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TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NM VOC	SO ₂
	(Gg)						
Total Energy	51 860,51	16,88	2,90	151,31	453,64	80,53	46,23
A. Fuel Combustion Activities (Sectoral Approach)	51 745,03	14,69	2,89	151,28	453,62	69,56	46,23
1. Energy Industries	25 120,12	0,96	0,93	40,61	16,78	0,90	28,67
a. Public Electricity and Heat Production	22 099,97	0,91	0,85	36,43	15,79	0,85	25,45
b. Petroleum Refining	2 832,54	0,05	0,08	3,73	0,95	0,05	2,88
c. Manufacture of Solid Fuels and Other Energy Industries	187,61	0,00	0,00	0,45	0,05	0,00	0,34
2. Manufacturing Industries and Construction	8 189,20	0,52	0,40	30,22	29,06	1,42	10,04
a. Iron and Steel	2 295,83	0,02	0,02	2,39	5,38	0,02	3,86
b. Non-Ferrous Metals	89,66	0,00	0,00	0,10	0,00	0,00	0,35
c. Chemicals	696,75	0,01	0,03	0,88	0,29	0,01	0,75
d. Pulp, Paper and Print	3 191,46	0,27	0,28	14,99	16,07	0,27	3,09
e. Food Processing, Beverages and Tobacco	137,52	0,00	0,01	0,30	0,07	0,00	0,41
f. Other (as specified in table 1.A(a) sheet 2)	1 777,98	0,21	0,06	11,56	7,23	1,11	1,58
Construction	841,96	0,06	0,02	7,40	4,83	1,00	0,01
Other non-specified	1 104,75	0,15	0,04	4,16	2,40	0,11	1,58
Transferred CO ₂	-168,73	NA	NA	NA	NA	NA	NA
3. Transport	12 708,43	1,84	0,56	59,91	272,65	32,66	1,06
a. Civil Aviation	275,48	0,01	0,01	0,85	1,89	0,10	0,07
b. Road Transportation	11 238,10	1,37	0,52	44,41	185,07	19,32	0,07
c. Railways	91,78	0,00	0,00	2,13	0,27	0,12	0,00
d. Navigation	508,22	0,16	0,01	8,46	22,58	4,83	0,92
e. Other Transportation (as specified in table 1.A(a) sheet 3)	594,85	0,30	0,01	4,05	62,84	8,29	0,00
Biofuels for 1A3C and 1A3D	NA	0,01	0,00	0,12	1,21	0,25	0,00
Off-road vehicles and other machinery	594,85	0,30	0,01	3,93	61,63	8,04	0,00

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 2 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	NO _x	CO	NM VOC	SO ₂
	(Gg)						
4. Other Sectors	4 836,35	11,31	0,25	18,79	133,31	34,45	5,71
a. Commercial/Institutional	952,27	0,29	0,03	1,38	6,90	0,71	2,01
b. Residential	2 078,16	10,52	0,16	7,39	108,10	30,92	2,36
c. Agriculture/Forestry/Fisheries	1 805,93	0,50	0,06	10,02	18,32	2,82	1,34
5. Other (as specified in table 1.A(a) sheet 4)	890,94	0,06	0,76	1,76	1,82	0,14	0,75
a. Stationary	715,41	0,05	0,75	0,70	0,22	0,05	0,69
Indirect N ₂ O emissions from NO _x	NO	NO	0,74	NO	NO	NO	NO
Non-specified emissions of Fuels from non-energy use	76,60	0,00	0,00	0,10	0,02	0,00	0,10
Other non-specified	638,81	0,05	0,01	0,59	0,20	0,05	0,59
b. Mobile	175,53	0,01	0,01	1,06	1,60	0,09	0,05
Other non-specified	175,53	0,01	0,01	1,06	1,60	0,09	0,05
B. Fugitive Emissions from Fuels	115,48	2,19	0,00	0,02	0,02	10,97	0,00
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO
a. Coal Mining and Handling	NO	NO	NO	NO	NO	NO	NO
b. Solid Fuel Transformation	NO	NO	NO	NO	NO	NO	NO
c. Other (as specified in table 1.B.1)	NO	NO	NO	NO	NO	NO	NO
Preparation of soils for peat production	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	115,48	2,19	0,00	0,02	0,02	10,97	0,00
a. Oil	1,43	0,52	NO	NO	NO	10,96	NO
b. Natural Gas	4,70	1,67				NO	NO
c. Venting and Flaring	77,19	0,00	0,00	0,02	0,02	0,00	0,00
Venting	NO	NO				NO	NO
Flaring	77,19	0,00	0,00	0,02	0,02	0,00	0,00
d. Other (as specified in table 1.B.2)	32,16	NO	NO	NO	NO	NO	NO
Other non-specified	32,16	NO	NO	NO	NO	NO	NO
Memo Items: ⁽¹⁾							
International Bunkers	2 379,36	0,09	0,09	21,02	4,00	0,72	8,33
Aviation	1 570,07	0,03	0,07	4,57	2,92	0,30	0,40
Marine	809,30	0,06	0,02	16,45	1,08	0,43	7,92
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass	29 332,48						

⁽¹⁾ Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO₂ emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the Energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO₂ emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO₂ emissions are accounted for as a loss of biomass stocks in the Land Use, Land-Use Change and Forestry sector.

Documentation Box:

Parties should provide detailed explanations on the Energy sector in Chapter 3: Energy (CRF sector 1) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

1 Energy:Other land converted to wetland includes all land use categories, no separation could be done between land use categories. See section 7.5.1 of the NIR.

1.AA.2.D Pulp, Paper and Print:Peat is included in Other fuels.

1.AA.3.E Other Transportation (please specify):Content of the category 1.AA.3.E Other Transportation Off-road vehicles and other machinery: see NIR text and tables 3.2.10 and 3.2.19 in section 3.2.2.1.

1.AA.3.E Off-road vehicles and other machinery:Contents of Category 1.AA.3.E Other Transportation Off-road vehicles and other machinery: see NIR text and tables 3.2.10 and 3.2.20 in section 3.2.2.1.

1.AA.3.E Liquid Fuels:Emissions in dataset prepared by UNFCCC were in wrong fuel category (Other Fuels). Fuels are gasoline, gasoil and LPG, which belong to Liquid Fuels. Activity data was missing.

1.AA.3.E Other Fuels:Emissions in dataset prepared by UNFCCC were in wrong fuel category (Other Fuels). Fuels are gasoline, gasoil and LPG, which belong to Liquid Fuels. Activity data was missing.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 1 of 4)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)	NCV/GCV ⁽¹⁾	(t/TJ)	(kg/TJ)		(Gg)		
1.A. Fuel Combustion	951 715,80	NCV				51 745,03	14,69	2,89
Liquid Fuels	327 186,67	NCV	71,76	7,32	2,58	23 477,90	2,39	0,84
Solid Fuels	131 228,16	NCV	98,75	1,14	1,74	12 958,95	0,15	0,23
Gaseous Fuels	134 773,74	NCV	54,77	2,63	1,12	7 381,73	0,35	0,15
Biomass	275 618,08	NCV	106,42	41,42	2,15 ⁽³⁾		11,42	0,59
Other Fuels	82 909,14	NCV	95,60	4,55	13,01	7 926,46	0,38	1,08
1.A.1. Energy Industries	380 668,85	NCV				25 120,12	0,96	0,93
Liquid Fuels	41 966,03	NCV	68,82	1,14	2,10	2 888,29	0,05	0,09
Solid Fuels	114 608,90	NCV	93,56	1,12	1,78	10 722,27	0,13	0,20
Gaseous Fuels	94 580,51	NCV	54,77	1,70	1,08	5 179,74	0,16	0,10
Biomass	64 976,22	NCV	105,65	5,57	3,79 ⁽³⁾	6 864,95	0,36	0,25
Other Fuels	64 537,18	NCV	98,08	4,12	4,45	6 329,82	0,27	0,29
a. Public Electricity and Heat Production	331 016,63	NCV				22 099,97	0,91	0,85
Liquid Fuels	13 429,77	NCV	77,86	1,44	2,60	1 045,68	0,02	0,03
Solid Fuels	112 344,90	NCV	93,77	1,13	1,80	10 534,66	0,13	0,20
Gaseous Fuels	76 504,31	NCV	54,77	1,86	1,02	4 189,81	0,14	0,08
Biomass	64 200,46	NCV	106,26	5,62	3,81 ⁽³⁾	6 821,79	0,36	0,24
Other Fuels	64 537,18	NCV	98,08	4,12	4,45	6 329,82	0,27	0,29
b. Petroleum Refining	47 388,22	NCV				2 832,54	0,05	0,08
Liquid Fuels	28 536,26	NCV	64,57	1,00	1,87	1 842,60	0,03	0,05
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	18 076,20	NCV	54,76	1,00	1,32	989,94	0,02	0,02
Biomass	775,76	NCV	55,64	1,00	2,00 ⁽³⁾	43,16	0,00	0,00
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
c. Manufacture of Solid Fuels and Other Energy Industries	2 264,00	NCV				187,61	0,00	0,00
Liquid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Solid Fuels	2 264,00	NCV	82,87	1,00	1,00	187,61	0,00	0,00
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Biomass	NO	NCV	NO	NO	NO ⁽³⁾	NO	NO	NO
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO

Note: All footnotes for this table are given at the end of the table on sheet 4.

Note: For the coverage of fuel categories, refer to the IPCC Guidelines (Volume 1. Reporting Instructions - Common Reporting Framework, section 1.2, p. 1.19). If some derived gases (e.g. gas works, gas, coke oven gas, blast furnace gas) are considered, Parties should provide information on the allocation of these derived gases under the above fuel categories (liquid, solid, gaseous, biomass and other fuels) in the NIR (see also documentation box at the end of sheet 4 of this table).

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
 (Sheet 2 of 4)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)	NCV/GCV ⁽¹⁾	(t/TJ)	(kg/TJ)		(Gg)		
I.A.2 Manufacturing Industries and Construction	251 699,06	NCV				8 189,20	0,52	0,40
Liquid Fuels	41 975,12	NCV	64,77	2,17	1,81	2 718,83	0,09	0,08
Solid Fuels	16 487,13	NCV	134,91	1,07	1,41	2 224,34	0,02	0,02
Gaseous Fuels	32 345,13	NCV	54,79	1,26	1,28	1 772,12	0,04	0,04
Biomass	143 735,15	NCV	108,01	2,20	1,44 ⁽³⁾	15 525,41	0,32	0,21
Other Fuels	17 156,53	NCV	85,91	2,94	2,80	1 473,91	0,05	0,05
a. Iron and Steel	19 401,25	NCV				2 295,83	0,02	0,02
Liquid Fuels	5 013,77	NCV	68,13	1,00	1,18	341,61	0,01	0,01
Solid Fuels	12 703,35	NCV	146,57	1,00	1,06	1 861,99	0,01	0,01
Gaseous Fuels	1 684,13	NCV	54,76	1,00	1,67	92,23	0,00	0,00
Biomass	NO	NCV	NO	NO	NO ⁽³⁾	NO	NO	NO
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
b. Non-Ferrous Metals	1 160,83	NCV				89,66	0,00	0,00
Liquid Fuels	956,67	NCV	73,36	1,00	1,10	70,18	0,00	0,00
Solid Fuels	160,46	NCV	106,47	1,00	1,03	17,08	0,00	0,00
Gaseous Fuels	43,70	NCV	54,76	1,00	1,48	2,39	0,00	0,00
Biomass	NO	NCV	NO	NO	NO ⁽³⁾	NO	NO	NO
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
c. Chemicals	13 138,52	NCV				696,75	0,01	0,03
Liquid Fuels	11 501,07	NCV	55,23	1,00	2,02	635,18	0,01	0,02
Solid Fuels	NA	NCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	942,19	NCV	54,77	1,00	1,57	51,60	0,00	0,00
Biomass	609,22	NCV	98,26	1,57	2,57 ⁽³⁾	59,86	0,00	0,00
Other Fuels	86,04	NCV	115,83	1,00	2,00	9,97	0,00	0,00
d. Pulp, Paper and Print	185 378,08	NCV				3 191,46	0,27	0,28
Liquid Fuels	6 384,31	NCV	74,52	1,18	1,43	475,76	0,01	0,01
Solid Fuels	572,59	NCV	93,65	2,99	6,56	53,63	0,00	0,00
Gaseous Fuels	26 874,57	NCV	54,79	1,07	1,20	1 472,53	0,03	0,03
Biomass	138 408,66	NCV	108,18	1,37	1,43 ⁽³⁾	14 973,38	0,19	0,20
Other Fuels	13 137,95	NCV	90,54	2,87	2,93	1 189,55	0,04	0,04
e. Food Processing, Beverages and Tobacco	1 882,66	NCV				137,52	0,00	0,01
Liquid Fuels	1 094,58	NCV	76,61	1,02	2,75	83,85	0,00	0,00
Solid Fuels	26,20	NCV	106,92	1,00	2,00	2,80	0,00	0,00
Gaseous Fuels	221,40	NCV	54,76	1,00	1,58	12,13	0,00	0,00
Biomass	169,58	NCV	105,87	6,02	4,71 ⁽³⁾	17,95	0,00	0,00
Other Fuels	370,90	NCV	104,45	5,43	6,81	38,74	0,00	0,00
f. Other (please specify) ⁽⁴⁾	30 737,73	NCV				1 777,98	0,21	0,06
Construction								
Liquid Fuels	11 440,40	NCV	73,60	5,03	1,94	841,96	0,06	0,02
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NA	NA	NA	NA	NA	NA
Biomass	108,70	NCV	70,51	9,75	1,94 ⁽³⁾	7,66	0,00	0,00
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Other non-specified								
Liquid Fuels	5 584,34	NCV	78,61	1,29	2,07	439,01	0,01	0,01
Solid Fuels	3 024,53	NCV	95,50	1,00	1,96	288,84	0,00	0,01
Gaseous Fuels	2 579,13	NCV	54,76	3,48	1,75	141,25	0,01	0,00
Biomass	4 438,99	NCV	105,10	27,79	1,39 ⁽³⁾	466,54	0,12	0,01
Other Fuels	3 561,63	NCV	66,16	2,99	1,93	235,65	0,01	0,01
Transferred CO2								

Liquid Fuels	NA	NCV	NA	NA	NA		-168,73	NA	NA
Solid Fuels	NA	NCV	NA	NA	NA		NA	NA	NA
Gaseous Fuels	NA	NCV	NA	NA	NA		NA	NA	NA
Biomass	NA	NCV	NA	NA	NA	(3)	NA	NA	NA
Other Fuels	NA	NCV	NA	NA	NA		NA	NA	NA

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY
Fuel Combustion Activities - Sectoral Approach
(Sheet 3 of 4)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)	NCV/GCV ⁽¹⁾	(t/TJ)	(kg/TJ)		(Gg)		
1.A.3 Transport	179 580,47	NCV				12 708,43	1,84	0,56
Liquid Fuels	173 063,31	NCV	73,37	9,43	3,12	12 696,83	1,63	0,54
Solid Fuels	NA,NO	NCV	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
Gaseous Fuels	210,74	NCV	55,04	609,98	0,10	11,60	0,13	0,00
Biomass	6 306,42	NCV	63,89	12,53	2,98	402,90	0,08	0,02
Other Fuels	NA,NO	NCV	NA,NO	NA,NO	NA,NO ⁽³⁾	NA,NO	NA,NO	NA,NO
a. Civil Aviation	3 764,50	NCV				275,48	0,01	0,01
Aviation Gasoline	43,50	NCV	71,30	0,46	2,07	3,10	0,00	0,00
Jet Kerosene	3 721,00	NCV	73,20	2,69	3,00	272,38	0,01	0,01
b. Road Transportation	159 295,04	NCV				11 238,10	1,37	0,52
Gasoline	63 655,90	NCV	72,90	14,99	2,75	4 640,52	0,95	0,17
Diesel Oil	89 483,50	NCV	73,60	2,51	3,64	6 585,99	0,22	0,33
Liquefied Petroleum Gases (LPG)	NO	NCV	NO	NO	NO	NO	NO	NO
Other Liquid Fuels (please specify)	NA	NCV				NA	NA	NA
Other non-specified	NA	NCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	210,74	NCV	55,04	609,98	0,10	11,60	0,13	0,00
Biomass	5 944,90	NCV	63,99	9,70	3,07 ⁽³⁾	380,44	0,06	0,02
Other Fuels (please specify)	NO	NCV				NO	NO	NO
Other non-specified	NO	NCV	NO	NO	NO	NO	NO	NO
c. Railways	1 247,00	NCV				91,78	0,00	0,00
Liquid Fuels	1 247,00	NCV	73,60	3,90	1,96	91,78	0,00	0,00
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Other Fuels (please specify)	NO	NCV				NO	NO	NO
Other non-specified	NO	NCV	NO	NO	NO	NO	NO	NO
d. Navigation	6 781,01	NCV				508,22	0,16	0,01
Residual Oil (Residual Fuel Oil)	2 008,39	NCV	78,80	5,73	2,01	158,26	0,01	0,00
Gas/Diesel Oil	2 352,69	NCV	73,60	4,56	1,98	173,16	0,01	0,00
Gasoline	1 865,09	NCV	72,90	70,68	1,43	135,97	0,13	0,00
Other Liquid Fuels (please specify)	554,84	NCV				40,84	0,00	0,00
Diesel Oil	554,84	NCV	73,60	4,11	2,14	40,84	0,00	0,00
Other non-specified	NA	NCV	NA	NA	NA	NA	NA	NA
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Other Fuels (please specify)	NO	NCV				NO	NO	NO
Other non-specified	NO	NCV	NO	NO	NO	NO	NO	NO
e. Other Transportation (please specify) ⁽⁵⁾	8 492,92	NCV				594,85	0,30	0,01
Biofuels for 1A3C and 1A3D	150,72	NCV				NA	0,01	0,00
Liquid Fuels	NA	NCV	NA	NA	NA	NA	NA	NA
Solid Fuels	NA	NCV	NA	NA	NA	NA	NA	NA
Gaseous Fuels	NA	NCV	NA	NA	NA	NA	NA	NA
Biomass	150,72	NCV	62,87	49,44	1,61 ⁽³⁾	9,48	0,01	0,00
Other Fuels	NA	NCV	NA	NA	NA	NA	NA	NA
Off-road vehicles and other machinery	8 342,20	NCV				594,85	0,30	0,01
Liquid Fuels	8 131,40	NCV	73,15	34,63	1,62	594,85	0,28	0,01
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Biomass	210,80	NCV	61,61	66,08	1,16 ⁽³⁾	12,99	0,01	0,00

Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO	NO
-------------	----	-----	----	----	----	----	----	----	----

Note: All footnotes for this table are given at the end of the table on sheet 4.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Fuel Combustion Activities - Sectoral Approach

(Sheet 4 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS		
	Consumption		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
	(TJ)	NCV/GCV ⁽¹⁾	(t/TJ)	(kg/TJ)		(Gg)		
1.A.4 Other Sectors	126 278,30	NCV				4 836,35	11,31	0,25
Liquid Fuels	60 847,47	NCV	74,11	9,44	2,00	4 509,47	0,57	0,12
Solid Fuels	132,13	NCV	93,42	21,92	3,06	12,34	0,00	0,00
Gaseous Fuels	3 502,23	NCV	54,76	3,49	1,03	191,80	0,01	0,00
Biomass	60 581,03	NCV	107,92	175,96	2,00 ⁽³⁾	6 537,87	10,66	0,12
Other Fuels	1 215,43	NCV	100,98	50,00	3,99	122,73	0,06	0,00
a. Commercial/Institutional	16 391,60	NCV				952,27	0,29	0,03
Liquid Fuels	11 419,62	NCV	75,21	9,83	2,02	858,89	0,11	0,02
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	1 492,19	NCV	54,76	4,30	1,08	81,72	0,01	0,00
Biomass	3 364,35	NCV	106,12	47,85	1,98 ⁽³⁾	357,02	0,16	0,01
Other Fuels	115,43	NCV	100,98	50,00	3,86	11,66	0,01	0,00
b. Residential	80 028,00	NCV				2 078,16	10,52	0,16
Liquid Fuels	26 185,20	NCV	73,77	10,00	2,00	1 931,74	0,26	0,05
Solid Fuels	8,00	NCV	89,87	300,00	4,00	0,72	0,00	0,00
Gaseous Fuels	1 720,00	NCV	54,76	3,00	1,00	94,20	0,01	0,00
Biomass	51 604,80	NCV	108,13	198,14	2,00 ⁽³⁾	5 580,09	10,23	0,10
Other Fuels	510,00	NCV	100,98	50,00	4,00	51,50	0,03	0,00
c. Agriculture/Forestry/Fisheries	29 858,70	NCV				1 805,93	0,50	0,06
Liquid Fuels	23 242,64	NCV	73,95	8,61	1,98	1 718,84	0,20	0,05
Solid Fuels	124,13	NCV	93,65	4,00	3,00	11,63	0,00	0,00
Gaseous Fuels	290,04	NCV	54,76	2,20	1,00	15,88	0,00	0,00
Biomass	5 611,88	NCV	107,05	48,77	2,00 ⁽³⁾	600,76	0,27	0,01
Other Fuels	590,00	NCV	100,98	50,00	4,00	59,58	0,03	0,00
1.A.5 Other (Not specified elsewhere) ⁽⁶⁾	13 489,12	NCV				890,94	0,06	0,76
a. Stationary (please specify) ⁽⁷⁾	11 088,32	NCV				715,41	0,05	0,75
Indirect N2O emissions from NOx								
Liquid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Biomass	NO	NCV	NO	NO	NO ⁽³⁾	NO	NO	NO
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	0,74
Non-specified emissions of Fuels from non-energy use								
Liquid Fuels	1 044,60	NCV	73,33	4,00	2,00	76,60	0,00	0,00
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Biomass	NO	NCV	NO	NO	NO ⁽³⁾	NO	NO	NO
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Other non-specified								
Liquid Fuels	5 893,30	NCV	69,97	6,37	1,48	412,35	0,04	0,01
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	4 135,12	NCV	54,76	2,97	1,00	226,46	0,01	0,00
Biomass	15,30	NCV	70,39	9,80	2,03 ⁽³⁾	1,08	0,00	0,00
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
b. Mobile (please specify) ⁽⁸⁾	2 400,80	NCV				175,53	0,01	0,01
Other non-specified								
Liquid Fuels	2 396,85	NCV	73,23	2,97	2,80	175,53	0,01	0,01
Solid Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Gaseous Fuels	NO	NCV	NO	NO	NO	NO	NO	NO
Biomass	3,95	NCV	70,99	5,06	2,02 ⁽³⁾	0,28	0,00	0,00
Other Fuels	NO	NCV	NO	NO	NO	NO	NO	NO

⁽¹⁾ If activity data are calculated using net calorific values (NCV) as specified by the IPCC Guidelines, write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.

⁽²⁾ Accurate estimation of CH₄ and N₂O emissions depends on combustion conditions, technology and emission control policy, as well as on fuel characteristics. Therefore, caution should be used when comparing the implied emission factors across countries.

⁽³⁾ Although carbon dioxide emissions from biomass are reported in this table, they will not be included in the total CO₂ emissions from fuel combustion. The value for total CO₂ from biomass is recorded in Table 1 sheet 2 under the Memo Items.

⁽⁴⁾ Use the cell below to list all activities covered under "f. Other".

⁽⁵⁾ Use the cell below to list all activities covered under "e. Other transportation".

⁽⁶⁾ Include military fuel use under this category.

⁽⁷⁾ Use the cell below to list all activities covered under "1.A.5.a Other - stationary".

⁽⁸⁾ Use the cell below to list all activities covered under "1.A.5.b Other - mobile".

Documentation Box:

- Parties should provide detailed explanations on the fuel combustion sub-sector in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- If estimates are based on GCV, use this documentation box to provide reference to the relevant section of the NIR where the information necessary to allow the calculation of the activity data based on NCV can be found.
- If some derived gases (e.g. gas works gas, coke oven gas, blast furnace gas) are considered, use this documentation box to provide a reference to the relevant section of the NIR containing the information on the allocation of these derived gases under the above fuel categories (liquid, solid, gaseous, biomass and other fuels).

1.AA.1.A Liquid Fuels:Refinery gases are included in Liquid fuels.
1.AA.1.A Biomass:Biogases are included in Biomass.
1.AA.1.A Other Fuels:Peat in included in Other fuels.
1.AA.1.B Liquid Fuels:Refinery gases are included in Liquid Fuels.
1.AA.1.C Solid Fuels:Coke oven gas and Blast furnace gases are included here.
1.AA.2.A Solid Fuels:Coke oven gas and Blast furnace gases are included in Solid fuels.
1.AA.2.C Biomass:Hydrogen isincluded in Biomass.
1.AA.2.D Pulp, Paper and Print:Peat is included in Other fuels.
1.AA.2.E Other Fuels:Peat is included in Other fuels.
1.AA.3.E Other Transportation (please specify):Content of the category 1.AA.3.E Other Transportation Off-road vehicles and other machinery: see NIR text and tables 3.2.10 and 3.2.19 in section 3.2.2.1.
1.AA.3.E Off-road vehicles and other machinery:Contents of Category 1.AA.3.E Other Transportation Off-road vehicles and other machinery: see NIR text and tables 3.2.10 and 3.2.20 in section 3.2.2.1.
1.AA.3.E Liquid Fuels:Emissions in dataset prepared by UNFCCC were in wrong fuel category (Other Fuels). Fuels are gasoline, gasoil and LPG, which belong to Liquid Fuels. Activity data was missing.
1.AA.3.E Other Fuels:Emissions in dataset prepared by UNFCCC were in wrong fuel category (Other Fuels). Fuels are gasoline, gasoil and LPG, which belong to Liquid Fuels. Activity data was missing.

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY
CO₂ from Fuel Combustion Activities - Reference Approach (IPCC Worksheet 1-1)
 (Sheet 1 of 1)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

FUEL TYPES			Unit	Production	Imports	Exports	International bunkers	Stock change	Apparent consumption	Conversion factor (TJ/Unit)	NCV/GCV ⁽¹⁾	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidized	Actual CO ₂ emissions (Gg CO ₂)	
Liquid Fossil	Primary Fuels	Crude Oil	kt	NO	10 784,00	NO		-213,00	10 997,00	42,66	NCV	469 132,02	20,00	9 382,64	NA	9 382,64	1,00	34 231,00	
		Orimulsion		NA	NA	NA		NA	NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	NA
		Natural Gas Liquids	kt	NO	733,00	108,00			-26,00	651,00	45,22	NCV	29 438,22	17,20	506,34	NA	506,34	1,00	1 847,29
	Secondary Fuels	Gasoline	kt		NO	2 354,00	NO		129,00	-2 483,00	43,00	NCV	-106 769,00	18,90	-2 017,93	NO	-2 017,93	1,00	-7 399,09
		Jet Kerosene	kt		87,00	NO	495,37		12,00	-420,37	43,30	NCV	-18 201,98	19,50	-354,94	NA	-354,94	1,00	-1 301,44
		Other Kerosene	kt		808,00	104,00	NO		IE	704,00	43,10	NCV	30 342,40	19,60	594,71	NA	594,71	1,00	2 169,70
		Shale Oil			NA	NA			NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	NA
		Gas / Diesel Oil	kt		2 283,00	2 566,00	47,81		439,00	-769,81	42,75	NCV	-32 909,29	20,20	-664,77	IE	-664,77	1,00	-2 425,29
		Residual Fuel Oil	kt		581,00	867,00	206,19		-140,00	-352,19	40,80	NCV	-14 369,23	21,10	-303,19	129,30	-432,49	1,00	-1 577,87
		Liquefied Petroleum Gas (LPG)	kt		224,00	12,00			-2,00	214,00	46,20	NCV	9 886,80	17,20	170,05	107,10	62,95	1,00	229,67
		Ethane	kt		NA	NA			NA	NA	NCV	NA	NA	NA	NA	NO	NA,NO	NA	NA,NO
		Naphtha	kt		299,00	36,00			-2,00	265,00	44,30	NCV	11 739,50	20,00	234,79	117,30	117,49	1,00	428,64
		Bitumen	kt		123,00	63,00			NA	60,00	40,20	NCV	2 412,00	22,00	53,06	228,10	-175,04	1,00	-641,80
		Lubricants	kt		169,00	281,00	NE		IE	-112,00	40,20	NCV	-4 502,40	20,00	-90,05	10,30	-100,35	1,00	-366,10
		Petroleum Coke	kt		95,00	NO			IE	95,00	33,50	NCV	3 182,50	27,50	87,52	NA	87,52	1,00	319,30
Refinery Feedstocks	kt		0,35	NO			IE	0,35	42,50	NCV	14,67	20,00	0,29	NA	0,29	1,00	1,07		
Other Oil	kt		94,66	188,45				-15,00	-78,79	42,00	NCV	-3 309,14	20,00	-66,18	453,90	-520,08	1,00	-1 897,44	
Other Liquid Fossil												NA	NA	NA	NA	NA		NA	
Other non-specified				NA	NA	NA	NA	NA	NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	
Liquid Fossil Totals												376 087,07		7 532,35	1 046,00	6 486,35		23 617,64	
Solid Fossil	Primary Fuels	Anthracite ⁽²⁾		NO	IE	NO		NO	IE,NO	NA	NCV	IE,NA,NO	NA	IE,NA,NO	NA	IE,NA,NO	NA	IE,NA,NO	
		Coking Coal	kt	NO	959,00	0,00			NA	959,00	29,00	NCV	27 811,00	25,80	717,52	NO	717,52	0,99	2 604,61
		Other Bituminous Coal	kt	NO	4 990,00	0,02	NA		411,48	4 578,50	25,50	NCV	116 751,77	25,80	3 012,20	NA	3 012,20	0,99	10 934,27
		Sub-bituminous Coal		NA	NA	NA	NA		NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	NA
		Lignite		NA	NA	NA			NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	NA
		Oil Shale		NA	NA	NA			NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	NA
	Peat	ktoe		2 193,47	28,45	11,10		468,85	1 741,97	41,87	NCV	72 932,82	28,90	2 107,76	NA	2 107,76	0,99	7 651,16	
	Secondary Fuels	BKB ⁽³⁾ and Patent Fuel			NA	NA			NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	NA
Coke Oven/Gas Coke		kt		245,56	2,94			-52,86	295,48	28,10	NCV	8 303,04	29,50	244,94	397,43	-152,49	0,99	-553,54	
Other Solid Fossil												NA	NA	NA	NA	NA		NA	
Other non-specified				NA	NA	NA	NA	NA	NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	
Solid Fossil Totals												225 798,64		6 082,42	397,43	5 684,99		20 636,51	
Gaseous Fossil	Natural Gas (Dry)	10 ^{^3}	NO	4 052,00	4,56			NA	4 047,44	36,00	NCV	145 707,96	15,30	2 229,33	172,40	2 056,93	1,00	7 504,37	
Other Gaseous Fossil												NA	NA	NA	NA	NA	NA	NA	
Other non-specified				NA	NA	NA	NA	NA	NA	NA	NCV	NA	NA	NA	NA	NA	NA	NA	
Gaseous Fossil Totals												145 707,96		2 229,33	172,40	2 056,93		7 504,37	
Total												747 593,66		15 844,10	1 615,83	14 228,27		51 758,52	
Biomass total												284 177,36		8 384,98	NA	8 384,98		30 442,76	
	Solid Biomass	ktoe		6 627,20	NO	55,00		NE	6 572,20	41,87	NCV	275 164,87	29,90	8 227,43	NA	8 227,43	0,99	29 865,57	
	Liquid Biomass	ktoe		173,89	NA	NA		NA	173,89	41,87	NCV	7 280,39	18,00	131,05	NA	131,05	1,00	480,51	
	Gas Biomass	ktoe		41,37	NA	NA		NA	41,37	41,87	NCV	1 732,10	15,30	26,50	NA	26,50	1,00	96,68	

⁽¹⁾ To convert quantities in previous columns to energy units, use net calorific values (NCV) and write NCV in this column. If gross calorific values (GCV) are used, write GCV in this column.

⁽²⁾ If data for Anthracite are not available separately, include with Other Bituminous Coal.

⁽³⁾ BKB: Brown coal/peat briquettes.

Documentation Box:
 Parties should provide detailed explanations on the fuel combustion sub-sector, including information relating to CO₂ from the Reference approach, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 1.A(c) COMPARISON OF CO2 EMISSIONS FROM FUEL COMBUSTION

(Sheet 1 of 1)

FUEL TYPES	REFERENCE APPROACH			SECTORAL APPROACH ⁽¹⁾		DIFFERENCE ⁽²⁾	
	Apparent energy consumption ⁽³⁾ (PJ)	Apparent energy consumption (excluding non-energy use and feedstocks) ⁽⁴⁾ (PJ)	CO ₂ emissions (Gg)	Energy consumption (PJ)	CO ₂ emissions (Gg)	Energy consumption (%)	CO ₂ emissions (%)
Liquid Fuels (excluding international bunkers)	376,09	351,68	23 617,64	327,19	23 477,90	7,49	0,60
Solid Fuels (excluding international bunkers) ⁽⁵⁾	225,80	199,59	20 636,51	131,23	12 958,95	52,09	59,25
Gaseous Fuels	145,71	134,44	7 504,37	134,77	7 381,73	-0,25	1,66
Other ⁽⁵⁾	IE,NA	IE	IE,NA	82,91	7 926,46	-100,00	-100,00
Total ⁽⁵⁾	747,59	685,70	51 758,52	676,10	51 745,03	1,42	0,03

⁽¹⁾ "Sectoral approach" is used to indicate the approach (if different from the Reference approach) used by the Party to estimate CO₂ emissions from fuel combustion as reported in table 1.A(a), sheets 1-4.

⁽²⁾ Difference in CO₂ emissions estimated by the Reference approach (RA) and the Sectoral approach (SA) (difference = 100% x ((RA-SA)/SA)). For calculating the difference in energy consumption between the two approaches, data as reported in the column "Apparent energy consumption (excluding non-energy use and feedstocks)" are used for the Reference approach.

⁽³⁾ Apparent energy consumption data shown in this column are as in table 1.A(b).

⁽⁴⁾ For the purposes of comparing apparent energy consumption from the Reference approach with energy consumption from the Sectoral approach, Parties should, in this column, subtract from the apparent energy consumption (Reference approach) the energy content corresponding to the fuel quantities used as feedstocks and/or for non-energy purposes, in accordance with the accounting of energy use in the Sectoral approach

⁽⁵⁾ Emissions from biomass are not included.

Note: The Reporting Instructions of the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories require that estimates of CO₂ emissions from fuel combustion, derived using a detailed Sectoral approach, be compared to those from the Reference approach (Worksheet 1-1 of the IPCC Guidelines, Volume 2, Workbook). This comparison is to assist in verifying the Sectoral data.

Documentation Box:
Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to the comparison of CO₂ emissions calculated using the Sectoral approach with those calculated using the Reference approach, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
If the CO₂ emission estimates from the two approaches differ by more than 2 per cent, Parties should briefly explain the cause of this difference in this documentation box and provide a reference to relevant section of the NIR where this difference is explained in more detail.

1.AC Difference - Reference and Sectoral Approach: The relatively high difference in liquid fuels CO₂ emissions is due to statistical differences in national oil balance. Allocation of Peat is different in SA ('Other fuels') compared to RA ('Solid fuels').
1.AC Liquid Fuels: The relatively high difference in liquid fuels CO₂ emissions is due to statistical differences in national oil balance.
1.AC Solid Fuels: Allocation of Peat is different in SA ('Other fuels') compared to RA ('Solid fuels').
1.AC Other Fuels: Allocation of Peat is different in SA ('Other fuels') compared to RA ('Solid fuels').

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY
Feedstocks and Non-Energy Use of Fuels
 (Sheet 1 of 1)

FUEL TYPE	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	Carbon stored in non-energy use of fuels (Gg C)
Naphtha ⁽¹⁾	5 863,30	1,00	20,01	117,30
Lubricants	1 559,20	0,33	20,02	10,30
Bitumen	10 366,00	1,00	22,00	228,10
Coal Oils and Tars (from Coking Coal)	NO	NO	NO	NO
Natural Gas ⁽¹⁾	11 268,00	1,00	15,30	172,40
Gas/Diesel Oil ⁽¹⁾	IE	IE	IE	IE
LPG ⁽¹⁾	6 223,90	1,00	17,21	107,10
Ethane ⁽¹⁾	NO	NO	NO	NO
Other (please specify)				980,63
Butane	IE	IE	IE	IE
Coke	26 212,01	0,51	29,45	397,43
Other petroleum products	22 694,40	1,00	20,00	453,90
Residual Fuel Oil	5 985,93	1,00	21,60	129,30
Total				1 615,83
Total amount of C and CO ₂ from feedstocks and non-energy use of fuels that is included as emitted CO ₂ in the Reference approach				395,54

⁽¹⁾ Enter data for those fuels that are used as feedstocks (fuel used as raw materials for manufacture of products such as plastics or fertilizers) or for other non-energy use (fuels not used as fuel or transformed into another fuel (e.g. bitumen for road construction, lubricants)).

Documentation box:

- Parties should provide detailed explanations on the fuel combustion sub-sector, including information related to feedstocks, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- The above table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feedstocks could continue to use their methodology, but should indicate this in this documentation box and provide a reference to the relevant section of the NIR where further explanation can be found.

Additional information ^(a)

CO ₂ not emitted (Gg CO ₂)	Subtracted from energy sector (specify source category)
430,10	NO
37,77	NO
836,37	NO
NO	NO
632,13	NO
IE	NO
392,70	NO
NO	NO
IE	NO
1 457,24	1.AB
1 664,30	NO
474,10	1.AB
5 924,71	
1 450,32	

^(a) The fuel lines continue from the table to the left.

Associated CO ₂ emissions (Gg)	Allocated under (Specify source category, e.g. Waste Incineration)
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
NO	NO
1 457,24	2.C1
NO	NO
474,10	2.C.1

A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during use of the energy carriers in the industrial production (e.g. fertilizer production), or during use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions, use the above table.

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY

Fugitive Emissions from Solid Fuels

(Sheet 1 of 1)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS		EMISSIONS		
	Amount of fuel produced (Mt)	CH ₄ ⁽¹⁾ (kg/t)	CO ₂ (kg/t)	CH ₄		CO ₂
				Recovery/Flaring ⁽²⁾	Emissions ⁽³⁾	
1. B. 1. a. Coal Mining and Handling	NO			NO	NO	NO
i. Underground Mines ⁽⁴⁾	NO	NO	NO	NO	NO	NO
Mining Activities		NO	NO	NO	NO	NO
Post-Mining Activities		NO	NO	NO	NO	NO
ii. Surface Mines ⁽⁴⁾	NO	NO	NO	NO	NO	NO
Mining Activities		NO	NO	NO	NO	NO
Post-Mining Activities		NO	NO	NO	NO	NO
1. B. 1. b. Solid Fuel Transformation	NO	NO	NO	NO	NO	NO
1. B. 1. c. Other (please specify)⁽⁵⁾				NO	NO	NO
Preparation of soils for peat production	NO	NO	NO	NO	NO	NO

(1) The IEFs for CH₄ are estimated on the basis of gross emissions as follows: (CH₄ emissions + amounts of CH₄ flared/recovered) / activity data.

(2) Amounts of CH₄ drained (recovered), utilized or flared.

(3) Final CH₄ emissions after subtracting the amounts of CH₄ utilized or recovered.

(4) In accordance with the IPCC Guidelines, emissions from Mining Activities and Post-Mining Activities are calculated using the activity data of the amount of fuel produced for Underground Mines and Surface Mines.

(5) This category is to be used for reporting any other solid-fuel-related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

Note: There are no clear references to the coverage of 1.B.1.b. and 1.B.1.c. in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, indicate this by using notation key IE and making the necessary reference in Table 9 (completeness).

Documentation box:

- Parties should provide detailed explanations on the fugitive emissions from source category 1.B.1 Solid Fuels, in the corresponding part of Chapter 3: Energy (CRF source category 1.B.1) of the NIR. Use this documentation box to provide references
- Regarding data on the amount of fuel produced entered in the above table, specify in this documentation box whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.
- If entries are made for "Recovery/Flaring", indicate in this documentation box whether CH₄ is flared or recovered and provide a reference to the section in the NIR where further details on recovery/flaring can be found.
- If estimates are reported under 1.B.1.b. and 1.B.1.c., use this documentation box to provide information regarding activities covered under these categories and to provide a reference to the section in the NIR where the background information can be found.

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY
Fugitive Emissions from Oil, Natural Gas and Other Sources
(Sheet 1 of 1)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA ⁽¹⁾			IMPLIED EMISSION FACTORS			EMISSIONS		
	Description ⁽¹⁾	Unit ⁽¹⁾	Value	CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
				(kg/unit) ⁽²⁾			(Gg)		
1. B. 2. a. Oil ⁽³⁾							1,43	0,52	NO
I. Exploration	<i>(e.g. number of wells drilled)</i>		NO	NO	NO	NO	NO	NO	NO
ii. Production ⁽⁴⁾	<i>(e.g. PJ of oil produced)</i>		NO	NO	NO		NO	NO	
iii. Transport	<i>kt oil loaded in tankers</i>		NO	NO	NO		NO	NO	
iv. Refining / Storage	<i>kt oil refined</i>	kt	14 179,17	100,85	36,67	NO	1,43	0,52	NO
v. Distribution of Oil Products	<i>kt oil refined</i>		NO	NO	NO		NO	NO	
vi. Other	<i>(specify)</i>		NO	NO	NO		NO	NO	
1. B. 2. b. Natural Gas							4,70	1,67	
i. Exploration	<i>(specify)</i>		NO	NO	NO		NO	NO	
ii. Production ⁽⁴⁾ / Processing	<i>(e.g. PJ gas produced)</i>		NO	NO	NO		NO	NO	
iii. Transmission	<i>PJ gas consumed</i>	PJ	145,44	8 924,64	3 245,32		1,30	0,47	
iv. Distribution	<i>PJ gas distributed via local</i>	PJ	7,27	467 546,75	165 016,50		3,40	1,20	
v. Other Leakage	<i>t of natural gas released from pipelines</i>		NO	NO	NO		NO	NO	
<i>at industrial plants and power stations</i>	<i>NO</i>		NO	NO	NO		NO	NO	
<i>in residential and commercial sectors</i>	<i>NO</i>		NO	NO	NO		NO	NO	
1. B. 2. c. Venting ⁽⁵⁾							NO	NO	
i. Oil	<i>kt oil refined</i>	kt	14 179,17	NO	NO		NO	NO	
ii. Gas	<i>(e.g. PJ gas produced)</i>		NO	NO	NO		NO	NO	
iii. Combined			NO	NO	NO		NO	NO	
Flaring							77,19	0,00	0,00
i. Oil	<i>used fuels, TJ</i>	kt	803,69	96 043,76	0,99	2,00	77,19	0,00	0,00
ii. Gas	<i>(e.g. PJ gas consumption)</i>		NA	NA	NO	NO	NA	NO	NO
iii. Combined			NO	NO	NO	NO	NO	NO	NO
1.B.2.d. Other <i>(please specify)</i> ⁽⁶⁾							32,16	NO	NO
Other non-specified	<i>NMVOE emissions</i>	Gg	10,96	2 933 333,33	NO	NO	32,16	NO	NO

⁽¹⁾ Specify the activity data used in the Description column (see examples). Specify the unit of the activity data in the Unit column using one of the following units: PJ, Tg, 10⁶ m³, 10⁶ bbl/vr, km, number of sources (e.g. wells).

⁽²⁾ The unit of the implied emission factor will depend on the unit of the activity data used, and is therefore not specified in this column.

⁽³⁾ Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iv, respectively.

⁽⁴⁾ If using default emission factors, these categories will include emissions from production other than venting and flaring.

⁽⁵⁾ If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for under Venting.

⁽⁶⁾ For example, fugitive CO₂ emissions from production of geothermal power could be reported here.

Documentation box:

- Parties should provide detailed explanations on the fugitive emissions from source category 1.B.2 Oil and Natural Gas, in the corresponding part of Chapter 3: Energy (CRF source category 1.B.2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Regarding data on the amount of fuel produced entered in this table, specify in this documentation box whether the fuel amount is based on the raw material production or on the saleable production. Note cases where more than one type of activity data is used to estimate emissions.
- Venting and Flaring: Parties using the IPCC software could report venting and flaring emissions together, indicating this in this documentation box.
- If estimates are reported under "1.B.2.d Other", use this documentation box to provide information regarding activities covered under this category and to provide a reference to the section in the NIR where background information can be found.

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY
International Bunkers and Multilateral Operations
(Sheet 1 of 1)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Consumption (TJ)	IMPLIED EMISSION FACTORS			EMISSIONS		
		CO ₂	CH ₄	N ₂ O	CO ₂	CH ₄	N ₂ O
		(t/TJ)			(Gg)		
Aviation Bunkers	21 449,00				1 570,07	0,03	0,07
Jet Kerosene	21 449,00	73,20	0,00	0,00	1 570,07	0,03	0,07
Gasoline	NO	NO	NO	NO	NO	NO	NO
Marine Bunkers	10 392,00				809,30	0,06	0,02
Gasoline	NO	NO	NO	NO	NO	NO	NO
Gas/Diesel Oil	2 041,00	74,10	0,00	0,00	151,24	0,01	0,00
Residual Fuel Oil	8 351,00	78,80	0,01	0,00	658,06	0,05	0,02
Lubricants	IE	IE	IE	IE	IE	IE	IE
Coal	NO	NO	NO	NO	NO	NO	NO
Other (<i>please specify</i>)	NA				NA	NA	NA
Other non-specified	NA	NA	NA	NA	NA	NA	NA
Multilateral Operations ⁽¹⁾	NO	NO	NO	NO	NO	NO	NO

Additional information

Fuel consumption	Distribution ^(a) (per cent)	
	Domestic	International
Aviation	14,93	85,07
Marine	39,49	60,51

^(a) For calculating the allocation of fuel consumption, the sums of fuel consumption for domestic navigation and aviation (table 1.A(a)) and for international bunkers (table 1.C) are used.

⁽¹⁾ Parties may choose to report or not report the activity data and implied emission factors for multilateral operations consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines. In any case, Parties should report the emissions from multilateral operations, where available, under the Memo Items section of the Summary tables and in the Sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and

Documentation box:

- Parties should provide detailed explanations on the fuel combustion sub-sector, including international bunker fuels, in the corresponding part of Chapter 3: Energy (CRF sub-sector 1.A) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Provide in this documentation box a brief explanation on how the consumption of international marine and aviation bunker fuels was estimated and separated from domestic consumption, and include a reference to the section of the NIR where the explanation is provided in more detail.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES

(Sheet 1 of 2)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	HFCs ⁽¹⁾		PFCs ⁽¹⁾		SF ₆		NO _x	CO	NMVOC	SO ₂
				P	A	P	A	P	A				
	(Gg)			CO ₂ equivalent (Gg)				(Gg)					
Total Industrial Processes	3 502,67	0,37	2,56	1 432,89	888,83	11,28	9,32	0,00	0,00	2,73	IE,NA,NO	7,97	12,63
A. Mineral Products	876,33	NO	NO							0,12	NO	0,71	0,47
1. Cement Production	381,84												IE
2. Lime Production	361,24												
3. Limestone and Dolomite Use	114,33												
4. Soda Ash Production and Use	7,77												
5. Asphalt Roofing	IE										NO	IE	
6. Road Paving with Asphalt	2,09									NO	NO	0,71	NO
7. Other (as specified in table 2(I).A-G)	9,06	NO	NO							0,12	NO	NO	0,47
Glass Production	9,06	NO	NO							NO	NO	NO	NO
Other non-specified	NO	NO	NO							0,12	NO	NO	0,47
B. Chemical Industry	684,79	NO	2,56	NO	NO	NO	NO	NO	NO	1,91	NO	2,47	6,73
1. Ammonia Production	NO	NO	NO							NO	NO	NO	NO
2. Nitric Acid Production			2,56							IE			
3. Adipic Acid Production	NO		NO							NO	NO	NO	
4. Carbide Production	NO	NO								NO	NO	NO	NO
5. Other (as specified in table 2(I).A-G)	684,79	NO	NO	NO	NA,NO	NO	NA,NO	NO	NO	1,91	NO	2,47	6,73
Carbon Black		NO											
Ethylene	NO	NO	NO										
Dichloroethylene		NO											
Styrene		NO											
Methanol		NO											
chemicals production	7,26	NO	NO	NO	NO	NO	NO	NO	NO	1,91	NO	2,47	2,76
Hydrogen	677,53	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Other non-specified	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Refineries	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	3,97
C. Metal Production	1 941,55	0,37	NO	NO	NO	NO	NO	NO	C,NO	0,69	IE,NO	0,63	3,48
1. Iron and Steel Production	1 941,37	0,37								0,69	IE	0,57	0,72
2. Ferroalloys Production	IE	NO								IE	IE	IE	IE
3. Aluminium Production	NO	NO				NO	NO			NO	NO	NO	NO
4. SF ₆ Used in Aluminium and Magnesium Foundries								NO	C,NO				
5. Other (as specified in table 2(I).A-G)	0,19	NO	NO	NO	NA,NO	NO	NA,NO	NO	NO	NO	NO	0,06	2,76
Non-ferrous metals	0,19	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	0,06	2,76
Other non-specified	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

Note: P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This applies only to source categories where methods exist for both tiers.

⁽¹⁾ The emissions of HFCs and PFCs are to be expressed as CO₂ equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES
(Sheet 2 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	CH ₄	N ₂ O	HFCs ⁽¹⁾		PFCs ⁽¹⁾		SF ₆		NO _x	CO	NM VOC	SO ₂
				P	A	P	A	P	A				
	(Gg)			CO ₂ equivalent (Gg)				(Gg)					
D. Other Production	NO									0,01	NO	4,15	1,93
1. Pulp and Paper	NO									0,01	NO	2,84	1,93
2. Food and Drink ⁽²⁾	NO											1,31	
E. Production of Halocarbons and SF₆					NA,NO		NA,NO		NO				
1. By-product Emissions					NA,NO		NA,NO		NO				
Production of HCFC-22					NO								
Other					NA,NO		NA,NO		NO				
2. Fugitive Emissions					NA,NO		NA,NO		NO				
3. Other (as specified in table 2(II))					NA,NO		NA,NO		NO				
Other non-specified					NO		NO		NO				
F. Consumption of Halocarbons and SF₆				1 432,89	888,83	11,28	9,32	0,00	0,00				
1. Refrigeration and Air Conditioning Equipment				1 335,15	799,24	8,41	8,24	NO	NO				
2. Foam Blowing				4,73	7,48	NO	NO	NO	NO				
3. Fire Extinguishers				C	C,NO	NO	NO	NO	NO				
4. Aerosols/ Metered Dose Inhalers				84,83	79,86	NO	NO	NO	NO				
5. Solvents				NO	NO	NO	NO	NO	NO				
6. Other applications using ODS ⁽³⁾ substitutes				NO	NO	NO	NO	NO	NO				
7. Semiconductor Manufacture				C	C,NA,NO	C	C,NA,NO	C	C,NA				
8. Electrical Equipment				NO	NO	NO	NO	0,00	0,00				
9. Other (as specified in table 2(II))				8,00	2,26	2,69	1,08	0,00	0,00				
Grouped confidential data				8,00	2,26	2,69	1,08	0,00	0,00				
G. Other (as specified in tables 2(I).A-G and 2(II))	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: P = Potential emissions based on Tier 1 approach of the IPCC Guidelines. A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This applies only to source categories where methods exist for both tiers.

⁽¹⁾ The emissions of HFCs and PFCs are to be expressed as CO₂ equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II).

⁽²⁾ CO₂ from Food and Drink Production (e.g. gasification of water) can be of biogenic or non-biogenic origin. Only information on CO₂ emissions of non-biogenic origin should be reported.

⁽³⁾ ODS: ozone-depleting substances.

Documentation box:

Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

2.A Mineral Products:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.A.6 Road Paving with Asphalt:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.B.2 Nitric Acid Production:N2O emissions from 2.B.2 includes also emissions from fertiliser production.

2.B.5 Other (please specify):2.B.5.2 Ethylene: Methane is recovered and used for energy production.

2.B.5 chemicals production:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.C.5 Non-ferrous metals:The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.D.1 Pulp and Paper:The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.E Production of Halocarbons and SF6:There is no manufacturing of F-gases or other fluorinated gases, such as HCFCs, in Finland that could lead to emissions from manufacturing process.

2.E.1 By-product Emissions:There is no manufacturing of fluorinated gases in Finland that could lead to by-product emissions.

2.E.2 Fugitive Emissions (please specify):There are no fugitive emissions from manufacturing because F-gases are not produced in Finland.

2.F.1 Refrigeration and Air Conditioning Equipment:Emissions from all sub-categories in category 2.F.1 Refrigeration and Air Conditioning Equipment are reported as a single figure in category 2.IIA.F.1.2 Commercial Refrigeration. This is due to aggregated data collection.

2.F.3 Fire Extinguishers:Emissions from fire fighting systems cannot be reported without disclosing confidential information (marked with 'C'). These emissions are reported combined with other confidential data in sub-category 2.F.9 Other \ Grouped Confidential Data.

2.F.4 Aerosols/ Metered Dose Inhalers/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Emissions of different HFCs from aerosols are grouped and presented as Unspecified mix of HFCs.

2.F.5 Solvents:There are no emissions in this sub-category in Finland.

2.F.7 Semiconductor Manufacture:F-gass emissions from Semiconductor Manufacture cannot be reported without disclosing confidential information. Figures belonging to cells marked with 'C' are reported combined with other confidential data in sub-category 2.F.9 Other \ Grouped Confidential Data.

2.F.7 CF4/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.

2.F.7 HFC-23/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.

2.F.7 SF6/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.

2.F.9 Grouped confidential data/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in this table as sums of Unspecified mix of HFC / PFC.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Emissions of CO₂, CH₄ and N₂O

(Sheet 1 of 2)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS					
	Production/Consumption quantity		CO ₂	CH ₄	N ₂ O	CO ₂		CH ₄		N ₂ O	
	Description ⁽¹⁾	(kt)				(t/t)	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾
			(Gg)								
A. Mineral Products						876,33	NO	NO	NO	NO	NO
1. Cement Production	clinker production	764,24	0,50			381,84	NO				
2. Lime Production	Lime production	490,18	0,74			361,24	NO				
3. Limestone and Dolomite Use	Limestone and dolomite use	271,16	0,42			114,33	NO				
4. Soda Ash						7,77	NO				
Soda Ash Production		NO	NO			NO	NO				
Soda Ash Use	Soda ash use	18,91	0,41			7,77	NO				
5. Asphalt Roofing	NM VOC emissions	IE	IE			IE	NO				
6. Road Paving with Asphalt	NM VOC emissions	0,71	2,93			2,09	NO				
7. Other (please specify)						9,06	NO	NO	NO	NO	NO
Glass Production	Carbonate use	20,92	0,43	NO	NO	9,06	NO	NO	NO	NO	NO
Other non-specified	(specify)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Chemical Industry						684,79	NO	NO	NO	2,56	NO
1. Ammonia Production ⁽⁵⁾	Produced ammonia	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Nitric Acid Production	medium pressure plants	477,03			0,01					2,56	NO
3. Adipic Acid Production		NO	NO		NO	NO	NO			NO	NO
4. Carbide Production		NO	NO	NO		NO	NO	NO	NO		
Silicon Carbide		NO	NO	NO		NO	NO	NO	NO		
Calcium Carbide		NO	NO	NO		NO	NO	NO	NO		
5. Other (please specify)						684,79	NO	NO	NO	NO	NO
Carbon Black		NO		NO				NO	NO		
Ethylene	Produced ethylene	361,89	NO	NO	NO	NO	NO	NO	NO	NO	NO
Dichloroethylene		NO		NO				NO	NO		
Styrene		NO		NO				NO	NO		
Methanol	(specify)	NO		NO				NO	NO		
chemicals production	NM VOC emissions	2,47	2,93	NO	NO	7,26	NO	NO	NO	NO	NO
Hydrogen	Used hydrocarbons	244,84	2,77	NO	NO	677,53	NO	NO	NO	NO	NO
Other non-specified	(Specify)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Refineries	Oil refined	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO

⁽¹⁾ Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

⁽²⁾ The implied emission factors (IEF) are estimated on the basis of gross emissions as follows: IEF = (emissions plus amounts recovered, oxidized, destroyed or transformed) / activity data.

⁽³⁾ Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

⁽⁴⁾ Amounts of emission recovery, oxidation, destruction or transformation.

⁽⁵⁾ To avoid double counting, make offsetting deductions for fuel consumption (e.g. natural gas) in Ammonia Production, first for feedstock use of the fuel, and then for a sequestering use of the feedstock.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Emissions of CO₂, CH₄ and N₂O

(Sheet 2 of 2)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS					
	Production/Consumption quantity		CO ₂	CH ₄	N ₂ O	CO ₂		CH ₄		N ₂ O	
	Description ⁽¹⁾	(kt)				Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾	Recovery ⁽⁴⁾
		(t/t)			(Gg)						
C. Metal Production						1 941,55	NO	0,37	NO	NO	NO
1. Iron and Steel Production			0,51	0,00		1 941,37	NO	0,37	NO		
Steel	Produced steel	3 066,36	0,63	NO		1 938,69	NO	NO	NO		
Pig Iron	(specify)	IE	IE	NO		IE	NO	NO	NO		
Sinter	(specify)	IE	IE	NO		IE	NO	NO	NO		
Coke	Produced coke	740,29	0,00	0,00		1,02	NO	0,37	NO		
Other (please specify)						1,66	NO	NO	NO		
Other non-specified	NMVOC emissions	0,57	2,93	NO		1,66	NO	NO	NO		
2. Ferroalloys Production	(specify)	NA	IE	NO		IE	NO	NO	NO		
3. Aluminium Production	(specify)	NO	NO	NO		NO	NO	NO	NO		
4. SF ₆ Used in Aluminium and Magnesium Foundries											
5. Other (please specify)						0,19	NO	NO	NO	NO	NO
Non-ferrous metals	NMVOC emissions	0,06	2,93	NO	NO	0,19	NO	NO	NO	NO	NO
Other non-specified	(specify)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Other Production						NO	NO				
1. Pulp and Paper						NO					
2. Food and Drink	(specify)	NO	NO			NO	NO				
G. Other (please specify)						NA	NA	NA	NA	NA	NA

⁽¹⁾ Where the IPCC Guidelines provide options for activity data, e.g. cement production or clinker production for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in parentheses) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

⁽²⁾ The implied emission factors (IEF) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

⁽³⁾ Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

⁽⁴⁾ Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:

• Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• In relation to metal production, more specific information (e.g. data on virgin and recycled steel production) could be provided in this documentation box, or in the NIR, together with a reference to the relevant section.

• Confidentiality: Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality, a note indicating this should be provided in this documentation box.

2.A Mineral Products:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.A.6 Road Paving with Asphalt:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.B.2 Nitric Acid Production:N2O emissions from 2.B.2 includes also emissions from fertiliser production.

2.B.4.1 Silicon Carbide:There are wrong notation keys in this table for year 1990 - 2003, it should be NO instead of NE. There have newer been produced silicon carbide in Finland.

2.B.4.2 Calcium Carbide:There are wrong notation keys in this table for year 1990 - 2003, it should be NO instead of NE. There have newer been produced calsium carbide in Finland.

2.B.5 Other (please specify):2.B.5.2 Ethylene: Methane is recovered and used for energy production.

2.B.5 chemicals production:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.C.1.1 Steel:CO2 emissions from iron and steel industry are for the first time allocated to process industry. All emissions from processing of steel were in energy sector in previous inventories.

2.C.1.5 Other non-specified:Note: The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.C.5 Non-ferrous metals:The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

2.D.1 Pulp and Paper:The quantity of carbon released in the form of NMVOCs has accounted for in both the NMVOC and the CO2 columns.

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF₆
(Sheet 1 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs ⁽¹⁾	Total HFCs	CF ₄	C ₂ F ₆	C ₃ F ₈	C ₄ F ₁₀	e-C ₄ F ₈	C ₅ F ₁₂	C ₆ F ₁₄	Unspecified mix of listed PFCs ⁽¹⁾	Total PFCs	SF ₆
	(t) ⁽²⁾													CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	(t) ⁽²⁾						CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	(t) ⁽²⁾	
Total Actual Emissions of Halocarbons (by chemical) and SF₆	C,NA,NO	22,96	NA,NO	NA,NO	97,03	NA,NO	178,64	1,31	NA,NO	75,71	NA,NO	NA,NO	NA,NO	82,12		C,NA,NO	NA,NO	1,18	NA,NO	C,NA,NO	NA,NO	NA,NO	1,08		1,73
C. Metal Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	C,NO
Aluminium Production																NO	NO	NO	NO	NO	NO	NO	NO	NO	
SF ₆ Used in Aluminium Foundries																									NO
SF ₆ Used in Magnesium Foundries																									C
E. Production of Halocarbons and SF₆	NA,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NA,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1. By-product Emissions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Production of HCFC-22	NO																								
Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Fugitive Emissions	NA,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NA,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Other (as specified in table 2(II).C.E)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Other non-specified	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F(a). Consumption of Halocarbons and SF₆ (actual)	C,NA,NO	22,96	NO	NO	97,03	NO	178,64	1,31	NO	75,71	NO	NO	NO	82,12		C,NA,NO	NA,NO	1,18	NO	C,NO	NO	NO	1,08		1,73
1. Refrigeration and Air Conditioning Equipment	C,NA	22,96	NO	NO	97,03	NO	172,89	1,31	NO	75,71	NO	NO	NO	NO		NO	NO	1,18	NO	NO	NO	NO	NO	NO	NO
2. Foam Blowing	NO	NO	NO	NO	NO	NO	5,75	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
3. Fire Extinguishers	NO	NO	NO	NO	C,NO	NO	C,NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
4. Aerosols/Metered Dose Inhalers	NO	NO	NO	NO	NO	NO	C,NO	C,NO	NO	NO	NO	NO	NO	79,86		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Solvents	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other applications using ODS ⁽³⁾ substitutes	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7. Semiconductor Manufacture	C,NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		C,NA	NA,NO	NA,NO	NO	C	NO	NO	NO	NO	C,NA
8. Electrical Equipment	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	0,54
9. Other (as specified in table 2(II)F)	C	NO	NO	NO	C	NO	C	NO	NO	NO	NO	NO	NO	2,26		C	NO	NO	NO	C	NO	NO	1,08		1,19
Grouped confidential data	C	NO	NO	NO	C	NO	C	NO	NO	NO	NO	NO	NO	2,26		C	NO	NO	NO	C	NO	NO	1,08		1,19
G. Other (please specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: All footnotes for this table are given at the end of the table on sheet 2.

Note: Gases with global warming potential (GWP) values not yet agreed upon by the Conference of the Parties should be reported in table 9(b).

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF₆
(Sheet 2 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND CATEGORIES	SINK	HFC-23	HFC-32	HFC-41	HFC-43-10mce	HFC-125	HFC-134	HFC-134a	HFC-152a	HFC-143	HFC-143a	HFC-227ea	HFC-236fa	HFC-245ca	Unspecified mix of listed HFCs ⁽¹⁾	Total HFCs	CF ₄	C ₂ F ₆	C ₃ F ₈	C ₄ F ₁₀	e-C ₄ F ₈	C ₃ F ₁₂	C ₆ F ₁₄	Unspecified mix of listed PFCs ⁽¹⁾	Total PFCs	SF ₆		
		(t) ⁽²⁾														CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	(t) ⁽²⁾						CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	(t) ⁽²⁾		
F(p). Total Potential Emissions of Halocarbons (by chemical) and SF₆⁽⁴⁾		0,11	54,52	NO	NO	166,45	NO	370,20	2,50	NO	118,03	NO	NO	NO	NO		C,NO	NO	0,00	NO	C,NO	NO	NO		11,31		2,94	
Production ⁽⁵⁾		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Import:		0,11	58,96	NO	NO	174,94	NO	469,31	29,05	NO	122,72	NO	NO	NO	NO		C,NO	NO	C,NO	NO	C,NO	NO	NO	NO	11,31		2,94	
In bulk		C	24,98	NO	NO	139,48	NO	334,54	C	NO	121,26	NO	NO	NO	NO		C	NO	C	NO	C	NO	NO	NO	11,31		1,71	
In products ⁽⁶⁾		C	33,98	NO	NO	35,46	NO	134,78	C	NO	1,46	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	1,23	
Export:		NO	2,84	NO	NO	6,03	NO	96,20	26,41	NO	3,76	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	C,NO	
In bulk		NO	C	NO	NO	C	NO	C	C	NO	C	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
In products ⁽⁶⁾		NO	2,84	NO	NO	6,03	NO	96,20	C	NO	3,76	NO	NO	NO	NO		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	C	
Destroyed amount		NO	1,61	NO	NO	2,46	NO	2,92	0,14	NO	0,93	NO	NO	NO	NO		NO	NO	0,00	NO	NO	NO	NO	NO	NO	NO	NO	

GWP values used	11700	650	150	1300	2800	1000	1300	140	300	3800	2900	6300	560			6500	9200	7000	7000	8700	7500	7400			23900	
Total Actual Emissions⁽⁷⁾ (CO₂ equivalent (Gg))	C,NA,NO	14,92	NA,NO	NA,NO	271,68	NA,NO	232,23	0,18	NA,NO	287,69	NA,NO	NA,NO	NA,NO	82,12	888,83	C,NA,NO	NA,NO	8,24	NA,NO	C,NA,NO	NA,NO	NA,NO	1,08		9,32	41,34
C. Metal Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	C,NO
E. Production of Halocarbons and SF ₆	NA,NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NA,NO	NA,NO	NO	NO	NO	NO	NO	NO	NO	NO	NA,NO	NO
F(a). Consumption of Halocarbons and SF ₆	C,NA,NO	14,92	NO	NO	271,68	NO	232,23	0,18	NO	287,69	NO	NO	NO	82,12	888,83	C,NA,NO	NA,NO	8,24	NO	C,NO	NO	NO	1,08		9,32	41,34
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Ratio of Potential/Actual Emissions from Consumption of Halocarbons and SF ₆																											
Actual emissions - F(a) (Gg CO ₂ eq.)	C,NA,NO	14,92	NO	NO	271,68	NO	232,23	0,18	NO	287,69	NO	NO	NO	82,12	888,83	C,NA,NO	NA,NO	8,24	NO	C,NO	NO	NO	1,08		9,32	41,34	
Potential emissions - F(p) ⁽⁸⁾ (Gg CO ₂ eq.)	1,29	35,43	NO	NO	466,05	NO	481,26	0,35	NO	448,51	NO	NO	NO	NO	1 432,89	C,NO	NO	-0,03	NO	C,NO	NO	NO	11,31		11,28	70,24	
Potential/Actual emissions ratio	C,NA,NO	2,37	NO	NO	1,72	NO	2,07	1,92	NO	1,56	NO	NO	NO	NO	1,61	C,NA,NO	NA,NO	0,00	NO	C,NO	NO	NO	10,49		1,21	1,70	

⁽¹⁾ In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), these columns could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for these columns is Gg of CO₂ equivalent.

⁽²⁾ Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. t instead of Gg.

⁽³⁾ ODS: ozone-depleting substances

⁽⁴⁾ Potential emissions of each chemical of halocarbons and SF₆ estimated using Tier 1a or Tier 1b of the IPCC Guidelines (Volume 3, Reference Manual, pp. 2.47-2.50). Where potential emission estimates are available in a disaggregated manner for the source categories F.1 to F.9, these should be reported in the NIR and a reference should be provided in the documentation box. Use table Summary 3 to indicate whether Tier 1a or Tier 1b was used.

⁽⁵⁾ Production refers to production of new chemicals. Recycled substances could be included here, but avoid double counting of emissions. An indication as to whether recycled substances are included should be provided in the documentation box to this table.

⁽⁶⁾ Relevant only for Tier 1b.

⁽⁷⁾ Total actual emissions equal the sum of the actual emissions of each halocarbon and SF₆ from the source categories 2.C, 2.E, 2.F and 2.G as reported in sheet 1 of this table multiplied by the corresponding GWP values.

⁽⁸⁾ Potential emissions of each halocarbon and SF₆ taken from row F(p) multiplied by the corresponding GWP values.

Note: As stated in the UNFCCC reporting guidelines, Parties should report actual emissions of HFCs, PFCs and SF₆, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO₂ equivalent. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability. Gases with GWP values not yet agreed upon by the COP should be reported in Table 9 (b).

Documentation box:
<ul style="list-style-type: none"> Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table. If estimates are reported under "2.G Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.
<p>2.E Production of Halocarbons and SF₆: There is no manufacturing of F-gases or other fluorinated gases, such as HCFCs, in Finland that could lead to emissions from manufacturing process.</p> <p>2.E.1 By-product Emissions: There is no manufacturing of fluorinated gases in Finland that could lead to by-product emissions.</p> <p>2.E.2 Fugitive Emissions (please specify): There are no fugitive emissions from manufacturing because F-gases are not produced in Finland.</p> <p>2.F.1 Refrigeration and Air Conditioning Equipment: Emissions from all sub-categories in category 2.F.1 Refrigeration and Air Conditioning Equipment are reported as a single figure in category 2.IIA.F.1.2 Commercial Refrigeration. This is due to aggregated data collection.</p> <p>2.F.3 Fire Extinguishers: Emissions from fire fighting systems cannot be reported without disclosing confidential information (marked with 'C'). These emissions are reported combined with other confidential data in sub-category 2.F.9 Other \ Grouped Confidential Data.</p> <p>2.F.4 Aerosols/ Metered Dose Inhalers/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Emissions of different HFCs from aerosols are grouped and presented as Unspecified mix of HFCs.</p> <p>2.F.5 Solvents: There are no emissions in this sub-category in Finland.</p> <p>2.F.7 Semiconductor Manufacture: F-gas emissions from Semiconductor Manufacture cannot be reported without disclosing confidential information. Figures belonging to cells marked with 'C' are reported combined with other confidential data in sub-category 2.F.9 Other \ Grouped Confidential Data.</p> <p>2.F.7 CF₄/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.</p> <p>2.F.7 HFC-23/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.</p> <p>2.F.7 SF₆/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.</p> <p>2.F.9 Grouped confidential data/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in this table as sums of Unspecified mix of HFC / PFC.</p> <p>2.F.P1 Production: F-gases are not produced in Finland.</p> <p>2.F.P2.1 In bulk: Figures belonging to cells marked with 'C' cannot be reported without disclosing confidential information.</p> <p>2.F.P2.2 In products: Figures belonging to cells marked with 'C' cannot be reported without disclosing confidential information.</p> <p>2.F.P3.2 In products: Figures belonging to cells marked with 'C' cannot be reported without disclosing confidential information.</p>

TABLE 2(II).C SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Metal Production

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾			EMISSIONS					
			CF ₄	C ₂ F ₆	SF ₆	CF ₄		C ₂ F ₆		SF ₆	
	Emissions ⁽³⁾	Recovery ⁽⁴⁾				Emissions ⁽³⁾	Recovery ⁽⁴⁾	Emissions ⁽³⁾	Recovery ⁽⁴⁾		
	Description ⁽¹⁾	(t)	(kg/t)			(t)					
C. PFCs and SF₆ from Metal Production						NO	NO	NO	NO	C,NO	NO
PFCs from Aluminium Production	(specify)	NO	NO	NO		NO	NO	NO	NO		
SF ₆ used in Aluminium and Magnesium Foundries										C,NO	NO
Aluminium Foundries	(SF6 consumption)	NO			NO					NO	NO
Magnesium Foundries	(SF6 consumption)	C			C					C	NO

⁽¹⁾ Specify the activity data used as shown in the examples in parentheses.

⁽²⁾ The implied emission factors (IEFs) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

⁽³⁾ Final emissions (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

⁽⁴⁾ Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:

- Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
- Where applying Tier 1b and country-specific methods, specify any other relevant activity data used in this documentation box, including a reference to the section of the NIR where more detailed information can be found.
- Use this documentation box for providing clarification on emission recovery, oxidation, destruction and/or transformation, and provide a reference to the section of the NIR where more detailed information can be found.

TABLE 2(II).E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Production of Halocarbons and SF₆
 (Sheet 1 of 1)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽²⁾ (kg/t)	EMISSIONS	
	Description ⁽¹⁾	(t)		Emissions ⁽³⁾	Recovery ⁽⁴⁾
				(t)	
E. Production of Halocarbons and SF₆					
1. By-product Emissions					
Production of HCFC-22					
HFC-23	NO	NO	NO	NO	NO
Other (specify activity and chemical)					
Other non-specified					
2. Fugitive Emissions (specify activity and chemical)					
HFCs				NA,NO	
HFC-23				NA,NO	
HFC-32				NO	
HFC-41				NO	
HFC-43-10-mee				NO	
HFC-125				NO	
HFC-134				NO	
HFC-134a				NO	
HFC-152a				NO	
HFC-143				NO	
HFC-143a				NO	
HFC-227ea				NO	
HFC-236fa				NO	
HFC-245ca				NO	
Unspecified mix of HFCs				NO	
PFCs				NA,NO	
CF4				NA,NO	
C2F6				NO	
C3F8				NO	
C4F10				NO	
c-C4F8				NO	
C5F12				NO	
C6F14				NO	
Unspecified mix of PFCs				NO	
SF6				NO	
Other non-specified					
HFCs				NA,NO	
HFC-23				NA,NO	
HFC-32				NO	
HFC-41				NO	
HFC-43-10-mee				NO	
HFC-125				NO	
HFC-134				NO	
HFC-134a				NO	
HFC-152a				NO	
HFC-143				NO	
HFC-143a				NO	
HFC-227ea				NO	
HFC-236fa				NO	
HFC-245ca				NO	
Unspecified mix of HFCs				NO	
PFCs				NA,NO	
CF4				NA,NO	
C2F6				NO	
C3F8				NO	
C4F10				NO	
c-C4F8				NO	
C5F12				NO	
C6F14				NO	
Unspecified mix of PFCs				NO	
SF6				NO	
3. Other (specify activity and chemical)					
HFCs				NA,NO	
HFC-23				NO	
HFC-32				NO	
HFC-41				NO	
HFC-43-10-mee				NO	
HFC-125				NO	
HFC-134				NO	
HFC-134a				NO	
HFC-152a				NO	
HFC-143				NO	
HFC-143a				NO	
HFC-227ea				NO	
HFC-236fa				NO	
HFC-245ca				NO	
Unspecified mix of HFCs				NO	
PFCs				NA,NO	
CF4				NO	
C2F6				NO	
C3F8				NO	
C4F10				NO	
c-C4F8				NO	
C5F12				NO	
C6F14				NO	
Unspecified mix of PFCs				NO	
SF6				NO	
Other non-specified					
HFCs				NO	
HFC-23				NO	
HFC-32				NO	
HFC-41				NO	
HFC-43-10-mee				NO	
HFC-125				NO	
HFC-134				NO	
HFC-134a				NO	
HFC-152a				NO	
HFC-143				NO	
HFC-143a				NO	
HFC-227ea				NO	
HFC-236fa				NO	
HFC-245ca				NO	
Unspecified mix of HFCs				NO	
PFCs				NO	
CF4				NO	
C2F6				NO	
C3F8				NO	
C4F10				NO	
c-C4F8				NO	
C5F12				NO	
C6F14				NO	
Unspecified mix of PFCs				NO	
SF6				NO	

⁽¹⁾ Specify the activity data used as shown in the examples within parentheses.

⁽²⁾ The implied emission factors (IEFs) are estimated on the basis of gross emissions as follows: IEF = (emissions + amounts recovered, oxidized, destroyed or transformed) / activity data.

⁽³⁾ Final emissions are to be reported (after subtracting the amounts of emission recovery, oxidation, destruction or transformation).

⁽⁴⁾ Amounts of emission recovery, oxidation, destruction or transformation.

Documentation box:

Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details. Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.

• Where applying Tier 2 and country-specific methods, specify any other relevant activity data used in this documentation box, including a reference to the section of the NIR where more detailed information can be found.

• Use this documentation box for providing clarification on emission recovery, oxidation, destruction and/or transformation, and provide a reference to the section of the NIR where more detailed information can be found.

2.E Production of Halocarbons and SF6: There is no manufacturing of F-gases or other fluorinated gases, such as HCFCs, in Finland that could lead to emissions from manufacturing process.

2.E.1 By-product Emissions: There is no manufacturing of fluorinated gases in Finland that could lead to by-product emissions.

2.E.2 Fugitive Emissions (please specify): There are no fugitive emissions from manufacturing because F-gases are not produced in Finland.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF₆
(Sheet 1 of 2)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA <i>Amount of fluid</i>			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
1. Refrigeration⁽¹⁾									
Air Conditioning Equipment									
Domestic Refrigeration <i>(please specify chemical)⁽¹⁾</i>									
HFC-134a	NA	NA	NA	NA	NA	NA	NA	IE	NA
Commercial Refrigeration									
C3F8	NA	NA	NA	NA	NA	NA	NA	1,18	NA
HFC-125	NA	NA	NA	NA	NA	NA	NA	97,03	NA
HFC-134a	NA	NA	NA	NA	NA	NA	NA	172,89	NA
HFC-143a	NA	NA	NA	NA	NA	NA	NA	75,71	NA
HFC-152a	NA	NA	NA	NA	NA	NA	NA	1,31	NA
HFC-23	NA	NA	NA	NA	NA	NA	NA	C	NA
HFC-32	NA	NA	NA	NA	NA	NA	NA	22,96	NA
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air-Conditioning									
HFC-152a	NA	NA	NA	NA	NA	NA	NA	IE	NA
Mobile Air-Conditioning									
HFC-134a	NA	NA	NA	NA	NA	NA	NA	IE	NA
2. Foam Blowing⁽¹⁾									
Hard Foam									
HFC-134a	2,91	414,24	NO	16,56	1,26	NA	0,48	5,27	NO
Soft Foam									

⁽¹⁾ Under each of the listed source categories, specify the chemical consumed (e.g. HFC-32) as indicated under category Domestic Refrigeration; use one row per chemical.

Note: This table provides for reporting of the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF₆ using the "bottom-up approach" (based on the total stock of equipment and estimated emission rates from this equipment). Some Parties may prefer to estimate actual emissions following the alternative "top-down approach" (based on annual sales of equipment and/or gas). Those Parties should indicate the activity data used and provide any other information needed to understand the content of the table in the documentation box at the end of sheet 2 to this table, including a reference to the section of the NIR where further details can be found. Those Parties should provide the following data in the NIR:

1. the amount of fluid used to fill new products,
2. the amount of fluid used to service existing products,
3. the amount of fluid originally used to fill retiring products (the total nameplate capacity of retiring products),
4. the product lifetime, and
5. the growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill retiring products.

In the NIR, Parties may provide alternative formats for reporting equivalent information with a similar level of detail.

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Consumption of Halocarbons and SF₆

(Sheet 2 of 2)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA <i>Amount of fluid</i>			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled into new manufactured products	In operating systems (average annual stocks)	Remaining in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(t)			(% per annum)			(t)		
3. Fire Extinguishers <i>(please specify chemical)</i> ⁽¹⁾									
HFC-125	C	C	NO	NA	NA	NA	NO	C	NO
HFC-134a	C	C	NO	NA	NA	NA	NO	C	NO
4. Aerosols ⁽¹⁾									
Metered Dose Inhalers									
HFC-134a	NO	NA	NO	NA	NA	NA	NO	C	NO
Other									
HFC-134a	C	NA	NO	NA	NA	NA	NO	C	NO
HFC-152a	C	NA	NO	NA	NA	NA	NO	C	NO
5. Solvents ⁽¹⁾									
6. Other applications using ODS ⁽²⁾ <i>substitutes</i> ⁽¹⁾									
7. Semiconductor Manufacture ⁽¹⁾									
C2F6	NA	NA	NA	NA	NA	NA	NA	NO	NA
C3F8	NA	NA	NA	NA	NA	NA	NA	NO	NA
CF4	NA	NA	NA	NA	NA	NA	NA	C	NA
HFC-23	NA	NA	NA	NA	NA	NA	NA	C	NA
SF6	NA	NA	NA	NA	NA	NA	NA	C	NA
8. Electrical Equipment ⁽¹⁾									
SF6	NA	NA	NA	NA	NA	NA	NA	0,54	NA
9. Other <i>(please specify)</i> ⁽¹⁾									
Grouped confidential data									

⁽¹⁾ Under each of the listed source categories, specify the chemical consumed (e.g. HFC-32) as indicated under category Fire Extinguishers; use one row per chemical.

⁽²⁾ ODS: ozone-depleting substances.

Documentation box:

- Parties should provide detailed explanations on the industrial processes sector in Chapter 4: Industrial processes (CRF sector 2) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Where only aggregate figures for activity data are provided, e.g. due to reasons of confidentiality (see footnote 1 to table 2(II)), a note indicating this should be provided in this documentation box.
- With regard to data on the amounts of fluid that remained in retired products at decommissioning, use this documentation box to provide a reference to the section of the NIR where information on the amount of the chemical recovered (recovery efficiency) and other relevant information used in the emission estimation can be found.
- Parties that estimate their actual emissions following the alternative top-down approach might not be able to report emissions using this table. As indicated in the note to sheet 1 of this table, Parties should in these cases provide, in the NIR, alternative formats for reporting equivalent information

2.F.1 Refrigeration and Air Conditioning Equipment: Emissions from all sub-categories in category 2.F.1 Refrigeration and Air Conditioning Equipment are reported as a single figure in category 2.IIA.F.1.2 Commercial Refrigeration. This is due to aggregated data collection.

2.IIA.F.1.2 Commercial Refrigeration: The source category covers HFCs and PFC-218 emissions from refrigeration and air conditioning equipment based on the vapour compression cycle. Included are inter alia domestic, commercial and industrial refrigeration systems, stationary and mobile air conditioning, as well as heat pumps. Emissions from refrigeration and air conditioning are reported as a single figure for all of the refrigeration and air conditioning sub-categories (domestic, commercial, industrial, mobile, etc.). Emissions are calculated by IPCC Tier 2 and Tier 1a and 1b methods.

2.IIA.F.1.2 Commercial Refrigeration/2009: HFC-23 emissions are confidential and therefore reported in sub-category 2.F.9 Other \ Grouped Confidential Data.

2.IIA.F.1.2 HFC-134a: Emissions from Mobile Air-Conditioning systems are combined in these figures with data from other sub-categories.

2.IIA.F.1.2 HFC-23/2009: HFC-23 emission data from refrigeration and air conditioning is confidential and is therefore reported in sub-category 2.F.9 Other \ Grouped Confidential Data.

2.F.3 Fire Extinguishers: Emissions from fire fighting systems cannot be reported without disclosing confidential information (marked with 'C'). These emissions are reported combined with other confidential data in sub-category 2.F.9 Other \ Grouped Confidential Data.

2.F.4 Aerosols/ Metered Dose Inhalers/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Emissions of different HFCs from aerosols are grouped and presented as Unspecified mix of HFCs.

2.IIA.F.4.1 HFC-134a: Data included into 2.IIA.F.4.2 Aerosols / Other emissions

2.IIA.F.4.1 HFC-134a/2009: Figure belonging to cell marked with C cannot be reported separately due to confidentiality. Emissions of HFC-134a from MDIs are grouped and presented in table 2.IIA.F.4.2 Aerosols \ Other \ Unspecified mix of HFCs.

2.IIA.F.4.2 HFC-152a/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Emissions of different HFCs from aerosols are grouped and presented in table 2.IIA.F.4.2 Aerosols \ Other \ Unspecified mix of HFCs.

2.IIA.F.4.2 HFC-134a/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Emissions of different HFCs from aerosols are grouped and presented in table 2.IIA.F.4.2 Aerosols \ Other \ Unspecified mix of HFCs.

2.F.5 Solvents: There are no emissions in this sub-category in Finland.

2.F.7 Semiconductor Manufacture: F-gas emissions from Semiconductor Manufacture cannot be reported without disclosing confidential information. Figures belonging to cells marked with 'C' are reported combined with other confidential data in sub-category 2.F.9 Other \ Grouped Confidential Data.

2.F.7 CF4/2009: Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.

2.F.7 HFC-23/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.

2.F.7 SF6/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in 2.F.9. Other \ Grouped confidential data.

2.F.9 Grouped confidential data/2009:Figures belonging to cells marked with C cannot be reported separately due to confidentiality. Data is reported aggregated in this table as sums of Unspecified mix of HFC / PFC.

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE

(Sheet 1 of 1)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂	N ₂ O	NM VOC
	(Gg)		
Total Solvent and Other Product Use	45,72	0,08	20,78
A. Paint Application	23,27		10,58
B. Degreasing and Dry Cleaning	1,31	NO	0,60
C. Chemical Products, Manufacture and Processing	5,26		2,39
D. Other	15,89	0,08	7,22
1. Use of N ₂ O for Anaesthesia		0,08	
2. N ₂ O from Fire Extinguishers		NO	
3. N ₂ O from Aerosol Cans		NO	
4. Other Use of N ₂ O		NO	
5. Other (as specified in table 3.A-D)	15,89	NO	7,22
Domestic solvent use	10,17	NO	4,62
Fat edible and non-edible oil extraction	0,28	NO	0,13
Glass Wool Induction	0,08	NO	0,04
Mineral Wool Induction	0,12	NO	0,06
Other non-specified	NO	NO	NO
Printing Industry	2,86	NO	1,30
Use of pesticides	1,14	NO	0,52
Wood Preservation	1,22	NO	0,56

Note: The quantity of carbon released in the form of NMVOCs should be accounted for in both the NMVOC and the CO₂ columns. The quantities of NMVOCs should be converted into CO₂ equivalent emissions before being added to the CO₂ amounts in the CO₂ column.

Documentation box:

- Parties should provide detailed explanations about the Solvent and Other Product Use sector in Chapter 5: Solvent and Other Product Use (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- The IPCC Guidelines do not provide methodologies for the calculation of emissions of N₂O from Solvent and Other Product Use. If reporting such data, Parties should provide in the NIR additional information (activity data and emission factors) used to derive these estimates, and provide in this documentation box a reference to the section of the NIR where this information can be found.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS ⁽¹⁾	
	Description	(kt)	CO ₂ (t/t)	N ₂ O (t/t)
A. Paint Application	NMVOC emission	10,58	2,20	
B. Degreasing and Dry Cleaning	NMVOC emission	0,60	2,20	NO
C. Chemical Products, Manufacture and Processing	NMVOC emissions	2,39	2,20	
D. Other				
1. Use of N ₂ O for Anaesthesia	Use of N2O, total	0,08		1,00
2. N ₂ O from Fire Extinguishers		IE		NO
3. N ₂ O from Aerosol Cans		IE		NO
4. Other Use of N ₂ O		NO		NO
5. Other (please specify) ⁽²⁾				
Domestic solvent use	NMVOC emissions	4,62	2,20	NO
Fat edible and non-edible oil extraction	NMVOC emissiosn	0,13	2,20	NO
Glass Wool Induction	NMVOC emissions	0,04	2,20	NO
Mineral Wool Induction	NMVOC emissions	0,06	2,20	NO
Other non-specified	(specify)	NO	NO	NO
Printing Industry	NMVOC emissions	1,30	2,20	NO
Use of pesticides	NMVOC emissions	0,52	2,20	NO
Wood Preservation	NMVOC emissions	0,56	2,20	NO

⁽¹⁾ The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into table 3.

⁽²⁾ Some probable sources to be reported under 3.D Other are listed in this table. Complement the list with other relevant sources, as appropriate.

Documentation box:

Parties should provide detailed explanations on the Solvent and Other Product Use sector in Chapter 5: Solvent and Other Product Use (CRF sector 3) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH ₄	N ₂ O	NO _x	CO	NM VOC
	(Gg)				
Total Agriculture	89,40	12,40	0,02	0,45	NE,NO
A. Enteric Fermentation	75,25				
1. Cattle ⁽¹⁾	36,65				
Option A:					
Dairy Cattle	36,65				
Non-Dairy Cattle	IE				
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo	NO				
3. Sheep	0,99				
4. Goats	0,03				
5. Camels and Llamas	NO				
6. Horses	1,13				
7. Mules and Asses	NO				
8. Swine	2,07				
9. Poultry	NE				
10. Other (as specified in table 4.A)	34,37				
Boars	IE				
Bulls	6,92				
Calves	10,38				
Cows	3,54				
Fattening pigs	IE				
Fur farming	0,27				
Heifers	9,25				
Piglets	IE				
Ponies	0,17				
Reindeers	3,84				
Sows	IE				
Weaned pigs	IE				
B. Manure Management	14,13	1,29			NE,NO
1. Cattle ⁽¹⁾	4,29				
Option A:					
Dairy Cattle	4,29				
Non-Dairy Cattle	IE				
Option B:					
Mature Dairy Cattle					
Mature Non-Dairy Cattle					
Young Cattle					
2. Buffalo	NO				
3. Sheep	0,02				
4. Goats	0,00				
5. Camels and Llamas	NO				
6. Horses	0,09				
7. Mules and Asses	NO				
8. Swine	IE				
9. Poultry	2,09				
10. Other livestock (as specified in table 4.B(a))	7,65				
Boars	0,01				
Bulls	0,56				
Calves	0,73				

Cows	0,28				
Fattening pigs	2,34				
Fur farming	0,36				
Heifers	0,48				
Piglets	0,90				
Ponies	0,01				
Reindeers	0,02				
Sows	0,35				
Weaned pigs	1,60				

Note: All footnotes for this table are given at the end of the table on sheet 2.

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH ₄	N ₂ O	NO _x	CO	NM VOC
	(Gg)				
B. Manure Management (continued)					
11. Anaerobic Lagoons		NO			NO
12. Liquid Systems		0,06			NE
13. Solid Storage and Dry Lot		1,02			NE
14. Other AWMS		0,22			NE
C. Rice Cultivation	NO				NO
1. Irrigated	NO				NO
2. Rainfed	NO				NO
3. Deep Water	NO				NO
4. Other (as specified in table 4.C)	NO				NO
Other non-specified	NO				NO
D. Agricultural Soils⁽²⁾	NE,NO	11,10			NE,NO
1. Direct Soil Emissions	NE	8,68			NO
2. Pasture, Range and Paddock Manure ⁽³⁾		0,57			NE
3. Indirect Emissions	NE	1,86			NE
4. Other (as specified in table 4.D)	NO	NO			NO
Other non-specified	NO	NO			NO
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0,02	0,00	0,02	0,45	NE,NO
1. Cereals	0,02	0,00	0,02	0,45	NE
2. Pulses	NO	NO	NO	NO	NO
3. Tubers and Roots	NO	NO	NO	NO	NO
4. Sugar Cane	NO	NO	NO	NO	NO
5. Other (as specified in table 4.F)	NO	NO	NO	NO	NO
Other non-specified	NO	NO	NO	NO	NO
G. Other (please specify)	NO	NO	NO	NO	NO
Other non-specified	NO	NO	NO	NO	NO

⁽¹⁾ The sum for cattle would be calculated on the basis of entries made under either option A (dairy and non-dairy cattle) or option B (mature dairy cattle, mature non-dairy cattle and young cattle).

⁽²⁾ See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO₂ emissions and removals from agricultural soils under 4.D Agricultural Soils of the sector Agriculture should report the amount (in Gg) of these emissions or removals in table Summary 1.A of the CRF. References to additional information (activity data, emissions factors) reported in the NIR should be provided in the documentation box to table 4.D. In line with the corresponding table in the IPCC Guidelines (i.e. IPCC Sectoral Report for Agriculture), this table does not include provisions for reporting CO₂ estimates.

⁽³⁾ Direct N₂O emissions from pasture, range and paddock manure are to be reported in the "4.D Agricultural Soils" category. All other N₂O emissions from animal manure are to be reported in the "4.B Manure Management" category. See also chapter 4.4 of the IPCC good practice guidance report.

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH₄ emissions and CH₄ and N₂O removals from agricultural soils, or CO₂ emissions from prescribed burning of savannas and field burning of agricultural residues. Parties that have estimated such emissions should provide, in the NIR, additional information (activity data and emission factors) used to derive these estimates and include a reference to the section of the NIR in the documentation box of the corresponding Sectoral background data tables.

Documentation box:

• Parties should provide detailed explanations on the agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• If estimates are reported under "4.G Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

4.A Enteric Fermentation:Cattle includes only dairy cows. Emissions from non-dairy cattle reported separately for each animal sub-category under "other livestock".

4.A Cattle:Cattle includes only dairy cows. Emissions from non-dairy cattle reported separately for each animal sub-category under "other livestock".

4.A Non-Dairy Cattle:This source category includes suckler cows, bulls >1yr, heifers and calves (summary of emissions).See Other livestock for each sub-category. Cow means suckler cows.

4.A Horses:Horses were divided to subgroups: horses and ponies. Population: number of horses (excluding ponies)

4.A Swine:Population: total number of swine

4.A Fur farming:OTH: EF modified IPCC default

4.A Ponies:Horses were divided to subgroups: horses and ponies. Population: number of ponies

4.A Sows:Population: sum of number of sows and number of piglets

4.B Cattle:Includes emissions from dairy cows. Emissions from non-dairy cattle are reported under other livestock (suckler cows, bulls, heifers, calves).Other AWMS includes deep litter.

4.B Non-Dairy Cattle:Includes suckler cows, bulls, heifers and calves. Detailed information for each cattle type under source category "Other livestock".Typical animal mass is an average of suckler cow, bull, heifer and calf.Total emissions not included in this table (IE) because of risk of double-counting.

4.B Horses:Horses are divided in two groups: horses and ponies. Population: number of horses (excluding ponies)

4.B Swine:Population: total number of swine. Emissions are calculated in sub-groups fattening pigs, weaned pigs, boars, sows and piglets

4.B Poultry:CH4 producing potential includes all poultry.N excretion includes all poultry.

4.B Fur farming:N excretion for fur animals is average of two sub-categories: minks and fitches and foxes and racoons.

4.B Cows: Includes suckler cows.

4.B Ponies: Horses are divided into horses and ponies. Population: number of ponies

4.B Sows: Sows and piglets included separately in calculating CH₄ from manure management. In calculating N₂O from manure management, sows and piglets are treated as one unit because N_{ex} value is defined for this unit "sows and piglets".

4.B Piglets: N_{ex} of piglets is included in N_{ex} of sows.

4.B Solid storage and dry lot: IEF is not constant as 'solid storage' also includes dung and urine stored separately and the share of urine changes. Urine has EF 0.1% and dung/manure 2%.

4.B Other AWMS: Other AWMS is deep litter

4.D.2 Pasture, Range and Paddock Manure: Fraction volatilised as NH₃ and NO_x subtracted from N_{ex} on pasture.

TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE
Enteric Fermentation
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS ⁽³⁾
	Population size ⁽¹⁾ (1000s)	Average gross energy intake (GE) (MJ/head/day)	Average CH ₄ conversion rate (Y _m) ⁽²⁾ (%)	CH ₄ (kg CH ₄ /head/yr)
1. Cattle	918.27			39.91
Option A:				
Dairy Cattle ⁽⁴⁾	290.04	321.11	6.00	126.37
Non-Dairy Cattle	628.22	121.74	6.00	IE
Option B:				
Mature Dairy Cattle				
Mature Non-Dairy Cattle				
Young Cattle				
2. Buffalo	NO	NA	NA	NO
3. Sheep	117.67	NA	NA	8.39
4. Goats	5.92	NA	NA	5.00
5. Camels and Llamas	NO	NA	NA	NO
6. Horses	63.00	NA	NA	18.00
7. Mules and Asses	NO	NA	NA	NO
8. Swine	1 381.21	NA	NA	1.50
9. Poultry	9 369.45	NA	NA	NE
10. Other (please specify)				
Boars	3.18	NA	NA	IE
Bulls	109.51	160.65	6.00	63.22
Calves	304.35	86.68	6.00	34.11
Cows	51.82	173.75	6.00	68.38
Fattening pigs	491.88	NA	NA	IE
Fur farming	2 699.74	NA	NA	0.10
Heifers	162.55	144.60	6.00	56.90
Piglets	396.24	NA	NA	IE
Ponies	9.30	NA	NA	18.00
Reindeers	192.92	NA	NA	19.90
Sows	152.86	NA	NA	IE
Weaned pigs	337.05	NA	NA	IE

Additional information (only for those livestock types for which Tier 2 was used)⁽⁴⁾

Disaggregated list of animals ^(b)	Dairy Cattle	Non-Dairy Cattle	Mature Dairy Cattle	Mature Non-Dairy Cattle	Young Cattle	Buffalo	Sheep	Goats	Camels and Llamas	Horses	Mules and Asses	Swine	Poultry	Other (specify)	Boars	Bulls	Calves	Cows	Fattening pigs	Fur farming	Heifers	Piglets	Ponies	Reindeers	Sows	Weaned pigs
	Indicators:																									
Weight (kg)	633.78	NA				NA	NA	NA	NA	NA	NA	NA	NA		NA	566.83	235.54	686.62	NA	NA	440.05	NA	NA	NA	NA	NA
Feeding situation ^(c)	SF+P	SF+P				NA	NA	NA	NA	NA	NA	NA	NA		NA	SF+P	SF+P	SF+P	NA	NA	SF+P	NA	NA	NA	NA	NA
Milk yield (kg/day)	22.15	NA				NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	4.44	NA	NA	NA	NA	NA	NA	NA	NA
Work (h/day)	NO	NA				NA	NA	NA	NA	NA	NA	NA	NA		NA	NO	NO	NO	NA	NA	NO	NA	NA	NA	NA	NA
Pregnant (%)	NA	NA	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Digestibility of feed (%)	70.00	70.00	0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA		NA	70.00	70.00	70.00	NA	NA	70.00	NA	NA	NA	NA	NA

⁽¹⁾ See also Tables A-1 and A-2 of the IPCC Guidelines (Volume 3, Reference Manual, pp. 4.31-4.34). These data are relevant if Parties do not have data on average feed intake.

⁽²⁾ Disaggregate to the split actually used. Add columns to the table if necessary.

⁽³⁾ Specify feeding situation as pasture, stall fed, confined, open range, etc.

⁽¹⁾ Parties are encouraged to provide detailed livestock population data by animal type and region, if available, in the NIR, and provide in the documentation box below a reference to the relevant section. Parties should use the same animal population statistics to estimate CH₄ emissions from enteric fermentation, CH₄ and N₂O from manure management, N₂O direct emissions from soil and N₂O emissions associated with manure production, as well as emissions from the use of manure as fuel, and sewage-related emissions reported in the Waste sector.

⁽²⁾ Y_m refers to the fraction of gross energy in feed converted to methane and should be given in per cent in this table.

⁽³⁾ The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into Table 4.

⁽⁴⁾ Including data on dairy heifers, if available.

Documentation box:
<ul style="list-style-type: none"> Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table. Indicate in this documentation box whether the activity data used are one-year estimates or a three-year averages. Provide a reference to the relevant section in the NIR, in particular with regard to: <ul style="list-style-type: none"> (a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or (b) parameters relevant to the application of IPCC good practice guidance.
<p>4.A Enteric Fermentation: Cattle includes only dairy cows. Emissions from non-dairy cattle reported separately for each animal sub-category under "other livestock".</p> <p>4.A Cattle: Cattle includes only dairy cows. Emissions from non-dairy cattle reported separately for each animal sub-category under "other livestock".</p> <p>4.A Non-Dairy Cattle: This source category includes suckler cows, bulls >1yr, heifers and calves (summary of emissions). See Other livestock for each sub-category. Cow means suckler cows.</p> <p>4.A Horses: Horses were divided to subgroups: horses and ponies. Population: number of horses (excluding ponies)</p> <p>4.A Swine: Population: total number of swine</p> <p>4.A Fur farming: OTH: EF modified IPCC default</p> <p>4.A Ponies: Horses were divided to subgroups: horses and ponies. Population: number of ponies</p> <p>4.A Sows: Population: sum of number of sows and number of piglets</p>

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE

CH₄ Emissions from Manure Management

(Sheet 1 of 2)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS ⁽⁴⁾ CH ₄ (kg CH ₄ /head/yr)	
	Population size (1000s)	Allocation by climate region ⁽¹⁾			Typical animal mass (average) (kg)	VS ⁽²⁾ daily excretion (average) (kg dm/head/day)		CH ₄ producing potential (Bo) ⁽²⁾ (average) (m ³ CH ₄ /kg VS)
		Cool	Temperate	Warm				
			(%)					
1. Cattle	918,27						4,67	
<i>Option A:</i>								
Dairy Cattle ⁽³⁾	290,04	100,00	NO	NO	633,78	4,80	0,24	
Non-Dairy Cattle	628,22	100,00	NO	NO	383,41	1,82	0,17	
<i>Option B:</i>								
Mature Dairy Cattle		0,00	0,00	0,00				
Mature Non-Dairy Cattle		0,00	0,00	0,00				
Young Cattle		0,00	0,00	0,00				
2. Buffalo	NO	NO	NA	NA	NA	NA	NA	
3. Sheep	117,67	100,00	NO	NO	NA	0,40	0,19	
4. Goats	5,92	100,00	NO	NO	NA	0,28	0,17	
5. Camels and Llamas	NO	NO	NO	NO	NA	NA	NA	
6. Horses	63,00	100,00	NO	NO	NA	1,72	0,33	
7. Mules and Asses	NO	NO	NO	NO	NA	NA	NA	
8. Swine	1 381,21	100,00	NO	NO	NA	0,50	0,45	
9. Poultry	9 369,45	100,00	NO	NO	NA	0,20	0,32	
10. Other livestock (please specify)								
Boars	3,18	100,00	NO	NO	NA	0,50	0,45	
Bulls	109,51	100,00	NO	NO	566,83	2,40	0,17	
Calves	304,35	100,00	NO	NO	235,54	1,30	0,17	
Cows	51,82	100,00	NO	NO	686,62	2,60	0,17	
Fattening pigs	491,88	100,00	NO	NO	NA	0,50	0,45	
Fur farming	2 699,74	100,00	NO	NO	NA	0,17	0,32	
Heifers	162,55	100,00	NO	NO	440,05	2,16	0,17	
Piglets	396,24	100,00	NO	NO	NA	0,50	0,45	
Ponies	9,30	100,00	NO	NO	NA	1,72	0,33	
Reindeers	192,92	100,00	NO	NO	NA	0,28	0,17	
Sows	152,86	100,00	NO	NO	NA	0,50	0,45	
Weaned pigs	337,05	100,00	NO	NO	NA	0,50	0,45	

⁽¹⁾ Climate regions are defined in terms of annual average temperature as follows: Cool = less than 15°C; Temperate = 15 - 25°C inclusive; and Warm = greater than 25°C (see table 4.2 of the IPCC Guidelines (Volume 3, Reference Manual, p. 4.8)).

⁽²⁾ VS = Volatile Solids; Bo = maximum methane producing capacity for manure IPCC Guidelines (Volume 3, Reference Manual, p.4.23 and p.4.15); dm = dry matter. Provide average values for VS and Bo where original calculations were made at a more disaggregated level of these livestock categories.

⁽³⁾ Including data on dairy heifers, if available.

⁽⁴⁾ The implied emission factors will not be calculated until the corresponding emission estimates are entered directly into table 4.

Documentation box:

- Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.
- Indicate in this documentation box whether the activity data used are one-year estimates or three-year averages.
- Provide a reference to the relevant section in the NIR, in particular with regard to:
 - (a) disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or three-year averages.
 - (b) parameters relevant to the application of IPCC good practice guidance;
 - (c) information on how the MCFs are derived, if relevant data could not be provided in the additional information box.

4.B Cattle:Includes emissions from dairy cows. Emissions from non-dairy cattle are reported under other livestock (suckler cows, bulls, heifers, calves).Other AWMS includes deep litter.

4.B Non-Dairy Cattle:Includes suckler cows, bulls, heifers and calves. Detailed information for each cattle type under source category "Other livestock".Typical animal mass is an average of suckler cow, bull, heifer and calf.Total emissions not included in this table (IE) because of risk of double-counting.

4.B Horses:Horses are divided in two groups: horses and ponies. Population: number of horses (excluding ponies)

4.B Swine:Population: total number of swine. Emissions are calculated in sub-groups fattening pigs, weaned pigs, boars, sows and piglets

4.B Poultry:CH₄ producing potential includes all poultry.N excretion includes all poultry.

4.B Fur farming:N excretion for fur animals is average of two sub-categories: minks and fitches and foxes and racoons.

4.B Cows: Includes suckler cows.

4.B Ponies:Horses are divided into horses and ponies. Population: number of ponies

4.B Sows:Sows and piglets included separately in calculating CH₄ from manure management. In calculating N₂O from manure management, sows and piglets are treated as one unit because N ex value is defined for this unit "sows and piglets".

4.B Piglets:Nex of piglets is included in Nex of sows.

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH₄ Emissions from Manure Management
(Sheet 2 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

Additional information (for Tier 2) ^(a)

Animal category	Indicator	Climate region	Animal waste management system						
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage	Dry lot	Pasture range paddock	Other
Dairy Cattle	Allocation (%)	Cool	NO	46,41	NO	26,52	NO	26,33	0,74
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	10,00	NA	1,00	NA	1,00	10,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Non-Dairy Cattle	Allocation (%)	Cool	NO	IE	NO	IE	NO	IE	IE
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	10,00	NA	1,00	NA	1,00	10,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Mature Dairy Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF ^(b)	Cool							
		Temperate							
		Warm							
Mature Non-Dairy Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF ^(b)	Cool							
		Temperate							
		Warm							
Young Cattle	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF ^(b)	Cool							
		Temperate							
		Warm							
Buffalo	Allocation (%)	Cool	NA	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
	MCF ^(b)	Cool	NA	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Sheep	Allocation (%)	Cool	NO	0,00	NO	6,79	NO	32,05	61,15
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NO	10,00	NO	1,00	NO	1,00	1,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Goats	Allocation (%)	Cool	NO	0,00	NO	6,79	NO	32,05	61,15
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	10,00	NA	1,00	NA	1,00	1,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Camels and Llamas	Allocation (%)	Cool	NO	NO	NO	NO	NO	NO	NO
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Horses	Allocation (%)	Cool	NO	0,00	NO	63,56	NO	36,44	0,00
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	10,00	NA	1,00	NA	1,00	1,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Mules and Asses	Allocation (%)	Cool	NA	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
	MCF ^(b)	Cool	NA	NA	NA	NA	NA	NA	NA
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Swine	Allocation (%)	Cool	NO	72,08	NO	22,92	NO	0,00	5,00
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	10,00	NA	1,00	NA	1,00	10,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Poultry	Allocation (%)	Cool	NO	0,61	NO	87,36	NO	NO	12,04
		Temperate	NO	NO	NO	NO	NO	NO	NO
		Warm	NO	NO	NO	NO	NO	NO	NO
	MCF ^(b)	Cool	NA	10,00	NA	1,00	NA	NA	2,00
		Temperate	NA	NA	NA	NA	NA	NA	NA
		Warm	NA	NA	NA	NA	NA	NA	NA
Other livestock (please specify)	Allocation (%)	Cool							
		Temperate							
		Warm							
	MCF ^(b)	Cool							
		Temperate							
		Warm							

^(a) The information required in this table may not be directly applicable to country-specific methods developed for MCF calculations. In such cases, information on MCF derivation should be described in the NIR and references to the relevant sections of the NIR should be provided in the documentation box.

^(b) MCF = Methane Conversion Factor (IPCC Guidelines, (Volume 3. Reference Manual, p. 4.9)). If another climate region categorization is used, replace the entries in the cells with the climate regions for which the MCFs are specified.

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE
N₂O Emissions from Manure Management
(Sheet 1 of 1)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS ⁽¹⁾	
	Population size (1000s)	Nitrogen excretion (kg N/head/yr)	Nitrogen excretion per animal waste management system (AWMS) (kg N/yr)						Emission factor per animal waste management system (kg N ₂ O-N/kg N)	
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other		
Cattle	918,27		NO	17 088 453,97	NO	9 764 830,84	9 692 961,08	271 245,30	Anaerobic lagoon	NO
Option A:									Liquid system	0,00
Dairy Cattle	290,04	126,94	NO	17 088 453,97	NO	9 764 830,84	9 692 961,08	271 245,30	Solid storage and dry lot	0,02
Non-Dairy Cattle	628,22	50,16	NO	IE	NO	IE	IE	IE	Other AWMS	0,02
Option B:										
Mature Dairy Cattle										
Mature Non-Dairy Cattle										
Young Cattle										
Sheep	117,67	9,97	NO	NO	NO	79 748,17	376 231,29	717 733,54		
Swine	1 381,21	IE	NO	IE	NO	IE	NO	IE		
Poultry	9 369,45	0,58	NO	37 266,27	NO	2 070 155,66	NO	3 304 070,08		
Buffalo	NO	NA	NA	NA	NA	NA	NA	NA		
Goats	5,92	10,70	NO	NO	NO	4 306,83	20 318,51	38 761,46		
Camels and Llamas	NO	NA	NA	NA	NA	NA	NA	NA		
Horses	63,00	61,19	NO	NO	NO	2 450 202,21	1 404 641,79	NO		
Mules and Asses	NO	NA	NA	NA	NA	NA	NA	NA		
Other livestock (please specify)										
Boars	3,18	20,28	NO	19 344,80	NO	41 913,73	NO	3 224,13		
Bulls	109,51	67,06	NO	2 937 464,49	NO	3 965 577,07	NO	440 619,67		
Calves	304,35	39,05	NO	4 207 357,75	NO	6 532 476,51	814 117,21	332 159,82		
Cows	51,82	68,91	NO	680 917,00	NO	703 614,23	1 301 177,59	885 192,09		
Fattening pigs	491,88	17,53	NO	6 899 971,86	NO	1 293 744,72	NO	431 248,24		
Fur farming	2 699,74	2,21	NO	NA	NO	5 964 527,09	NA	NA		
Heifers	162,55	53,60	NO	2 053 960,26	NO	3 480 321,56	3 007 891,60	171 163,36		
Piglets	396,24	IE	NO	IE	NO	IE	NO	IE		
Ponies	9,30	43,36	NO	NO	NO	256 316,38	146 939,99	NO		
Reindeers	192,92	10,70	NO	NA	NO	NA	2 064 211,90	NA		
Sows	152,86	29,05	NO	1 332 169,03	NO	2 886 366,24	NO	222 028,17		
Weaned pigs	337,05	9,03	NO	2 433 795,68	NO	456 336,69	NO	152 112,23		
Total per AWMS			NA,NO	37 690 701,12	NA,NO	39 950 437,92	18 828 490,96	6 969 558,10		

⁽¹⁾ The implied emission factor will not be calculated until the emissions are entered directly into table 4.

Documentation box:

- Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Indicate in this documentation box whether the activity data used are one-year estimates or three-year averages.
- Provide a reference to the relevant section in the NIR, in particular with regard to:
 - disaggregation of livestock population (e.g. according to the classification recommended in the IPCC good practice guidance), including information on whether these data are one-year estimates or three-year averages.
 - information on other AWMS, if reported.

4.B Cattle: Includes emissions from dairy cows. Emissions from non-dairy cattle are reported under other livestock (suckler cows, bulls, heifers, calves). Other AWMS includes deep litter.

4.B Non-Dairy Cattle: Includes suckler cows, bulls, heifers and calves. Detailed information for each cattle type under source category "Other livestock". Typical animal mass is an average of suckler cow, bull, heifer and calf. Total en

4.B Swine: Population: total number of swine. Emissions are calculated in sub-groups fattening pigs, weaned pigs, boars, sows and piglets

4.B Poultry: CH₄ producing potential includes all poultry. N excretion includes all poultry.

4.B Fur farming: N excretion for fur animals is average of two sub-categories: minks and fitches and foxes and racoons.

4.B Cows: Includes suckler cows.

4.B Ponies: Horses are divided into horses and ponies. Population: number of ponies

4.B Sows: Sows and piglets included separately in calculating CH₄ from manure management. In calculating N₂O from manure management, sows and piglets are treated as one unit because N ex value is defined for this unit "sow

4.B Piglets: Nex of piglets is included in Nex of sows.

4.B Solid storage and dry lot: IEF is not constant as 'solid storage' also includes dung and urine stored separately and the share of urine changes. Urine has EF 0.1% and dung/manure 2%.

4.B Other AWMS: Other AWMS is deep litter

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE

Rice Cultivation

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR ⁽¹⁾	EMISSIONS		
	Harvested area ⁽²⁾ (10 ⁹ m ² /yr)	Organic amendments added ⁽³⁾				CH ₄ (g/m ²)	CH ₄ (Gg)
		type	(t/ha)				
1. Irrigated					NO		
Continuously Flooded	NO	NA	NO	NO	NO		
Intermittently Flooded	Single Aeration	NO	NA	NO	NO		
	Multiple Aeration	NO	NA	NO	NO		
2. Rainfed					NO		
Flood Prone	NO	NA	NO	NO	NO		
Drought Prone	NO	NA	NO	NO	NO		
3. Deep Water					NO		
Water Depth 50-100 cm	NO	NA	NO	NO	NO		
Water Depth > 100 cm	NO	NA	NO	NO	NO		
4. Other (please specify)	NO				NO		
Other non-specified	NO	(specify type)	NA	NO	NO		
Upland Rice ⁽⁴⁾	NO						
Total ⁽⁴⁾	NO						

⁽¹⁾ The implied emission factor implicitly takes account of all relevant corrections for continuously flooded fields without organic amendment, the correction for the organic amendments and the effect of different soil characteristics, if considered in the calculation of methane emissions.

⁽²⁾ Harvested area is the cultivated area multiplied by the number of cropping seasons per year.

⁽³⁾ Specify dry weight or wet weight for organic amendments in the documentation box.

⁽⁴⁾ These rows are included to allow comparison with international statistics. Methane emissions from upland rice are assumed to be zero.

Documentation box:

- Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- When disaggregating by more than one region within a country, and/or by growing season, provide additional information on disaggregation and related data in the NIR and provide a reference to the relevant section in the NIR.
- Where available, provide activity data and scaling factors by soil type and rice cultivar in the NIR.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Inventory 2009

Agricultural Soils

Submission 2011 v1.6

(Sheet 1 of 2)

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS kg N ₂ O-N/kg N ⁽²⁾	EMISSIONS N ₂ O (Gg)
	Description	Value kg N/yr		
1. Direct Soil Emissions	N input to soils			8,68
1. Synthetic Fertilizers	Nitrogen input from application of synthetic fertilizers	133 761 838,01	0,01	2,63
2. Animal Manure Applied to Soils	Nitrogen input from manure applied to soils	58 496 571,21	0,01	1,15
3. N-fixing Crops	Nitrogen fixed by N-fixing crops	848 088,90	0,01	0,02
4. Crop Residue	Nitrogen in crop residues returned to soils	28 360 682,73	0,01	0,56
5. Cultivation of Histosols ⁽²⁾	Area of cultivated organic soils (ha/yr)	332 486,00	8,28	4,32
6. Other direct emissions (<i>please specify</i>)				0,00
Municipal sewage sludge applied to soils	Nitrogen from sewage applied to soils	192 266,44	0,01	0,00
2. Pasture, Range and Paddock Manure	N excretion on pasture range and paddock	18 006 627,33	0,02	0,57
3. Indirect Emissions				1,86
1. Atmospheric Deposition	Volatized N from fertilizers, animal manures and other	28 486 975,74	0,01	0,45
2. Nitrogen Leaching and Run-off	N from fertilizers, animal manures and other that is lost through leaching and run-off	35 955 838,21	0,02	1,41
4. Other (<i>please specify</i>)				NO
Other non-specified	(specify)	NE	NO	NO

⁽¹⁾ To convert from N₂O-N to N₂O emissions, multiply by 44/28. Note that for cultivation of Histosols the unit of the IEF is kg N₂O-N/ha.

Documentation box:

• Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

• Provide a reference to the relevant section in the NIR, in particular with regard to:

- Background information on CH₄ emissions from agricultural soils, if accounted for under the Agriculture sector;
- Disaggregated values for Frac_{GRAZ} according to animal type, and for Frac_{BURN} according to crop types;
- Full list of assumptions and fractions used.

4.D.1.1 Synthetic Fertilizers: Fraction lost as NH₃&NO_x subtracted.

4.D.1.2 Animal Manure Applied to Soils: Excludes manure applied to pastures.

4.D.1.4 Crop Residue: Fraction burned subtracted

4.D.1.5 Cultivation of Histosols: Separate EF's for cultivated organic soils on cereals and grasses have been used. EF for cereals 11,7 kg N₂O-N/ha/yr, EF for grass 4,0 kg N₂O-N/ha/yr.

4.D.1.6 Municipal sewage sludge applied to soils: Municipal sewage sludge applied to soils is reported under direct soil emissions 4.D.1.6 (and not 4.D.4).

4.D.1.6 Municipal sewage sludge applied to soils/2009: Sewage sludge now reported under 4.D.1.6

4.D.2 Pasture, Range and Paddock Manure: Fraction volatilised as NH₃ and NO_x subtracted from Nex on pasture.

4.D.3.1 Atmospheric Deposition: Volatilised amount from fertilisers includes indirect N from manure management!

4.D.3.1 Atmospheric Deposition/2009: Manure nitrogen corrected and therefore changes in volatilized nitrogen also.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Inventory 2009

Agricultural Soils⁽¹⁾

Submission 2011 v1.6

(Sheet 2 of 2)

FINLAND

Additional information

Fraction^(a)	Description	Value
Frac _{BURN}	Fraction of crop residue burned	0,00
Frac _{FUEL}	Fraction of livestock N excretion in excrements burned for fuel	NA
Frac _{GASF}	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH ₃ and NO _x	0,02
Frac _{GASM}	Fraction of livestock N excretion that volatilizes as NH ₃ and NO _x	0,25
Frac _{GRAZ}	Fraction of livestock N excreted and deposited onto soil during grazing	0,18
Frac _{LEACH}	Fraction of N input to soils that is lost through leaching and run-off	0,15
Frac _{NCRBF}	Fraction of total above-ground biomass of N-fixing crop that is N	0,04
Frac _{NCRO}	Fraction of residue dry biomass that is N	0,01
Frac _R	Fraction of total above-ground crop biomass that is removed from the field as a crop product	0,45
Other fractions (<i>please specify</i>)		NA

^(a) Use the definitions for fractions as specified in the IPCC Guidelines (Volume 3. Reference Manual, pp. 4.92-4.113) as elaborated by the IPCC good practice guidance (pp. 4.54-4.74).

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE

Prescribed Burning of Savannas

(Sheet 1 of 1)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
	Area of savanna burned	Average above-ground biomass density	Fraction of savanna burned	Biomass burned	Nitrogen fraction in biomass	CH ₄	N ₂ O	CH ₄	N ₂ O
	(k ha/yr)	(t dm/ha)		(Gg dm)		(kg/t dm)		(Gg)	
(specify ecological zone)								NO	NO
Other non-specified	NO	NA	NA	NA	NA	NO	NO	NO	NO

Additional information

	Living Biomass	Dead Biomass
Fraction of above-ground biomass	NA	NA
Fraction oxidized	NA	NA
Carbon fraction	NA	NA

Documentation box:

Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE

Field Burning of Agricultural Residues

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS		EMISSIONS	
	Crop production (t)	Residue/ Crop ratio	Dry matter (dm) fraction of residue	Fraction burned in fields	Fraction oxidized	Total biomass burned (Gg dm)	C fraction of residue	N-C ratio in biomass residues	CH ₄	N ₂ O	CH ₄	N ₂ O
									(kg/t dm)		(Gg)	
1. Cereals											0,02	0,00
Wheat	887 600,00	1,30	0,83	0,00	0,90	1,49	0,47	0,01	3,14	0,06	0,00	0,00
Barley	2 170,30	1,20	0,83	0,00	0,90	3,41	0,47	0,01	3,14	0,06	0,01	0,00
Maize	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
Oats	1 113 800,00	1,30	0,83	0,00	0,90	1,90	0,47	0,01	3,14	0,06	0,01	0,00
Rye	41 700,00	1,60	0,83	0,00	0,90	0,09	0,47	0,01	3,14	0,06	0,00	0,00
Rice	NO	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
Other (please specify)											NO	NO
Other non-specified	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
2. Pulses											NO	NO
Dry bean	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
Peas	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
Soybeans	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
Other (please specify)											NO	NO
Other non-specified	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
3 Tubers and Roots											NO	NO
Potatoes	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
Other (please specify)											NO	NO
Other non-specified	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO
4 Sugar Cane	NO	NA	NA	NA	NA	NO	NA	NA	NO	NO	NO	NO
5 Other (please specify)											NO	NO
Other non-specified	NA	NA	NA	NA	NA	NA	NA	NA	NO	NO	NO	NO

Documentation box:
Parties should provide detailed explanations on the Agriculture sector in Chapter 6: Agriculture (CRF sector 4) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 5 SECTORAL REPORT FOR LAND USE, LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO ₂ emissions/removals ^{(1), (2)}	CH ₄ ⁽²⁾	N ₂ O ⁽²⁾	NO _x	CO	NMVOC
	(Gg)					
Total Land-Use Categories	-40 703,86	1,75	0,35	0,01	0,46	NA,NE
A. Forest Land	-47 219,57	0,05	0,08	0,01	0,46	NE
1. Forest Land remaining Forest Land	-47 407,90	0,05	0,08	0,01	0,46	NE
2. Land converted to Forest Land	188,33	IE	IE	IE	IE	NE
B. Cropland	6 540,85	NA,NE	0,03	NE	NE	NE
1. Cropland remaining Cropland	4 809,97	NA	NA	NE	NE	NE
2. Land converted to Cropland	1 730,88	NE	0,03	NE	NE	NE
C. Grassland	498,06	NE,NO	NE,NO	NE	NE	NE
1. Grassland remaining Grassland	508,77	NE,NO	NE,NO	NE	NE	NE
2. Land converted to Grassland	-10,70	NE	NE	NE	NE	NE
D. Wetlands	1 186,52	1,70	0,24	IE	IE	NE
1. Wetlands remaining Wetlands ⁽³⁾	IE,NE,NO	IE,NO	IE,NO	IE	IE	NE
2. Land converted to Wetlands	1 186,52	1,70	0,24	IE	IE	NE
E. Settlements	IE,NE	NA,NE	NA,NE	NA	NA	NA
1. Settlements remaining Settlements ⁽³⁾	NE	NA	NA	NA	NA	NA
2. Land converted to Settlements	IE,NE	NA	NA	NA	NA	NA
F. Other Land	IE,NA,NO	IE,NA	IE,NA	NA	NA	NA
1. Other Land remaining Other Land ⁽⁴⁾						
2. Land converted to Other Land	NA,NO	NA	NA	NA	NA	NA
G. Other (please specify)⁽⁵⁾	-1 709,72	NE	NE	NE	NE	NE
Harvested Wood Products ⁽⁶⁾	-1 709,72	NE	NE	NE	NE	NE
Information items⁽⁷⁾						
Forest Land converted to other Land-Use Categories	IE	IE,NE	IE,NE	NE	NE	NE
Grassland converted to other Land-Use Categories	NE	NE	NE	NE	NE	NE

⁽¹⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽²⁾ For each land-use category and sub-category, this table sums net CO₂ emissions and removals shown in tables 5.A to 5.F, and the CO₂, CH₄ and N₂O emissions showing in tables 5(I) to 5(V).

⁽³⁾ Parties may decide not to prepare estimates for these categories contained in appendices 3a.3 and 3a.4 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.

⁽⁴⁾ This land-use category is to allow the total of identified land area to match the national area.

⁽⁵⁾ The total for category 5.G Other includes items specified only under category 5.G in this table as well as sources and sinks specified in category 5.G in tables 5(I) to 5(V).

⁽⁶⁾ Parties may decide not to prepare estimates for this category contained in appendix 3a.1 of the IPCC good practice guidance for LULUCF, although they may do so if they wish and report in this row.

⁽⁷⁾ These items are listed for information only and will not be added to the totals, because they are already included in subcategories 5.A.2 to 5.F.2.

Documentation box:

- Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- If estimates are reported under 5.G Other, use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

5.A.2 Land converted to Forest Land: The all subcategories of the category 5.A.2 Land converted to Forest Land are reported under the category 5.A.1. Forest land remaining Forest land. At the moment there is no appropriate method and activity data to estimate land-use conversions to all years to been reported.

5.C.1 Grassland remaining Grassland: Total grassland area and EFs for organic soils were updated in 2011 and the whole timeseries was recalculated.

5.D.2 Land converted to Wetlands: CO₂ emissions from peat extraction are reported in this category. No distinctions is made between new and old areas. New areas can be taken in use from Forest land, Cropland, Grassland or Wetlands. Carbon stock change due to the conversion from Forest land to peat extraction is reported in category 5.A.1 Forest land. See section 7.5.1 in the NIR.



TABLE 5.A SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Forest Land
(Sheet 1 of 1)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO ₂ emissions/removals ^{(8) (9)}
Land-Use Category	Sub-division ⁽¹⁾	Area ⁽²⁾ (kha)	Area of organic soil ⁽²⁾ (kha)	Carbon stock change in living biomass per area ⁽³⁾			Net carbon stock change in dead organic matter per area ⁽⁴⁾	Net carbon stock change in soils per area ⁽⁴⁾		Carbon stock change in living biomass ^{(3) (4)}			Net carbon stock change in dead organic matter ⁽⁴⁾	Net carbon stock change in soils ^{(4) (6)}		
				Gains	Losses	Net change		Mineral soils ⁽⁵⁾	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils ⁽⁷⁾	
				(Mg C/ha)						(Gg C)						
A. Total Forest Land		22 014,53	5 963,21	1,60	-0,99	0,61	IE,NO	0,11	-0,39	35 182,69	-21 778,36	13 404,33	IE,NO	1 788,79	-2 313,70	-47 224,54
1. Forest Land remaining Forest Land		21 849,25	5 904,42	1,61	-1,00	0,61	IE	0,11	-0,37	35 110,43	-21 778,36	13 332,08	IE	1 795,92	-2 197,21	-47 412,86
2. Land converted to Forest Land ⁽¹⁰⁾		165,28	58,79	0,44	IE,NO	0,44	IE,NO	-0,07	-1,98	72,26	IE,NO	72,26	IE,NO	-7,13	-116,49	188,33
2.1 Cropland converted to Forest Land		48,47	7,43	0,30	IE	0,30	IE	-0,68	-2,70	14,77	IE	14,77	IE	-28,07	-20,03	122,21
2.2 Grassland converted to Forest Land		67,39	27,46	0,52	IE	0,52	IE	-0,97	-1,90	35,00	IE	35,00	IE	-38,73	-52,05	204,52
2.3 Wetlands converted to Forest Land		25,15	23,31	0,40	IE	0,40	IE	-0,80	-1,85	10,00	IE	10,00	IE	-1,46	-43,22	127,19
	drained-WL	21,15	20,41	0,42	IE	0,42	IE	NO	-1,93	8,82	IE	8,82	IE	NO	-39,33	111,86
	peat extraction	4,00	2,91	0,30	IE	0,30	IE	-1,34	-1,34	1,18	IE	1,18	IE	-1,46	-3,90	15,33
2.4 Settlements converted to Forest Land		22,90	0,58	0,55	IE	0,55	IE	2,74	-2,03	12,50	IE	12,50	IE	61,12	-1,18	-265,60
2.5 Other Land converted to Forest Land		1,38	NA	NO	NO	NO	NO	NO	NA	NO	NO	NO	NO	NO	NA	NA,NO

⁽¹⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽²⁾ The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Forest Land report the cumulative area remaining in the category in the reporting year.

⁽³⁾ Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.

⁽⁴⁾ The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).

⁽⁵⁾ Implied carbon-stock-change factors for mineral soils are calculated by dividing the net C stock change estimate for mineral soil by the difference between the area and the area of organic soil.

⁽⁶⁾ When Parties are estimating fluxes for organic soils but cannot separate these fluxes from mineral soils, these fluxes should be reported under mineral soils.

⁽⁷⁾ The value reported for organic soils is estimated as a flux. For consistency with other entries in this column, these fluxes should be expressed in the unit required in this column, i.e. in Gg C.

⁽⁸⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.

⁽⁹⁾ Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.

⁽¹⁰⁾ A Party may report aggregate estimates for all conversions of land to forest land when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.A.1 Carbon stock change: Dead organic matter is reported under soil carbon, see NIR 7.2.2.2

5.A.2 Carbon stock change: The method to estimate C gains and losses in living biomass for different land-use conversion types is given in Section 7.2.2.1 in the NIR.

5.A.2.1 Cropland converted to Forest Land: Dead organic matter is reported under soil carbon, see NIR 7.2.2.3

5.A.2.2 Grassland converted to Forest Land: Dead organic matter is reported under soil carbon, see NIR 7.2.2.3

5.A.2.3 Wetlands converted to Forest Land: Dead organic matter is reported under soil carbon, see NIR 7.2.2.3

5.A.2.3 drained-WL: Dead organic matter is reported under soil carbon, see NIR 7.2.2.3

5.A.2.3 drained-WL/2009: Wetland has converted to Forest land/forest road and has classified as mineral soil

5.A.2.3 peat extraction: Dead organic matter is reported under soil carbon, see NIR 7.2.2.3

5.A.2.4 Settlements converted to Forest Land: Dead organic matter is reported under soil carbon, see NIR 7.2.2.3

TABLE 5.B SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Cropland
(Sheet 1 of 1)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO ₂ emissions/removals ^{(10) (11)}
Land-Use Category	Sub-division ⁽¹⁾	Area ⁽²⁾ (kha)	Area of organic soil ⁽²⁾ (kha)	Carbon stock change in living biomass per area ⁽³⁾			Net carbon stock change in dead organic matter per area ⁽⁴⁾	Net carbon stock change in soils per area ⁽⁴⁾		Carbon stock change in living biomass ^{(3), (4), (6)}			Net carbon stock change in dead organic matter ^{(4) (7)}	Net carbon stock change in soils ^{(4) (8)}		
				Gains	Losses	Net change		Mineral soils ⁽⁵⁾	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils ⁽⁹⁾	
				(Mg C/ha)						(Gg C)						
B. Total Cropland		2 448,04	332,49	0,00	0,00	0,00	IE,NE	-0,02	-4,97	1,01	-0,37	0,64	IE,NE	-45,43	-1 653,98	6 228,82
1. Cropland remaining Cropland		2 336,31	279,80	0,00	0,00	0,00	NE	0,08	-4,99	0,98	-0,37	0,61	NE	168,49	-1 395,81	4 497,94
2. Land converted to Cropland ⁽¹²⁾		111,73	52,69	0,00	IE,NE	0,00	IE,NE	-3,62	-4,90	0,03	IE,NE	0,03	IE,NE	-213,92	-258,17	1 730,88
2.1 Forest Land converted to Cropland		80,25	31,02	0,00	IE	0,00	IE	-0,43	-4,90	0,02	IE	0,02	IE	-21,41	-152,01	635,79
	Mineral soils	49,23	NA	0,00	IE	0,00	IE	-0,43	NA	0,01	IE	0,01	IE	-21,41	NA	78,45
	Organic soils	31,02	31,02	0,00	IE	0,00	IE	NA	-4,90	0,01	IE	0,01	IE	NA	-152,01	557,33
2.2 Grassland converted to Cropland		8,73	0,73	0,00	NE	0,00	NE	-24,07	-4,90	0,00	NE	0,00	NE	-192,51	-3,56	718,93
2.3 Wetlands converted to Cropland		22,03	20,94	0,00	NE	0,00	NE	NE	-4,90	0,01	NE	0,01	NE	NE	-102,60	376,17
2.4 Settlements converted to Cropland		0,73	NO	NE	NE	NE	NE	NE	NO	NE	NE	NE	NE	NE	NO	NE,NO
2.5 Other Land converted to Cropland		NO	NO	NE	NE	NE	NE	NO	NO	NE	NE	NE	NE	NO	NO	NE,NO

⁽¹⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽²⁾ The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Cropland report the cumulative area remaining in the category in the reporting year.

⁽³⁾ Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.

⁽⁴⁾ The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).

⁽⁵⁾ Implied carbon-stock-change factors for mineral soils are calculated by dividing the net C stock change estimate for mineral soil by the difference between the area and the area of organic soil.

⁽⁶⁾ For category 5.B.1 Cropland remaining Cropland this column only includes changes in perennial woody biomass.

⁽⁷⁾ No reporting on dead organic matter pools is required for category 5.B.1. Cropland remaining Cropland.

⁽⁸⁾ When Parties are estimating fluxes for organic soils but cannot separate these fluxes from mineral soils, these fluxes should be reported under mineral soils.

⁽⁹⁾ The value reported for organic soils is estimated as a flux. For consistency with other entries in this column, these fluxes should be expressed in the unit required in this column, i.e. in Gg C.

⁽¹⁰⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.

⁽¹¹⁾ Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.

⁽¹²⁾ A Party may report aggregate estimates for all land conversions to cropland, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:

Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 5.C SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

Grassland

Submission 2011 v1.6

(Sheet 1 of 1)

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		IMPLIED CARBON-STOCK-CHANGE FACTORS						CHANGES IN CARBON STOCK						Net CO ₂ emissions/removals ^{(10) (11)}
Land-Use Category	Sub-division ⁽¹⁾	Area ⁽²⁾ (kha)	Area of organic soil ⁽²⁾ (kha)	Carbon stock change in living biomass per area ⁽³⁾ ₍₄₎			Net carbon stock change in dead organic matter per area ⁽⁴⁾	Net carbon stock change in soils per area ⁽⁴⁾		Carbon stock change in living biomass ^{(3), (4), (6)}			Net carbon stock change in dead organic matter ^{(4) (7)}	Net carbon stock change in soils ^{(4) (8)}		
				Gains	Losses	Net change		Mineral soils ⁽⁵⁾	Organic soils	Gains	Losses	Net change		Mineral soils	Organic soils ⁽⁹⁾	
				(Mg C/ha)						(Gg C)						
C. Total Grassland		225,48	68,87	0,00	IE,NE	0,00	IE,NA,NE	0,54	-3,20	0,10	IE,NE	0,10	IE,NA,NE	84,44	-220,37	498,06
1. Grassland remaining Grassland		163,68	54,37	NE	NE	NE	NA	0,32	-3,20	NE	NE	NE	NA	35,24	-173,99	508,77
2. Land converted to Grassland ⁽¹²⁾		61,80	14,50	0,00	IE,NE	0,00	IE,NE	1,04	-3,20	0,10	IE,NE	0,10	IE,NE	49,21	-46,38	-10,70
2.1 Forest Land converted to Grassland		7,52	1,88	0,00	IE	0,00	IE	-0,03	-3,20	0,00	IE	0,00	IE	-0,15	-6,01	22,57
2.2 Cropland converted to Grassland		53,35	12,34	0,00	NE	0,00	NE	1,20	-3,20	0,02	NE	0,02	NE	49,35	-39,48	-36,27
2.3 Wetlands converted to Grassland		0,28	0,28	0,26	NE	0,26	NE	NO	-3,20	0,07	NE	0,07	NE	NO	-0,89	3,00
2.4 Settlements converted to Grassland		0,65	NO	NE	NE	NE	NE	NO	NO	NE	NE	NE	NE	NO	NO	NE,NO
2.5 Other Land converted to Grassland		NO	NO	NE	NE	NE	NE	NO	NO	NE	NE	NE	NE	NO	NO	NE,NO

⁽¹⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽²⁾ The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Grassland report the cumulative area remaining in the category in the reporting year.

⁽³⁾ Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.

⁽⁴⁾ The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).

⁽⁵⁾ Implied carbon-stock-change factors for mineral soils are calculated by dividing the net C stock change estimate for mineral soil by the difference between the area and the area of organic soil.

⁽⁶⁾ For category 5.C.1 Grassland remaining Grassland this column only includes changes in perennial woody biomass.

⁽⁷⁾ No reporting on dead organic matter pools is required for category 5.C.1 Grassland remaining Grassland.

⁽⁸⁾ When Parties are estimating fluxes for organic soils but cannot separate these fluxes from mineral soils, these fluxes should be reported under mineral soils.

⁽⁹⁾ The value reported for organic soils is estimated as a flux. For consistency with other entries in this column, these fluxes should be expressed in the unit required in this column, i.e. in Gg C.

⁽¹⁰⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.

⁽¹¹⁾ Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.

⁽¹²⁾ A Party may report aggregate estimates for all land conversions to grassland, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.C.1 Carbon stock change: Total grassland area and EF's for organic soils were updated in 2011 and the whole timeseries was recalculated.

TABLE 5.D SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

Wetlands
(Sheet 1 of 1)

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED CARBON-STOCK-CHANGE FACTORS					CHANGES IN CARBON STOCK					Net CO ₂ emissions/removals ^{(5) (6)}
Land-Use Category	Sub-division ⁽¹⁾	Area ⁽²⁾ (kha)	Carbon stock change in living biomass per area ^{(3) (4)}			Net carbon stock change in dead organic matter per area ⁽⁴⁾	Net carbon stock change in soils per area ⁽⁴⁾	Carbon stock change in living biomass ^{(3) (4)}			Net carbon stock change in dead organic matter ⁽⁴⁾	Net carbon stock change in soils ⁽⁴⁾	
			Gains	Losses	Net change			Gains	Losses	Net change			
			(Mg C/ha)					(Gg C)					
D. Total Wetlands		6 420,38	NE,NO	IE,NE,NO	IE,NE,NO	NE,NO	-0,05	NE,NO	IE,NE,NO	IE,NE,NO	NE,NO	-323,60	1 186,52
1. Wetlands remaining Wetlands ⁽⁷⁾		6 328,35	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	Inland waters	3 452,55	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
	Wetlands	2 875,79	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. Land converted to Wetlands ⁽⁸⁾		92,03	NE,NO	IE,NE,NO	IE,NE,NO	NE,NO	-3,52	NE,NO	IE,NE,NO	IE,NE,NO	NE,NO	-323,60	1 186,52
2.1 Forest Land converted to Wetlands		7,91	NE	IE	IE,NE	NE	-1,85	NE	IE	IE,NE	NE	-14,66	53,74
2.2 Cropland converted to Wetlands		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2.3 Grassland converted to Wetlands		1,23	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.4 Settlements converted to Wetlands		0,94	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.5 Other Land converted to Wetlands		81,95	NO	IE	IE,NO	NE	-3,77	NO	IE	IE,NO	NE	-308,94	1 132,78
	Peat extraction	81,95	NO	IE	IE,NO	NE	-3,77	NO	IE	IE,NO	NE	-308,94	1 132,78

⁽¹⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽²⁾ The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Wetlands report the cumulative area remaining in the category in the reporting year.

⁽³⁾ Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.

⁽⁴⁾ The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).

⁽⁵⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.

⁽⁶⁾ Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.

⁽⁷⁾ Parties may decide not to prepare estimates for this category contained in appendix 3a.3 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.

⁽⁸⁾ A Party may report aggregate estimates for all land conversions to wetlands, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.D.1 Wetlands: See NIR section 5.D Wetlands
5.D.2 Carbon stock change: Other land converted to wetland includes all land use categories, no separation could be done between land use categories. See section 7.5.1 of the NIR.
5.D.2.1 Forest Land converted to Wetlands: In this Table emissions from peatland soils from conversion forest land converted to wetlands (excluding peat extraction) are reported. See NIR Section 7.5.2.1.
5.D.2.5 Other Land converted to Wetlands: CO₂ emissions from peat extraction are reported in this category. No distinctions is made between new and old areas. New areas can be taken in use from Forest land, Cropland, Grassland or Wetlands. Carbon stock change due to the conversion from Forest land to peat extraction is reported in category 5.A.1 Forest land. See section 7.5.1 in the NIR.

TABLE 5.E SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Settlements
(Sheet 1 of 1)

Inventory 2009

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FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED CARBON-STOCK-CHANGE FACTORS					CHANGES IN CARBON STOCK					Net CO ₂ emissions/removals ^{(6) (7)}
Land-Use Category	Sub-division ⁽¹⁾	Area ⁽²⁾ (kha)	Carbon stock change in living biomass per area ⁽³⁾ (4)			Net carbon stock change in dead organic matter per area ⁽⁴⁾	Net carbon stock change in soils per area ⁽⁴⁾	Carbon stock change in living biomass ^{(3), (4), (5)}			Net carbon stock change in dead organic matter ⁽⁴⁾	Net carbon stock change in soils ⁽⁴⁾	
			Gains	Losses	Net change			Gains	Losses	Net change			
			(Mg C/ha)					(Gg C)					
E. Total Settlements		1 451,02	NE	IE,NE	IE,NE	NE	NE	NE	IE,NE	IE,NE	NE	NE	IE,NE
1. Settlements remaining Settlements ⁽⁸⁾		1 244,75	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2. Land converted to Settlements ⁽⁹⁾		206,27	NE	IE,NE	IE,NE	NE	NE	NE	IE,NE	IE,NE	NE	NE	IE,NE
2.1 Forest Land converted to Settlements		172,76	NE	IE	IE,NE	NE	NE	NE	IE	IE,NE	NE	NE	IE,NE
2.2 Cropland converted to Settlements		16,31	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.3 Grassland converted to Settlements		12,33	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.4 Wetlands converted to Settlements		3,91	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
2.5 Other Land converted to Settlements		0,97	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

⁽¹⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽²⁾ The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Settlements report the cumulative area remaining in the category in the reporting year.

⁽³⁾ Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.

⁽⁴⁾ The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).

⁽⁵⁾ For category 5.E.1 Settlements remaining Settlements this column only includes changes in perennial woody biomass.

⁽⁶⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.

⁽⁷⁾ Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.

⁽⁸⁾ Parties may decide not to prepare estimates for this category contained in appendix 3a.4 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.

⁽⁹⁾ A Party may report aggregate estimates for all land conversions to settlements, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 5.F SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

Other land
(Sheet 1 of 1)

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FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED CARBON-STOCK-CHANGE FACTORS					CHANGES IN CARBON STOCK					Net CO ₂ emissions/removals ^{(5) (6)}
Land-Use Category	Sub-division ⁽¹⁾	Area ⁽²⁾ (kha)	Carbon stock change in living biomass per area ^{(3) (4)}			Net carbon stock change in dead organic matter per area ⁽⁴⁾	Net carbon stock change in soils per area ⁽⁴⁾	Carbon stock change in living biomass ^{(3) (4)}			Net carbon stock change in dead organic matter ⁽⁴⁾	Net carbon stock change in soils ⁽⁴⁾	
			Gains	Losses	Net change			Gains	Losses	Net change			
			(Mg C/ha)					(Gg C)					
F. Total Other Land		1 283,00	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
1. Other Land remaining Other Land ⁽⁷⁾		1 282,31											
2. Land converted to Other Land ⁽⁸⁾		0,69	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
2.1 Forest Land converted to Other Land		NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2.2 Cropland converted to Other Land		NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.3 Grassland converted to Other Land		NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.4 Wetlands converted to Other Land		NO	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2.5 Settlements converted to Other Land		0,69	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

⁽¹⁾ Land categories may be further divided according to climate zone, management system, soil type, vegetation type, tree species, ecological zone or national land classification.

⁽²⁾ The total area of the subcategories, in accordance with the sub-division used, should be entered here. For lands converted to Other Land report the cumulative area remaining in the category in the reporting year.

⁽³⁾ Carbon stock gains and losses should be listed separately except in cases where, due to the methods used, it is technically impossible to separate information on gains and losses.

⁽⁴⁾ The signs for estimates of gains in carbon stocks are positive (+) and of losses in carbon stocks are negative (-).

⁽⁵⁾ According to the Revised 1996 IPCC Guidelines, for the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+). Net changes in carbon stocks are converted to CO₂ by multiplying C by 44/12 and changing the sign for net CO₂ removals to be negative (-) and for net CO₂ emissions to be positive (+). Note that carbon stock changes in a single pool are not necessarily equal to emissions or removals, because some carbon stock changes result from carbon transfers among pools rather than exchanges with the atmosphere.

⁽⁶⁾ Where Parties directly estimate emissions and removals rather than carbon stock changes, they may report emissions/removals directly in this column and use notation keys in the stock change columns.

⁽⁷⁾ This land-use category is to allow the total of identified land area to match the national area.

⁽⁸⁾ A Party may report aggregate estimates for all land conversions to other land, when data are not available to report them separately. A Party should specify in the documentation box which types of land conversion are included. Separate estimates for forest land and grassland conversion should be provided in table 5 as an information item.

Documentation box:
Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

TABLE 5 (I) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

Direct N₂O emissions from N fertilization⁽¹⁾ of Forest Land and Other

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(Sheet 1 of 1)

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS ⁽⁴⁾
Land-Use Category ⁽²⁾	Total amount of fertilizer applied	N ₂ O-N emissions per unit of fertilizer	N ₂ O
	(Gg N/yr)	(kg N ₂ O-N/kg N) ⁽³⁾	(Gg)
Total for all Land Use Categories	4,07	0,01	0,08
A. Forest Land^{(5) (6)}	4,07	0,01	0,08
1. Forest Land remaining Forest Land	4,07	0,01	0,08
2. Land converted to Forest Land	IE	IE	IE
G. Other (please specify)			NA

⁽¹⁾ Direct N₂O emissions from fertilization are estimated using equations 3.2.17 and 3.2.18 of the IPCC good practice guidance for LULUCF based on the amounts of fertilizers applied to forest land.

⁽²⁾ N₂O emissions from N fertilization of cropland and grassland are reported in the Agriculture sector; therefore only Forest Land is included in this table.

⁽³⁾ In the calculation of the implied emission factor, N₂O emissions are converted to N₂O-N by multiplying by 28/44.

⁽⁴⁾ Emissions are reported with a positive sign.

⁽⁵⁾ If a Party is not able to separate the fertilizer applied to forest land from that applied to agriculture, it may report all N₂O emissions from fertilization in the Agriculture sector. This should be explicitly indicated in the documentation box.

⁽⁶⁾ A Party may report aggregate estimates for all N fertilization on forest land in the category Forest Land remaining Forest Land when data are not available to report Forest Land remaining Forest Land and Land converted to Forest Land separately.

Documentation box:

Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.A.2 5(I) Direct N₂O emissions from N fertilization of Forest Land and Other: Described in the NIR 7.7.1.1

TABLE 5 (II) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

Non-CO₂ emissions from drainage of soils and wetlands⁽¹⁾

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(Sheet 1 of 1)

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA	IMPLIED EMISSION FACTORS		EMISSIONS ⁽⁵⁾	
Land-Use Category ⁽²⁾	Sub-division ⁽³⁾	Area (kha)	N ₂ O-N per area ⁽⁴⁾ (kg N ₂ O-N/ha)	CH ₄ per area (kg CH ₄ /ha)	N ₂ O	CH ₄
					(Gg)	
Total all Land-Use Categories					0,24	1,70
A. Forest Land⁽⁶⁾			NE	NE	NE	NE
Organic Soil		NE	NE	NE	NE	NE
	Organic Soils	NE	NE	NE	NE	NE
Mineral Soil		NE	NE	NE	NE	NE
	Mineral Soils	NE	NE	NE	NE	NE
D. Wetlands			1,85	20,71	0,24	1,70
Peatland ⁽⁷⁾		81,95	1,85	20,71	0,24	1,70
Flooded Lands ⁽⁷⁾		NO	NO	NO	NO	NO
G. Other (please specify)					NA	NA

⁽¹⁾ Parties may decide not to prepare estimates for these categories contained in appendices 3a.2 and 3a.3 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.

⁽²⁾ N₂O emissions from drained cropland and grassland soils are covered in the Agriculture tables of the CRF under Cultivation of Histosols.

⁽³⁾ A Party should report further disaggregations of drained soils corresponding to the methods used. Tier 1 disaggregates soils into "nutrient rich" and "nutrient poor" areas, whereas higher-tier methods can further disaggregate into different peatland types, soil f

⁽⁴⁾ In the calculation of the implied emission factor, N₂O emissions are converted to N₂O-N by multiplying by 28/44.

⁽⁵⁾ Emissions are reported with a positive sign.

⁽⁶⁾ In table 5, these emissions will be added to 5.A.1 Forest Land remaining Forest Land.

⁽⁷⁾ In table 5, these emissions will be added to 5.D.2 Land converted to Wetlands.

Documentation box:

Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.D.2 Peatland:Finland reports in this category non-CO2 emissions from peat extraction areas. Emissions from drainage of other Wetlands are not reported. Description of the calculation is given in Section 7.5 Wetlands in the NIR

TABLE 5 (III) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

N₂O emissions from disturbance associated with land-use conversion to cropland ⁽¹⁾

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(Sheet 1 of 1)

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS ⁽⁴⁾
Land-Use Category ⁽²⁾	Land area converted	N ₂ O-N emissions per area converted ⁽³⁾	N ₂ O
	(kha)	(kg N ₂ O-N/ha)	(Gg)
Total all Land-Use Categories ⁽⁵⁾	111,73	0,18	0,03
B. Cropland	111,73	0,18	0,03
2. Lands converted to Cropland ⁽⁶⁾	111,73	0,18	0,03
Organic Soils	52,69	IE,NE,NO	IE,NE,NO
Mineral Soils	59,04	0,35	0,03
2.1 Forest Land converted to Cropland	80,25	0,16	0,02
Organic Soils	31,02	IE	IE
Mineral Soils	49,23	0,25	0,02
2.2 Grassland converted to Cropland	9,45	0,85	0,01
Organic Soils	0,73	NO	NO
Mineral Soils	8,73	0,92	0,01
2.3 Wetlands converted to Cropland ⁽⁷⁾	22,03	IE,NO	IE,NO
Organic Soils	20,94	IE	IE
Mineral Soils	1,09	NO	NO
2.5 Other Land converted to Cropland	NO	NE	NE
Organic Soils	NO	NE	NE
Mineral Soils	NO	NE	NE
G. Other (please specify)			

⁽¹⁾ Methodologies for N₂O emissions from disturbance associated with land-use conversion are based on equations 3.3.14 and 3.3.15 of the IPCC good practice guidance for LULUCF. N₂O emissions from fertilization in the preceding land use and new land use should not be reported.

⁽²⁾ According to the IPCC good practice guidance for LULUCF, N₂O emissions from disturbance of soils are only relevant for land conversions to cropland. N₂O emissions from Cropland remaining Cropland are included in the Agriculture sector of the good practice guidance. The good practice guidance provides methodologies only for mineral soils.

⁽³⁾ In the calculation of the implied emission factor, N₂O emissions are converted to N₂O-N by multiplying by 28/44.

⁽⁴⁾ Emissions are reported with a positive sign.

⁽⁵⁾ Parties can separate between organic and mineral soils, if they have data available.

⁽⁶⁾ If activity data cannot be disaggregated to all initial land uses, Parties may report some initial land uses aggregated under Other Land converted to Cropland (indicate in the documentation box what this category includes).

⁽⁷⁾ Parties should avoid double counting with N₂O emissions from drainage and from cultivation of organic soils reported in Agriculture under Cultivation of Histosols.

Documentation box:

Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF Sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.B.2.1 Forest Land converted to Cropland:N₂O emissions from forest land converted to cropland are reported from mineral soils using the default methodology and the emissions from organic soils are included in the emissions from sector Agriculture.

TABLE 5 (IV) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Inventory 2009

CO₂ emissions from agricultural lime application ⁽¹⁾

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FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	EMISSIONS ⁽³⁾
Land-Use Category	Total amount of lime applied (Mg/yr)	CO ₂ -C per unit of lime ⁽²⁾ (Mg CO ₂ -C /Mg)	CO ₂ (Gg)
Total all Land-Use Categories ^{(4), (5), (6)}	692 206,09	0,12	312,04
B. Cropland ^{(6) (7)}	692 206,09	0,12	312,04
Limestone CaCO ₃	488 600,89	0,12	214,98
Dolomite CaMg(CO ₃) ₂	203 605,20	0,13	97,05
C. Grassland ^{(6) (8)}	IE	IE	IE
Limestone CaCO ₃	IE	IE	IE
Dolomite CaMg(CO ₃) ₂	IE	IE	IE
G. Other (please specify) ^{(6) (9)}			NA

⁽¹⁾ CO₂ emissions from agricultural lime application are addressed in equations 3.3.6 and 3.4.11 of the IPCC good practice guidance for LULUCF.

⁽²⁾ The implied emission factor is expressed in unit of carbon to facilitate comparison with published emission factors.

⁽³⁾ Emissions are reported with a positive sign.

⁽⁴⁾ If Parties are not able to separate liming application for different land-use categories, they should include liming for all land-use categories in the category 5.G Other.

⁽⁵⁾ Parties that are able to provide data for lime application to forest land should provide this information under 5.G Other and specify in the documentation box that forest land application is included in this category.

⁽⁶⁾ A Party may report aggregate estimates for total lime applications when data are not available for limestone and dolomite.

⁽⁷⁾ In table 5, these CO₂ emissions will be added to 5.B.1 Cropland remaining Cropland.

⁽⁸⁾ In table 5, these CO₂ emissions will be added to 5.C.1 Grassland remaining Grassland.

⁽⁹⁾ If a Party has data broken down to limestone and dolomite at national level, it can report these data under 5.G Other.

Documentation box:

Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.C.1 Limestone CaCO₃:All emissions from liming are under Cropland.

5.C.1 Dolomite CaMg(CO₃)₂:All emissions from liming are under Cropland.

TABLE 5 (V) SECTORAL BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY

Biomass Burning ⁽¹⁾

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			IMPLIED EMISSION FACTOR			EMISSIONS ⁽⁵⁾		
	Description ⁽³⁾	Unit	Values	CO ₂	CH ₄	N ₂ O	CO ₂ ⁽⁴⁾	CH ₄	N ₂ O
Land-Use Category ⁽²⁾		(ha or kg dm)		(Mg/activity data unit)			(Gg)		
Total for Land-Use Categories	Area burned		NA	NA	NA	NA	4,96	0,05	0,00
A. Forest Land	Area burned	ha	1 222,00	4,06	0,04	0,00	4,96	0,05	0,00
1. Forest land remaining Forest Land	Area burned	ha	1 222,00	4,06	0,04	0,00	4,96	0,05	0,00
<i>Controlled Burning</i>	Area burned	ha	691,00	IE	0,05	0,00	IE	0,03	0,00
<i>Wildfires</i>	Area burned	ha	531,00	9,35	0,04	0,00	4,96	0,02	0,00
2. Land converted to Forest Land	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
<i>Controlled Burning</i>	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
<i>Wildfires</i>	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
B. Cropland			NA	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
1. Cropland remaining Cropland ⁽⁶⁾			NA	NA	NA	NA	NA	NA	NA
<i>Controlled Burning</i>	(specify)		NA	NA	NA	NA	NA	NA	NA
<i>Wildfires</i>	(specify)		NA	NA	NA	NA	NA	NA	NA
2. Land converted to Cropland			NE	NE	NE	NE	NE	NE	NE
<i>Controlled Burning</i>			NE	NE	NE	NE	NE	NE	NE
<i>Wildfires</i>			NE	NE	NE	NE	NE	NE	NE
2.1. Forest Land converted to Cropland			NE	NE	NE	NE	NE	NE	NE
<i>Controlled Burning</i>	(specify)		NE	NE	NE	NE	NE	NE	NE
<i>Wildfires</i>	(specify)		NE	NE	NE	NE	NE	NE	NE
C. Grassland	Area burned	ha	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
1. Grassland remaining grassland ⁽⁷⁾	Area burned	ha	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
<i>Controlled Burning</i>	(specify)		NO	NO	NO	NO	NO	NO	NO
<i>Wildfires</i>	Area burned	ha	NE	NE	NE	NE	NE	NE	NE
2. Land converted to Grassland			NE	NE	NE	NE	NE	NE	NE
<i>Controlled Burning</i>			NE	NE	NE	NE	NE	NE	NE
<i>Wildfires</i>			NE	NE	NE	NE	NE	NE	NE
2.1. Forest Land converted to Grassland			NE	NE	NE	NE	NE	NE	NE
<i>Controlled Burning</i>	(specify)		NE	NE	NE	NE	NE	NE	NE
<i>Wildfires</i>	(specify)		NE	NE	NE	NE	NE	NE	NE
D. Wetlands	Area burned	ha	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
1. Wetlands remaining Wetlands ⁽⁸⁾	Area burned	ha	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
<i>Controlled Burning</i>	Area burned	ha	NO	NO	NO	NO	NO	NO	NO
<i>Wildfires</i>	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
2. Land converted to Wetlands	Area burned	ha	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
<i>Controlled Burning</i>	Area burned	ha	NO	NO	NO	NO	NO	NO	NO
<i>Wildfires</i>	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
2.1. Forest Land converted to Wetlands	Area burned	ha	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
<i>Controlled Burning</i>	Area burned	ha	NO	NO	NO	NO	NO	NO	NO
<i>Wildfires</i>	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
E. Settlements ⁽⁸⁾	Area burned	ha	NE	NE	NE	NE	NE	NE	NE
F. Other Land ⁽⁹⁾	Area burned	ha	IE	IE	IE	IE	IE	IE	IE
G. Other (please specify)									

⁽¹⁾ Methodological guidance on burning can be found in sections 3.2.1.4 and 3.4.1.3 of the IPCC good practice guidance for LULUCF.

⁽²⁾ Parties should report both controlled/prescribed burning and wildfires emissions, where appropriate, in a separate manner.

⁽³⁾ For each category activity data should be selected between area burned or biomass burned. Units for area will be ha and for biomass burned kg dm. The implied emission factor will refer to the selected activity data with an automatic change in the units.

⁽⁴⁾ If CO₂ emissions from biomass burning are not already included in tables 5.A - 5.F, they should be reported here. This should be clearly documented in the documentation box and in the NIR. Double counting should be avoided. Parties that include all carbon stock changes in the carbon stock tables (5.A, 5.B, 5.C, 5.D, 5.E and 5.F), should report IE (included elsewhere) in this column.

⁽⁵⁾ Emissions are reported with a positive sign.

⁽⁶⁾ In-situ above-ground woody biomass burning is reported here. Agricultural residue burning is reported in the Agriculture sector.

⁽⁷⁾ Includes only emissions from controlled biomass burning on grasslands outside the tropics (prescribed savanna burning is reported under the Agriculture sector).

⁽⁸⁾ Parties may decide not to prepare estimates for these categories contained in appendices 3a.2, 3a.3 and 3a.4 of the IPCC good practice guidance for LULUCF, although they may do so if they wish.

⁽⁹⁾ This land-use category is to allow the total of identified land area to match the national area.

Documentation box:

Parties should provide detailed explanations on the Land Use, Land-Use Change and Forestry sector in Chapter 7: Land Use, Land-Use Change and Forestry (CRF sector 5) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.

5.A.1 Controlled Burning:CO2 emissions from controlled burning are reported in the category 5.A.1 Forest Land remaining Forest Land/ Carbon stock change in dead organic matter. CO2 emissions are not reported in this table to avoid double counting. The method applied to estimate carbon stock change in dead organic matter (litter) add in also waste wood burned in prescribed burnings.

5.A.2 5(V) Biomass Burning:Emissions from biomass burning are reported under the category 5.A.1 Forest Land remaining Forest Land. It is not possible to divide activity data into land converted to Forest land and land remaining Forest land.

5.A.2 Controlled Burning:See NIR 7.7.4.1

5.A.2 Wildfires:See NIR 7.7.4.1

TABLE 6 SECTORAL REPORT FOR WASTE
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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	NO _x	CO	NM VOC	SO ₂
	(Gg)						
Total Waste	IE,NO	96,80	0,50	IE,NO	IE,NO	0,44	IE,NO
A. Solid Waste Disposal on Land	NO	88,05		NO	NO	0,12	
1. Managed Waste Disposal on Land	NO	53,87		NO	NO	0,07	
2. Unmanaged Waste Disposal Sites	NO	NO		NO	NO	NO	
3. Other (as specified in table 6.A)	NO	34,19		NO	NO	0,05	
Construction and Demolition Waste	NO	12,22		NO	NO	0,02	
Industrial Sludge (d.m.)	NO	6,15		NO	NO	0,01	
Industrial Solid Waste	NO	15,05		NO	NO	0,02	
Municipal Sludge (d.m.)	NO	0,78		NO	NO	0,00	
Other non-specified	NO	NO		NO	NO	NO	
B. Waste Water Handling		5,74	0,30	NO	NO	0,26	
1. Industrial Wastewater		0,88	NE	NO	NO	0,13	
2. Domestic and Commercial Waste Water		4,86	0,24	NO	NO	0,13	
3. Other (as specified in table 6.B)		NO	0,06	NO	NO	NO	
N input from Fish Farming		NO	0,01	NO	NO	NO	
N input from Industrial Wastewater		NO	0,05	NO	NO	NO	
Other non-specified		NO	NO	NO	NO	NO	
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE
D. Other (please specify)	NO	3,00	0,20	NO	NO	0,06	NO
Compost production	NO	3,00	0,20	NO	NO	0,06	NO
Other non-specified	NO	NO	NO	NO	NO	NO	NO

⁽¹⁾ CO₂ emissions from source categories Solid waste disposal on land and Waste incineration should only be included if they derive from non-biological or inorganic waste sources.

Documentation box:

- Parties should provide detailed explanations on the waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- If estimates are reported under "6.D Other", use this documentation box to provide information regarding activities covered under this category and to provide reference to the section in the NIR where background information can be found.

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE

Solid Waste Disposal
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR		EMISSIONS		
	Annual MSW at the SWDS (Gg)	MCF	DOC degraded %	CH ₄ ⁽¹⁾	CO ₂	CH ₄		CO ₂ ⁽⁴⁾
				(t/t MSW)		Emissions ⁽²⁾	Recovery ⁽³⁾	(Gg)
1 Managed Waste Disposal on Land	1 128,00	1,00	8,84	0,08	NO	53,87	32,08	NO
2 Unmanaged Waste Disposal Sites	NO	NA	NO	NO	NO	NO	NO	NO
a. Deep (>5 m)	NO	NA	NA	NO	NO	NO	NO	NO
b. Shallow (<5 m)	NO	NA	NA	NO	NO	NO	NO	NO
3 Other (please specify)						34,19	7,74	NO
Construction and Demolition Waste	229,11	1,00	5,61	0,09	NO	12,22	7,28	NO
Industrial Sludge (d.m.)	17,79	1,00	16,35	0,35	NO	6,15	0,35	NO
Industrial Solid Waste	3 570,23	1,00	0,28	0,00	NO	15,05	NO	NO
Municipal Sludge (d.m.)	3,35	1,00	25,00	0,37	NO	0,78	0,46	NO
Other non-specified	NO	NA	NA	NO	NO	NO	NO	NO

Note: MSW - Municipal Solid Waste, SWDS - Solid Waste Disposal Site, MCF - Methane Correction Factor, DOC - Degradable Organic Carbon (IPCC Guidelines (Volume 3, Reference Manual, section 6.2.4)). MSW includes household waste, yard/garden waste, commercial/market waste and organic industrial solid waste. MSW should not include inorganic industrial waste such as construction or demolition materials.

⁽¹⁾ The CH₄ implied emission factor (IEF) is calculated on the basis of gross CH₄ emissions, as follows: IEF = (CH₄ emissions + CH₄ recovered)/annual MSW at the SWDS.

⁽²⁾ Actual emissions (after recovery).

⁽³⁾ CH₄ recovered and flared or utilized.

⁽⁴⁾ Under Solid Waste Disposal, CO₂ emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO₂ emissions from non-biogenic wastes are included in the total emissions, whereas the CO₂ emissions from biogenic wastes are not included in the total emissions.

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE

Waste Incineration
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA Amount of incinerated wastes (Gg)	IMPLIED EMISSION FACTOR			EMISSIONS		
		CO ₂	CH ₄	N ₂ O	CO ₂ ⁽¹⁾	CH ₄	N ₂ O
		(kg/t waste)			(Gg)		
Waste Incineration	650,00				IE	IE	IE
a. Biogenic ⁽¹⁾	650,00	IE	IE	IE	IE	IE	IE
b. Other (non-biogenic - please specify) ^{(1), (2)}	IE				IE	IE	IE
Other non-specified	IE	IE	IE	IE	IE	IE	IE

⁽¹⁾ Under Solid Waste Disposal, CO₂ emissions should be reported only when the disposed waste is combusted at the disposal site as a management practice. CO₂ emissions from non-biogenic wastes are included in the total emissions, while the CO₂ emissions from biogenic wastes are not included in the total emissions.

⁽²⁾ Enter under this source category all types of non-biogenic wastes, such as plastics.

Note: Only emissions from waste incineration without energy recovery are to be reported in the Waste sector. Emissions from incineration with energy recovery are to be reported in the Energy sector, as Other Fuels (see IPCC good practice guidance, page 5.23).

Documentation box:	
<ul style="list-style-type: none"> Parties should provide detailed explanations on the waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are Parties that use country-specific models should provide a reference in the documentation box to the relevant section in the NIR where these models are described, and fill in only the relevant cells of tables 6.A and 6.C. Provide a reference to the relevant section in the NIR, in particular with regard to: <ul style="list-style-type: none"> (a) A population size (total or urban population) used in the calculations and the rationale for doing so; (b) The composition of landfilled waste; (c) In relation to the amount of incinerated wastes (specify whether the reported data relate to wet or dry matter). 	

Additional information

Description	Value
Total population (1000s) ^(a)	5 338,87
Urban population (1000s) ^(a)	4 475,09
Waste generation rate (kg/capita/day)	1,43
Fraction of MSW disposed to SWDS	0,41
Fraction of DOC in MSW	0,18
CH ₄ oxidation factor ^(b)	0,10
CH ₄ fraction in landfill gas	0,50
CH ₄ generation rate constant (k) ^(c)	0,06
Time lag considered (yr) ^(c)	NO

^(a) Specify whether total or urban population is used and the rationale for doing so.

^(b) See IPCC Guidelines (Volume 2, Reference Manual, 6.2.4).

^(c) Only for Parties using Tier 2 methods.

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE

Waste Water Handling
(Sheet 1 of 2)

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION ⁽¹⁾		IMPLIED EMISSION FACTOR		EMISSIONS		
	Total organic product		CH ₄ ⁽²⁾	N ₂ O ⁽³⁾	CH ₄		N ₂ O ⁽³⁾
					Emissions ⁽⁴⁾	Recovery ⁽⁵⁾	
	(Gg DC ⁽¹⁾ /yr)		(kg/kg DC)			(Gg)	
1. Industrial Waste Water					0,88	0,68	NE
a. Waste Water	707,51		0,00	NA	0,88	0,68	NE
b. Sludge	IE		IE	NO	IE	IE	NE
2. Domestic and Commercial Wastewater					4,86	14,73	0,24
a. Waste Water	124,56		0,16	NA	4,86	14,73	NE
b. Sludge	IE		IE	NA	IE	IE	NE
3. Other (please specify) ⁽⁶⁾					NO	NO	0,06
N input from Fish Farming					NO	NO	0,01
a. Waste Water	NA		NO	NA	NO	NO	0,01
b. Sludge ⁽⁶⁾	NA		NO	NA	NO	NO	NO
N input from Industrial Wastewater					NO	NO	0,05
a. Waste Water	NA		NO	NA	NO	NO	0,05
b. Sludge ⁽⁶⁾	NA		NO	NA	NO	NO	NO
Other non-specified					NO	NO	NO
a. Waste Water	NO		NO	NO	NO	NO	NO
b. Sludge ⁽⁶⁾	NO		NO	NO	NO	NO	NO

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
	Population (1000s)	Protein consumption (kg/person/yr)	N fraction (kg N/kg protein)	N ₂ O (kg N ₂ O-N/kg sewage N produced)	N ₂ O (Gg)
N ₂ O from human sewage ⁽³⁾	5 338,87	38,95	0,16	0,00	0,24

⁽¹⁾ DC - degradable organic component. DC indicators are COD (Chemical Oxygen Demand) for industrial waste water and BOD (Biochemical Oxygen Demand) for Domestic/Commercial waste water/sludge (IPCC Guidelines (Volume 3. Reference Manual, pp. 6.14, 6.18)).

⁽²⁾ The CH₄ implied emission factor (IEF) is calculated on the basis of gross CH₄ emissions, as follows: IEF = (CH₄ emissions + CH₄ recovered or flared) / total organic product.

⁽³⁾ Parties using methods other than those from the IPCC for estimating N₂O emissions from human sewage or waste-water treatment should provide aggregate data in this table.

⁽⁴⁾ Actual emissions (after recovery).

⁽⁵⁾ CH₄ recovered and flared or utilized.

⁽⁶⁾ Use the cells below to specify each activity covered under "6.B.3 Other". Note that under each reported activity, data for waste water and sludge are to be reported separately.

Documentation box:

- Parties should provide detailed explanations on the Waste sector in Chapter 8: Waste (CRF sector 6) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and/or further details are needed to understand the content of this table.
- Regarding the estimates for N₂O from human sewage, specify whether total or urban population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.
- Parties using methods other than those from the IPCC for estimating N₂O emissions from human sewage or waste-water treatment should provide, in the NIR, corresponding information on methods, activity data and emission factors used, and should provide a reference to the relevant section of the NIR in this documentation box.

6.B.2.2 Human sewage/2009:Based on preliminary activity data (protein consumption).



TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE
Waste Water Handling

(Sheet 2 of 2)

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Additional information

	Domestic	Industrial
Total waste water (m ³):	515 524 069,50	868 614 950,07
Treated waste water (%):	100,00	100,00

Waste-water streams:	Waste-water output (m ³)	DC (kg COD/m ³)
Industrial waste water	868 614 950,07	0,81
Iron and steel	175 171 478,10	0,00
Non-ferrous	IE	IE
Fertilizers	IE	IE
Food and beverage	3 163 986,40	0,97
Paper and pulp	561 464 214,14	1,21
Organic chemicals	90 234 154,79	0,12
Other (please specify)	37 342 925,64	0,30
Chemical		
Dairy Processing		
Electricity, steam, water production		
Fuels		
Iron and steel	IE	IE
Leather and Skins		
Leather industry		
Machinery and equipment		
Meat industry		
Mining and quarrying		
Other agricultural		
Poultry		
Rubber		
Textile		
Wood and wood production	1 238 191,00	3,20
Wool Scouring		
DC (kg BOD/1000 person/yr)		
Domestic and Commercial	23 683,84	
Other (please specify)		
N input from Fish Farming	NA	
N input from Industrial Wastewater	NA	
Other non-specified	NA	

Handling systems:	Industrial waste water treated (%)	Industrial sludge treated (%)	Domestic waste water treated (%)	Domestic sludge treated (%)
Aerobic	99,00	100,00	100,00	62,34
Anaerobic	1,00	0,00	0,00	37,66
Other (please specify)	0,00	0,00	0,00	0,00

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO ₂ emissions/removals	CH ₄	N ₂ O	HFCs ⁽¹⁾		PFCs ⁽¹⁾		SF ₆		NO _x	CO	NMVOC	SO ₂	
				P	A	P	A	P	A					
	(Gg)				CO ₂ equivalent (Gg)				(Gg)					
Total National Emissions and Removals	14 705,05	205,21	18,79	1 432,89	888,83	11,28	9,32	0,00	0,00	154,06	454,55	109,72	58,86	
1. Energy	51 860,51	16,88	2,90							151,31	453,64	80,53	46,23	
A. Fuel Combustion	Reference Approach ⁽²⁾	51 758,52												
	Sectoral Approach ⁽²⁾	51 745,03	14,69	2,89						151,28	453,62	69,56	46,23	
1. Energy Industries		25 120,12	0,96	0,93						40,61	16,78	0,90	28,67	
2. Manufacturing Industries and Construction		8 189,20	0,52	0,40						30,22	29,06	1,42	10,04	
3. Transport		12 708,43	1,84	0,56						59,91	272,65	32,66	1,06	
4. Other Sectors		4 836,35	11,31	0,25						18,79	133,31	34,45	5,71	
5. Other		890,94	0,06	0,76						1,76	1,82	0,14	0,75	
B. Fugitive Emissions from Fuels		115,48	2,19	0,00						0,02	0,02	10,97	0,00	
1. Solid Fuels		NO	NO	NO						NO	NO	NO	NO	
2. Oil and Natural Gas		115,48	2,19	0,00						0,02	0,02	10,97	0,00	
2. Industrial Processes		3 502,67	0,37	2,56	1 432,89	888,83	11,28	9,32	0,00	0,00	2,73	IE,NA,NO	7,97	12,63
A. Mineral Products		876,33	NO	NO						0,12	NO	0,71	0,47	
B. Chemical Industry		684,79	NO	2,56	NO	NO	NO	NO	NO	1,91	NO	2,47	6,73	
C. Metal Production		1 941,55	0,37	NO			NO		C,NO	0,69	IE,NO	0,63	3,48	
D. Other Production ⁽³⁾		NO								0,01	NO	4,15	1,93	
E. Production of Halocarbons and SF ₆						NA,NO	NA,NO		NO					
F. Consumption of Halocarbons and SF ₆					1 432,89	888,83	11,28	9,32	0,00	0,00				
G. Other		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Note: A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.
P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

Note: All footnotes for this table are given at the end of the table on sheet 3.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)

(Sheet 2 of 3)

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO ₂ emissions/removals	CH ₄	N ₂ O	HFCs ⁽¹⁾		PFCs ⁽¹⁾		SF ₆		NO _x	CO	NMVOC	SO ₂
				P	A	P	A	P	A				
	(Gg)	CO ₂ equivalent (Gg)						(Gg)					
3. Solvent and Other Product Use	45,72		0,08							NO	NO	20,78	NO
4. Agriculture		89,40	12,40							0,02	0,45	NE,NO	NO
A. Enteric Fermentation		75,25											
B. Manure Management		14,13	1,29									NE,NO	
C. Rice Cultivation		NO										NO	
D. Agricultural Soils ⁽⁴⁾		NE,NO	11,10									NE,NO	
E. Prescribed Burning of Savannas		NO	NO							NO	NO	NO	
F. Field Burning of Agricultural Residues		0,02	0,00							0,02	0,45	NE,NO	
G. Other		NO	NO							NO	NO	NO	NO
5. Land Use, Land-Use Change and Forestry	⁽⁵⁾ -40 703,86	1,75	0,35							0,01	0,46	NA,NE	NE
A. Forest Land	⁽⁵⁾ -47 219,57	0,05	0,08							0,01	0,46	NE	
B. Cropland	⁽⁵⁾ 6 540,85	NA,NE	0,03							NE	NE	NE	
C. Grassland	⁽⁵⁾ 498,06	NE,NO	NE,NO							NE	NE	NE	
D. Wetlands	⁽⁵⁾ 1 186,52	1,70	0,24							IE	IE	NE	
E. Settlements	⁽⁵⁾ IE,NE	NA,NE	NA,NE							NA	NA	NA	
F. Other Land	⁽⁵⁾ IE,NA,NO	IE,NA	IE,NA							NA	NA	NA	
G. Other	⁽⁵⁾ -1 709,72	NE	NE							NE	NE	NE	NE
6. Waste	IE,NO	96,80	0,50							IE,NO	IE,NO	0,44	IE,NO
A. Solid Waste Disposal on Land	⁽⁶⁾ NO	88,05								NO	NO	0,12	
B. Waste-water Handling		5,74	0,30							NO	NO	0,26	
C. Waste Incineration	⁽⁶⁾ IE	IE	IE							IE	IE	IE	IE
D. Other		NO	3,00	0,20						NO	NO	0,06	NO
7. Other (please specify)⁽⁷⁾	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: All footnotes for this table are given at the end of the table on sheet 3.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO ₂ emissions/removals	CH ₄	N ₂ O	HFCs		PFCs		SF ₆		NO _x	CO	NMVOC	SO ₂
				P	A	P	A	P	A				
	(Gg)			CO ₂ equivalent (Gg)					(Gg)				
Memo Items: ⁽⁸⁾													
International Bunkers	2 379,36	0,09	0,09							21,02	4,00	0,72	8,33
Aviation	1 570,07	0,03	0,07							4,57	2,92	0,30	0,40
Marine	809,30	0,06	0,02							16,45	1,08	0,43	7,92
Multilateral Operations	NO	NO	NO							NO	NO	NO	NO
CO₂ Emissions from Biomass	29 332,48												

⁽¹⁾ The emissions of HFCs and PFCs are to be expressed as CO₂ equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

⁽²⁾ For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c). For estimating national total emissions, the results from the Sectoral approach should be used, where possible.

⁽³⁾ Other Production includes Pulp and Paper and Food and Drink Production.

⁽⁴⁾ Parties which previously reported CO₂ from soils in the Agriculture sector should note this in the NIR.

⁽⁵⁾ For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽⁶⁾ CO₂ from source categories Solid Waste Disposal on Land and Waste Incineration should only be included if it stems from non-biogenic or inorganic waste streams. Only emissions from Waste Incineration Without Energy Recovery are to be reported in the Waste sector, whereas emissions from Incineration With Energy Recovery are to be reported in the Energy sector.

⁽⁷⁾ If reporting any country-specific source category under sector "7. Other", detailed explanations should be provided in Chapter 9: Other (CRF sector 7) of the NIR.

⁽⁸⁾ Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO₂ emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO₂ emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO₂ emissions are accounted for as a loss of biomass stocks in the Land Use, Land-use Change and Forestry sector.

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)

(Sheet 1 of 1)

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Net CO ₂ emissions/removals	CH ₄	N ₂ O	HFCs ⁽¹⁾		PFCs ⁽¹⁾		SF ₆		NO _x	CO	NMVOC	SO ₂
				P	A	P	A	P	A				
	(Gg)				CO ₂ equivalent (Gg)				(Gg)				
Total National Emissions and Removals	14 705,05	205,21	18,79	1 432,89	888,83	11,28	9,32	0,00	0,00	154,06	454,55	109,72	58,86
1. Energy	51 860,51	16,88	2,90							151,31	453,64	80,53	46,23
A. Fuel Combustion	Reference Approach ⁽²⁾	51 758,52											
	Sectoral Approach ⁽²⁾	51 745,03	14,69	2,89						151,28	453,62	69,56	46,23
B. Fugitive Emissions from Fuels		115,48	2,19	0,00						0,02	0,02	10,97	0,00
2. Industrial Processes	3 502,67	0,37	2,56	1 432,89	888,83	11,28	9,32	0,00	0,00	2,73	IE,NA,NO	7,97	12,63
3. Solvent and Other Product Use	45,72		0,08							NO	NO	20,78	NO
4. Agriculture⁽³⁾		89,40	12,40							0,02	0,45	NE,NO	NO
5. Land Use, Land-Use Change and Forestry	⁽⁴⁾ -40 703,86	1,75	0,35							0,01	0,46	NA,NE	NE
6. Waste	IE,NO	96,80	0,50							IE,NO	IE,NO	0,44	IE,NO
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Memo Items:⁽⁵⁾													
International Bunkers	2 379,36	0,09	0,09							21,02	4,00	0,72	8,33
Aviation	1 570,07	0,03	0,07							4,57	2,92	0,30	0,40
Marine	809,30	0,06	0,02							16,45	1,08	0,43	7,92
Multilateral Operations	NO	NO	NO							NO	NO	NO	NO
CO₂ Emissions from Biomass	29 332,48												

Note: A = Actual emissions based on Tier 2 approach of the IPCC Guidelines.

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines.

⁽¹⁾ The emissions of HFCs and PFCs are to be expressed as CO₂ equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

⁽²⁾ For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach in the documentation box to Table 1.A.(c).

For estimating national total emissions, the result from the Sectoral approach should be used, where possible.

⁽³⁾ Parties which previously reported CO₂ from soils in the Agriculture sector should note this in the NIR.

⁽⁴⁾ For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽⁵⁾ Countries are asked to report emissions from international aviation and marine bunkers and multilateral operations, as well as CO₂ emissions from biomass, under Memo Items. These emissions should not be included in the national total emissions from the energy sector. Amounts of biomass used as fuel are included in the national energy consumption but the corresponding CO₂ emissions are not included in the national total as it is assumed that the biomass is produced in a sustainable manner. If the biomass is harvested at an unsustainable rate, net CO₂ emissions are accounted for as a loss of biomass stocks in the Land Use, Land-use Change and Forestry sector.

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

(Sheet 1 of 1)

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs ⁽²⁾	PFCs ⁽²⁾	SF ₆ ⁽²⁾	Total
	CO ₂ equivalent (Gg)						
Total (Net Emissions)⁽¹⁾	14 705,05	4 309,42	5 823,93	888,83	9,32	41,34	25 777,89
1. Energy	51 860,51	354,56	897,64				53 112,72
A. Fuel Combustion (Sectoral Approach)	51 745,03	308,52	897,14				52 950,69
1. Energy Industries	25 120,12	20,26	287,60				25 427,98
2. Manufacturing Industries and Construction	8 189,20	10,84	122,65				8 322,68
3. Transport	12 708,43	38,63	173,14				12 920,19
4. Other Sectors	4 836,35	237,51	77,93				5 151,79
5. Other	890,94	1,29	235,82				1 128,05
B. Fugitive Emissions from Fuels	115,48	46,05	0,50				162,03
1. Solid Fuels	NO	NO	NO				NO
2. Oil and Natural Gas	115,48	46,05	0,50				162,03
2. Industrial Processes	3 502,67	7,77	792,99	888,83	9,32	41,34	5 242,91
A. Mineral Products	876,33	NO	NO				876,33
B. Chemical Industry	684,79	NO	792,99	NO	NO	NO	1 477,77
C. Metal Production	1 941,55	7,77	NO	NO	NO	C,NO	1 949,33
D. Other Production	NO						NO
E. Production of Halocarbons and SF ₆				NA,NO	NA,NO	NO	NA,NO
F. Consumption of Halocarbons and SF ₆ ⁽²⁾				888,83	9,32	41,34	939,48
G. Other	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	45,72		24,78				70,51
4. Agriculture		1 877,48	3 843,87				5 721,35
A. Enteric Fermentation		1 580,22					1 580,22
B. Manure Management		296,81	401,36				698,17
C. Rice Cultivation		NO					NO
D. Agricultural Soils ⁽³⁾		NE,NO	3 442,37				3 442,37
E. Prescribed Burning of Savannas		NO	NO				NO
F. Field Burning of Agricultural Residues		0,45	0,13				0,59
G. Other		NO	NO				NO
5. Land Use, Land-Use Change and Forestry⁽¹⁾	-40 703,86	36,75	108,69				-40 558,42
A. Forest Land	-47 219,57	1,11	24,91				-47 193,55
B. Cropland	6 540,85	NA,NE	10,00				6 550,85
C. Grassland	498,06	NE,NO	NE,NO				498,06
D. Wetlands	1 186,52	35,64	73,78				1 295,94
E. Settlements	IE,NE	NA,NE	NA,NE				IE,NA,NE
F. Other Land	IE,NA,NO	IE,NA	IE,NA				IE,NA,NO
G. Other	-1 709,72	NE	NE				-1 709,72
6. Waste	IE,NO	2 032,85	155,97				2 188,82
A. Solid Waste Disposal on Land	NO	1 849,13					1 849,13
B. Waste-water Handling		120,64	93,56				214,19
C. Waste Incineration	IE	IE	IE				IE
D. Other	NO	63,08	62,41				125,49
7. Other (as specified in Summary I.A)	NA	NA	NA	NA	NA	NA	NA
Memo Items:⁽⁴⁾							
International Bunkers	2 379,36	1,90	26,76				2 408,02
Aviation	1 570,07	0,69	20,31				1 591,06
Marine	809,30	1,20	6,46				816,96
Multilateral Operations	NO	NO	NO				NO
CO₂ Emissions from Biomass	29 332,48						29 332,48
Total CO ₂ Equivalent Emissions without Land Use, Land-Use Change and Forestry							66 336,30
Total CO ₂ Equivalent Emissions with Land Use, Land-Use Change and Forestry							25 777,89

⁽¹⁾ For CO₂ from Land Use, Land-use Change and Forestry the net emissions/removals are to be reported. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽²⁾ Actual emissions should be included in the national totals. If no actual emissions were reported, potential emissions should be included.

⁽³⁾ Parties which previously reported CO₂ from soils in the Agriculture sector should note this in the NIR.

⁽⁴⁾ See footnote 8 to table Summary I.A.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED
(Sheet 1 of 2)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂		CH ₄		N ₂ O		HFCs		PFCs		SF ₆	
	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor	Method applied	Emission factor
1. Energy	CS,M,T1,T3	CS,D,PS	CS,M,T1,T2,T3	CS,D,PS	CS,D,M,T1,T3	CS,D						
A. Fuel Combustion	CS,M,T1,T3	CS,D,PS	CS,M,T1,T3	CS,D	CS,D,M,T1,T3	CS,D						
1. Energy Industries	T3	CS,D,PS	T3	CS	T3	CS						
2. Manufacturing Industries and Construction	CS,M,T3	CS,PS	CS,M,T3	CS	CS,M,T3	CS,D						
3. Transport	M,T1,T3	CS,D	CS,M,T1,T3	CS,D	CS,M,T1,T3	CS,D						
4. Other Sectors	M,T1,T3	CS,D	M,T1,T3	CS,D	M,T1,T3	CS,D						
5. Other	CS,T1	CS	CS,T1	CS	CS,D,T1	CS,D						
B. Fugitive Emissions from Fuels	CS	CS,D	CS,T1,T2	CS,D,PS	CS	CS						
1. Solid Fuels	NA	NA	NA	NA	NA	NA						
2. Oil and Natural Gas	CS	CS,D	CS,T1,T2	CS,D,PS	CS	CS						
2. Industrial Processes	CS,T1,T2,T3	CS,D	T1	D	T2	PS	T1,T2	D	T1,T2	D	T1,T2,T3	D
A. Mineral Products	T2	CS,D	NA	NA	NA	NA						
B. Chemical Industry	T2	CS,D	NA	NA	T2	PS	NA	NA	NA	NA	NA	NA
C. Metal Production	CS,T1,T2,T3	CS,D	T1	D	NA	NA	NA	NA	NA	NA	NA	NA
D. Other Production	NA	NA										
E. Production of Halocarbons and SF ₆							NA	NA	NA	NA	NA	NA
F. Consumption of Halocarbons and SF ₆							T1,T2	D	T1,T2	D	T1,T2,T3	D
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Use the following notation keys to specify the method applied:

D (IPCC default)

RA (Reference Approach)

T1 (IPCC Tier 1)

T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively)

T2 (IPCC Tier 2)

T3 (IPCC Tier 3)

CR (CORINAIR)

CS (Country Specific)

OTH (Other)

If using more than one method within one source category, list all the relevant methods. Explanations regarding country-specific methods, other methods or any modifications to the default IPCC methods, as well as information

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

D (IPCC default)

CR (CORINAIR)

CS (Country Specific)

PS (Plant Specific)

OTH (Other)

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

TABLE 7 SUMMARY OVERVIEW FOR KEY CATEGORIES
(Sheet 1 of 1)

KEY CATEGORIES OF EMISSIONS AND REMOVALS	Gas	Criteria used for key source identification			Key category excluding LULUCF ⁽¹⁾	Key category including LULUCF ⁽¹⁾	Comments ⁽¹⁾
		L	T	Q			
Specify key categories according to the national level of disaggregation used:							
1.A.1 Energy Industries - other fuels	N2O	x	x		x		
1.A.1. Energy Industries Biomass	N2O		x		x		
1.A.3.b. Road Transportation - diesel	N2O	x	x		x		
1.A.3.b.Road Transportation - gasoline - cars with catalytic converters	N2O	x			x		
1.A.4.Other sectors - biomass	CH4	x	x		x		
1.A.Fuel combustion - gaseous fuels	CO2		x		x		
1.A.Fuel Combustion - liquid fuels	CO2	x	x		x		
1.A.Fuel combustion - other fuels	CO2	x	x		x		
1.A.Fuel combustion - solid fuels	CO2	x	x		x		
2.B.2Nitric Acid production	N2O	x			x		
2.B.5 Other: Hydrogen Production	CO2		x		x		
2.C.1 Iron and Steel production	CO2	x	x		x		
2.F.1.Refrigeration and Air Conditioning Equipment	HFC and PCF	x	x		x		
4.A.Enteric Fermentation	CH4	x	x		x		
4.B.Manure management	N2O	x	x		x		
4.D.1. Direct Soil Emissions	N2O	x	x		x		
4.D.2. Pasture, Range and Paddock Manure	N2O	x	x		x		
4.D.3. Indirect emissions	N2O	x	x		x		
4.D.Agricultural soils: indirect emissions	N2O	x	x		x		
5.A.1. Forest Land remaining Forest Land	CO2	x	x			x	
5.A.2. Land converted to Forest Land	CO2	x	x			x	
5.B.2. Land converted to Cropland	CO2	x	x			x	
5.B1. Cropland remaining cropland	CO2	x	x			x	
5.C.1. Grassland remaining Grassland	CO2	x	x			x	
5.C.2. Land converted to Grassland	CO2		x			x	
5.D.2. Land converted to Wetlands	CO2	x	x			x	
6.A.Solid waste disposal on Land	CH4	x	x		x		
6.B.2.Domestic and Commercial Wastewater - densely populated areas	N2O	x	x		x		

Note: L = Level assessment; T = Trend assessment; O = Qualitative assessment.

⁽¹⁾ The term “key categories” refers to both the key source categories as addressed in the IPCC good practice guidance and the key categories as addressed in the IPCC good practice guidance for LULUCF.

⁽²⁾ For estimating key categories Parties may chose the disaggregation level presented as an example in table 7.1 of the IPCC good practice guidance (page 7.6) and table 5.4.1 (page 5.31) of the IPCC good practice guidance for LULUCF, the level used in table Summary 1.A of the common reporting format or any other disaggregation level that the Party used to determine its key categories.

Documentation box:

Parties should provide the full information on methodologies used for identifying key categories and the quantitative results from the level and trend assessments (according to tables 7.1–7.3 of the IPCC good practice guidance and tables 5.4.1–5.4.3 of the IPCC good practice guidance for LULUCF) in Annex 1 to the NIR.

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 1 of 2)

Recalculated year: Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂					CH ₄					N ₂ O							
	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾
	CO ₂ equivalent (Gg)		CO ₂ equivalent (Gg)			CO ₂ equivalent (Gg)		CO ₂ equivalent (Gg)			CO ₂ equivalent (Gg)		CO ₂ equivalent (Gg)					
Total National Emissions and Removals		14 705,05					4 309,42						5 823,93					
1. Energy		51 860,51					354,56						897,64					
1.A. Fuel Combustion Activities		51 745,03					308,52						897,14					
1.A.1. Energy Industries		25 120,12					20,26						287,60					
1.A.2. Manufacturing Industries and Construction		8 189,20					10,84						122,65					
1.A.3. Transport		12 708,43					38,63						173,14					
1.A.4. Other Sectors		4 836,35					237,51						77,93					
1.A.5. Other		890,94					1,29						235,82					
1.B. Fugitive Emissions from Fuels		115,48					46,05						0,50					
1.B.1. Solid fuel		NO					NO						NO					
1.B.2. Oil and Natural Gas		115,48					46,05						0,50					
2. Industrial Processes		3 502,67					7,77						792,99					
2.A. Mineral Products		876,33					NO						NO					
2.B. Chemical Industry		684,79					NO						792,99					
2.C. Metal Production		1 941,55					7,77						NO					
2.D. Other Production		NO																
2.G. Other		NA					NA						NA					
3. Solvent and Other Product Use		45,72											24,78					
4. Agriculture							1 877,48						3 843,87					
4.A. Enteric Fermentation							1 580,22											
4.B. Manure Management							296,81						401,36					
4.C. Rice Cultivation							NO											
4.D. Agricultural Soils ⁽⁴⁾							NE,NO						3 442,37					
4.E. Prescribed Burning of Savannas							NO						NO					
4.F. Field Burning of Agricultural Residues							0,45						0,13					
4.G. Other							NO						NO					
5. Land Use, Land-Use Change and Forestry (net)⁽⁵⁾		-40 703,86					36,75						108,69					
5.A. Forest Land		-47 219,57					1,11						24,91					
5.B. Cropland		6 540,85					NA,NE						10,00					
5.C. Grassland		498,06					NE,NO						NE,NO					
5.D. Wetlands		1 186,52					35,64						73,78					
5.E. Settlements		IE,NE					NA,NE						NA,NE					
5.F. Other Land		IE,NA,NO					IE,NA						IE,NA					
5.G. Other		-1 709,72					NE						NE					

Note: All footnotes for this table are given at the end of the table on sheet 2.

TABLE 8(a) RECALCULATION - RECALCULATED DATA
(Sheet 2 of 2)

Recalculated year: Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂						CH ₄						N ₂ O					
	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾
	CO ₂ equivalent (Gg)			(%)			CO ₂ equivalent (Gg)			(%)			CO ₂ equivalent (Gg)			(%)		
6. Waste		IE,NO					2 032,85						155,97					
6.A. Solid Waste Disposal on Land		NO					1 849,13											
6.B. Waste-water Handling							120,64						93,56					
6.C. Waste Incineration		IE					IE						IE					
6.D. Other		NO					63,08						62,41					
7. Other (as specified in Summary 1.A)		NA					NA						NA					
Memo Items:																		
International Bunkers		2 379,36					1,90						26,76					
Multilateral Operations		NO					NO						NO					
CO ₂ Emissions from Biomass		29 332,48																

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFCs						PFCs						SF ₆					
	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾	Previous submission	Latest submission	Difference	Difference ⁽¹⁾	Impact of recalculation on total emissions excluding LULUCF ⁽²⁾	Impact of recalculation on total emissions including LULUCF ⁽³⁾
	CO ₂ equivalent (Gg)			(%)			CO ₂ equivalent (Gg)			(%)			CO ₂ equivalent (Gg)			(%)		
Total Actual Emissions		888,83					9,32						41,34					
2.C.3. Aluminium Production							NO											
2.E. Production of Halocarbons and SF ₆		NA,NO					NA,NO						NO					
2.F. Consumption of Halocarbons and SF ₆		888,83					9,32						41,34					
2.G. Other		NA					NA						NA					
Potential Emissions from Consumption of HFCs/PFCs and SF ₆		1 432,89					11,28						70,24					

	Previous submission	Latest submission	Difference	Difference ⁽¹⁾
	CO ₂ equivalent (Gg)			(%)
Total CO ₂ Equivalent Emissions with Land Use, Land-Use Change and Forestry		25 777,89		
Total CO ₂ Equivalent Emissions without Land Use, Land-Use Change and Forestry		66 336,30		

- ⁽¹⁾ Estimate the percentage change due to recalculation with respect to the previous submission (percentage change = 100 x [(LS-PS)/PS], where LS = latest submission and PS = previous submission. All cases of recalculation of the estimate of the source/sink category should be addressed and explained in table 8(b).
- ⁽²⁾ Total emissions refer to total aggregate GHG emissions expressed in terms of CO₂ equivalent, excluding GHGs from the LULUCF sector. The impact of the recalculation on the total emissions is calculated as follows: impact of recalculation (%) = 100 x [(source (LS) - source (PS))/total emissions (LS)], where LS = latest submission, PS = previous submission.
- ⁽³⁾ Total emissions refer to total aggregate GHG emissions expressed in terms of CO₂ equivalent, including GHGs from the LULUCF sector. The impact of the recalculation on the total emissions is calculated as follows: impact of recalculation (%) = 100 x [(source (LS) - source (PS))/total emissions (LS)], where LS = latest submission, PS = previous submission.
- ⁽⁴⁾ Parties which previously reported CO₂ from soils in the Agriculture sector should note this in the NIR.
- ⁽⁵⁾ Net CO₂ emissions/removals to be reported.

Documentation box:
Parties should provide detailed information on recalculations in Chapter 10: Recalculations and Improvements, and in the relevant sections of Chapters 3 to 9 (see section 2.5 of each of Chapters 3 - 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

TABLE 8(b) RECALCULATION - EXPLANATORY INFORMATION
(Sheet 1 of 1)

Specify the sector and source/sink category ⁽¹⁾ where changes in estimates have occurred:	GHG	RECALCULATION DUE TO				
		CHANGES IN:			Addition/removal/ reallocation of source/sink categories	Other changes in data (e.g. statistical or editorial changes, correction of errors)
		Methods ⁽²⁾	Emission factors ⁽²⁾	Activity data ⁽²⁾		

⁽¹⁾ Enter the identification code of the source/sink category (e.g. 1.B.1) in the first column and the name of the category (e.g. Fugitive Emissions from Solid Fuels) in the second column of the table. Note that the source categories entered in this table should match those used in table 8(a).

⁽²⁾ Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink as indicated in table 8(a). Include changes in the assumptions and coefficients in the Methods column.

Documentation box:
Parties should provide the full information on recalculations in Chapter 10: Recalculations and Improvements, and in the relevant sections of Chapters 3 to 9 (see section 2.5 of each of Chapters 3 to 9) of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table. References should point particularly to the sections of the NIR in which justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory are reported.

TABLE 9(a) COMPLETENESS - INFORMATION ON NOTATION KEYS
(Sheet 1 of 1)

Sources and sinks not estimated (NE) ⁽¹⁾			
GHG	Sector ⁽²⁾	Source/sink category ⁽²⁾	Explanation
Carbon	5 LULUCF	5.B.2.4 Settlements converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.5 Other Land converted to Cropland	No data available
Carbon	5 LULUCF	5.C.1 5.C.1 Grassland remaining Grassland	Data not available
Carbon	5 LULUCF	5.C.2.4 Settlements converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.5 Other Land converted to Grassland	No data available
Carbon	5 LULUCF	5.D.2.1 Forest Land converted to Wetlands	Gains in C stock in biomass after conversion from forest land to wetlands is not estimated. The method is under development.
Carbon	5 LULUCF	5.D.2.3 Grassland converted to Wetlands	There is no data and method to estimate carbon stock changes of this category.
Carbon	5 LULUCF	5.D.2.4 Settlements converted to Wetlands	At the moment there is no data and method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.1 5.E.1 Settlements remaining Settlements	There is no method to estimate carbon stock changes on Settlements.
Carbon	5 LULUCF	5.E.2.1 Forest Land converted to Settlements	Data to estimate gains in C stock in settlements is not available
Carbon	5 LULUCF	5.E.2.2 Cropland converted to Settlements	There is no data to estimate area conversion from cropland to settlements and carbon stock changes.
Carbon	5 LULUCF	5.E.2.3 Grassland converted to Settlements	There is no data and method to calculate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.2.4 Wetlands converted to Settlements	There is no method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.2.5 Other Land converted to Settlements	At the moment there is no method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.D.1 Inland waters	#####
Carbon	5 LULUCF	5.D.1 Wetlands	Main part of wetlands covers undrained peatlands and are thus considered as unmanaged.
Carbon	5 LULUCF	5.B.2.2 Grassland converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.3 Wetlands converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.4 Settlements converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.5 Other Land converted to Cropland	No data available
Carbon	5 LULUCF	5.C.1 5.C.1 Grassland remaining Grassland	Data not available
Carbon	5 LULUCF	5.C.2.2 Cropland converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.3 Wetlands converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.4 Settlements converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.5 Other Land converted to Grassland	No data available
Carbon	5 LULUCF	5.D.2.3 Grassland converted to Wetlands	There is no data and method to estimate carbon stock changes of this category.
Carbon	5 LULUCF	5.D.2.4 Settlements converted to Wetlands	At the moment there is no data and method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.1 5.E.1 Settlements remaining Settlements	There is no method to estimate carbon stock changes on Settlements.
Carbon	5 LULUCF	5.E.2.2 Cropland converted to Settlements	There is no data to estimate area conversion from cropland to settlements and carbon stock changes.
Carbon	5 LULUCF	5.E.2.3 Grassland converted to Settlements	There is no data and method to calculate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.2.4 Wetlands converted to Settlements	There is no method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.2.5 Other Land converted to Settlements	At the moment there is no method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.D.1 Inland waters	#####
Carbon	5 LULUCF	5.D.1 Wetlands	Main part of wetlands covers undrained peatlands and are thus considered as unmanaged.
Carbon	5 LULUCF	5.B.1 5.B.1 Cropland remaining Cropland	There is no data available for this estimate
Carbon	5 LULUCF	5.B.2.2 Grassland converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.3 Wetlands converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.4 Settlements converted to Cropland	No data available
Carbon	5 LULUCF	5.B.2.5 Other Land converted to Cropland	No data available
Carbon	5 LULUCF	5.C.2.2 Cropland converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.3 Wetlands converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.4 Settlements converted to Grassland	No data available
Carbon	5 LULUCF	5.C.2.5 Other Land converted to Grassland	No data available
Carbon	5 LULUCF	5.D.2.1 Forest Land converted to Wetlands	IPCC GPG 2003 does not provide methods to estimate carbon stock changes of forests regressing to wetlands
Carbon	5 LULUCF	5.D.2.3 Grassland converted to Wetlands	There is no data and method to estimate carbon stock changes of this category.
Carbon	5 LULUCF	5.D.2.4 Settlements converted to Wetlands	At the moment there is no data and method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.1 5.E.1 Settlements remaining Settlements	There is no method to estimate carbon stock changes on Settlements.
Carbon	5 LULUCF	5.E.2.1 Forest Land converted to Settlements	According to the IPCC GPG-LULUCF it is not mandatory for a party to report C stock changes in DOM and SOM
Carbon	5 LULUCF	5.E.2.2 Cropland converted to Settlements	There is no data to estimate area conversion from cropland to settlements and carbon stock changes.
Carbon	5 LULUCF	5.E.2.3 Grassland converted to Settlements	There is no data and method to calculate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.2.4 Wetlands converted to Settlements	There is no method to estimate carbon stock changes in this category.
Carbon	5 LULUCF	5.E.2.5 Other Land converted to Settlements	At the moment there is no method to estimate carbon stock changes in this category.

Carbon	5 LULUCF	5.D.2.5 Peat extraction	At the moment there is no method to estimate amount of C stock in litter and dead wood before and after the conversion from forest land or	
Carbon	5 LULUCF	5.D.1 Inland waters	#####	
Carbon	5 LULUCF	5.D.1 Wetlands	Main part of wetlands covers undrained peatlands and are thus considered as unmanaged.	
Carbon	5 LULUCF	5.D.2.3 Grassland converted to Wetlands	There is no data and method to estimate carbon stock changed of this category	
Carbon	5 LULUCF	5.D.2.4 Settlements converted to Wetlands	Activity data is lacking.	
Carbon	5 LULUCF	5.E.1 5.E.1 Settlements remaining Settlements	There is no method to estimate carbon stock changes on Settlements.	
Carbon	5 LULUCF	5.E.2.1 Forest Land converted to Settlements	According to the IPCC GPG-LULUCF it is not mandatory for a party to report C stock changes in DOM and SOM	
Carbon	5 LULUCF	5.E.2.2 Cropland converted to Settlements	There is no data to estimate area conversion from cropland to settlements and carbon stock changes.	
Carbon	5 LULUCF	5.E.2.3 Grassland converted to Settlements	There is no data and method to calculate carbon stock changes in this category.	
Carbon	5 LULUCF	5.E.2.4 Wetlands converted to Settlements	There is no method to estimate carbon stock changes in this category.	
Carbon	5 LULUCF	5.E.2.5 Other Land converted to Settlements	At the moment there is no method to estimate carbon stock changes in this category.	
Carbon	5 LULUCF	5.D.1 Inland waters	#####	
Carbon	5 LULUCF	5.D.1 Wetlands	Main part of wetlands covers undrained peatlands and are thus considered as unmanaged.	
Carbon	5 LULUCF	5.B.2.3 Wetlands converted to Cropland	No method available	
Carbon	5 LULUCF	5.B.2.4 Settlements converted to Cropland	No data available	
CH4	4 Agriculture	4.A 4.A Enteric Fermentation	No methodology available	
CH4	4 Agriculture	4.D.1 Direct Soil Emissions	No methodology available	
CH4	4 Agriculture	4.D.3 Indirect Emissions	No methodology available	
CH4	5 LULUCF	5.A.1 5.A.1 Forest Land remaining Forest Land	IPCC GPG 2003 does not provide methods for CH4 emissions	
CH4	5 LULUCF	5.A.1 5.A.1 Forest Land remaining Forest Land	IPCC GPG 2003 does not provide methods for CH4 emissions	
CH4	5 LULUCF	5.B.2.1 5.B.2.1 Forest Land converted to Cropland	No activity data available	
CH4	5 LULUCF	5.B.2.1 5.B.2.1 Forest Land converted to Cropland	No activity data available	
CH4	5 LULUCF	5.C.1 5.C.1 Grassland remaining Grassland	There are no area estimates available.	
CH4	5 LULUCF	5.C.2.1 5.C.2.1 Forest Land converted to Grassland	No activity data available	
CH4	5 LULUCF	5.C.2.1 5.C.2.1 Forest Land converted to Grassland	No activity data available	
CH4	5 LULUCF	5.E 5.E Settlements	There is no method provided for these emissions and therefore Finland does not report biomass burning on Settlements	
CH4	5 LULUCF	5 Forest Land converted to Other Land-Use Categories	#####	
CH4	5 LULUCF	5 Grassland converted to Other Land-Use Categories	Currently there is not activity data available to calculate this.	
CH4	5 LULUCF	5.G Harvested Wood Products	See category notes	
CH4	5 LULUCF	5.A.1 Organic Soils	IPCC GPG 2003 does not provide methods for CH4 emissions	
CH4	5 LULUCF	5.A.1 Mineral Soils	IPCC GPG 2003 does not provide methods for CH4 emissions	
CO2	5 LULUCF	5.B.2.1 5.B.2.1 Forest Land converted to Cropland	No activity data available	
CO2	5 LULUCF	5.B.2.1 5.B.2.1 Forest Land converted to Cropland	No activity data available	
CO2	5 LULUCF	5.C.1 5.C.1 Grassland remaining Grassland	There are no area estimates available.	
CO2	5 LULUCF	5.C.2.1 5.C.2.1 Forest Land converted to Grassland	No activity data available	
CO2	5 LULUCF	5.C.2.1 5.C.2.1 Forest Land converted to Grassland	No activity data available	
CO2	5 LULUCF	5.E 5.E Settlements	There is no method provided for these emissions and therefore Finland does not report biomass burning on Settlements	
CO2	5 LULUCF	5 Grassland converted to Other Land-Use Categories	Currently there is not activity data available to calculate this.	
N2O	5 LULUCF	5.A.1 5.A.1 Forest Land remaining Forest Land	IPCC GPG LULUCF 2003 provide methods for this in the Appendix 3a.2 and therefore it is not compulsory to report these emissions	
N2O	5 LULUCF	5.A.1 5.A.1 Forest Land remaining Forest Land	IPCC GPG LULUCF 2003 provide methods for this in the Appendix 3a.2 and therefore it is not compulsory to report these emissions	
N2O	5 LULUCF	5.B.2.1 5.B.2.1 Forest Land converted to Cropland	No activity data available	
N2O	5 LULUCF	5.B.2.1 5.B.2.1 Forest Land converted to Cropland	No activity data available	
N2O	5 LULUCF	5.B.2.5 Other Land converted to Cropland	No area data available	
N2O	5 LULUCF	5.B.2.5 Other Land converted to Cropland	No area data available	
N2O	5 LULUCF	5.C.1 5.C.1 Grassland remaining Grassland	There are no area estimates available.	
N2O	5 LULUCF	5.C.2.1 5.C.2.1 Forest Land converted to Grassland	No activity data available	
N2O	5 LULUCF	5.C.2.1 5.C.2.1 Forest Land converted to Grassland	No activity data available	
N2O	5 LULUCF	5.E 5.E Settlements	There is no method provided for these emissions and therefore Finland does not report biomass burning on Settlements	
N2O	5 LULUCF	5 Forest Land converted to Other Land-Use Categories	#####	
N2O	5 LULUCF	5 Grassland converted to Other Land-Use Categories	Currently there is not activity data available to calculate this.	
N2O	5 LULUCF	5.G Harvested Wood Products	See category notes	
N2O	5 LULUCF	5.A.1 Organic Soils	IPCC GPG LULUCF 2003 provide methods for this in the Appendix 3a.2 and therefore it is not compulsory to report these emissions	
N2O	5 LULUCF	5.A.1 Mineral Soils	IPCC GPG LULUCF 2003 provide methods for this in the Appendix 3a.2 and therefore it is not compulsory to report these emissions	
N2O	6 Waste	6.B.1 6.B.1 Industrial Wastewater	No IPCC instructions.	
N2O	6 Waste	6.B.1 6.B.1 Industrial Wastewater	No IPCC instructions.	
N2O	6 Waste	6.B.2.1 6.B.2.1 Domestic and Commercial (w/o human sewage)	No IPCC instructions	
N2O	6 Waste	6.B.2.1 6.B.2.1 Domestic and Commercial (w/o human sewage)	No IPCC Instructions	
Sources and sinks reported elsewhere (IE)⁽³⁾				
GHG	Source/sink category	Allocation as per IPCC Guidelines	Allocation used by the Party	Explanation

Carbon	Cropland converted to Forest Land	Losses in carbon stock in living biomass should be reported here	Change in living biomass is given	Method to estimate carbon stock change in this category gives an estimate for a net carbon stock change.
Carbon	Grassland converted to Forest Land	Losses in living biomass should be reported here	Category 5.A.1 Forest land remaining forest land	Method to allocate the cutting removals for lands converted to forest is not yet complete
Carbon	Settlements converted to Forest Land	Carbon stock in living biomass on lands converted from settlements to forest land should be reported here	Change in living biomass is given	The method to estimate carbon stock change in this category gives an estimate for a net change
Carbon	Forest Land converted to Grassland	Under each category	Reported under FL remaining FL	Reported under FL remaining FL
Carbon	Forest Land converted to Wetlands	Losses in C stock in biomass	Category forest land remaining forest land (5.A.1).	Method for whole forest area. The method to estimate removals for converted areas is under development
Carbon	Forest Land converted to Settlements	Losses in carbon stock in biomass due to land conversion from forest land to settlements	Category 5.A.1. Forest land remaining forest land.	because the drain statistics of growing stock are not available for land-use conversions separately.
Carbon	Organic soils	Included in FL conv. to CL/mineral soils	Included in FL conv. to CL/mineral soils	Included in FL conv. to CL/mineral soils
Carbon	Mineral soils	Under each land use class.	Reported under FL remaining FL	Removals could not be divided between different land use classes but are reported under FL remaining FL.
Carbon	drained-WL	Losses in living biomass should be reported here	Category 5.A.1 Forest land remaining forest land	Method to allocate the cutting removals for lands converted to forest is not yet complete
Carbon	peat extraction	Losses in carbon stock in living biomass should be reported here	Change in living biomass is given	Method to estimate carbon stock change in this category gives an estimate for a net carbon stock change.
Carbon	Peat extraction	Losses in C stock in living biomass should be reported here	Category 5A1 Forest land remaining forest land.	Method to allocate reliably harvest removals to forest land and lands converted from forest land to other land use.
Carbon	Forest Land remaining Forest Land	5A1, net carbon stock change in dead organic matter	DOM is reported under SOM	Dead organic matter is reported under soil organic matter
Carbon	Cropland converted to Forest Land	DOM is reported under DOM according to IPCC	DOM is reported under SOM	Dead organic matter is reported under soil organic matter
Carbon	Grassland converted to Forest Land	DOM is reported under DOM according to IPCC	DOM is reported under SOM	Dead organic matter is reported under soil organic matter
Carbon	Settlements converted to Forest Land	DOM is reported under DOM according to IPCC	DOM is reported under SOM	Dead organic matter. The soil model gives a combined estimate for carbon stock change in DOM and SOM.
Carbon	Forest Land converted to Grassland	Under each category	Allocated under FL remaining FL	Removals could not be divided between all different classes but are reported under FL remaining FL
Carbon	Organic soils	Under each land use class.	Reported under FL remaining FL	Reported under FL remaining FL
Carbon	Mineral soils	Should be reported under each land use category.	Reported under FL remaining FL	Removals could not be divided between different land use classes but are reported under FL remaining FL.
Carbon	drained-WL	DOM is reported under DOM according to IPCC	DOM is reported under SOM	Dead organic matter is reported under soil organic matter
Carbon	peat extraction	DOM is reported under DOM according to IPCC	DOM is reported under SOM	Dead organic matter is reported under soil organic matter
CH4	4.A Enteric Fermentation	Emissions reported under other livestock category in order to avoid double-counting	Category in order to avoid double-counting	Emissions reported under other livestock category in order to avoid double-counting
CH4	4.A Enteric Fermentation	emissions reported in 'swine'	emissions reported in 'swine'	emissions reported in 'swine'
CH4	4.A Enteric Fermentation	Emissions reported in 'swine'.	Emissions reported in 'swine'.	Emissions reported in 'swine'.
CH4	4.A Enteric Fermentation	Emissions reported in 'swine'.	emissions reported in 'swine'	emissions reported in 'swine'
CH4	4.A Enteric Fermentation	Emissions reported in 'swine'.	emissions reported in 'swine'	emissions reported in 'swine'
CH4	4.A Enteric Fermentation	Emissions reported in 'swine'.	Emissions reported in 'swine'.	Emissions reported in 'swine'.
CH4	4.B Manure Management	Emissions reported in subgroups (sows with piglets, boars, fattening pigs, weaned pigs)	with piglets, boars, fattening pigs, weaned pigs)	Emissions reported in subgroups (sows with piglets, boars, fattening pigs, weaned pigs)
CH4	4.B Manure Management	Emissions reported under other livestock category in order to avoid double-counting	Category in order to avoid double-counting	Emissions reported under other livestock category in order to avoid double-counting
CH4	6.B.1 Industrial Wastewater	Sludge	Wastewater	CH4 emissions from wastewater include both wastewater and sludge handling
CH4	6.B.1 Industrial Wastewater	Sludge	Wastewater	Recovery from wastewater include both wastewater and sludge handling
CH4	Commercial (w/o human sewage)	Sludge	Wastewater	CH4 emissions from wastewater include both wastewater and sludge handling
CH4	Commercial (w/o human sewage)	Sludge	Wastewater	Recovery from wastewater include both wastewater and sludge handling
CH4	6.C.1 Biogenic	Waste sector	Energy sector	emissions without energy recovery is nearly zero and it is included in the calculations of the energy sector
CH4	1.C1.B Marine	1.C1.B	1.AD.2	emissions about bunker use of lubricants. All lubricants are included in domestic sales and reported in 1.AD.2
CH4	Other non-specified	Waste sector	Energy sector	emissions without energy recovery is nearly zero and it is included in the calculations of the energy sector
CH4	2 Land converted to Forest Land	Emissions from controlled burning on lands converted to forest land should be reported here	Category 5.A.1 forest land remaining forest land.	land area and it can not be divided into sub-categories forest land remaining and forest land converted.
CH4	2 Land converted to Forest Land	Emissions from wildfires on Lands converted to forest land	Category 5.A.1 forest land remaining forest land.	in Finland. It can not be divided into sub-categories forest land remaining and forest land converted
CH4	1 Wetlands remaining Wetlands	Emissions from wildfires on wetlands remaining wetlands	Category 5.A.1 forest land remaining forest land	Activity data is compiled for total forestry land area including forest land, wetlands and other land.
CH4	Forest Land converted to Wetlands	Emissions from wildfires on wetlands converted from forest land.	remaining forest land/biomass burning/wildfires	land and is included in the category 5.A.1 forest land remaining forest land/biomass burning/wildfires.
CH4	5.F Other Land	Emissions from biomass burning on other land	Forest Land remaining Forest Land/Wildfires.	land and is included in category 5.A.1. Forest land remaining Forest land/biomass burning/wildfires.
CH4	Converted to Other Land-Use Categories	II) non-CO2 emissions from drainage of soils under sub-categories forest land converted to other land use	conversion from forest land to peat extraction	emissions are already reported under category 5(II). CH4 emissions from other conversions are not estimated
CO2	2.A.5 Asphalt Roofing	No allocation determined in IPCC GL.	2.A.6. Road paving.	No split between asphalt roofing and paving available.
CO2	2.C.1.2 Pig Iron	2.C.1.2	2.C.1.1.	All emissions in integrated plants are included in steel production.
CO2	2.C.1.3 Sinter	2.C.1.3.	2.C.1.1.	All emissions in integrated plants are included in steel production.
CO2	2.C.2 Ferroalloys Production	2.C.2.	2.C.1.1.	All emissions in integrated plants are included in steel production.
CO2	6.C.1 Biogenic	Waste sector	Energy sector	emissions without energy recovery is nearly zero and it is included in the calculations of the energy sector
CO2	1.C1.B Marine	1.C1.B	1.AD.2	emissions about bunker use of lubricants. All lubricants are included in domestic sales and reported in 1.AD.2
CO2	Other non-specified	Waste sector	Energy sector	emissions without energy recovery is nearly zero and it is included in the calculations of the energy sector
CO2	Forest Land remaining Forest Land	CO2 emission in controlled burning in Forest Land remaining Forest land should be reported here.	Change in dead organic matter (category 5.A.1)	Cutting waste is counted in litter. To avoid double counting CO2 emissions is not reported here.
CO2	2 Land converted to Forest Land	CO2 emissions from controlled burning on Lands converted to forest land should be reported here	1 remaining forest land/carbon stock changes.	#####
CO2	2 Land converted to Forest Land	Emissions from wildfires on Lands converted to forest land	Category 5.A.1 forest land remaining forest land.	in Finland. It can not be divided into sub-categories forest land remaining and forest land converted
CO2	1 Grassland remaining Grassland	5C1	emissions from liming reported under cropland	Emissions from liming reported under cropland
CO2	1 Grassland remaining Grassland	5C1	emissions from liming reported under cropland	Emissions from liming reported under cropland
CO2	1 Wetlands remaining Wetlands	Emissions from wildfires on wetlands remaining wetlands	Category 5.A.1 forest land remaining forest land	Activity data is compiled for total forestry land area including forest land, wetlands and other land.
CO2	Forest Land converted to Wetlands	Emissions from wildfires on wetlands converted from forest land.	remaining forest land/biomass burning/wildfires	land and is included in the category 5.A.1 forest land remaining forest land/biomass burning/wildfires.
CO2	5.F Other Land	Emissions from biomass burning on other land	Forest Land remaining Forest Land/Wildfires.	land and is included in category 5.A.1. Forest land remaining Forest land/biomass burning/wildfires.
CO2	Converted to Other Land-Use Categories	from land-use change from forest land to other land use are included in under subcategories 5.A.2 to 5.F.2.	#####	emissions are included in other categories 5.B.2.1 to 5.F.2.1 and they are not reported here separately
N2O	6.C.1 Biogenic	Waste sector	Energy sector	emissions without energy recovery is nearly zero and it is included in the calculations of the energy sector
N2O	1.C1.B Marine	1.C1.B	1.AD.2	emissions about bunker use of lubricants. All lubricants are included in domestic sales and reported in 1.AD.2
N2O	Other non-specified	Waste sector	Energy sector	emissions without energy recovery is nearly zero and it is included in the calculations of the energy sector

N2O	2 Land converted to Forest Land	N2O emissions from N fertilization in land converted to Forest land should be reported here	Category 5.A.1 Forest Land remaining Forest Land.	land area and it can not be divided into sub-categories forest land remaining and forest land converted
N2O	2 Land converted to Forest Land	Emissions from controlled burning on forest land converted from other land use categories.	Category 5.A.1 forest land remaining forest land.	land area and it can not be divided into sub-categories forest land remaining and forest land converted.
N2O	2 Land converted to Forest Land	Emissions from wildfires on Lands converted to forest land	Category 5.A.1 forest land remaining forest land.	in Finland. It can not be divided into sub-categories forest land remaining and forest land converted
N2O	Forest Land converted to Cropland	Emissions from organic croplands are allocated to CRF4	from organic croplands are allocated to CRF4	Emissions from organic croplands are allocated to CRF4
N2O	Wetlands converted to Cropland	Emissions from organic croplands are allocated to CRF4	from organic croplands are allocated to CRF4	Emissions from organic croplands are allocated to CRF4
N2O	5.1 Wetlands remaining Wetlands	Emissions from wildfires on wetlands remaining wetlands	Category 5.A.1 forest land remaining forest land	Activity data is compiled for total forestry land area including forest land, wetlands and other land.
N2O	Forest Land converted to Wetlands	Emissions from wildfires on wetlands converted from forest land.	remaining forest land/biomass burning/wildfires	and is included in the category 5.A.1 forest land remaining forest land/biomass burning/wildfires.
N2O	5.F Other Land	Emissions from biomass burning on other land	Forest Land remaining Forest Land/Wildfires.	land and is included in category 5.A.1. Forest land remaining Forest land/biomass burning/wildfires.
N2O	Land converted to Other Land-Use Categories	of soils and 5(III) N2O emissions from disturbance of soils associated to land use conversion to cropland.	associated to land use conversion to cropland	Category 5(II) and conversion to cropland under category 5(III). Other N2O emissions are not estimated.

- (1) Clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source/sink category for
- (2) Indicate omitted source/sink following the IPCC source/sink category structure (e.g. sector: Waste, source category: Waste-Water Handling).
- (3) Clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector indicated in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason

TABLE 9(b) COMPLETENESS - INFORMATION ON ADDITIONAL GREENHOUSE GASES
(Sheet 1 of 1)

Inventory 2009
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FINLAND

Additional GHG emissions reported ⁽¹⁾						
GHG	Source category	Emissions (Gg)	Estimated GWP value (100-year horizon)	Emissions CO ₂ equivalent (Gg)	Reference to the source of GWP value	Explanation
HFC-245fa	Foam Blowing	0,00	950,00	0,59	IPCC AR3, 2001	T2 actual emissions of HFC-245fa from foam blowing in Gg
HFC-365mfc	Foam Blowing	0,00	890,00	0,65	IPCC AR3, 2001	T2 actual emissions of HFC-365mfc from foam blowing in Gg

⁽¹⁾ Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Include such gases in this table if they are considered in the submitted inventory. Provide additional information on the estimation methods used.

Documentation box:

Parties should provide detailed information regarding completeness of the inventory in the NIR (Chapter 1.8: General Assessment of the Completeness, and Annex 5). Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.

TABLE 10 EMISSION TRENDS

CO₂
(Part 1 of 3)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year (1990)	1991	1992	1993	1994	1995	1996	1997	1998	1999
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
1. Energy	53 159,91	51 732,49	51 016,08	52 921,35	58 122,34	54 679,56	60 316,95	58 728,02	55 575,63	55 019,70
A. Fuel Combustion (Sectoral Approach)	52 941,06	51 524,36	50 797,92	52 654,82	57 956,73	54 508,89	60 162,27	58 532,59	55 432,45	54 892,12
1. Energy Industries	19 057,37	18 820,00	18 582,69	21 293,46	26 197,26	23 921,61	29 590,31	27 201,55	23 945,96	23 434,75
2. Manufacturing Industries and Construction	13 171,56	12 662,14	12 144,35	12 232,09	12 519,84	11 956,97	11 815,18	12 072,84	11 738,16	11 715,54
3. Transport	12 483,40	12 132,78	12 052,49	11 589,23	11 939,03	11 735,32	11 724,60	12 298,25	12 446,97	12 682,81
4. Other Sectors	7 040,32	6 886,73	6 988,18	6 510,34	6 157,78	5 697,83	5 814,51	5 825,75	5 917,45	5 829,87
5. Other	1 188,40	1 022,71	1 030,21	1 029,69	1 142,82	1 197,17	1 217,66	1 134,19	1 383,91	1 229,14
B. Fugitive Emissions from Fuels	218,85	208,13	218,17	266,53	165,61	170,68	154,68	195,44	143,18	127,58
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	218,85	208,13	218,17	266,53	165,61	170,68	154,68	195,44	143,18	127,58
2. Industrial Processes	3 315,27	3 167,12	3 038,56	3 056,07	3 155,07	3 070,98	3 242,79	3 480,11	3 482,42	3 576,16
A. Mineral Products	1 254,31	1 079,52	974,04	886,29	941,53	913,39	941,97	968,20	975,47	1 052,38
B. Chemical Industry	125,35	139,12	102,91	93,74	129,11	110,79	126,68	125,51	115,38	113,16
C. Metal Production	1 935,62	1 948,49	1 961,62	2 076,04	2 084,44	2 046,80	2 174,13	2 386,39	2 391,57	2 410,62
D. Other Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
E. Production of Halocarbons and SF ₆										
F. Consumption of Halocarbons and SF ₆										
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	116,37	108,51	95,56	88,42	84,56	80,77	75,96	73,72	74,28	73,04
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land Use, Land-Use Change and Forestry⁽²⁾	-15 161,40	-29 180,73	-23 212,37	-20 965,65	-13 558,54	-13 404,04	-22 800,01	-18 939,22	-17 037,28	-19 873,94
A. Forest Land	-21 220,61	-35 855,34	-29 138,74	-27 244,29	-19 127,23	-19 127,61	-28 409,64	-23 504,69	-21 985,50	-24 542,96
B. Cropland	5 445,33	4 813,84	4 592,10	4 813,95	4 721,11	4 997,82	5 056,82	5 084,51	5 092,89	5 065,70
C. Grassland	568,22	548,36	514,11	496,34	510,64	489,71	465,26	435,90	424,29	428,14
D. Wetlands	991,30	1 005,13	1 044,83	1 061,54	1 093,29	1 105,84	1 135,27	1 166,62	1 197,53	1 213,62
E. Settlements	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE
F. Other Land	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO
G. Other	-945,64	307,28	-224,67	-93,19	-756,35	-869,80	-1 047,72	-2 121,56	-1 766,49	-2 038,44
6. Waste	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
A. Solid Waste Disposal on Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Waste-water Handling										
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7. Other (as specified in Summary I.A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total CO₂ emissions including net CO₂ from LULUCF	41 430,15	25 827,39	30 937,83	35 100,19	47 803,44	44 427,28	40 835,68	43 342,63	42 095,04	38 794,97
Total CO₂ emissions excluding net CO₂ from LULUCF	56 591,55	55 008,12	54 150,20	56 065,84	61 361,98	57 831,32	63 635,69	62 281,85	59 132,32	58 668,90
Memo Items:										
International Bunkers	2 852,28	2 706,86	3 055,86	2 523,21	2 178,54	1 965,11	2 169,60	2 311,78	2 706,91	2 897,86
Aviation	1 007,74	948,31	838,29	787,78	829,36	896,99	960,24	997,64	1 022,16	1 094,05
Marine	1 844,54	1 758,55	2 217,58	1 735,43	1 349,18	1 068,12	1 209,37	1 314,14	1 684,75	1 803,81
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass	19 294,58	18 993,74	18 709,93	22 231,16	23 078,23	23 428,77	23 435,03	26 680,54	27 618,19	29 233,97

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS

CO₂
(Part 2 of 3)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
1. Energy	53 079,08	58 277,70	60 825,66	68 201,43	64 139,38	52 630,97	63 772,86	61 786,89	53 757,44	51 860,51
A. Fuel Combustion (Sectoral Approach)	52 951,15	58 158,88	60 701,47	68 082,44	64 024,85	52 503,85	63 658,76	61 655,36	53 617,19	51 745,03
1. Energy Industries	21 898,91	27 234,06	29 944,28	36 848,43	32 634,29	21 652,63	32 523,37	30 474,88	23 926,59	25 120,12
2. Manufacturing Industries and Construction	11 734,69	11 287,74	10 984,09	11 348,67	11 435,75	11 150,50	11 443,25	11 289,57	10 635,27	8 189,20
3. Transport	12 591,96	12 712,50	12 907,59	13 096,22	13 451,33	13 480,14	13 668,09	14 038,71	13 383,97	12 708,43
4. Other Sectors	5 465,49	5 689,78	5 644,94	5 558,82	5 432,35	5 240,06	5 048,48	4 939,05	4 749,26	4 836,35
5. Other	1 260,09	1 234,80	1 220,58	1 230,31	1 071,13	980,52	975,57	913,16	922,09	890,94
B. Fugitive Emissions from Fuels	127,93	118,82	124,19	118,99	114,53	127,11	114,10	131,52	140,25	115,48
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	127,93	118,82	124,19	118,99	114,53	127,11	114,10	131,52	140,25	115,48
2. Industrial Processes	3 581,36	3 640,52	3 536,63	3 772,39	3 960,11	3 688,99	3 925,36	4 277,78	4 436,56	3 502,67
A. Mineral Products	1 106,48	1 118,75	1 120,25	1 173,64	1 255,51	1 197,57	1 283,69	1 293,80	1 256,32	876,33
B. Chemical Industry	124,27	120,07	133,12	150,54	164,04	119,42	203,52	523,83	656,64	684,79
C. Metal Production	2 350,62	2 401,70	2 283,26	2 448,21	2 540,56	2 372,01	2 438,15	2 460,15	2 523,60	1 941,55
D. Other Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
E. Production of Halocarbons and SF ₆										
F. Consumption of Halocarbons and SF ₆										
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	72,01	72,40	67,68	64,16	64,80	59,89	60,81	60,65	52,66	45,72
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land Use, Land-Use Change and Forestry⁽²⁾	-21 065,12	-24 478,31	-24 767,47	-25 123,19	-25 077,43	-27 799,92	-31 369,05	-23 481,48	-27 172,43	-40 703,86
A. Forest Land	-26 417,31	-30 903,79	-31 138,98	-31 004,28	-31 218,01	-34 565,66	-38 275,44	-29 372,32	-34 865,89	-47 219,57
B. Cropland	4 983,44	5 082,84	5 178,11	5 153,89	5 295,81	5 472,08	5 713,44	5 927,80	6 247,50	6 540,85
C. Grassland	401,84	420,66	419,78	412,40	422,21	401,91	415,72	464,56	505,75	498,06
D. Wetlands	1 233,41	1 236,80	1 210,41	1 203,92	1 254,24	1 231,78	1 227,50	1 231,90	1 249,31	1 186,52
E. Settlements	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE	IE,NE
F. Other Land	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO	IE,NA,NO
G. Other	-1 266,51	-314,82	-436,80	-889,13	-831,68	-340,03	-450,27	-1 733,42	-309,09	-1 709,72
6. Waste	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO	IE,NO
A. Solid Waste Disposal on Land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Waste-water Handling										
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
7. Other (as specified in Summary I.A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total CO₂ emissions including net CO₂ from LULUCF	35 667,34	37 512,31	39 662,49	46 914,79	43 086,85	28 579,94	36 389,99	42 643,84	31 074,24	14 705,05
Total CO₂ emissions excluding net CO₂ from LULUCF	56 732,46	61 990,62	64 429,96	72 037,98	68 164,28	56 379,85	67 759,04	66 125,32	58 246,67	55 408,91
Memo Items:										
International Bunkers	3 143,26	2 951,51	3 175,66	3 199,10	2 961,28	2 941,10	3 250,74	3 145,84	3 097,05	2 379,36
Aviation	1 063,30	1 089,95	1 077,58	1 113,52	1 282,24	1 290,15	1 434,57	1 655,64	1 792,08	1 570,07
Marine	2 079,95	1 861,56	2 098,09	2 085,58	1 679,04	1 650,95	1 816,16	1 490,21	1 304,97	809,30
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass	29 374,42	28 489,18	30 747,31	31 469,60	32 866,65	30 690,51	34 498,00	33 080,92	32 937,65	29 332,48

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
CO₂
(Part 3 of 3)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Change from base to latest reported year
	%
1. Energy	-2,44
A. Fuel Combustion (Sectoral Approach)	-2,26
1. Energy Industries	31,81
2. Manufacturing Industries and Construction	-37,83
3. Transport	1,80
4. Other Sectors	-31,30
5. Other	-25,03
B. Fugitive Emissions from Fuels	-47,23
1. Solid Fuels	0,00
2. Oil and Natural Gas	-47,23
2. Industrial Processes	5,65
A. Mineral Products	-30,13
B. Chemical Industry	446,32
C. Metal Production	0,31
D. Other Production	0,00
E. Production of Halocarbons and SF ₆	
F. Consumption of Halocarbons and SF ₆	
G. Other	0,00
3. Solvent and Other Product Use	-60,71
4. Agriculture	
A. Enteric Fermentation	
B. Manure Management	
C. Rice Cultivation	
D. Agricultural Soils	
E. Prescribed Burning of Savannas	
F. Field Burning of Agricultural Residues	
G. Other	
5. Land Use, Land-Use Change and Forestry⁽²⁾	168,47

A. Forest Land	122,52
B. Cropland	20,12
C. Grassland	-12,35
D. Wetlands	19,69
E. Settlements	0,00
F. Other Land	0,00
G. Other	80,80
6. Waste	0,00
A. Solid Waste Disposal on Land	0,00
B. Waste-water Handling	
C. Waste Incineration	0,00
D. Other	0,00
7. Other (as specified in Summary I.A)	0,00
Total CO₂ emissions including net CO₂ from LULUCF	-64,51
Total CO₂ emissions excluding net CO₂ from LULUCF	-2,09
Memo Items:	
International Bunkers	-16,58
Aviation	55,80
Marine	-56,12
Multilateral Operations	0,00
CO₂ Emissions from Biomass	52,02

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
CH₄
(Part 1 of 3)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year (1990)	1991	1992	1993	1994	1995	1996	1997	1998	1999
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
1. Energy	15,13	16,30	16,91	17,59	18,04	17,95	18,39	17,81	17,87	16,88
A. Fuel Combustion (Sectoral Approach)	14,60	14,31	14,24	14,14	14,21	14,15	14,47	14,40	14,40	14,06
1. Energy Industries	0,39	0,41	0,42	0,48	0,58	0,62	0,73	0,76	0,78	0,77
2. Manufacturing Industries and Construction	0,61	0,59	0,57	0,65	0,67	0,69	0,66	0,71	0,69	0,70
3. Transport	4,73	4,49	4,36	4,18	4,02	3,90	3,74	3,60	3,47	3,35
4. Other Sectors	8,73	8,71	8,78	8,73	8,83	8,83	9,22	9,24	9,33	9,12
5. Other	0,14	0,11	0,10	0,10	0,11	0,11	0,11	0,10	0,13	0,12
B. Fugitive Emissions from Fuels	0,53	1,98	2,67	3,45	3,82	3,80	3,93	3,41	3,47	2,81
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	0,53	1,98	2,67	3,45	3,82	3,80	3,93	3,41	3,47	2,81
2. Industrial Processes	0,24	0,24	0,25	0,44	0,46	0,46	0,46	0,44	0,46	0,45
A. Mineral Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Chemical Industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. Metal Production	0,24	0,24	0,25	0,44	0,46	0,46	0,46	0,44	0,46	0,45
D. Other Production										
E. Production of Halocarbons and SF ₆										
F. Consumption of Halocarbons and SF ₆										
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use										
4. Agriculture	103,90	99,95	97,11	97,61	98,12	93,73	94,00	95,70	93,51	92,07
A. Enteric Fermentation	92,05	88,47	85,49	85,65	85,66	80,80	80,99	81,91	79,99	78,77
B. Manure Management	11,76	11,47	11,62	11,95	12,46	12,92	12,98	13,77	13,51	13,30
C. Rice Cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural Soils	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0,09	0,01	0,01	0,02	0,01	0,02	0,03	0,02	0,01	0,01
G. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Land Use, Land-Use Change and Forestry	1,63	1,53	1,66	1,58	1,69	1,68	1,69	1,76	1,74	1,83
A. Forest Land	0,19	0,08	0,15	0,05	0,11	0,10	0,07	0,10	0,04	0,09
B. Cropland	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
C. Grassland	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
D. Wetlands	1,44	1,45	1,51	1,53	1,58	1,59	1,62	1,66	1,71	1,74
E. Settlements	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
F. Other Land	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA
G. Other	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
6. Waste	181,45	183,42	184,19	184,09	181,41	178,50	174,08	169,33	161,74	158,05
A. Solid Waste Disposal on Land	173,11	175,38	176,03	175,68	173,04	169,80	165,36	160,67	153,13	149,51
B. Waste-water Handling	7,31	6,89	6,87	7,02	6,88	7,00	6,82	6,73	6,57	6,37
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Other	1,03	1,15	1,29	1,39	1,49	1,70	1,91	1,92	2,04	2,16
7. Other (as specified in Summary I.A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total CH₄ emissions including CH₄ from LULUCF	302,35	301,43	300,12	301,31	299,72	292,33	288,62	285,05	275,32	269,28
Total CH₄ emissions excluding CH₄ from LULUCF	300,72	299,90	298,46	299,72	298,03	290,65	286,93	283,28	273,58	267,45
Memo Items:										
International Bunkers	0,16	0,15	0,18	0,15	0,12	0,10	0,12	0,13	0,16	0,18
Aviation	0,03	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,03	0,04
Marine	0,14	0,13	0,16	0,13	0,10	0,07	0,09	0,09	0,12	0,14
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass										

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
CH₄
(Part 2 of 3)

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
1. Energy	16,20	17,84	17,72	18,09	17,48	17,48	17,46	17,05	16,39	16,88
A. Fuel Combustion (Sectoral Approach)	13,58	14,62	15,00	15,16	14,86	14,43	14,81	14,61	14,05	14,69
1. Energy Industries	0,73	0,92	1,15	1,34	1,18	0,97	1,19	1,09	1,03	0,96
2. Manufacturing Industries and Construction	0,72	0,68	0,66	0,67	0,69	0,65	0,71	0,66	0,62	0,52
3. Transport	3,15	3,02	2,92	2,79	2,59	2,41	2,24	2,12	1,91	1,84
4. Other Sectors	8,86	9,90	10,16	10,26	10,31	10,31	10,59	10,68	10,44	11,31
5. Other	0,11	0,11	0,11	0,10	0,09	0,08	0,07	0,06	0,07	0,06
B. Fugitive Emissions from Fuels	2,62	3,23	2,72	2,93	2,62	3,05	2,64	2,44	2,33	2,19
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	2,62	3,23	2,72	2,93	2,62	3,05	2,64	2,44	2,33	2,19
2. Industrial Processes	0,46	0,45	0,46	0,45	0,45	0,45	0,43	0,43	0,43	0,37
A. Mineral Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Chemical Industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. Metal Production	0,46	0,45	0,46	0,45	0,45	0,45	0,43	0,43	0,43	0,37
D. Other Production										
E. Production of Halocarbons and SF ₆										
F. Consumption of Halocarbons and SF ₆										
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use										
4. Agriculture	92,52	91,07	92,37	91,94	91,06	90,91	90,95	89,89	89,55	89,40
A. Enteric Fermentation	78,92	77,90	78,65	77,75	76,90	76,33	76,38	75,34	74,80	75,25
B. Manure Management	13,56	13,15	13,69	14,16	14,15	14,57	14,55	14,52	14,72	14,13
C. Rice Cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural Soils	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0,04	0,02	0,02	0,02	0,02	0,01	0,02	0,03	0,03	0,02
G. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Land Use, Land-Use Change and Forestry	1,82	1,91	1,89	1,86	1,83	1,85	1,89	1,82	1,82	1,75
A. Forest Land	0,04	0,12	0,13	0,09	0,03	0,07	0,11	0,05	0,06	0,05
B. Cropland	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
C. Grassland	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
D. Wetlands	1,77	1,79	1,76	1,77	1,80	1,78	1,78	1,77	1,76	1,70
E. Settlements	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
F. Other Land	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA
G. Other	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
6. Waste	148,23	141,88	131,71	123,20	116,68	106,71	109,46	105,03	100,49	96,80
A. Solid Waste Disposal on Land	139,68	133,31	122,83	114,34	107,73	97,61	100,43	95,78	91,43	88,05
B. Waste-water Handling	6,27	6,19	6,40	6,26	6,25	6,08	6,13	6,14	6,05	5,74
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Other	2,28	2,38	2,49	2,59	2,69	3,02	2,89	3,11	3,01	3,00
7. Other (as specified in Summary I.A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total CH₄ emissions including CH₄ from LULUCF	259,22	253,15	244,15	235,54	227,50	217,40	220,18	214,22	208,67	205,21
Total CH₄ emissions excluding CH₄ from LULUCF	257,40	251,24	242,26	233,67	225,68	215,55	218,29	212,40	206,85	203,46
Memo Items:										
International Bunkers	0,20	0,18	0,18	0,18	0,16	0,16	0,17	0,14	0,13	0,09
Aviation	0,04	0,04	0,03	0,03	0,04	0,03	0,03	0,04	0,04	0,03
Marine	0,16	0,14	0,16	0,16	0,12	0,12	0,13	0,11	0,09	0,06
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass										

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
CH₄
(Part 3 of 3)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Change from base to latest reported year
	%
1. Energy	11,59
A. Fuel Combustion (Sectoral Approach)	0,63
1. Energy Industries	144,69
2. Manufacturing Industries and Construction	-15,33
3. Transport	-61,14
4. Other Sectors	29,60
5. Other	-54,79
B. Fugitive Emissions from Fuels	312,85
1. Solid Fuels	0,00
2. Oil and Natural Gas	312,85
2. Industrial Processes	52,01
A. Mineral Products	0,00
B. Chemical Industry	0,00
C. Metal Production	52,01
D. Other Production	
E. Production of Halocarbons and SF ₆	
F. Consumption of Halocarbons and SF ₆	
G. Other	0,00
3. Solvent and Other Product Use	
4. Agriculture	-13,95
A. Enteric Fermentation	-18,25
B. Manure Management	20,14
C. Rice Cultivation	0,00
D. Agricultural Soils	0,00
E. Prescribed Burning of Savannas	0,00
F. Field Burning of Agricultural Residues	-75,90
G. Other	0,00
5. Land Use, Land-Use Change and Forestry	7,27

A. Forest Land	-72,64
B. Cropland	0,00
C. Grassland	0,00
D. Wetlands	18,01
E. Settlements	0,00
F. Other Land	0,00
G. Other	0,00
6. Waste	-46,65
A. Solid Waste Disposal on Land	-49,13
B. Waste-water Handling	-21,42
C. Waste Incineration	0,00
D. Other	192,65
7. Other (as specified in Summary I.A)	0,00
Total CH₄ emissions including CH₄ from LULUCF	-32,13
Total CH₄ emissions excluding CH₄ from LULUCF	-32,34
Memo Items:	
International Bunkers	-44,63
Aviation	24,53
Marine	-58,05
Multilateral Operations	0,00
CO₂ Emissions from Biomass	

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS

N₂O
(Part 1 of 3)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year (1990)	1991	1992	1993	1994	1995	1996	1997	1998	1999
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
1. Energy	3,24	3,13	3,07	3,19	3,28	3,17	3,32	3,33	3,26	3,23
A. Fuel Combustion (Sectoral Approach)	3,24	3,13	3,07	3,19	3,28	3,17	3,32	3,33	3,26	3,23
1. Energy Industries	0,39	0,43	0,46	0,52	0,60	0,61	0,72	0,71	0,71	0,68
2. Manufacturing Industries and Construction	0,56	0,52	0,48	0,53	0,55	0,54	0,55	0,60	0,59	0,61
3. Transport	0,56	0,56	0,56	0,56	0,56	0,57	0,57	0,58	0,59	0,60
4. Other Sectors	0,28	0,27	0,28	0,27	0,26	0,24	0,25	0,25	0,26	0,25
5. Other	1,45	1,36	1,30	1,31	1,31	1,21	1,22	1,18	1,11	1,09
B. Fugitive Emissions from Fuels	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
2. Industrial Processes	5,34	4,64	4,20	4,39	4,63	4,72	4,72	4,66	4,44	4,34
A. Mineral Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Chemical Industry	5,34	4,64	4,20	4,39	4,63	4,72	4,72	4,66	4,44	4,34
C. Metal Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Other Production										
E. Production of Halocarbons and SF ₆										
F. Consumption of Halocarbons and SF ₆										
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20	0,20
4. Agriculture	14,44	13,44	12,31	12,56	12,60	13,16	12,86	12,77	12,53	12,35
A. Enteric Fermentation										
B. Manure Management	1,58	1,47	1,44	1,45	1,47	1,43	1,46	1,50	1,47	1,42
C. Rice Cultivation										
D. Agricultural Soils	12,86	11,97	10,88	11,12	11,13	11,73	11,40	11,26	11,06	10,93
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
G. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Land Use, Land-Use Change and Forestry	0,29	0,27	0,24	0,23	0,26	0,25	0,26	0,28	0,29	0,29
A. Forest Land	0,09	0,07	0,03	0,01	0,04	0,02	0,03	0,04	0,04	0,03
B. Cropland	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,02
C. Grassland	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
D. Wetlands	0,19	0,19	0,20	0,20	0,21	0,21	0,22	0,23	0,24	0,24
E. Settlements	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
F. Other Land	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA
G. Other	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
6. Waste	0,53	0,52	0,51	0,50	0,51	0,52	0,53	0,52	0,51	0,50
A. Solid Waste Disposal on Land										
B. Waste-water Handling	0,46	0,44	0,43	0,41	0,41	0,41	0,40	0,40	0,38	0,36
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Other	0,07	0,07	0,08	0,09	0,10	0,11	0,12	0,13	0,13	0,14
7. Other (as specified in Summary 1.A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total N₂O emissions including N₂O from LULUCF	24,04	22,20	20,54	21,08	21,48	22,02	21,88	21,76	21,23	20,92
Total N₂O emissions excluding N₂O from LULUCF	23,75	21,93	20,30	20,85	21,22	21,77	21,62	21,48	20,94	20,63
Memo Items:										
International Bunkers	0,09	0,09	0,09	0,08	0,07	0,07	0,07	0,08	0,09	0,09
Aviation	0,04	0,04	0,03	0,03	0,03	0,04	0,04	0,04	0,04	0,05
Marine	0,05	0,05	0,06	0,05	0,04	0,03	0,03	0,03	0,04	0,05
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass										

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS

N₂O
(Part 2 of 3)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
1. Energy	3,15	3,32	3,39	3,56	3,44	3,07	3,39	3,30	3,09	2,90
A. Fuel Combustion (Sectoral Approach)	3,15	3,32	3,39	3,56	3,44	3,07	3,38	3,30	3,09	2,89
1. Energy Industries	0,66	0,82	0,94	1,07	1,00	0,82	1,08	1,06	0,97	0,93
2. Manufacturing Industries and Construction	0,61	0,59	0,56	0,56	0,59	0,55	0,53	0,50	0,48	0,40
3. Transport	0,59	0,60	0,60	0,60	0,60	0,59	0,59	0,58	0,56	0,56
4. Other Sectors	0,24	0,26	0,26	0,26	0,25	0,25	0,25	0,24	0,24	0,25
5. Other	1,04	1,05	1,03	1,08	1,00	0,87	0,95	0,91	0,83	0,76
B. Fugitive Emissions from Fuels	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
1. Solid Fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and Natural Gas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
2. Industrial Processes	4,40	4,17	4,30	4,54	4,83	5,24	4,64	4,77	5,09	2,56
A. Mineral Products	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Chemical Industry	4,40	4,17	4,30	4,54	4,83	5,24	4,64	4,77	5,09	2,56
C. Metal Production	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Other Production										
E. Production of Halocarbons and SF ₆										
F. Consumption of Halocarbons and SF ₆										
G. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Solvent and Other Product Use	0,17	0,16	0,14	0,13	0,13	0,15	0,13	0,12	0,11	0,08
4. Agriculture	12,61	12,46	12,55	12,60	12,45	12,50	12,51	12,61	13,06	12,40
A. Enteric Fermentation										
B. Manure Management	1,42	1,34	1,38	1,39	1,36	1,37	1,35	1,34	1,36	1,29
C. Rice Cultivation										
D. Agricultural Soils	11,19	11,12	11,17	11,20	11,09	11,13	11,16	11,27	11,71	11,10
E. Prescribed Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agricultural Residues	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
G. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Land Use, Land-Use Change and Forestry	0,29	0,30	0,30	0,30	0,32	0,31	0,34	0,33	0,40	0,35
A. Forest Land	0,03	0,04	0,04	0,04	0,04	0,04	0,06	0,05	0,11	0,08
B. Cropland	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,03	0,03	0,03
C. Grassland	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO
D. Wetlands	0,24	0,24	0,24	0,24	0,26	0,25	0,25	0,25	0,25	0,24
E. Settlements	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE	NA,NE
F. Other Land	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA	IE,NA
G. Other	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
6. Waste	0,51	0,52	0,51	0,52	0,52	0,53	0,52	0,53	0,53	0,50
A. Solid Waste Disposal on Land										
B. Waste-water Handling	0,36	0,36	0,34	0,35	0,34	0,33	0,33	0,32	0,33	0,30
C. Waste Incineration	IE	IE	IE	IE	IE	IE	IE	IE	IE	IE
D. Other	0,15	0,16	0,16	0,17	0,18	0,20	0,19	0,21	0,20	0,20
7. Other (as specified in Summary 1.A)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total N₂O emissions including N₂O from LULUCF	21,12	20,92	21,19	21,65	21,69	21,81	21,52	21,66	22,29	18,79
Total N₂O emissions excluding N₂O from LULUCF	20,83	20,63	20,90	21,35	21,37	21,49	21,18	21,32	21,89	18,44
Memo Items:										
International Bunkers	0,10	0,09	0,10	0,10	0,09	0,10	0,11	0,11	0,11	0,09
Aviation	0,04	0,04	0,04	0,05	0,04	0,05	0,06	0,07	0,07	0,07
Marine	0,05	0,05	0,05	0,05	0,04	0,04	0,05	0,04	0,03	0,02
Multilateral Operations	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CO₂ Emissions from Biomass										

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
N₂O
(Part 3 of 3)

Inventory 2009

Submission 2011 v1.6

FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Change from base to latest reported year
	%
1. Energy	-10,62
A. Fuel Combustion (Sectoral Approach)	-10,61
1. Energy Industries	136,20
2. Manufacturing Industries and Construction	-28,78
3. Transport	-0,46
4. Other Sectors	-10,27
5. Other	-47,46
B. Fugitive Emissions from Fuels	-28,99
1. Solid Fuels	0,00
2. Oil and Natural Gas	-28,99
2. Industrial Processes	-52,11
A. Mineral Products	0,00
B. Chemical Industry	-52,11
C. Metal Production	0,00
D. Other Production	
E. Production of Halocarbons and SF ₆	
F. Consumption of Halocarbons and SF ₆	
G. Other	0,00
3. Solvent and Other Product Use	-60,03
4. Agriculture	-14,13
A. Enteric Fermentation	
B. Manure Management	-18,08
C. Rice Cultivation	
D. Agricultural Soils	-13,64
E. Prescribed Burning of Savannas	0,00
F. Field Burning of Agricultural Residues	-75,90
G. Other	0,00
5. Land Use, Land-Use Change and Forestry	22,17
A. Forest Land	-8,51
B. Cropland	165,52
C. Grassland	0,00
D. Wetlands	27,27
E. Settlements	0,00
F. Other Land	0,00

G. Other	0,00
6. Waste	-5,02
A. Solid Waste Disposal on Land	
B. Waste-water Handling	-34,93
C. Waste Incineration	0,00
D. Other	205,49
7. Other (as specified in Summary I.A)	0,00
Total N₂O emissions including N₂O from LULUCF	-21,84
Total N₂O emissions excluding N₂O from LULUCF	-22,38
Memo Items:	
International Bunkers	-3,93
Aviation	57,83
Marine	-56,93
Multilateral Operations	0,00
CO₂ Emissions from Biomass	

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
HFCs, PFCs and SF₆
(Part 1 of 3)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year (1990)	1991	1992	1993	1994	1995	1996	1997	1998	1999
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
Emissions of HFCs⁽³⁾ - (Gg CO₂ equivalent)	0,02	0,05	0,10	0,10	6,52	29,33	77,30	167,77	245,22	318,35
HFC-23	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	0,00	C,NA,NO	0,00
HFC-32	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	0,00	0,00	0,00	0,01
HFC-41	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-43-10mee	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-125	NA,NO	NA,NO	NA,NO	NA,NO	0,00	0,00	0,00	0,01	0,02	0,03
HFC-134	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-134a	NA,NO	NA,NO	NA,NO	NA,NO	0,00	0,01	0,04	0,09	0,09	0,13
HFC-152a	0,00	0,00	0,00	0,00	0,00	0,02	0,04	0,04	0,03	0,03
HFC-143	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-143a	NA,NO	NA,NO	NA,NO	NA,NO	0,00	0,00	0,00	0,01	0,02	0,01
HFC-227ea	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-236fa	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-245ca	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
Unspecified mix of listed HFCs ⁽⁴⁾ - (Gg CO ₂ equivalent)	0,01	0,01	NA,NO	0,01	NA,NO	0,01	NA,NO	0,12	0,02	2,41
Emissions of PFCs⁽³⁾ - (Gg CO₂ equivalent)	0,07	0,08	0,09	0,10	0,12	0,14	0,16	0,18	0,21	27,97
CF ₄	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO
C ₂ F ₆	C,NA,NO	C,NA,NO	NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO
C ₃ F ₈	C,NA,NO	C,NA,NO	NA,NO	C,NA,NO	C,IE,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	0,00
C ₄ F ₁₀	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
c-C ₄ F ₈	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
C ₅ F ₁₂	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
C ₆ F ₁₄	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	C,NA,NO
Unspecified mix of listed PFCs ⁽⁴⁾ - (Gg CO ₂ equivalent)	0,07	0,08	0,09	0,10	0,12	0,14	0,16	0,18	0,21	2,62
Emissions of SF₆⁽³⁾ - (Gg CO₂ equivalent)	94,38	67,32	36,64	33,61	34,90	68,53	72,20	75,98	53,18	51,98
SF ₆	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
HFCs, PFCs and SF₆
(Part 2 of 3)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)	(Gg)
Emissions of HFCs⁽³⁾ - (Gg CO₂ equivalent)	491,76	646,38	463,22	651,31	693,75	863,45	747,16	903,28	993,19	888,83
HFC-23	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO
HFC-32	0,00	0,01	NA,NO	0,01	0,02	0,02	0,01	0,01	0,03	0,02
HFC-41	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-43-10mee	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-125	0,03	0,05	0,03	0,06	0,07	0,08	0,08	0,08	0,10	0,10
HFC-134	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-134a	0,23	0,19	0,13	0,16	0,15	0,21	0,14	0,24	0,24	0,18
HFC-152a	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
HFC-143	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-143a	0,02	0,04	0,04	0,06	0,06	0,07	0,07	0,07	0,08	0,08
HFC-227ea	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-236fa	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
HFC-245ca	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
Unspecified mix of listed HFCs ⁽⁴⁾ - (Gg CO ₂ equivalent)	0,13	74,90	67,47	67,25	63,48	77,16	78,87	77,11	83,87	82,12
Emissions of PFCs⁽³⁾ - (Gg CO₂ equivalent)	22,46	20,06	13,37	14,85	12,23	9,88	15,43	8,40	11,23	9,32
CF ₄	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO
C ₂ F ₆	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	NA,NO	NA,NO	NA,NO
C ₃ F ₈	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
C ₄ F ₁₀	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
c-C ₄ F ₈	NA,NO	NA,NO	NA,NO	C,NA,NO	NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO	C,NA,NO
C ₅ F ₁₂	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
C ₆ F ₁₄	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO	NA,NO
Unspecified mix of listed PFCs ⁽⁴⁾ - (Gg CO ₂ equivalent)	0,28	0,32	0,77	1,06	0,97	0,94	1,10	0,54	0,51	1,08
Emissions of SF₆⁽³⁾ - (Gg CO₂ equivalent)	51,49	55,03	51,31	48,11	33,82	34,83	40,25	35,97	40,36	41,34
SF ₆	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

Note: All footnotes for this table are given at the end of the table on sheet 5.

TABLE 10 EMISSION TRENDS
HFCs, PFCs and SF₆
(Part 3 of 3)

Inventory 2009
 Submission 2011 v1.6
 FINLAND

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Change from base to latest reported year
	%
Emissions of HFCs⁽³⁾ - (Gg CO₂ equivalent)	5 021 543,67
HFC-23	0,00
HFC-32	100,00
HFC-41	0,00
HFC-43-10mee	0,00
HFC-125	100,00
HFC-134	0,00
HFC-134a	100,00
HFC-152a	1 352,22
HFC-143	0,00
HFC-143a	100,00
HFC-227ea	0,00
HFC-236fa	0,00
HFC-245ca	0,00
Unspecified mix of listed HFCs ⁽⁴⁾ - (Gg CO ₂ equivalent)	1 610 062,75
Emissions of PFCs⁽³⁾ - (Gg CO₂ equivalent)	13 210,57
CF ₄	0,00
C ₂ F ₆	0,00
C ₃ F ₈	100,00
C ₄ F ₁₀	0,00
c-C ₄ F ₈	0,00
C ₅ F ₁₂	0,00
C ₆ F ₁₄	0,00
Unspecified mix of listed PFCs ⁽⁴⁾ - (Gg CO ₂ equivalent)	1 440,57
Emissions of SF₆⁽³⁾ - (Gg CO₂ equivalent)	-56,20
SF ₆	-56,20

Note: All footnotes for this table are given at the end of the table on sheet 5.

**TABLE 10 EMISSION TRENDS
SUMMARY
(Part 1 of 3)**

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS EMISSIONS	Base year (1990)	1991	1992	1993	1994	1995	1996	1997	1998	1999
	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)
CO ₂ emissions including net CO ₂ from LULUCF	41 430,15	25 827,39	30 937,83	35 100,19	47 803,44	44 427,28	40 835,68	43 342,63	42 095,04	38 794,97
CO ₂ emissions excluding net CO ₂ from LULUCF	56 591,55	55 008,12	54 150,20	56 065,84	61 361,98	57 831,32	63 635,69	62 281,85	59 132,32	58 668,90
CH ₄ emissions including CH ₄ from LULUCF	6 349,43	6 330,11	6 302,50	6 327,41	6 294,05	6 138,95	6 061,03	5 985,97	5 781,72	5 654,81
CH ₄ emissions excluding CH ₄ from LULUCF	6 315,17	6 297,89	6 267,70	6 294,22	6 258,55	6 103,64	6 025,59	5 948,98	5 745,10	5 616,38
N ₂ O emissions including N ₂ O from LULUCF	7 451,71	6 881,03	6 368,31	6 533,95	6 658,74	6 826,64	6 783,88	6 745,67	6 581,95	6 485,23
N ₂ O emissions excluding N ₂ O from LULUCF	7 362,74	6 797,56	6 293,87	6 463,25	6 577,85	6 749,62	6 703,30	6 657,57	6 491,15	6 396,82
HFCs	0,02	0,05	0,10	0,10	6,52	29,33	77,30	167,77	245,22	318,35
PFCs	0,07	0,08	0,09	0,10	0,12	0,14	0,16	0,18	0,21	27,97
SF ₆	94,38	67,32	36,64	33,61	34,90	68,53	72,20	75,98	53,18	51,98
Total (including LULUCF)	55 325,75	39 106,00	43 645,48	47 995,36	60 797,77	57 490,87	53 830,25	56 318,21	54 757,32	51 333,30
Total (excluding LULUCF)	70 363,93	68 171,03	66 748,60	68 857,12	74 239,92	70 782,58	76 514,24	75 132,34	71 667,18	71 080,40

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year (1990)	1991	1992	1993	1994	1995	1996	1997	1998	1999
	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)
1. Energy	54 481,96	53 045,45	52 323,88	54 280,93	59 517,59	56 039,27	61 731,99	60 134,93	56 961,94	56 376,77
2. Industrial Processes	5 070,56	4 677,61	4 383,39	4 459,29	4 641,22	4 641,50	4 865,43	5 176,73	5 166,47	5 330,62
3. Solvent and Other Product Use	178,37	170,51	157,56	150,42	146,56	142,77	137,96	135,72	136,28	135,04
4. Agriculture	6 658,45	6 265,37	5 856,37	5 944,57	5 967,46	6 047,99	5 960,21	5 967,17	5 847,72	5 762,73
5. Land Use, Land-Use Change and Forestry ⁽⁵⁾	-15 038,18	-29 065,03	-23 103,13	-20 861,77	-13 442,15	-13 291,72	-22 683,99	-18 814,14	-16 909,86	-19 747,10
6. Waste	3 974,60	4 012,10	4 027,41	4 021,92	3 967,08	3 911,06	3 818,65	3 717,79	3 554,78	3 475,23
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (including LULUCF)⁽⁵⁾	55 325,75	39 106,00	43 645,48	47 995,36	60 797,77	57 490,87	53 830,25	56 318,21	54 757,32	51 333,30

⁽¹⁾ The column "Base year" should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP. For these Parties, this different base year is used to calculate the percentage change in the final column of this table.

⁽²⁾ Fill in net emissions/removals as reported in table Summary I.A. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽³⁾ Enter actual emissions estimates. If only potential emissions estimates are available, these should be reported in this table and an indication for this be provided in the documentation box. Only in these rows are the emissions expressed as CO₂ equivalent emissions.

⁽⁴⁾ In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this row could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for this row is Gg of CO₂ equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.

⁽⁵⁾ Includes net CO₂, CH₄ and N₂O from LULUCF.

**TABLE 10 EMISSION TRENDS
SUMMARY
(Part 2 of 3)**

Inventory 2009
Submission 2011 v1.6
FINLAND

GREENHOUSE GAS EMISSIONS	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)
CO ₂ emissions including net CO ₂ from LULUCF	35 667,34	37 512,31	39 662,49	46 914,79	43 086,85	28 579,94	36 389,99	42 643,84	31 074,24	14 705,05
CO ₂ emissions excluding net CO ₂ from LULUCF	56 732,46	61 990,62	64 429,96	72 037,98	68 164,28	56 379,85	67 759,04	66 125,32	58 246,67	55 408,91
CH ₄ emissions including CH ₄ from LULUCF	5 443,64	5 316,11	5 127,09	4 946,28	4 777,60	4 565,42	4 623,76	4 498,59	4 382,10	4 309,42
CH ₄ emissions excluding CH ₄ from LULUCF	5 405,50	5 276,09	5 087,41	4 907,13	4 739,24	4 526,56	4 584,13	4 460,39	4 343,89	4 272,67
N ₂ O emissions including N ₂ O from LULUCF	6 548,46	6 486,39	6 570,19	6 710,33	6 724,19	6 759,87	6 669,69	6 714,29	6 908,69	5 823,93
N ₂ O emissions excluding N ₂ O from LULUCF	6 458,37	6 394,33	6 478,45	6 618,22	6 625,24	6 662,27	6 564,59	6 610,54	6 784,96	5 715,24
HFCs	491,76	646,38	463,22	651,31	693,75	863,45	747,16	903,28	993,19	888,83
PFCs	22,46	20,06	13,37	14,85	12,23	9,88	15,43	8,40	11,23	9,32
SF ₆	51,49	55,03	51,31	48,11	33,82	34,83	40,25	35,97	40,36	41,34
Total (including LULUCF)	48 225,14	50 036,28	51 887,68	59 285,67	55 328,43	40 813,38	48 486,28	54 804,36	43 409,81	25 777,89
Total (excluding LULUCF)	69 162,03	74 382,51	76 523,74	84 277,60	80 268,56	68 476,84	79 710,60	78 143,90	70 420,29	66 336,30

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)	CO ₂ equivalent (Gg)
1. Energy	54 395,32	59 681,48	62 249,57	69 686,06	65 573,97	53 950,82	65 188,79	63 167,44	55 059,21	53 112,72
2. Industrial Processes	5 520,16	5 662,70	5 408,57	5 903,43	6 205,88	6 231,74	6 175,52	6 713,30	7 068,96	5 242,91
3. Solvent and Other Product Use	124,71	122,00	111,08	104,46	105,10	106,39	100,18	97,07	86,77	70,51
4. Agriculture	5 850,67	5 776,51	5 831,07	5 835,83	5 772,31	5 783,21	5 787,54	5 796,54	5 930,15	5 721,35
5. Land Use, Land-Use Change and Forestry ⁽⁵⁾	-20 936,89	-24 346,23	-24 636,06	-24 991,93	-24 940,13	-27 663,46	-31 224,31	-23 339,54	-27 010,49	-40 558,42
6. Waste	3 271,16	3 139,82	2 923,45	2 747,82	2 611,30	2 404,68	2 458,56	2 369,54	2 275,19	2 188,82
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (including LULUCF)⁽⁵⁾	48 225,14	50 036,28	51 887,68	59 285,67	55 328,43	40 813,38	48 486,28	54 804,36	43 409,81	25 777,89

⁽¹⁾ The column "Base year" should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP. For these Parties, this different base year is used to calculate the percentage change in the final column of this table.

⁽²⁾ Fill in net emissions/removals as reported in table Summary I.A. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽³⁾ Enter actual emissions estimates. If only potential emissions estimates are available, these should be reported in this table and an indication for this be provided in the documentation box. Only in these rows are the emissions expressed as CO₂ equivalent emissions.

⁽⁴⁾ In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this row could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for this row is Gg of CO₂ equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.

⁽⁵⁾ Includes net CO₂, CH₄ and N₂O from LULUCF.

**TABLE 10 EMISSION TRENDS
SUMMARY
(Part 3 of 3)**

Inventory 2009
Submission 2011 v1.6
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GREENHOUSE GAS EMISSIONS	Change from base to latest reported year
	(%)
CO ₂ emissions including net CO ₂ from LULUCF	-64,51
CO ₂ emissions excluding net CO ₂ from LULUCF	-2,09
CH ₄ emissions including CH ₄ from LULUCF	-32,13
CH ₄ emissions excluding CH ₄ from LULUCF	-32,34
N ₂ O emissions including N ₂ O from LULUCF	-21,84
N ₂ O emissions excluding N ₂ O from LULUCF	-22,38
HFCs	5 021 543,67
PFCs	13 210,57
SF ₆	-56,20
Total (including LULUCF)	-53,41
Total (excluding LULUCF)	-5,72

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Change from base to latest reported year
	(%)
1. Energy	-2,51
2. Industrial Processes	3,40
3. Solvent and Other Product Use	-60,47
4. Agriculture	-14,07
5. Land Use, Land-Use Change and Forestry ⁽⁵⁾	169,70
6. Waste	-44,93
7. Other	0,00
Total (including LULUCF)⁽⁵⁾	-53,41

⁽¹⁾ The column "Base year" should be filled in only by those Parties with economies in transition that use a base year different from 1990 in accordance with the relevant decisions of the COP. For these Parties, this different base year is used to calculate the percentage change in the final column of this table.

⁽²⁾ Fill in net emissions/removals as reported in table Summary 1.A. For the purposes of reporting, the signs for removals are always negative (-) and for emissions positive (+).

⁽³⁾ Enter actual emissions estimates. If only potential emissions estimates are available, these should be reported in this table and an indication for this be provided in the documentation box. Only in these rows are the emissions expressed as CO₂ equivalent emissions.

⁽⁴⁾ In accordance with the UNFCCC reporting guidelines, HFC and PFC emissions should be reported for each relevant chemical. However, if it is not possible to report values for each chemical (i.e. mixtures, confidential data, lack of disaggregation), this row could be used for reporting aggregate figures for HFCs and PFCs, respectively. Note that the unit used for this row is Gg of CO₂ equivalent and that appropriate notation keys should be entered in the cells for the individual chemicals.

⁽⁵⁾ Includes net CO₂, CH₄ and N₂O from LULUCF.

Documentation box:

- Parties should provide detailed explanations on emissions trends in Chapter 2: Trends in Greenhouse Gas Emissions and, as appropriate, in the corresponding Chapters 3 - 9 of the NIR. Use this documentation box to provide references to relevant sections of the NIR if any additional information and further details are needed to understand the content of this table.
- Use the documentation box to provide explanations if potential emissions are reported.