kaar	13.03.2008	Check for consistency in input data by looking at graphs in the Reporter.	Input data and CO_2 emissions are consistent for years 1990 – 2006.	none

resulting in recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	K. Kaar	13.03.2008	Check for consistency in the algorithm used.	The method used to estimate CO_2 emissions has been taken from the Revised 1996 IPCC Guidelines.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	K. Kaar	13.03.2008	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	K. Kaar	13.03.2008	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	K. Kaar	13.03.2008	Inventories CO_2 emissions were compared in order to trace for significant changes in 1990 – 2006.	No significant changes in CO_2 emissions in 1990 – 2006 were noted.	none

Table D. Tier 1: Individual Source Category Checklist – F-gas emissions from Industrial Processes Sector

Inventory Report: 1990 – 2006

Source/Sink Category: **Industrial Processes**

Estimates prepared by: **André Leisewitz** (Twinning Project EE2005/1B/EN/01 "Enhancing the capacity to reduce the emissions of fluorinated greenhouse gases in Estonia)

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
1	2	3	4	5	6	7
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	A. Leisewitz	13.03.08	Check that the description of activity data, emission factors is properly recorded and archived.	The description of activity data, emissions factors and methodology used for 2006 is recorded in the internal documentation and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	A. Leisewitz	13.03.08	Check that bibliographical data references are cited and documented.	2006 activity data and emission factors are cited to references and documented in the internal documentation and the NIR.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	A. Leisewitz	13.03.08	Check for transcription errors.	No transcription errors were noted.	none

Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	A. Leisewitz	13.03.08	F-gas emissions for 2006 has been calculated using figures of 2006.	The value calculated was 75.97 Gg; the value of CO_2 emission from the investigated F-gas sources (2.F1-8;) in the Reporter it was 75.97 Gg. The test passed.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	A. Leisewitz	13.03.08	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	A. Leisewitz	13.03.08	Check that units correctly used and properly reported.	There are correct units used in tables and NIR.	none
	Check that units are correctly carried through from beginning to end of calculations.	A. Leisewitz	13.03.08	Check that units are used properly.	Correct SI units were used to estimate F-gas emissions from Industrial Processes sector.	none
1	2	3	4	5	6	7
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	A. Leisewitz	13.03.08	Check that all required data processing steps are properly represented.	All steps needed for 2006 data processing are represented properly and documented.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	A. Leisewitz	13.03.08	Check that data fields are properly labeled.	The data fields are correctly labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	A. Leisewitz	13.03.08	Check that documentation of database is archive	All required documentation of 2006 database has been archived by the expert. A copy of 2006 datasets is stored in the Estonian Environmental Research Center.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	A. Leisewitz	13.03.08	F- gas emissions	Activity data for 2006 and emission factors used are consistent.	none

Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	A. Leisewitz	13.03.08	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	A. Leisewitz	13.03.08	The check was not undertaken.		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	A. Leisewitz	13.03.08	Check for the detailed internal documentation.	The detailed internal documentation exists and is archived in the Estonian Environmental Centre.	none
1	2	3	4	5	6	7
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	A. Leisewitz	13.03.08	Check that all data required to estimate F-gas emissions are documented and archived.	Activity and supporting data, emission factors are documented and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	A. Leisewitz	13.03.08	The check was not undertaken.		
Check methodological and data changes	Check for temporal consistency in time series input data for each source category.	A. Leisewitz	13.03.08	The check was not undertaken		none

resulting in recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	A. Leisewitz	13.03.08	The check was not undertaken	The time series are not consistent as outlined in the NIR: the 2006 data are not yet complete and the methodology changed between 2006 and the years before. Time series have to be recalculated.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	A. Leisewitz	13.03.08	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	A. Leisewitz	13.03.08	The check was undertaken.	F-gas emission estimates are not yet complete as outlined in the NIR.	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	A. Leisewitz	13.03.08	The check was undertaken.	The estimation of F-gas emissions for the years before 2006 was not based on empirical analysis and is underestimated. That's why the (preliminary) data for 2006 can not be compared to the data for the former years which have to be recalculated.	none

Table E. Tier 1: Individual Source Category Checklist – CH_4 emissions from Enteric Fermentation of Livestock

Inventory Report: 1990 - 2006

Source/Sink Category: **4.A. – Enteric Fermentation (Cattle, Swine, Sheep, Goats and Horses)**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) with the data from ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	23.11.2007	Check of criteria for the selection and descriptions of activity data, emission factors and methodology used.	The description of activity data, emission factors and methods applied are documented and archived.	none
Check for transcription errors in data input and reference.	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	23.11.2007	Confirmation that references are cited in the internal documentation.	All activity data and emission factors are cited to references and documented in the NIR.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	23.11.2007	Check for transcription errors.	No transcription errors were made.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	23.11.2007	CH_4 emission from Enteric Fermentation of Mature Non-Dairy Cattle was calculated using figures of 1993.	The value of CH_4 emitted from enteric fermentation of manure non-dairy cattle calculated is 7.46 Gg. The same value is reported in the CRF.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	23.11.2007	Check that recorded units are appropriate.	Correct units were used through calculations from beginning to end.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	23.11.2007	Check that units are properly reported (used) through inventories.	Correct SI units were used in the estimates.	none
	Check that conversion factors are correct.	O. Gavrilova	23.11.2007	Check that conversion factors are properly used.	Appropriated conversion factors were used in order to estimate CH_4 emissions from enteric fermentation.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	23.11.2007	Confirmation that required data processing steps are correctly represented in the database.	Appropriate data processing steps were done, the algorithm is documented in the internal documentation and in the NIR.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	23.11.2007	Check that data fields are properly labeled.	The data fields are labeled correctly.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	23.11.2007	Check that corresponding documentations of databases are archived.	All corresponding documentations and datasets are documented and archived.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	23.11.2007	Check for consistency in activity data and emission factors used in the estimation of CH_4 emissions.	Activity data and emission factors used in the estimates are consistent in time. The small drop was 1999, when ESO changed a methodology of data collection.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	23.11.2007	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	23.11.2007	Check for the detailed internal documentation.	The detailed internal documentation is archived. One of the copies is stored on a server of Tallinn University of Technology; another is on a server of the EEIC.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	23.11.2007	Check that activity data and supporting data are archived.	Activity data and supporting data are archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	23.11.2007	Check for consistency of input data in time by looking at graphs in the CRF.	There is consistency in input-data on livestock population. No sharp drops are noted.	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	23.11.2007	Check for consistency of approach used to estimate CH_4 emissions from enteric fermentation.	The methods applied for the estimates are consistent.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	23.11.2007	Run completeness check.	The test passed.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	23.11.2007	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	23.11.2007	Inventories/CH_4 emissions in for years 1990–2006 were compared in order to trace significant changes in CH_4 emissions.	An omission was made in the 2007 submission. The omission was fixed in the 2008 submission. There are no significant changes in CH_4 emissions are noted.	none

Table F. Tier 1: Individual Source Category Checklist – CH_4 and N_2O emissions from Manure Management

Inventory Report: 1990 - 2006

Source/Sink Category: **4.B. – Manure Management (Cattle, Swine, Sheep, Goats, Horses and Poultry)**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) with the data from ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	23.11.2007	Check for descriptions of activity data, emission factors and methodology used in the estimates.	The description of activity data, emission factors and methodology used in the estimates are documented and archived.	none
Check for transcription errors in data input and reference.	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	23.11.2007	Confirmation that references on activity data are cited in the internal documentation.	References on activity data and emission factors are cited in the Reporter and the internal documentation.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	23.11.2007	Check that no transcription errors were made.	No transcription errors were made.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	23.11.2007	N_2O emission from Anaerobic Lagoon was estimated using figures of 1990.	The value calculated of N_2O emission from Anaerobic Lagoon is 0.002 Gg. The value reported in the CRF is the same.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that parameter and	Check that units are properly labeled in calculation sheets.	O. Gavrilova	23.11.2007	Check that units are appropriate.	There are correct units used in tables.	none
emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	23.11.2007	Check that units have been used properly from beginning to end of calculations.	Proper SI units were used.	none
	Check that conversion factors are correct.	O. Gavrilova	23.11.2007	Check that conversion factors have been used correctly.	Appropriate conversion factors were used.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	23.11.2007	Confirmation that all required data processing steps are represented and documented.	All appropriate data processing steps have been carried out (in the estimates of CH_4 and N_2O emissions) and documented.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	23.11.2007	Check that data fields are labeled.	The data fields are labeled properly.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	23.11.2007	Check that required documentation is archived.	All adequate documentation of database is archived. One of the copies are stored on a server of Tallinn University of Technology, the second copy is kept on a server of the EEIC.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	23.11.2007	Check for consistency in the values (activity data and emission factors) used in the calculations.	The total population of cattle declines smoothly during 1990–2006. The population of cattle by sub-categories decreased inconsistently, as in 1999, ESO changed a method of data collection. In 2003, Estonia decided to use a module on Western Europe's manure management system (instead of Eastern Europe's). Due to it, a small drop in N_2O emission in 2003.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	23.11.2007	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that uncertainties in emissions and removals are	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
estimated or calculated correctly.	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	23.11.2007	Check for the detailed internal documentation.	The detailed internal documentation is archived.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	23.11.2007	Check that activity and supporting data are archived.	Activity and supporting data (cattle population, milk production, manure management systems etc.) are described and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check methodological and data changes resulting in	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	23.11.2007	Check for consistency of activity data in time by looking at graphs in the Reporter.	No inconsistencies in time-series.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	23.11.2007	Check for consistency of method used in time.	The *Tier 2* approach was used to estimate CH_4 emissions and the *Tier 1* method was used to estimate N_2O emissions from cattle manure management in 1990–2006.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	23.11.2007	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	23.11.2007	Check that unknown data are documented.	The known data gaps are documented.	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	23.11.2007	Inventories reported in the Reporter were compared in order to trace significant changes of CH_4 or N_2O emissions.	There are not significant changes in CH_4 emissions from manure management noted. However, significant changes between two submissions are noted in N_2O emissions from swine manure management. It is explained by employing of N_2O emission factor, which is specific for 'cattle and deep litter manure system'.	none

Table G. Tier 1: Individual Source Category Checklist – Direct N_2O emissions from Agricultural Soils

Inventory Report: 1990 - 2006

Source/Sink Category: **4.D.1. – Direct Soil Emissions [4.D.1.1. Synthetic Fertilizers, 4.D.1.2. Animal Manure Applied, 4.D.1.3. N-fixing crops, 4.D.1.4. Crop Residues, 4.D.1.5. Cultivation of Histosols, 4.D.1.6. Other direct emissions (sewage sludge applied)]**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) with the data from ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	23.11.2007	Check for descriptions of activity data, emission factors and methodology used.	The activity data, the emission factors and the method applied are described, documented and archived.	none
Check for transcription errors in data input and reference.	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	23.11.2007	Confirmation that input data is cited to references.	Activity data used and emission factors are cited to references in the internal documentation and in the NIR.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	23.11.2007	Check for transcription errors.	There are no transcription errors made.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	23.11.2007	The calculation was carried out to estimate N_2O emission from Organic soils cultivation using figures of 1990.	The value (recalculated) of N_2O emission from organic soil cultivated is 0.54 Gg. The same value is reported in the CRF and in the NIR.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	23.11.2007	Check that all units are correctly labeled.	Units are properly labeled.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	23.11.2007	Check that units have been used correctly in the estimates.	Correct SI units were used properly.	none
	Check that conversion factors are correct.	O. Gavrilova	23.11.2007	Check that conversion factors have been used correctly.	Proper conversion factors were used through calculations from beginning to end.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	23.11.2007	Confirmation that all required data processing steps are documented in the internal documentation.	All required data processing steps were documented in the internal documentation.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	23.11.2007	Check that data fields are labeled.	The data fields are labeled properly.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	23.11.2007	Check that adequate documentation of database is represented and archived.	The documentation including activity data and emission factors used, the methods employed are archived. One of the copies are stored on a server of Tallinn University of Technology, another copy is kept on a server of the EEIC.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	23.11.2007	Check for consistency in activity data and emission factors used to estimate direct N_2O emissions from agricultural soils.	Activity data and emission factors used in the estimates are consistent in time-series.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	23.11.2007	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that uncertainties in emissions and removals are estimated or	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	23.11.2007	Check for the detailed internal documentation.	The detailed internal documentation (mostly excel-files) is stored.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	23.11.2007	Check that input and supporting data with appropriate documentation is documented and archived.	All data (activity and supporting) are documented and cited to references. The documentation is archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check methodological and data changes resulting in	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	23.11.2007	Check that input data are consistent in time by looking at graphs in the CRF.	No inconsistencies in time-series.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	23.11.2007	Check that method used is consistent in time.	The *Tier 1* approach has been used in order to estimate direct N_2O emissions from agricultural soils.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	23.11.2007	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	23.11.2007	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	23.11.2007	Inventories/direct N_2O emissions from agricultural soil were compared in order to trace for significant changes in emissions of 1990–2006.	The total direct N_2O emission reported in the 2008 submission is differ from those reported in the 2007 submission due to including into account N_2O emissions from cultivation of organic soils and from sewage sludge applied on agricultural fields.	none

Table H. Tier 1: Individual Source Category Checklist – Indirect Emissions of N_2O from Agriculture

Inventory Report: 1990 - 2006

Source/Sink Category: **4.D.3. – Indirect Emissions (Atmospheric Deposition and Nitrogen Leaching and Run-off)**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) with the data from ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	23.11.2007	Check that descriptions of activity data and emission factors are documented and archived.	Description of activity data in time-series, and emission factors employed are documented and archived.	none
Check for transcription errors in data input and reference.	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	23.11.2007	Ensure that the input data are cited to references.	All activity data and emission factors used are cited to references.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	23.11.2007	Check for transcription errors.	No transcription errors were made.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	23.11.2007	The calculation of N_2O emission from nitrogen leaching and run-off using figures of 1995 was carried out.	The value calculated is 0.61Gg. The N_2O emission from nitrogen leaching and run-off reported in the CRF is the same.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	23.11.2007	Check that units are labeled.	Units are properly labeled.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	23.11.2007	Check that units are used correctly in calculations.	Correct SI units were properly used from beginning to end of the calculation in years 1990–2006.	none
	Check that conversion factors are correct.	O. Gavrilova	23.11.2007	Check that correct conversion factors have been used.	Correct conversion factors were used in the estimations.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	23.11.2007	Confirmation that all necessary data processing steps have been carried out.	All required data processing steps have been carried out and documented.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	23.11.2007	Check that data fields have been properly labeled.	All data fields were labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	23.11.2007	Confirm that the required documentation of databases are documented and archived.	Datasets on activity data, emission factors are documented and archived. One of the copies is kept on a server of Tallinn University of Technology, the second copy is stored on a server of the EEIC.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	23.11.2007	Check for consistency in dataset associated with estimates of N_2O indirect emission.	Activity data are consistent in time-series. There are not sharp drops in the data noted.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	23.11.2007	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	23.11.2007	Check for the detailed internal documentation.	The detailed internal documentation for years 1990–2005 exists and is archived.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	23.11.2007	Check that activity and supporting data used are recorded and archived.	All input data for years 1990–2005 are archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	23.11.2007	The check was not undertaken.		
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	23.11.2007	Check that input data are consistent in time by looking at graphs presented in the CRF.	No inconsistencies in time-series were noted.	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	23.11.2007	Check that methodology used is consistent in time.	The IPCC algorithms (*Tier 1* approach) have been used in the estimates in years 1990–2006.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	23.11.2007	Run completeness check.	The test passed.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	23.11.2007	Check that unknown data are documented.	There are no unknown data.	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	23.11.2007	Inventories/N_2O indirect emissions were compared in order to trace emission trend.	There are changes in N_2O emissions between two submissions noted (the 2007 and the 2008 submission) due to taking into account sewage sludge applied on agricultural fields. Also, the changes in N_2O emissions are explained by recalculation of nitrogen excreted by animals in Estonia in 1990–2006.	none

Table I. Tier 1: Individual Source Category Checklist – Forest Land remaining Forest Land

Inventory Report: 2006

Source/Sink Category: **5.A.1 – Forest Land Remaining Forest Land**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) with the data from ESO and CFPS

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	05.12.2007	Check for description of activity data, emission factors applied and methodology used.	The description of activity data, emission factors and methodology employed are documented and archived.	none
Check for transcription errors in data input and reference.	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	05.12.2007	Check that all references are cited in the appropriate source chapter.	The activity data, emission factors used are cited properly to reference in the internal documentation and in the NIR.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	05.12.2007	Check that no transcription errors were made in the Reporter.	There are no transcription errors made.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	05.12.2007	Carbon removal flow due to forest biomass increment was estimated using figures of 1996.	The quantity of carbon sequestrated was calculated at value of 3,477 Gg. The same value is reported in the CRF and in the NIR.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	05.12.2007	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	05.12.2007	Inspection that units are correctly labeled.	All units are labeled in calculation sheets.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	05.12.2007	Check that units are appropriate.	The correct units were used through the estimates, from beginning to end.	none
	Check that conversion factors are correct.	O. Gavrilova	05.12.2007	Check that correct conversion factors have been used to estimate emissions/removals of carbon.	Correct conversion factors were used in order to estimate carbon emissions/removals.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	05.12.2007	Confirmation that all required data processing steps were carried out.	Appropriate data processing steps are carried out, documented and archived.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	05.12.2007	Confirm that data fields are properly labeled.	Data fields are correctly labeled.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	05.12.2007	Confirm that the documentation of databases on forest areas and biomass is documented and archived.	Documentation (updated) of datasets on forest areas, forest biomass increment and felling is archived. One of the copies is stored at Tallinn University of Technology and another is kept on a server of the EEIC.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	05.12.2007	Check for consistency in forest dataset in 1990–2006.	The data on forest area and forest biomass increment are consistent in time-series. The data on forest biomass burned due to wildfires are not consistent in time-series. As, a number of wildfire cases varies from one year to another.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	05.12.2007	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	05.12.2007	The check was not undertaken.		
Check that uncertainties in emissions and removals are	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	05.12.2007	Check for the detailed internal documentation to support the estimates.	The detailed internal documentation supporting additional estimates are archived and stored on servers of Tallinn University of Technology and the EEIC.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	05.12.2007	Check that inventory and supporting data are archived.	All data (initial and supporting) are cited to reference, documented and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	05.12.2007	The check was not undertaken.		
Check methodological and data changes	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	05.12.2007	Check for consistency in time by looking at graphs in the Reporter.	The test passed.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
resulting in recalculations.	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	05.12.2007	Check for consistency in algorithm used.	The *Tier 1* approach was used in order to estimate removals due to forest biomass increment and emissions from forest felling, biomass burning and from forest soils.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	05.12.2007	Run completeness check.	All passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	05.12.2007	N/A	N/A	N/A
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	05.12.2007	The submissions of 2007 and 2008 (years 1990–2006) were compared in order to trace changes in CO_2 emissions or removals.	The emission/removal data differ between the 2007 submission and the 2008 submission. The updated BEFs were used in the estimates. Also emission from forest drained organic soils was calculated first in the 2008 submission.	none

Table J. Tier 1: Individual Source Category Checklist – CH_4 Emissions from Solid Waste Disposal on Land

Inventory Report: 2006

Source/Sink Category: **6.A.1. Solid Waste Disposal on Land (Managed Waste Disposal on Land)**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) using datasets of EEIC and ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	20.11.2007	Check that the description of activity data, emission factors and methodology used have been documented and archived.	The activity data, emission factors and methodology applied in the estimates are documented and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	20.11.2007	Confirmation that bibliographical data references are cited in the internal documentation.	All data (activity data, emission factors and methods used) are cited to references in the internal documentation and the NIR.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	20.11.2007	Check for transcription errors made.	No transcription errors made.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	20.11.2007	The FOD method has been used in order to estimate CH_4 emission from solid waste disposed on landfills.	'The IPCC Spreadsheet for Estimating Methane Emissions from Solid Waste Disposal Sites' (IPCC Waste Model) presented on www.ipcc.ch was applied in the estimates.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	20.11.2007	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	20.11.2007	Check that units are appropriate.	The correct units were used in the estimates and reported in the NIR tables.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	20.11.2007	Check that units correctly used through calculations.	The data with correct SI units were used in order to estimate CH_4 from Solid Waste Disposal on Landfills.	none
	Check that conversion factors are correct.	O. Gavrilova	20.11.2007	Ensure that conversion factors used in the estimates are correct.	Correct conversion factors were used in the estimates.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	20.11.2007	Check that all steps needed are represented.	All appropriate (needed) data processing steps are accurately represented.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	20.11.2007	Check data fields.	Data fields are properly labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	20.11.2007	Check adequate documentation of waste database.	The documentation on activity data used (reports of the EEIC) are archived in expert's computer. A copy of datasets is stored in Ministry of the Environment.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	20.11.2007	Check for consistency in waste generation (disposal) from 1990 to 2006, and emission factors used in estimations.	Emissions of CH_4 from solid waste disposal (degradable waste) on landfills are consistent: 28.9 Gg in 1990 and 26.3 Gg in 2006.	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	20.11.2007	The check was not undertaken		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	20.11.2007	The check was not undertaken		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	20.11.2007	Check for the detailed internal documentation.	The detailed internal documentation is archived. Copies are stored on a server of the EEIC and on a server of Tallinn University of Technology.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	20.11.2007	Check that supporting data and calculations carried out are archived.	All excel files, which provide supporting data and calculations carried out are archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	20.11.2007	The check was not undertaken.		
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	20.11.2007	Check for consistency in time by looking at graphs in the Reporter.	No inconsistencies in time-series.	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	20.11.2007	Check for consistency in algorithm/method used for calculations.	The FOD approach was used in order to estimate CH_4 emission from Solid Waste Disposal (municipal and industrial) on Landfills in 1990–2006.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	20.11.2007	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	20.11.2007	N/A		

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	20.11.2007	Inventories/CH_4 emissions from waste disposal were compared in order to trace significant changes.	The FOD approach was applied for the first time in the 2008 submission in order to estimate emissions from municipal and industrial waste disposal on sites taking.	none

Table K. Tier 1: Individual Source Category Checklist – CO_2 and N_2O emissions from Waste Incineration

Inventory Report: 2006

Source/Sink Category: **6.C. Waste Incineration**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) using datasets of EEIC and ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	20.11.2007	Check of the description of activity data, emission factors and methodology used.	Activity data used, emission factors and methodology applied are properly recorded and archived. The emissions from waste incineration were estimated for the first time in the 2008 submission, therefore achieve created includes the data of 1990–2006.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	20.11.2007	Confirmation that bibliographical data are cited.	Activity data used in the estimates, emission factors and methods are accurately cited to references.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	20.11.2007	Check that no transcription errors were made.	No transcription errors made.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	20.11.2007	N_2O emission from waste incineration using figures of 2000 was estimated.	The value of N_2O emission from waste incineration was 0.415 Gg. The value reported in the CRF is the same. The test passed.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	20.11.2007	The check was not undertaken		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	20.11.2007	Check that units are appropriate.	The correct units were used in the estimates and reported in the NIR.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	20.11.2007	Check that units correctly used in calculations.	SI units were used correctly through from beginning to end of estimations.	none
	Check that conversion factors are correct.	O. Gavrilova	20.11.2007	Check that conversion factors were used correctly.	Conversion factors were used accurately through estimations.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	20.11.2007	Confirmation that all required steps represented correctly in the internal documentation.	All required data processing steps have been correctly applied and reported in the internal datasets.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	20.11.2007	Check that data fields are properly labeled.	Data fields are properly labeled.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	20.11.2007	Check for consistency in amounts of waste burned and GHG emissions emitted due to waste incineration in 1990–2006.	The amounts of waste burned in Estonia differ from one year to another. The sharp peak increase is noted in 1995–1996 due to large amounts of wood waste incinerated on land.	none
Check that the movement of inventory data among processing	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	20.11.2007	The check was not undertaken		

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
steps is correct.	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	20.11.2007	The check was not undertaken		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	20.11.2007	Check for the detailed internal documentation.	The detailed internal information is documented and archived. One of the copies is stored in Tallinn University of Technology and another is on a server of the EEIC.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	20.11.2007	Check that activity and supporting data are archived.	All activity data, emission factors, methods used in the estimates and supporting estimations are properly documented and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	20.11.2007	The check was not undertaken		

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	20.11.2007	Check for consistency of input data in time by looking at graphs in the Reporter.	The sharp increase in CO_2 emission from waste incineration in 2004 is explained by burning of mixed construction and demolition wastes. The N_2O emissions from solid waste incineration are relatively consistent, with the exception of 1995, 1996, 2000, 2002 and 2004. The sharp increase in N_2O emission in 1995 is explained by burning of animal manure for energy generation. The increase in emission of 1996 is explained by increase of wood waste burned on land. The increases in N_2O emission in 2000 and 2002 were due to burning of sludge. The increase in N_2O emission in 2004 taken place due to incineration of mixed construction and demolition wastes.	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	20.11.2007	Check for consistency in the method used.	The Tier 1 approach presented in the 2006 IPCC was used in order to estimate GHG emissions in 1990–2006 in Estonia.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	20.11.2007	Run completeness check.	The test passed.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova		N/A		
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	20.11.2007	Inventories/GHG emissions from solid waste incineration in years 1990–2006 were compared in order to trace for significant changes in emissions.	GHG emissions (CO_2 and N_2O) from solid waste burned were carried out in the first time in the 2008 submission.	none

Table L. Tier 1: Individual Source Category Checklist – CH_4 and N_2O emissions from Biological Treatment of Solid Waste

Inventory Report: 2006

Source/Sink Category: **6.D. Biological Treatment**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) using datasets of EEIC and ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	21.11.2007	Check of the description of activity data, emission factors and methodology used.	Activity data employed, emission factors and methods used in the estimates are properly documented and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	21.11.2007	Confirmation that bibliographical data are cited.	All input data (activity data and emission factors) are cited to references. A list of reference is reported in the NIR and in the internal documentation.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	21.11.2007	Check that no transcription errors were made.	No transcription errors were made.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	21.11.2007	N_2O emission from biological treatment of waste was calculated using figures of 1992.	The value of N_2O emitted from waste composting in 1992 (reported in the CRF) was 0.002 Gg. The same value was received during a representative sample of emission calculation.	none
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	21.11.2007	The check was not undertaken		
Check that parameter and	Check that units are properly labeled in calculation sheets.	O. Gavrilova	21.11.2007	Check that units are appropriate.	The correct units were employed in the estimates.	none
emission units are correctly recorded and that	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	21.11.2007	Check that units correctly used in calculations.	SI units were correctly employed through from beginning to end of the estimates.	none
appropriate conversion factors are used.	Check that conversion factors are correct.	O. Gavrilova	21.11.2007	Check that conversion factors were used correctly.	All conversion factors employed were used correctly.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	21.11.2007	Confirmation that all required steps represented correctly in the internal documentation.	All appropriate steps are described in the dataset (in the internal documentation).	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	21.11.2007	Check that data fields are properly labeled.	Data fields are labeled properly.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	21.11.2007	Check for consistency in parameters employed in order to estimate N_2O and CH_4 emissions from organic waste composting in 1990–2006.	All activity data employed were used from annual reports reported by the EEIC. Constants (emission factors) have been used from the IPCC Guidelines (1996, 2006).	none
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	21.11.2007	The check was not undertaken		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	21.11.2007	The check was not undertaken		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	21.11.2007	Check for the detailed internal documentation.	The detailed internal documentation is archived. One of the copies are stored in Tallinn University of Technology, another is on a server of the EEIC.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	21.11.2007	Check that activity and supporting data are archived.	Activity data employed and all supporting data and estimates are recorded and archived.	none
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	21.11.2007	The check was not undertaken		
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	21.11.2007	Check for consistency of input data in time by looking at graphs in the Reporter.	There is not inconsistency in CH_4 and N_2O emissions noted in 1990–2001. However, since 2002 the practice of composting of organic waste is increasing. Therefore GHG emissions have started to increase since 2002.	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	21.11.2007	Check for consistency in the method used.	The *Tier 1* method was applied in order to estimate CH_4 and N_2O emissions from biological treatment of waste in 1990–2006.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	21.11.2007	Run completeness check.	The test passed.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	21.11.2007	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	21.11.2007	Inventories/GHG emissions from biological treatment of waste in years 1990–2006 were compared in order to trace for significant changes in emissions.	GHG emissions from Biological Treatment were estimated for the first time in the 2008 submission. Therefore no comparison has been done.	none

Table M. Tier 1: Individual Source Category Checklist – N_2O emissions from Domestic Water: Human Sewage

Inventory Report: 2006

Source/Sink Category: **6.B.2.2 – Human Sewage**

Estimates prepared by: O. Gavrilova (Tallinn University of Technology) using datasets of EEIC and ESO

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that assumptions and criteria for the selection of activity data and emission factors are documented.	Cross-check descriptions of activity data and emission factors with information on source categories and ensure that these are properly recorded and archived.	O. Gavrilova	21.11.2007	Check that the description of activity data, emission factors is properly recorded and archived.	The description of activity data, emission factors with information on references are properly recorded and archived.	none
Check for transcription errors in data input and reference	Confirm that bibliographical data references are properly cited in the internal documentation.	O. Gavrilova	21.11.2007	Check that all bibliographical data references are cited and documented.	Bibliographical data references are cited in the internal documentation and in the NIR.	none
	Cross-check a sample of input data from each source category (either measurements or parameters used in calculations) for transcription errors.	O. Gavrilova	21.11.2007	Check for transcription errors.	No transcription errors were made.	none
Check that emissions are calculated correctly.	Reproduce a representative sample of emissions calculations.	O. Gavrilova	21.11.2007	N_2O emission from human sewage has been calculated using figures of 2004.	The value of N_2O emission from human sewage recalculated was 0.11 Gg, the same value is reported in the CRF and in the NIR.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Selectively mimic complex model calculations with abbreviated calculations to judge relative accuracy.	O. Gavrilova	21.11.2007	The check was not undertaken.		
Check that parameter and emission units are correctly recorded and that appropriate conversion factors are used.	Check that units are properly labeled in calculation sheets.	O. Gavrilova	21.11.2007	Check that units correctly used and properly reported.	The correct units were used in tables.	none
	Check that units are correctly carried through from beginning to end of calculations.	O. Gavrilova	21.11.2007	Check that units are used properly.	Correct SI units were used through from beginning to end of the estimates.	none
	Check that conversion factors are correct.	O. Gavrilova	21.11.2007	Check that conversion factors used are correct.	Correct conversion factors were employed in the estimates.	none
Check the integrity of database files.	Confirm that the appropriate data processing steps are correctly represented in the database.	O. Gavrilova	21.11.2007	Check that all required data processing steps are properly represented.	All needed data processing steps are accurately documented and archived.	none
	Ensure that data fields are properly labeled and have the correct design specifications.	O. Gavrilova	21.11.2007	Check that data fields are properly labeled.	Data fields are properly labeled.	none
	Ensure that adequate documentation of database and model structure and operation are archived.	O. Gavrilova	21.11.2007	Check that documentation of database is archived.	The appropriate documentation of datasets is archived.	none
Check for consistency in data between source categories.	Identify parameters (e.g. activity data, constants) that are common to multiple source categories and confirm that there is consistency in the values used for these parameters in the emissions calculations.	O. Gavrilova	21.11.2007	Check for consistency in dataset related to the estimation of N_2O from human sewage.	There is no inconsistency in activity data and emission factors used in 1990–2006.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
Check that the movement of inventory data among processing steps is correct.	Check that emissions data are correctly aggregated from lower reporting levels to higher reporting levels when preparing summaries.	O. Gavrilova	21.11.2007	The check was not undertaken.		
	Check that emissions data are correctly transcribed between different intermediate products.	O. Gavrilova	21.11.2007	The check was nit undertaken.		
Check that uncertainties in emissions and removals are estimated or calculated correctly.	Check that qualifications of individuals providing expert judgment for uncertainty estimates are appropriate.					
	Check that qualifications, assumptions and expert judgments are recorded. Check that calculated uncertainties are complete and calculated correctly.					
	If necessary, duplicate error calculations or a small sample of the probability distributions used by Monte Carlo analyses.					
Undertake review of internal documentation.	Check that there is detailed internal documentation to support the estimates and enable duplication of the emission and uncertainty estimates.	O. Gavrilova	21.11.2007	Check for the detailed internal documentation.	The detailed internal documentation is archived. The copies are stored on servers of Tallinn University of Technology and the EEIC.	none
	Check that inventory data, supporting data, and inventory records are archived and stored to facilitate detailed review.	O. Gavrilova	21.11.2007	Check that all data required to estimate N_2O emissions from human sewage are documented and archived.	Activity data employed, emission factors used in the estimates are archived.	none

QC Activity	Procedures	Person responsible for quality check	Date	Brief description of check applied	Results of check	Corrective Actions Taken
	Check integrity of any data archiving arrangements of outside organizations involved in inventory preparation.	O. Gavrilova	21.11.2007	The check was not undertaken.		
Check methodological and data changes resulting in recalculations.	Check for temporal consistency in time series input data for each source category.	O. Gavrilova	21.11.2007	Check for consistency in input data by looking at graphs in the Reporter.	The test passed.	none
	Check for consistency in the algorithm/method used for calculations throughout the time series.	O. Gavrilova	21.11.2007	Check for consistency in the algorithm used.	The *Tier 1* approach was used in order to estimate N_2O emissions from human sewage in 1990–2006.	none
Undertake completeness checks.	Confirm that estimates are reported for all source categories and for all years from the appropriate base year to the period of the current inventory.	O. Gavrilova	21.11.2007	Run completeness check.	The test passed.	none
	Check that known data gaps that result in incomplete source category emissions estimates are documented.	O. Gavrilova	21.11.2007	N/A	N/A	none
Compare estimates to previous estimates.	For each source category, current inventory estimates should be compared to previous estimates. If there are significant changes or departures from expected trends, recheck estimates and explain any difference.	O. Gavrilova	21.11.2007	Inventories/N_2O emissions from human sewage were compared in order to trace for significant changes in 1990–2006.	There is one recalculation was made in the 2008 submission. The protein consumption per capita was updated. However, no significant changes in the emissions were noted.	none