ANNEXES TO THE NATIONAL INVENTORY DOCUMENT

2026

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ANNEX 1. Key Categories

A1.1 Description of methodology used for identifying key sources and reference to the key source tables in the CRT

This annex describes the key category analysis conducted for the 2024 Hungarian inventory.

Generally, inventory uncertainty is lower when emissions are estimated using the available most rigorous methods, but due to finite resources this may not be feasible for every category. Therefore, it is good practice to identify those categories (key categories) that have the greatest contribution to overall inventory uncertainty in order to make the most efficient use of available resources. In that context, a "key category" is one that is prioritized within the national inventory system because its estimate has a significant influence on a country's total inventory of direct greenhouse gases in terms of the absolute level of emissions (level assessment) or/and to the trend of emissions (trend assessment).

The 2006 IPCC Guidelines describes two Tier level for identification of key categories. The difference is that in Tier 2 approach assessments are weighted with the uncertainty values of each source category.

Both in Tier 1 and Tier 2 approaches key categories are identified from two perspectives.

The first analyses the emission contribution that each category makes to the national total (with LULUCF). The second perspective analyses the trend of emission contributions from each category to identify where the greatest absolute changes (either increases or reductions) have taken place over a given time (with LULUCF categories). The percent contributions to both levels and trends in emissions are calculated and sorted from greatest to least. A cumulative total is calculated for both approaches. IPCC has determined that a cumulative contribution threshold of 95% for both level and trend assessments. The 95% cumulative contribution threshold has been used in this analysis to define an upper boundary for key category identification. Therefore, when source and/or sink contributions are sorted in decreasing order of importance, those that integrate the group of categories that accumulate the upper 95% of national GHG emissions are considered quantitatively to be key. Results for these analyses are shown in *Table A1-2* and *Table A1-3*. Key categories are highlighted with bold characters.

The Equation 4.1 from 2006 IPCC Guidelines Vol.1 was used for level assessment and equation 4.2 from 2006 IPCC Guidelines Vol.1 was used for trend assessment.

Good practice first requires that source categories should be disaggregated into categories from which key sources and sinks may be identified. Several recommendations exist for the list of categories (aggregation/disaggregation level):

- 2006 IPCC Guidelines Table 4.1
- EU list
- country specific list

In Hungary Tier 1 level and trend assessment was conducted on a list of categories that follow Table 4.1 from 2006 IPCC Guidelines in order to be consistent with CRF Table 7 Key categories. This list of Tier 1 analysis is shown in Table A1-1 below.

The results of the tables presented in the following Annex 1. and Annex 2. were derived from the new CRT tables instead of the previous CRF tables. However, due to calculation errors in the CRT tables, there are some discrepancies between the total emissions calculated by the Hungarian emission inventory experts and the values reported in the CRT tables. The discrepancy appears only in cases when the LULUCF is included in the calculations.

Table A1-1 Category list used in Tier 1 analysis

CRF code and category name	
1A1 Energy Industries - Biomass	CH4
1A1 Energy Industries - Biomass	N2O
1A1 Energy Industries - Gaseous fuels	CH4
1A1 Energy Industries - Gaseous fuels	CO2
1A1 Energy Industries - Gaseous fuels	N2O
1A1 Energy Industries - Liquid fuels	CH4
1A1 Energy Industries - Liquid fuels	CO2
1A1 Energy Industries - Liquid fuels	N2O
1A1 Energy Industries - Other fossil fuels	CH4
1A1 Energy Industries - Other fossil fuels	CO2
1A1 Energy Industries - Other fossil fuels	N2O
1A1 Energy Industries - Peat	CH4
1A1 Energy Industries - Peat	N2O
1A1 Energy Industries - Solid fuels	CO2
1A1 Energy Industries - Solid fuels	CH4
1A1 Energy Industries - Solid fuels	N2O
1A2 Manufacturing industries - Biomass	CH4
1A2 Manufacturing industries - Biomass	N2O
1A2 Manufacturing industries - Gaseous fuels	CH4
1A2 Manufacturing industries - Gaseous fuels	CO2
1A2 Manufacturing industries - Gaseous fuels	N2O
1A2 Manufacturing industries - Liquid fuels	CH4
1A2 Manufacturing industries - Liquid fuels	CO2
1A2 Manufacturing industries - Liquid fuels	N2O
1A2 Manufacturing industries - Other fossil fuels	CH4
1A2 Manufacturing industries - Other fossil fuels	CO2
1A2 Manufacturing industries - Other fossil fuels	N2O
1A2 Manufacturing industries - Peat	CH4
1A2 Manufacturing industries - Peat	N2O
1A2 Manufacturing industries - Solid fuels	CH4
1A2 Manufacturing industries - Solid fuels	CO2
1A2 Manufacturing industries - Solid fuels	N2O
1A3a Domestic aviation - All fuels	CH4
1A3a Domestic aviation - All fuels	CO2
1A3a Domestic aviation - All fuels	N2O
1A3b Road transport - All Fuels	CH4
1A3b Road transport - All Fuels	CO2
1A3b Road transport - All Fuels	N2O
1A3c Railways - All Fuels	CH4
1A3c Railways - All Fuels	CO2
1A3c Railways - All Fuels	N2O
1A3d Domestic navigation - All Liquid fuels	CH4
1A3d Domestic navigation - All Liquid fuels	CO2
1A3d Domestic navigation - All Liquid fuels	N2O
1A3d Domestic navigation - Gaseous fuels	CH4

1A3d Domestic navigation - Gaseous fuels	CO2
1A3d Domestic navigation - Gaseous fuels	N2O
1A3e Other Transportation - Pipelines	CH4
1A3e Other Transportation - Pipelines	CO2
1A3e Other Transportation - Pipelines	N2O
1A4 Other sectors - Biomass	CH4
1A4 Other sectors - Biomass	N2O
1A4 Other sectors - Gaseous fuels	CH4
1A4 Other sectors - Gaseous fuels	CO2
1A4 Other sectors - Gaseous fuels	N2O
1A4 Other sectors - Liquid fuels	CH4
1A4 Other sectors - Liquid fuels	CO2
1A4 Other sectors - Liquid fuels	N2O
1A4 Other sectors - Other Fossil Fuels	CH4
1A4 Other sectors - Other Fossil Fuels	CO2
1A4 Other sectors - Other Fossil Fuels	N2O
1A4 Other sectors - Solid fuels	CH4
1A4 Other sectors - Solid fuels	CO2
1A4 Other sectors - Solid fuels	N2O
1A5a Stationary	CH4
1A5a Stationary	CO2
1A5a Stationary	N2O
1A5b Mobile	CH4
1A5b Mobile	CO2
1A5b Mobile	N2O
1B1 Solid fuels	CH4
1B1 Solid fuels	CO2
1B1 Solid fuels	N2O
1B2a Oil	CH4
1B2a Oil	CO2
1B2b Natural Gas	CH4
1B2b Natural Gas	CO2
1B2b Natural Gas	N2O
1B2c Venting and flaring	CH4
1B2c Venting and flaring	CO2
1B2c Venting and flaring	N2O
1B2d Other (Thermal water extraction + NatGas storage)	CH4
1B2d Other (Thermal water extraction + NatGas storage)	CO2
1B2d Other (Thermal water extraction + NatGas storage)	N2O
2A1 Cement Production	CO2
2A2 Lime Production	CO2
2A3 Glass production	CO2
2A4 Other Process Uses of Carbonates	CO2
2B1 Ammonia Production	CO2
2B1 Ammonia Production	CH4
2B1 Ammonia Production	N2O
2B2 Nitric Acid Production	N2O
2B8 Petrochemical and carbon black production	CH4

2B8 Petrochemical and carbon black production	CO2
2B8 Petrochemical and carbon black production	N2O
2B10 Other	CO2
2C1 Iron and Steel Production	CH4
2C1 Iron and Steel Production	CO2
2C1 Iron and Steel Production	N2O
2C2 Ferroalloys Production	CH4
2C2 Ferroalloys Production	CO2
2C2 Ferroalloys Production	N2O
2C3 Aluminium Production	CH4
2C3 Aluminium Production	CO2
2C3 Aluminium Production	N2O
2C3 Aluminium Production	PFC
2D Non-energy products from fuels and solvent use	CH4
2D Non-energy products from fuels and solvent use	CO2
2E Electronics industry	SF6
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases
2F2 Foam Blowing - HFC	Aggregate F-gases
2F3 Fire extinguishers - HFC	Aggregate F-gases
2F4 Aerosol + MDI - HFC	Aggregate F-gases
2F5 Solvent - HFC+PFC	Aggregate F-gases
2G Other Product Manufacture and Use - N2O	N2O
2G Other Product Manufacture and Use - SF6	Aggregate F-gases
3.D.1 Direct N2O Emissions From Managed Soils	N2O
3.D.2 Indirect N2O Emissions From Managed Soils	N2O
3A Enteric Fermentation	CH4
3B Manure Management	CH4
3B Manure Management	N2O
3C Rice Cultivation	CH4
3D Agricultural Soils	CH4
3F Field Burning of Agricultural Residues	CH4
3F Field Burning of Agricultural Residues	N2O
3G Liming	CO2
3H Urea application	CO2
3I Other carbon containing fertilizers	CO2
3J Other	CH4
3J Other	CO2
3J Other	N2O
4(I) Direct N2O emissions from N inputs to managed soils	N2O
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CH4
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CO2
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	N2O
4(III). Total for all land-use categories (direct + Indirect)	N2O

4(IV) Biomass Burning	CH4
4(V) Biomass Burning	CO2
4(V) Biomass Burning	N2O
4A1 Forest Land Remaining Forest Land	CO2
4A2 Land Converted to Forest Land	CO2
4B1 Cropland Remaining Cropland	CO2
4B2 Land Converted to Cropland	CO2
4C1 Grassland Remaining Grassland	CO2
4C2 Land Converted to Grassland	CO2
4.D.1. Wetlands remaining wetlands	CO2
4D2 Land Converted to Wetlands	CO2
4E1 Settlements Remaining Settlements	CO2
4E2 Land Converted to Settlements	CO2
4F1 Other Land Remaining Other Land	CO2
4F2 Land Converted to Other Land	CO2
4G Harvested Wood Products	CO2
4H Other	CH4
4H Other	CO2
4H Other	N2O
5A Solid waste disposal	CH4
5A Solid waste disposal	CO2
5A Solid waste disposal	N2O
5B Biological Treatment of Solid Waste	CH4
5B Biological Treatment of Solid Waste	CO2
5B Biological Treatment of Solid Waste	N2O
5C Incineration and open burning of waste	CH4
5C Incineration and open burning of waste	CO2
5C Incineration and open burning of waste	N2O
5D Wastewater Treatment and Discharge	CH4
5D Wastewater Treatment and Discharge	CO2
5D Wastewater Treatment and Discharge	N2O
5E Other	CH4
5E Other	CO2
5E Other	N2O

A1.2 Results of the key category analysis

Table A1-2 Tier 1 level assessment including LULUCF (2024)

CRT code + note	Direct Greenhouse Gas	Latest Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A3b Road transport - All Fuels	CO2	13 604.87	13 604.87	22.25%	22.25%
1A4 Other sectors - Gaseous fuels	CO2	7 681.47	7 681.47	12.56%	34.81%
4A1 Forest Land Remaining Forest Land	CO2	-5 363.17	5 363.17	8.77%	43.58%
1A1 Energy Industries - Gaseous fuels	CO2	4 720.12	4 720.12	7.72%	51.30%
5A Solid waste disposal	CH4	3 258.59	3 258.59	5.33%	56.62%
1A1 Energy Industries - Solid fuels	CO2	2 821.72	2 821.72	4.61%	61.24%
1A2 Manufacturing industries - Gaseous fuels	CO2	2 673.32	2 673.32	4.37%	65.61%
3.D.1 Direct N2O Emissions From Managed Soils	N2O	2 633.89	2 633.89	4.31%	69.92%
3A Enteric Fermentation	CH4	2 257.81	2 257.81	3.69%	73.61%
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	1 403.74	1 403.74	2.30%	75.90%
2B8 Petrochemical and carbon black production	CO2	1 335.77	1 335.77	2.18%	78.09%
1A4 Other sectors - Liquid fuels	CO2	1 294.73	1 294.73	2.12%	80.21%
4A2 Land Converted to Forest Land	CO2	-1 033.29	1 033.29	1.69%	81.90%
1B2b Natural Gas	CH4	992.67	992.67	1.62%	83.52%
1A1 Energy Industries - Liquid fuels	CO2	901.56	901.56	1.47%	84.99%
1A2 Manufacturing industries - Liquid fuels	CO2	887.06	887.06	1.45%	86.44%
2B1 Ammonia Production	CO2	746.43	746.43	1.22%	87.66%
3B Manure Management	CH4	634.17	634.17	1.04%	88.70%
2A1 Cement Production	CO2	543.32	543.32	0.89%	89.59%
1A4 Other sectors - Biomass	CH4	433.47	433.47	0.71%	90.30%
2B10 Other	CO2	431.91	431.91	0.71%	91.00%
4G Harvested Wood Products	CO2	-408.83	408.83	0.67%	91.67%
3B Manure Management	N2O	371.85	371.85	0.61%	92.28%
5D Wastewater Treatment and Discharge	N2O	304.80	304.80	0.50%	92.78%
1A2 Manufacturing industries - Other fossil fuels	CO2	296.60	296.60	0.48%	93.26%
5D Wastewater Treatment and Discharge	CH4	255.00	255.00	0.42%	93.68%
2G Other Product Manufacture and Use - N2O	N2O	250.54	250.54	0.41%	94.09%
1A1 Energy Industries - Other fossil fuels	CO2	216.26	216.26	0.35%	94.44%
1A3b Road transport - All Fuels	N2O	214.01	214.01	0.35%	94.79%
3.D.2 Indirect N2O Emissions From Managed Soils	N2O	192.05	192.05	0.31%	95.11%
1A2 Manufacturing industries - Solid fuels	CO2	180.24	180.24	0.29%	95.40%
4E2 Land Converted to Settlements	CO2	164.28	164.28	0.27%	95.67%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CO2	161.08	161.08	0.26%	95.94%
1A4 Other sectors - Other Fossil Fuels	CO2	153.48	153.48	0.25%	96.19%
1B2c Venting and flaring	CO2	150.99	150.99	0.25%	96.43%

CRT code + note	Direct Greenhouse Gas	Latest Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
5B Biological Treatment of Soild Waste	CH4	128.00	128.00	0.21%	96.64%
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	118.30	118.30	0.19%	96.84%
4B2 Land Converted to Cropland	CO2	116.15	116.15	0.19%	97.03%
3H Urea application	CO2	114.58	114.58	0.19%	97.21%
2A4 Other Process Uses of Carbonates	CO2	112.19	112.19	0.18%	97.40%
1A3c Railways - All Fuels	CO2	101.77	101.77	0.17%	97.56%
1A4 Other sectors - Solid fuels	CO2	99.94	99.94	0.16%	97.73%
2D Non-energy products from fuels and solvent use	CO2	95.34	95.34	0.16%	97.88%
2F2 Foam Blowing - HFC	Aggregate F-gases	81.88	81.88	0.13%	98.02%
3I Other carbon containing fertilizers	CO2	80.90	80.90	0.13%	98.15%
1B2d Other (Thermal water extraction + NatGas storage)	CH4	77.57	77.57	0.13%	98.28%
4C1 Grassland Remaining Grassland	CO2	-69.57	69.57	0.11%	98.39%
1B2a Oil	CH4	68.53	68.53	0.11%	98.50%
1A4 Other sectors - Biomass	N2O	54.71	54.71	0.09%	98.59%
1B2c Venting and flaring	CH4	52.76	52.76	0.09%	98.68%
4.D.1. Wetlands remaining wetlands	CO2	51.33	51.33	0.08%	98.76%
1A5b Mobile	CO2	50.49	50.49	0.08%	98.84%
2A2 Lime Production	CO2	46.72	46.72	0.08%	98.92%
1A3e Other Transportation - Pipelines	CO2	45.12	45.12	0.07%	98.99%
2B8 Petrochemical and carbon black production	CH4	41.13	41.13	0.07%	99.06%
4B1 Cropland Remaining Cropland	CO2	-39.68	39.68	0.06%	99.13%
2B2 Nitric Acid Production	N2O	39.19	39.19	0.06%	99.19%
5B Biological Treatment of Solid Waste	N2O	39.02	39.02	0.06%	99.25%
1A5a Stationary	CO2	30.81	30.81	0.05%	99.30%
2F4 Aerosol + MDI - HFC	Aggregate F-gases	30.12	30.12	0.05%	99.35%
1B1 Solid fuels	CH4	29.98	29.98	0.05%	99.40%
4C2 Land Converted to Grassland	CO2	22.64	22.64	0.04%	99.44%
4(III). Total for all land-use categories (direct + Indirect)	0	22.64	22.64	0.04%	99.48%
1A1 Energy Industries - Biomass	N2O	22.62	22.62	0.04%	99.51%
1A3b Road transport - All Fuels	CH4	22.18	22.18	0.04%	99.55%
1A4 Other sectors - Gaseous fuels	CH4	19.02	19.02	0.03%	99.58%
1A1 Energy Industries - Biomass	CH4	17.94	17.94	0.03%	99.61%
3C Rice Cultivation	CH4	17.82	17.82	0.03%	99.64%
4(IV) Biomass Burning	CH4	16.24	16.24	0.03%	99.67%
5C Incineration and open burning of waste	CO2	15.74	15.74	0.03%	99.69%
2C1 Iron and Steel Production	CO2	15.13	15.13	0.02%	99.72%
2A3 Glass production	CO2	13.87	13.87	0.02%	99.74%
1A3d Domestic navigation - All Liquid fuels	CO2	12.67	12.67	0.02%	99.76%
1A2 Manufacturing industries - Biomass	N2O	12.45	12.45	0.02%	99.78%
1A4 Other sectors - Liquid fuels	N2O	11.85	11.85	0.02%	99.80%
1A1 Energy Industries - Solid fuels	N2O	10.42	10.42	0.02%	99.82%

CRT code + note	Direct Greenhouse Gas	Latest Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A3c Railways - All Fuels	N2O	10.33	10.33	0.02%	99.83%
1A2 Manufacturing industries - Biomass	CH4	9.75	9.75	0.02%	99.85%
4(V) Biomass Burning	N2O	8.91	8.91	0.01%	99.86%
1A4 Other sectors - Solid fuels	CH4	8.31	8.31	0.01%	99.88%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	N2O	8.16	8.16	0.01%	99.89%
1A2 Manufacturing industries - Liquid fuels	N2O	8.16	8.16	0.01%	99.90%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CH4	6.03	6.03	0.01%	99.91%
2F3 Fire extinguishers - HFC	Aggregate F-gases	5.76	5.76	0.01%	99.92%
1A3a Domestic aviation - All fuels	CO2	4.91	4.91	0.01%	99.93%
1A2 Manufacturing industries - Other fossil fuels	N2O	4.53	4.53	0.01%	99.94%
1A4 Other sectors - Gaseous fuels	N2O	3.60	3.60	0.01%	99.94%
1A2 Manufacturing industries - Other fossil fuels	CH4	3.59	3.59	0.01%	99.95%
4D2 Land Converted to Wetlands	CO2	-3.31	3.31	0.01%	99.96%
1A1 Energy Industries - Other fossil fuels	N2O	2.82	2.82	0.00%	99.96%
1A4 Other sectors - Liquid fuels	CH4	2.42	2.42	0.00%	99.96%
1A1 Energy Industries - Gaseous fuels	CH4	2.34	2.34	0.00%	99.97%
1A1 Energy Industries - Gaseous fuels	N2O	2.21	2.21	0.00%	99.97%
1A1 Energy Industries - Other fossil fuels	CH4	2.14	2.14	0.00%	99.98%
1A4 Other sectors - Other Fossil Fuels	N2O	1.34	1.34	0.00%	99.98%
1A2 Manufacturing industries - Gaseous fuels	CH4	1.32	1.32	0.00%	99.98%
1A2 Manufacturing industries - Gaseous fuels	N2O	1.25	1.25	0.00%	99.98%
3G Liming	CO2	1.22	1.22	0.00%	99.98%
5C Incineration and open burning of waste	N2O	1.13	1.13	0.00%	99.99%
5C Incineration and open burning of waste	CH4	1.09	1.09	0.00%	99.99%
1A4 Other sectors - Other Fossil Fuels	CH4	1.06	1.06	0.00%	99.99%
1A1 Energy Industries - Liquid fuels	N2O	0.86	0.86	0.00%	99.99%
1A2 Manufacturing industries - Solid fuels	N2O	0.84	0.84	0.00%	99.99%
1A1 Energy Industries - Solid fuels	CH4	0.75	0.75	0.00%	99.99%
1B2b Natural Gas	CO2	0.61	0.61	0.00%	99.99%
1A1 Energy Industries - Liquid fuels	CH4	0.60	0.60	0.00%	100.00%
1B2a Oil	CO2	0.47	0.47	0.00%	100.00%
1A4 Other sectors - Solid fuels	N2O	0.40	0.40	0.00%	100.00%
1A5b Mobile	N2O	0.37	0.37	0.00%	100.00%
1B2c Venting and flaring	N2O	0.32	0.32	0.00%	100.00%
1A2 Manufacturing industries - Solid fuels	CH4	0.32	0.32	0.00%	100.00%
1A2 Manufacturing industries - Liquid fuels	CH4	0.27	0.27	0.00%	100.00%
3F Field Burning of Agricultural Residues	CH4	0.20	0.20	0.00%	100.00%
1A3c Railways - All Fuels	CH4	0.16	0.16	0.00%	100.00%
1A5a Stationary	CH4	0.14	0.14	0.00%	100.00%

CRT code + note	Direct Greenhouse Gas	Latest Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A3d Domestic navigation - All Liquid fuels	N2O	0.09	0.09	0.00%	100.00%
3F Field Burning of Agricultural Residues	N2O	0.05	0.05	0.00%	100.00%
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	CH4	0.03	0.03	0.00%	100.00%
1A3e Other Transportation - Pipelines	CH4	0.02	0.02	0.00%	100.00%
1A5a Stationary	N2O	0.02	0.02	0.00%	100.00%
1A3e Other Transportation - Pipelines	N2O	0.02	0.02	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.01	0.01	0.00%	100.00%
1A5b Mobile	CH4	0.01	0.01	0.00%	100.00%
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CH4	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CO2	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	N2O	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	CO2	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	N2O	0.00	0.00	0.00%	100.00%
1B2b Natural Gas	N2O	0.00	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	N2O	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	CH4	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	N2O	0.00	0.00	0.00%	100.00%
2B8 Petrochemical and carbon black production	N2O	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	N2O	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	CH4	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	CO2	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	N2O	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CH4	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CO2	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	N2O	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	PFC	0.00	0.00	0.00%	100.00%
2D Non-energy products from fuels and solvent use	CH4	0.00	0.00	0.00%	100.00%
2E Electronics industry	SF6	0.00	0.00	0.00%	100.00%
2F5 Solvent - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
3D Agricultural Soils	CH4	0.00	0.00	0.00%	100.00%
3J Other	CH4	0.00	0.00	0.00%	100.00%
3J Other	CO2	0.00	0.00	0.00%	100.00%
3J Other	N2O	0.00	0.00	0.00%	100.00%
4(I) Direct N2O emissions from N inputs to managed soils	N2O	0.00	0.00	0.00%	100.00%

CRT code + note	Direct Greenhouse Gas	Latest Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
4(V) Biomass Burning	CO2	0.00	0.00	0.00%	100.00%
4E1 Settlements Remaining Settlements	CO2	0.00	0.00	0.00%	100.00%
4F1 Other Land Remaining Other Land	CO2	0.00	0.00	0.00%	100.00%
4F2 Land Converted to Other Land	CO2	0.00	0.00	0.00%	100.00%
4H Other	CH4	0.00	0.00	0.00%	100.00%
4H Other	CO2	0.00	0.00	0.00%	100.00%
4H Other	N2O	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	CO2	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	N2O	0.00	0.00	0.00%	100.00%
5B Biological Treatment of Solid Waste	CO2	0.00	0.00	0.00%	100.00%
5D Wastewater Treatment and Discharge	CO2	0.00	0.00	0.00%	100.00%
5E Other	CH4	0.00	0.00	0.00%	100.00%
5E Other	CO2	0.00	0.00	0.00%	100.00%
5E Other	N2O	0.00	0.00	0.00%	100.00%

Table A1-3 Tier1 trend assessment including LULUCF (2024)

CRT code + note	GHG	Base Year Emission [Gg CO2-eq)	Current Year Emission [Gg CO2-eq]	Trend Assessment	Contribution to Trend %	Cumulative Total %
1A3b Road transport - All Fuels	CO2	7 173.02	13 604.87	0.09	16.50%	16.50%
1A1 Energy Industries - Solid fuels	CH4	14 354.24	0.75	0.05	9.86%	26.36%
1A4 Other sectors - Gaseous fuels	CO2	3 953.57	7 681.47	0.05	9.38%	35.74%
1A4 Other sectors - Solid fuels	CO2	12 328.29	99.94	0.05	8.31%	44.05%
1A1 Energy Industries - Solid fuels	CO2	4.03	2 821.72	0.02	4.44%	48.49%
1A1 Energy Industries - Gaseous fuels	CO2	5 731.22	4 720.12	0.02	3.50%	51.99%
5A Solid waste disposal	CH4	2 448.24	3 258.59	0.02	3.45%	55.44%
2C1 Iron and Steel Production	CO2	4 578.59	15.13	0.02	3.12%	58.56%
3A Enteric Fermentation	CH4	824.08	2 257.81	0.02	2.99%	61.55%
3C Rice Cultivation	CH4	4 173.13	17.82	0.02	2.84%	64.39%
1A1 Energy Industries - Liquid fuels	CO2	5 880.16	901.56	0.01	2.62%	67.01%
2B2 Nitric Acid Production	N2O	3 882.26	39.19	0.01	2.60%	69.61%
4A1 Forest Land Remaining Forest Land	CO2	2 466.81	5 363.17	0.01	2.37%	71.98%
1A2 Manufacturing industries - Solid fuels	CO2	3 816.20	180.24	0.01	2.34%	74.32%
1A4 Other sectors - Liquid fuels	CO2	6 324.89	1 294.73	0.01	2.31%	76.63%
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	0.00	1 403.74	0.01	2.21%	78.84%
1A2 Manufacturing industries - Gaseous fuels	CO2	8 774.25	2 673.32	0.01	1.82%	80.65%
2B8 Petrochemical and carbon black production	CO2	571.26	1 335.77	0.01	1.71%	82.37%
1A2 Manufacturing industries - Liquid fuels	CO2	4 240.03	887.06	0.01	1.52%	83.88%
4A2 Land Converted to Forest Land	CO2	55.78	1 033.29	0.01	1.49%	85.37%
1B1 Solid fuels	CH4	1 790.74	29.98	0.01	1.18%	86.55%
3.D.1 Direct N2O Emissions From Managed Soils	N2O	4 649.52	2 633.89	0.01	0.95%	87.51%
3B Manure Management	CH4	90.98	634.17	0.01	0.94%	88.44%
1B2b Natural Gas	CH4	1 155.71	992.67	0.00	0.77%	89.21%
2B10 Other	CO2	0.00	431.91	0.00	0.68%	89.89%
1A4 Other sectors - Solid fuels	CH4	980.03	8.31	0.00	0.66%	90.55%
3.D.2 Indirect N2O Emissions From Managed Soils	N2O	1 366.98	192.05	0.00	0.64%	91.19%
3B Manure Management	N2O	0.00	371.85	0.00	0.59%	91.78%
1A4 Other sectors - Biomass	CH4	171.21	433.47	0.00	0.57%	92.34%
1A5a Stationary	CO2	886.77	30.81	0.00	0.56%	92.90%
1A2 Manufacturing industries - Other fossil fuels	CO2	0.00	296.60	0.00	0.47%	93.37%
5D Wastewater Treatment and Discharge	N2O	128.79	304.80	0.00	0.39%	93.76%
2G Other Product Manufacture and Use - N2O	N2O	7.52	250.54	0.00	0.39%	94.15%
1A3c Railways - All Fuels	CO2	752.98	101.77	0.00	0.36%	94.51%
2A2 Lime Production	CO2	606.79	46.72	0.00	0.34%	94.85%
2A1 Cement Production	CO2	1 744.64	543.32	0.00	0.34%	95.19%
1A1 Energy Industries - Other fossil fuels	CO2	49.45	216.26	0.00	0.31%	95.50%
1A3b Road transport - All Fuels	N2O	47.10	214.01	0.00	0.30%	95.80%

CRT code + note	GHG	Base Year Emission [Gg CO2-eq)	Current Year Emission [Gg CO2-eq]	Trend Assessment	Contribution to Trend %	Cumulative Total %
3D Agricultural Soils	CH4	394.20	0.00	0.00	0.27%	96.08%
1A4 Other sectors - Other Fossil Fuels	CO2	0.00	153.48	0.00	0.24%	96.32%
2C3 Aluminium Production	PFC	333.36	0.00	0.00	0.23%	96.55%
4E2 Land Converted to Settlements	CO2	59.56	164.28	0.00	0.22%	96.76%
1A3d Domestic navigation - All Liquid fuels	CO2	340.55	12.67	0.00	0.21%	96.98%
4B2 Land Converted to Cropland	CO2	11.90	116.15	0.00	0.21%	97.19%
5B Biological Treatment of Solid Waste	CH4	5.60	128.00	0.00	0.20%	97.39%
1B2c Venting and flaring	CH4	408.36	52.76	0.00	0.20%	97.59%
5D Wastewater Treatment and Discharge	CH4	834.89	255.00	0.00	0.17%	97.76%
4G Harvested Wood Products	CO2	328.96	408.83	0.00	0.17%	97.92%
4B1 Cropland Remaining Cropland	CO2	136.09	39.68	0.00	0.16%	98.08%
1B2c Venting and flaring	CO2	570.66	150.99	0.00	0.15%	98.23%
2A4 Other Process Uses of Carbonates	CO2	453.29	112.19	0.00	0.13%	98.37%
2F2 Foam Blowing - HFC	Aggregate F-gases	0.00	81.88	0.00	0.13%	98.50%
3I Other carbon containing fertilizers	CO2	48.11	80.90	0.00	0.09%	98.59%
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	139.01	118.30	0.00	0.09%	98.68%
3G Liming	CO2	130.21	1.22	0.00	0.09%	98.77%
2C3 Aluminium Production	CO2	125.37	0.00	0.00	0.09%	98.86%
1A4 Other sectors - Biomass	N2O	21.61	54.71	0.00	0.07%	98.93%
1A5b Mobile	CO2	14.45	50.49	0.00	0.07%	99.00%
5B Biological Treatment of Solid Waste	N2O	3.18	39.02	0.00	0.06%	99.06%
4.D.1. Wetlands remaining wetlands	CO2	37.07	51.33	0.00	0.06%	99.11%
2B8 Petrochemical and carbon black production	CH4	22.85	41.13	0.00	0.05%	99.16%
2F4 Aerosol + MDI - HFC	Aggregate F-gases	0.00	30.12	0.00	0.05%	99.21%
5C Incineration and open burning of waste	CO2	96.88	15.74	0.00	0.04%	99.25%
1B2a Oil	CH4	217.91	68.53	0.00	0.04%	99.29%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CO2	312.97	161.08	0.00	0.04%	99.33%
2A3 Glass production	CO2	87.63	13.87	0.00	0.04%	99.37%
3F Field Burning of Agricultural Residues	CH4	51.96	0.20	0.00	0.04%	99.40%
1A1 Energy Industries - Biomass	N2O	0.83	22.62	0.00	0.04%	99.44%
1A3c Railways - All Fuels	N2O	74.66	10.33	0.00	0.04%	99.47%
1A3e Other Transportation - Pipelines	CO2	154.38	45.12	0.00	0.03%	99.51%
4(III). Total for all land-use categories (direct + Indirect)	N2O	1.42	22.64	0.00	0.03%	99.54%
1A4 Other sectors - Solid fuels	N2O	50.43	0.40	0.00	0.03%	99.58%
4C1 Grassland Remaining Grassland	CO2	31.14	69.57	0.00	0.03%	99.61%
1A1 Energy Industries - Biomass	CH4	0.66	17.94	0.00	0.03%	99.64%
2C2 Ferroalloys Production	CO2	40.24	0.00	0.00	0.03%	99.67%
3H Urea application	CO2	229.03	114.58	0.00	0.02%	99.69%
1A4 Other sectors - Gaseous fuels	CH4	9.96	19.02	0.00	0.02%	99.71%

CRT code + note	GHG	Base Year Emission [Gg CO2-eq)	Current Year Emission [Gg CO2-eq]	Trend Assessment	Contribution to Trend %	Cumulative Total %
1B2d Other (Thermal water extraction + NatGas storage)	CH4	144.76	77.57	0.00	0.02%	99.74%
1A1 Energy Industries - Solid fuels	N2O	56.37	10.42	0.00	0.02%	99.76%
1A2 Manufacturing industries - Biomass	N2O	0.41	12.45	0.00	0.02%	99.78%
4C2 Land Converted to Grassland	CO2	25.48	22.64	0.00	0.02%	99.80%
2D Non-energy products from fuels and solvent use	CO2	242.62	95.34	0.00	0.02%	99.81%
1A2 Manufacturing industries - Biomass	CH4	0.33	9.75	0.00	0.02%	99.83%
1A4 Other sectors - Liquid fuels	CH4	20.48	2.42	0.00	0.01%	99.84%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CH4	3.58	6.03	0.00	0.01%	99.85%
2F3 Fire extinguishers - HFC	Aggregate F-gases	0.00	5.76	0.00	0.01%	99.86%
3F Field Burning of Agricultural Residues	N2O	12.75	0.05	0.00	0.01%	99.86%
2C1 Iron and Steel Production	CH4	12.19	0.00	0.00	0.01%	99.87%
4(IV) Biomass Burning	CH4	26.18	16.24	0.00	0.01%	99.88%
1A2 Manufacturing industries - Solid fuels	N2O	12.93	0.84	0.00	0.01%	99.89%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	N2O	7.87	8.16	0.00	0.01%	99.90%
4D2 Land Converted to Wetlands	CO2	3.15	3.31	0.00	0.01%	99.90%
1A2 Manufacturing industries - Other fossil fuels	N2O	0.00	4.53	0.00	0.01%	99.91%
1A3b Road transport - All Fuels	CH4	60.54	22.18	0.00	0.01%	99.92%
1A1 Energy Industries - Liquid fuels	N2O	11.14	0.86	0.00	0.01%	99.92%
1A2 Manufacturing industries - Solid fuels	CH4	9.20	0.32	0.00	0.01%	99.93%
1A2 Manufacturing industries - Other fossil fuels	CH4	0.00	3.59	0.00	0.01%	99.93%
5C Incineration and open burning of waste	CH4	9.19	1.09	0.00	0.00%	99.94%
5C Incineration and open burning of waste	N2O	9.21	1.13	0.00	0.00%	99.94%
1A4 Other sectors - Gaseous fuels	N2O	1.88	3.60	0.00	0.00%	99.95%
1A2 Manufacturing industries - Liquid fuels	N2O	12.43	8.16	0.00	0.00%	99.95%
1A3a Domestic aviation - All fuels	CO2	5.41	4.91	0.00	0.00%	99.96%
1A1 Energy Industries - Other fossil fuels	N2O	0.83	2.82	0.00	0.00%	99.96%
1A1 Energy Industries - Liquid fuels	CH4	6.03	0.60	0.00	0.00%	99.96%
4(V) Biomass Burning	N2O	15.90	8.91	0.00	0.00%	99.97%
1B2a Oil	CO2	5.57	0.47	0.00	0.00%	99.97%
1A1 Energy Industries - Other fossil fuels	CH4	0.66	2.14	0.00	0.00%	99.97%
1A2 Manufacturing industries - Liquid fuels	CH4	4.86	0.27	0.00	0.00%	99.98%
1A5a Stationary	CH4	4.37	0.14	0.00	0.00%	99.98%
1B1 Solid fuels	CO2	3.60	0.00	0.00	0.00%	99.98%

CRT code + note	GHG	Base Year Emission [Gg CO2-eq)	Current Year Emission [Gg CO2-eq]	Trend Assessment	Contribution to Trend %	Cumulative Total %
1A5a Stationary	N2O	3.61	0.02	0.00	0.00%	99.98%
2B1 Ammonia Production	CO2	1 714.65	746.43	0.00	0.00%	99.98%
1A4 Other sectors - Other Fossil Fuels	N2O	0.00	1.34	0.00	0.00%	99.99%
1A1 Energy Industries - Gaseous fuels	CH4	2.88	2.34	0.00	0.00%	99.99%
1A4 Other sectors - Other Fossil Fuels	CH4	0.00	1.06	0.00	0.00%	99.99%
1A4 Other sectors - Liquid fuels	N2O	24.74	11.85	0.00	0.00%	99.99%
1A1 Energy Industries - Gaseous fuels	N2O	2.73	2.21	0.00	0.00%	99.99%
1A3d Domestic navigation - All Liquid fuels	N2O	2.55	0.09	0.00	0.00%	100.00%
1A2 Manufacturing industries - Gaseous fuels	CH4	4.42	1.32	0.00	0.00%	100.00%
1A2 Manufacturing industries - Gaseous fuels	N2O	4.18	1.25	0.00	0.00%	100.00%
1B2b Natural Gas	CO2	2.28	0.61	0.00	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	CH4	0.94	0.03	0.00	0.00%	100.00%
1A3c Railways - All Fuels	CH4	1.16	0.16	0.00	0.00%	100.00%
1A5b Mobile	N2O	0.11	0.37	0.00	0.00%	100.00%
1B2c Venting and flaring	N2O	1.13	0.32	0.00	0.00%	100.00%
2C2 Ferroalloys Production	CH4	0.28	0.00	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	0.00	0.00%	100.00%
1A3e Other Transportation - Pipelines	CH4	0.08	0.02	0.00	0.00%	100.00%
1A3e Other Transportation - Pipelines	N2O	0.07	0.02	0.00	0.00%	100.00%
1A5b Mobile	CH4	0.00	0.01	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.04	0.01	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	CH4	0.00	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	N2O	0.00	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	CH4	0.00	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	N2O	0.00	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CH4	0.00	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CO2	0.00	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	N2O	0.00	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	N2O	0.00	0.00	0.00	0.00%	100.00%
1B2b Natural Gas	N2O	0.00	0.00	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	N2O	0.00	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	CH4	0.00	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2B8 Petrochemical and carbon black production	N2O	0.00	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CH4	0.00	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2D Non-energy products from fuels and solvent use	CH4	0.00	0.00	0.00	0.00%	100.00%

CRT code + note	GHG	Base Year Emission [Gg CO2-eq)	Current Year Emission [Gg CO2-eq]	Trend Assessment	Contribution to Trend %	Cumulative Total %
2E Electronics industry	SF6	0.00	0.00	0.00	0.00%	100.00%
2F5 Solvent - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00	0.00%	100.00%
3J Other	CH4	0.00	0.00	0.00	0.00%	100.00%
3J Other	CO2	0.00	0.00	0.00	0.00%	100.00%
3J Other	N2O	0.00	0.00	0.00	0.00%	100.00%
4(I) Direct N2O emissions from N inputs to managed soils	N2O	0.00	0.00	0.00	0.00%	100.00%
4(V) Biomass Burning	CO2	0.00	0.00	0.00	0.00%	100.00%
4E1 Settlements Remaining Settlements	CO2	0.00	0.00	0.00	0.00%	100.00%
4F1 Other Land Remaining Other Land	CO2	0.00	0.00	0.00	0.00%	100.00%
4F2 Land Converted to Other Land	CO2	0.00	0.00	0.00	0.00%	100.00%
4H Other	CH4	0.00	0.00	0.00	0.00%	100.00%
4H Other	CO2	0.00	0.00	0.00	0.00%	100.00%
4H Other	N2O	0.00	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	CO2	0.00	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	N2O	0.00	0.00	0.00	0.00%	100.00%
5B Biological Treatment of Solid Waste	CO2	0.00	0.00	0.00	0.00%	100.00%
5D Wastewater Treatment and Discharge	CO2	0.00	0.00	0.00	0.00%	100.00%
5E Other	CH4	0.00	0.00	0.00	0.00%	100.00%
5E Other	CO2	0.00	0.00	0.00	0.00%	100.00%
5E Other	N2O	0.00	0.00	0.00	0.00%	100.00%

Table A1-4 Tier 1 level assessment excluding LULUCF (2024)

Category	Direct Greenhouse Gas	Latest Year Emission excluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total %
1A3b Road transport - All Fuels	CO2	13604.87	0.25	25.35%	25.35%
1A4 Other sectors - Gaseous fuels	CO2	7681.47	0.14	14.32%	39.67%
1A1 Energy Industries - Gaseous fuels	CO2	4720.12	0.09	8.80%	48.47%
5A Solid waste disposal	CH4	3258.59	0.06	6.07%	54.54%
1A1 Energy Industries - Solid fuels	CO2	2821.72	0.05	5.26%	59.80%
1A2 Manufacturing industries - Gaseous fuels	CO2	2673.32	0.05	4.98%	64.78%
3.D.1 Direct N2O Emissions From Managed Soils	N2O	2633.89	0.05	4.91%	69.69%
3A Enteric Fermentation	CH4	2257.81	0.04	4.21%	73.90%
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	1403.74	0.03	2.62%	76.51%
2B8 Petrochemical and carbon black production	CO2	1335.77	0.02	2.49%	79.00%
1A4 Other sectors - Liquid fuels	CO2	1294.73	0.02	2.41%	81.41%
1B2b Natural Gas	CH4	992.67	0.02	1.85%	83.26%
1A1 Energy Industries - Liquid fuels	CO2	901.56	0.02	1.68%	84.94%
1A2 Manufacturing industries - Liquid fuels	CO2	887.06	0.02	1.65%	86.60%
2B1 Ammonia Production	CO2	746.43	0.01	1.39%	87.99%
3B Manure Management	CH4	634.17	0.01	1.18%	89.17%
2A1 Cement Production	CO2	543.32	0.01	1.01%	90.18%
1A4 Other sectors - Biomass	CH4	433.47	0.01	0.81%	90.99%
2B10 Other	CO2	431.91	0.01	0.80%	91.80%
3B Manure Management	N2O	371.85	0.01	0.69%	92.49%
5D Wastewater Treatment and Discharge	N2O	304.80	0.01	0.57%	93.06%
1A2 Manufacturing industries - Other fossil fuels	CO2	296.60	0.01	0.55%	93.61%
5D Wastewater Treatment and Discharge	CH4	255.00	0.00	0.48%	94.08%
2G Other Product Manufacture and Use - N2O	N2O	250.54	0.00	0.47%	94.55%
1A1 Energy Industries - Other fossil fuels	CO2	216.26	0.00	0.40%	94.95%
1A3b Road transport - All Fuels	N2O	214.01	0.00	0.40%	95.35%
3.D.2 Indirect N2O Emissions From Managed Soils	N2O	192.05	0.00	0.36%	95.71%
1A2 Manufacturing industries - Solid fuels	CO2	180.24	0.00	0.34%	96.05%
1A4 Other sectors - Other Fossil Fuels	CO2	153.48	0.00	0.29%	96.33%
1B2c Venting and flaring	CO2	150.99	0.00	0.28%	96.61%
5B Biological Treatment of Solid Waste	CH4	128.00	0.00	0.24%	96.85%
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	118.30	0.00	0.22%	97.07%
3H Urea application	CO2	114.58	0.00	0.21%	97.29%
2A4 Other Process Uses of Carbonates	CO2	112.19	0.00	0.21%	97.50%
1A3c Railways - All Fuels	CO2	101.77	0.00	0.19%	97.69%
1A4 Other sectors - Solid fuels	CO2	99.94	0.00	0.19%	97.87%
2D Non-energy products from fuels and solvent use	CO2	95.34	0.00	0.18%	98.05%

Category	Direct Greenhouse Gas	Latest Year Emission excluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total %
2F2 Foam Blowing - HFC	Aggregate F-gases	81.88	0.00	0.15%	98.20%
3I Other carbon containing fertilizers	CO2	80.90	0.00	0.15%	98.35%
1B2d Other (Thermal water extraction + NatGas storage)	CH4	77.57	0.00	0.14%	98.50%
1B2a Oil	CH4	68.53	0.00	0.13%	98.63%
1A4 Other sectors - Biomass	N2O	54.71	0.00	0.10%	98.73%
1B2c Venting and flaring	CH4	52.76	0.00	0.10%	98.83%
1A5b Mobile	CO2	50.49	0.00	0.09%	98.92%
2A2 Lime Production	CO2	46.72	0.00	0.09%	99.01%
1A3e Other Transportation - Pipelines	CO2	45.12	0.00	0.08%	99.09%
2B8 Petrochemical and carbon black production	CH4	41.13	0.00	0.08%	99.17%
2B2 Nitric Acid Production	N2O	39.19	0.00	0.07%	99.24%
5B Biological Treatment of Solid Waste	N2O	39.02	0.00	0.07%	99.31%
1A5a Stationary	CO2	30.81	0.00	0.06%	99.37%
2F4 Aerosol + MDI - HFC	Aggregate F-gases	30.12	0.00	0.06%	99.43%
1B1 Solid fuels	CH4	29.98	0.00	0.06%	99.48%
1A1 Energy Industries - Biomass	N2O	22.62	0.00	0.04%	99.52%
1A3b Road transport - All Fuels	CH4	22.18	0.00	0.04%	99.57%
1A4 Other sectors - Gaseous fuels	CH4	19.02	0.00	0.04%	99.60%
1A1 Energy Industries - Biomass	CH4	17.94	0.00	0.03%	99.64%
3C Rice Cultivation	CH4	17.82	0.00	0.03%	99.67%
5C Incineration and open burning of waste	CO2	15.74	0.00	0.03%	99.70%
2C1 Iron and Steel Production	CO2	15.13	0.00	0.03%	99.73%
2A3 Glass production	CO2	13.87	0.00	0.03%	99.75%
1A3d Domestic navigation - All Liquid fuels	CO2	12.67	0.00	0.02%	99.78%
1A2 Manufacturing industries - Biomass	N2O	12.45	0.00	0.02%	99.80%
1A4 Other sectors - Liquid fuels	N2O	11.85	0.00	0.02%	99.82%
1A1 Energy Industries - Solid fuels	N2O	10.42	0.00	0.02%	99.84%
1A3c Railways - All Fuels	N2O	10.33	0.00	0.02%	99.86%
1A2 Manufacturing industries - Biomass	CH4	9.75	0.00	0.02%	99.88%
1A4 Other sectors - Solid fuels	CH4	8.31	0.00	0.02%	99.89%
1A2 Manufacturing industries - Liquid fuels	N2O	8.16	0.00	0.02%	99.91%
2F3 Fire extinguishers - HFC	Aggregate F-gases	5.76	0.00	0.01%	99.92%
1A3a Domestic aviation - All fuels	CO2	4.91	0.00	0.01%	99.93%
1A2 Manufacturing industries - Other fossil fuels	N2O	4.53	0.00	0.01%	99.94%
1A4 Other sectors - Gaseous fuels	N2O	3.60	0.00	0.01%	99.94%
1A2 Manufacturing industries - Other fossil fuels	CH4	3.59	0.00	0.01%	99.95%
1A1 Energy Industries - Other fossil fuels	N2O	2.82	0.00	0.01%	99.95%
1A4 Other sectors - Liquid fuels	CH4	2.42	0.00	0.00%	99.96%
1A1 Energy Industries - Gaseous fuels	CH4	2.34	0.00	0.00%	99.96%

Category	Direct Greenhouse Gas	Latest Year Emission excluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total %
1A1 Energy Industries - Gaseous fuels	N2O	2.21	0.00	0.00%	99.97%
1A1 Energy Industries - Other fossil fuels	CH4	2.14	0.00	0.00%	99.97%
1A4 Other sectors - Other Fossil Fuels	N2O	1.34	0.00	0.00%	99.97%
1A2 Manufacturing industries - Gaseous fuels	CH4	1.32	0.00	0.00%	99.98%
1A2 Manufacturing industries - Gaseous fuels	N2O	1.25	0.00	0.00%	99.98%
3G Liming	CO2	1.22	0.00	0.00%	99.98%
5C Incineration and open burning of waste	N2O	1.13	0.00	0.00%	99.98%
5C Incineration and open burning of waste	CH4	1.09	0.00	0.00%	99.99%
1A4 Other sectors - Other Fossil Fuels	CH4	1.06	0.00	0.00%	99.99%
1A1 Energy Industries - Liquid fuels	N2O	0.86	0.00	0.00%	99.99%
1A2 Manufacturing industries - Solid fuels	N2O	0.84	0.00	0.00%	99.99%
1A1 Energy Industries - Solid fuels	CH4	0.75	0.00	0.00%	99.99%
1B2b Natural Gas	CO2	0.61	0.00	0.00%	99.99%
1A1 Energy Industries - Liquid fuels	CH4	0.60	0.00	0.00%	99.99%
1B2a Oil	CO2	0.47	0.00	0.00%	100.00%
1A4 Other sectors - Solid fuels	N2O	0.40	0.00	0.00%	100.00%
1A5b Mobile	N2O	0.37	0.00	0.00%	100.00%
1B2c Venting and flaring	N2O	0.32	0.00	0.00%	100.00%
1A2 Manufacturing industries - Solid fuels	CH4	0.32	0.00	0.00%	100.00%
1A2 Manufacturing industries - Liquid fuels	CH4	0.27	0.00	0.00%	100.00%
3F Field Burning of Agricultural Residues	CH4	0.20	0.00	0.00%	100.00%
1A3c Railways - All Fuels	CH4	0.16	0.00	0.00%	100.00%
1A5a Stationary	CH4	0.14	0.00	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	N2O	0.09	0.00	0.00%	100.00%
3F Field Burning of Agricultural Residues	N2O	0.05	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	N2O	0.04	0.00	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	CH4	0.03	0.00	0.00%	100.00%
1A3e Other Transportation - Pipelines	CH4	0.02	0.00	0.00%	100.00%
1A5a Stationary	N2O	0.02	0.00	0.00%	100.00%
1A3e Other Transportation - Pipelines	N2O	0.02	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.01	0.00	0.00%	100.00%
1A5b Mobile	CH4	0.01	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CH4	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CO2	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	N2O	0.00	0.00	0.00%	100.00%

Category	Direct Greenhouse Gas	Latest Year Emission excluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total %
1B1 Solid fuels	CO2	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	N2O	0.00	0.00	0.00%	100.00%
1B2b Natural Gas	N2O	0.00	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	N2O	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	CH4	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	N2O	0.00	0.00	0.00%	100.00%
2B8 Petrochemical and carbon black production	N2O	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	N2O	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	CH4	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	CO2	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	N2O	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CH4	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CO2	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	N2O	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	PFC	0.00	0.00	0.00%	100.00%
2D Non-energy products from fuels and solvent use	CH4	0.00	0.00	0.00%	100.00%
2E Electronics industry	SF6	0.00	0.00	0.00%	100.00%
2F5 Solvent - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
3D Agricultural Soils	CH4	0.00	0.00	0.00%	100.00%
3J Other	CH4	0.00	0.00	0.00%	100.00%
3J Other	CO2	0.00	0.00	0.00%	100.00%
3J Other	N2O	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	CO2	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	N2O	0.00	0.00	0.00%	100.00%
5B Biological Treatment of Solid Waste	CO2	0.00	0.00	0.00%	100.00%
5D Wastewater Treatment and Discharge	CO2	0.00	0.00	0.00%	100.00%
5E Other	CH4	0.00	0.00	0.00%	100.00%
5E Other	CO2	0.00	0.00	0.00%	100.00%
5E Other	N2O	0.00	0.00	0.00%	100.00%

Table A1-5 Tier1 trend assessment excluding LULUCF (2024)

Category	GHG	Base Years (1985-87) Emission	Current Year Emission	Trend Assesment	Contribution to Trend %	Cumulative Total %
1A3b Road transport - All Fuels	CO2	7 173.02	13 604.87	0.09	16.05%	16.05%
1A1 Energy Industries - Solid fuels	CH4	14 354.24	0.75	0.06	11.02%	27.07%
1A4 Other sectors - Solid fuels	CO2	12 328.29	99.94	0.05	9.31%	36.38%
1A4 Other sectors - Gaseous fuels	CO2	3 953.57	7 681.47	0.05	9.14%	45.51%
1A1 Energy Industries - Solid fuels	CO2	4.03	2 821.72	0.03	4.47%	49.98%
2C1 Iron and Steel Production	CO2	4 578.59	15.13	0.02	3.49%	53.47%
5A Solid waste disposal	CH4	2 448.24	3 258.59	0.02	3.28%	56.76%
3C Rice Cultivation	CH4	4 173.13	17.82	0.02	3.18%	59.93%
1A1 Energy Industries - Liquid fuels	CO2	5 880.16	901.56	0.02	3.09%	63.02%
1A1 Energy Industries - Gaseous fuels	CO2	5 731.22	4 720.12	0.02	3.08%	66.10%
3A Enteric Fermentation	CH4	824.08	2 257.81	0.02	2.95%	69.04%
2B2 Nitric Acid Production	N2O	3 882.26	39.19	0.02	2.92%	71.96%
1A4 Other sectors - Liquid fuels	CO2	6 324.89	1 294.73	0.02	2.80%	74.77%
1A2 Manufacturing industries - Solid fuels	CO2	3 816.20	180.24	0.02	2.64%	77.41%
1A2 Manufacturing industries - Gaseous fuels	CO2	8 774.25	2 673.32	0.01	2.50%	79.91%
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	0.00	1 403.74	0.01	2.22%	82.13%
1A2 Manufacturing industries - Liquid fuels	CO2	4 240.03	887.06	0.01	1.85%	83.98%
2B8 Petrochemical and carbon black production	CO2	571.26	1 335.77	0.01	1.68%	85.66%
1B1 Solid fuels	CH4	1 790.74	29.98	0.01	1.33%	86.99%
3B Manure Management	CH4	90.98	634.17	0.01	0.94%	87.92%
3.D.2 Indirect N2O Emissions From Managed Soils	N2O	1 366.98	192.05	0.00	0.75%	88.67%
1A4 Other sectors - Solid fuels	CH4	980.03	8.31	0.00	0.74%	89.41%
1B2b Natural Gas	CH4	1 155.71	992.67	0.00	0.69%	90.10%
2B10 Other	CO2	0.00	431.91	0.00	0.68%	90.78%
1A5a Stationary	CO2	886.77	30.81	0.00	0.63%	91.41%
3.D.1 Direct N2O Emissions From Managed Soils	N2O	4 649.52	2 633.89	0.00	0.60%	92.02%
3B Manure Management	N2O	0.00	371.85	0.00	0.59%	92.61%
1A4 Other sectors - Biomass	CH4	171.21	433.47	0.00	0.56%	93.16%
2A1 Cement Production	CO2	1 744.64	543.32	0.00	0.48%	93.64%
1A2 Manufacturing industries - Other fossil fuels	CO2	0.00	296.60	0.00	0.47%	94.11%
1A3c Railways - All Fuels	CO2	752.98	101.77	0.00	0.42%	94.53%
2A2 Lime Production	CO2	606.79	46.72	0.00	0.39%	94.92%
2G Other Product Manufacture and Use - N2O	N2O	7.52	250.54	0.00	0.39%	95.31%
5D Wastewater Treatment and Discharge	N2O	128.79	304.80	0.00	0.38%	95.69%
1A1 Energy Industries - Other fossil fuels	CO2	49.45	216.26	0.00	0.30%	96.00%
1A3b Road transport - All Fuels	N2O	47.10	214.01	0.00	0.30%	96.30%
3D Agricultural Soils	CH4	394.20	0.00	0.00	0.30%	96.60%
2C3 Aluminium Production	PFC	333.36	0.00	0.00	0.26%	96.86%
1A4 Other sectors - Other Fossil Fuels	CO2	0.00	153.48	0.00	0.24%	97.10%

Category	GHG	Base Years (1985-87) Emission	Current Year Emission	Trend Assesment	Contribution to Trend %	Cumulative Total %
1A3d Domestic navigation - All Liquid fuels	CO2	340.55	12.67	0.00	0.24%	97.34%
5D Wastewater Treatment and Discharge	CH4	834.89	255.00	0.00	0.24%	97.58%
1B2c Venting and flaring	CH4	408.36	52.76	0.00	0.23%	97.81%
1B2c Venting and flaring	CO2	570.66	150.99	0.00	0.20%	98.01%
5B Biological Treatment of Solid Waste	CH4	5.60	128.00	0.00	0.20%	98.21%
2A4 Other Process Uses of Carbonates	CO2	453.29	112.19	0.00	0.17%	98.38%
2B1 Ammonia Production	CO2	1 714.65	746.43	0.00	0.13%	98.51%
2F2 Foam Blowing - HFC	Aggregate F-gases	0.00	81.88	0.00	0.13%	98.64%
3G Liming	CO2	130.21	1.22	0.00	0.10%	98.74%
2C3 Aluminium Production	CO2	125.37	0.00	0.00	0.10%	98.84%
3I Other carbon containing fertilizers	CO2	48.11	80.90	0.00	0.09%	98.93%
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	139.01	118.30	0.00	0.08%	99.01%
1A4 Other sectors - Biomass	N2O	21.61	54.71	0.00	0.07%	99.08%
1A5b Mobile	CO2	14.45	50.49	0.00	0.07%	99.15%
5B Biological Treatment of Solid Waste	N2O	3.18	39.02	0.00	0.06%	99.21%
1B2a Oil	CH4	217.91	68.53	0.00	0.06%	99.26%
5C Incineration and open burning of waste	CO2	96.88	15.74	0.00	0.05%	99.31%
2F4 Aerosol + MDI - HFC	Aggregate F-gases	0.00	30.12	0.00	0.05%	99.36%
2B8 Petrochemical and carbon black production	CH4	22.85	41.13	0.00	0.05%	99.41%
1A3e Other Transportation - Pipelines	CO2	154.38	45.12	0.00	0.05%	99.46%
2A3 Glass production	CO2	87.63	13.87	0.00	0.05%	99.50%
1A3c Railways - All Fuels	N2O	74.66	10.33	0.00	0.04%	99.54%
3F Field Burning of Agricultural Residues	CH4	51.96	0.20	0.00	0.04%	99.58%
1A4 Other sectors - Solid fuels	N2O	50.43	0.40	0.00	0.04%	99.62%
1A1 Energy Industries - Biomass	N2O	0.83	22.62	0.00	0.04%	99.66%
2D Non-energy products from fuels and solvent use	CO2	242.62	95.34	0.00	0.04%	99.69%
2C2 Ferroalloys Production	CO2	40.24	0.00	0.00	0.03%	99.72%
1A1 Energy Industries - Biomass	CH4	0.66	17.94	0.00	0.03%	99.75%
1A1 Energy Industries - Solid fuels	N2O	56.37	10.42	0.00	0.03%	99.78%
1A4 Other sectors - Gaseous fuels	CH4	9.96	19.02	0.00	0.02%	99.80%
1A2 Manufacturing industries - Biomass	N2O	0.41	12.45	0.00	0.02%	99.82%
1A2 Manufacturing industries - Biomass	CH4	0.33	9.75	0.00	0.02%	99.83%
1A4 Other sectors - Liquid fuels	CH4	20.48	2.42	0.00	0.01%	99.85%
1B2d Other (Thermal water extraction + NatGas storage)	CH4	144.76	77.57	0.00	0.01%	99.86%
1A3b Road transport - All Fuels	CH4	60.54	22.18	0.00	0.01%	99.87%
3F Field Burning of Agricultural Residues	N2O	12.75	0.05	0.00	0.01%	99.88%
2C1 Iron and Steel Production	CH4	12.19	0.00	0.00	0.01%	99.89%
2F3 Fire extinguishers - HFC	Aggregate F-gases	0.00	5.76	0.00	0.01%	99.90%
1A2 Manufacturing industries - Solid fuels	N2O	12.93	0.84	0.00	0.01%	99.91%
1A1 Energy Industries - Liquid fuels	N2O	11.14	0.86	0.00	0.01%	99.91%

Category	GHG	Base Years (1985-87) Emission	Current Year Emission	Trend Assesment	Contribution to Trend %	Cumulative Total %
1A2 Manufacturing industries - Other fossil fuels	N2O	0.00	4.53	0.00	0.01%	99.92%
1A2 Manufacturing industries - Solid fuels	CH4	9.20	0.32	0.00	0.01%	99.93%
3H Urea application	CO2	229.03	114.58	0.00	0.01%	99.93%
1A2 Manufacturing industries - Other fossil fuels	CH4	0.00	3.59	0.00	0.01%	99.94%
5C Incineration and open burning of waste	CH4	9.19	1.09	0.00	0.01%	99.94%
5C Incineration and open burning of waste	N2O	9.21	1.13	0.00	0.01%	99.95%
1A4 Other sectors - Gaseous fuels	N2O	1.88	3.60	0.00	0.00%	99.95%
1A1 Energy Industries - Other fossil fuels	N2O	0.83	2.82	0.00	0.00%	99.96%
1A1 Energy Industries - Liquid fuels	CH4	6.03	0.60	0.00	0.00%	99.96%
1A3a Domestic aviation - All fuels	CO2	5.41	4.91	0.00	0.00%	99.96%
1B2a Oil	CO2	5.57	0.47	0.00	0.00%	99.97%
1A2 Manufacturing industries - Liquid fuels	N2O	12.43	8.16	0.00	0.00%	99.97%
1A2 Manufacturing industries - Liquid fuels	CH4	4.86	0.27	0.00	0.00%	99.97%
1A5a Stationary	CH4	4.37	0.14	0.00	0.00%	99.98%
1A1 Energy Industries - Other fossil fuels	CH4	0.66	2.14	0.00	0.00%	99.98%
1B1 Solid fuels	CO2	3.60	0.00	0.00	0.00%	99.98%
1A5a Stationary	N2O	3.61	0.02	0.00	0.00%	99.99%
1A4 Other sectors - Other Fossil Fuels	N2O	0.00	1.34	0.00	0.00%	99.99%
1A3d Domestic navigation - All Liquid fuels	N2O	2.55	0.09	0.00	0.00%	99.99%
1A4 Other sectors - Other Fossil Fuels	CH4	0.00	1.06	0.00	0.00%	99.99%
1A1 Energy Industries - Gaseous fuels	CH4	2.88	2.34	0.00	0.00%	99.99%
1A1 Energy Industries - Gaseous fuels	N2O	2.73	2.21	0.00	0.00%	99.99%
1A2 Manufacturing industries - Gaseous fuels	CH4	4.42	1.32	0.00	0.00%	100.00%
1A2 Manufacturing industries - Gaseous fuels	N2O	4.18	1.25	0.00	0.00%	100.00%
1B2b Natural Gas	CO2	2.28	0.61	0.00	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	CH4	0.94	0.03	0.00	0.00%	100.00%
1A3c Railways - All Fuels	CH4	1.16	0.16	0.00	0.00%	100.00%
1A5b Mobile	N2O	0.11	0.37	0.00	0.00%	100.00%
1B2c Venting and flaring	N2O	1.13	0.32	0.00	0.00%	100.00%
1A4 Other sectors - Liquid fuels	N2O	24.74	11.85	0.00	0.00%	100.00%
2C2 Ferroalloys Production	CH4	0.28	0.00	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	0.00	0.00%	100.00%
1A3e Other Transportation - Pipelines	CH4	0.08	0.02	0.00	0.00%	100.00%
1A3e Other Transportation - Pipelines	N2O	0.07	0.02	0.00	0.00%	100.00%
1A5b Mobile	CH4	0.00	0.01	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.04	0.01	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	CH4	0.00	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	N2O	0.00	0.00	0.00	0.00%	100.00%

Category	GHG	Base Years (1985-87) Emission	Current Year Emission	Trend Assesment	Contribution to Trend %	Cumulative Total %
1A2 Manufacturing industries - Peat	CH4	0.00	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	N2O	0.00	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CH4	0.00	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CO2	0.00	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	N2O	0.00	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	N2O	0.00	0.00	0.00	0.00%	100.00%
1B2b Natural Gas	N2O	0.00	0.00	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	N2O	0.00	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	CH4	0.00	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2B8 Petrochemical and carbon black production	N2O	0.00	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CH4	0.00	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	N2O	0.00	0.00	0.00	0.00%	100.00%
2D Non-energy products from fuels and solvent use	CH4	0.00	0.00	0.00	0.00%	100.00%
2E Electronics industry	SF6	0.00	0.00	0.00	0.00%	100.00%
2F5 Solvent - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00	0.00%	100.00%
3J Other	CH4	0.00	0.00	0.00	0.00%	100.00%
3J Other	CO2	0.00	0.00	0.00	0.00%	100.00%
3J Other	N2O	0.00	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	CO2	0.00	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	N2O	0.00	0.00	0.00	0.00%	100.00%
5B Biological Treatment of Solid Waste	CO2	0.00	0.00	0.00	0.00%	100.00%
5D Wastewater Treatment and Discharge	CO2	0.00	0.00	0.00	0.00%	100.00%
5E Other	CH4	0.00	0.00	0.00	0.00%	100.00%
5E Other	CO2	0.00	0.00	0.00	0.00%	100.00%
5E Other	N2O	0.00	0.00	0.00	0.00%	100.00%

Table A1-6 Tier 1 level assessment including LULUCF (Base year)

Category	Direct Greenhouse Gas	Base Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A1 Energy Industries - Solid fuels	CO2	14 354.24	14 354.24	12.56%	12.56%
1A4 Other sectors - Solid fuels	CO2	12 328.29	12 328.29	10.79%	23.35%
1A2 Manufacturing industries - Gaseous fuels	CO2	8 774.25	8 774.25	7.68%	31.03%
1A3b Road transport - All Fuels	CO2	7 173.02	7 173.02	6.28%	37.30%
1A4 Other sectors - Liquid fuels	CO2	6 324.89	6 324.89	5.53%	42.84%
1A1 Energy Industries - Liquid fuels	CO2	5 880.16	5 880.16	5.15%	47.98%
1A1 Energy Industries - Gaseous fuels	CO2	5 731.22	5 731.22	5.01%	53.00%
3A Enteric Fermentation	CH4	4 649.52	4 649.52	4.07%	57.06%
2C1 Iron and Steel Production	CO2	4 578.59	4 578.59	4.01%	61.07%
1A2 Manufacturing industries - Liquid fuels	CO2	4 240.03	4 240.03	3.71%	64.78%
3.D.1 Direct N2O Emissions From Managed Soils	N2O	4 173.13	4 173.13	3.65%	68.43%
1A4 Other sectors - Gaseous fuels	CO2	3 953.57	3 953.57	3.46%	71.89%
2B2 Nitric Acid Production	N2O	3 882.26	3 882.26	3.40%	75.29%
1A2 Manufacturing industries - Solid fuels	CO2	3 816.20	3 816.20	3.34%	78.63%
4A1 Forest Land Remaining Forest Land	CO2	-2 466.81	2 466.81	2.16%	80.79%
5A Solid waste disposal	CH4	2 448.24	2 448.24	2.14%	82.93%
1B1 Solid fuels	CH4	1 790.74	1 790.74	1.57%	84.50%
2A1 Cement Production	CO2	1 744.64	1 744.64	1.53%	86.02%
2B1 Ammonia Production	CO2	1 714.65	1 714.65	1.50%	87.52%
3B Manure Management	CH4	1 366.98	1 366.98	1.20%	88.72%
1B2b Natural Gas	CH4	1 155.71	1 155.71	1.01%	89.73%
1A4 Other sectors - Solid fuels	CH4	980.03	980.03	0.86%	90.59%
1A5a Stationary	CO2	886.77	886.77	0.78%	91.36%
5D Wastewater Treatment and Discharge	CH4	834.89	834.89	0.73%	92.09%
3B Manure Management	N2O	824.08	824.08	0.72%	92.81%
1A3c Railways - All Fuels	CO2	752.98	752.98	0.66%	93.47%
2A2 Lime Production	CO2	606.79	606.79	0.53%	94.00%
2B8 Petrochemical and carbon black production	CO2	571.26	571.26	0.50%	94.50%
1B2c Venting and flaring	CO2	570.66	570.66	0.50%	95.00%
2A4 Other Process Uses of Carbonates	CO2	453.29	453.29	0.40%	95.40%
1B2c Venting and flaring	CH4	408.36	408.36	0.36%	95.76%
3.D.2 Indirect N2O Emissions From Managed Soils	N2O	394.20	394.20	0.34%	96.10%
1A3d Domestic navigation - All Liquid fuels	CO2	340.55	340.55	0.30%	96.40%
2C3 Aluminium Production	PFC	333.36	333.36	0.29%	96.69%
4G Harvested Wood Products	CO2	-328.96	328.96	0.29%	96.98%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CO2	312.97	312.97	0.27%	97.25%
2D Non-energy products from fuels and solvent use	CO2	242.62	242.62	0.21%	97.47%
3H Urea application	CO2	229.03	229.03	0.20%	97.67%
1B2a Oil	CH4	217.91	217.91	0.19%	97.86%
1A4 Other sectors - Biomass	CH4	171.21	171.21	0.15%	98.01%

Category	Direct Greenhouse Gas	Base Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A3e Other Transportation - Pipelines	CO2	154.38	154.38	0.14%	98.14%
1B2d Other (Thermal water extraction + NatGas storage)	CH4	144.76	144.76	0.13%	98.27%
2G Other Product Manufacture and Use - N2O	N2O	139.01	139.01	0.12%	98.39%
4B1 Cropland Remaining Cropland	CO2	136.09	136.09	0.12%	98.51%
3G Liming	CO2	130.21	130.21	0.11%	98.62%
5D Wastewater Treatment and Discharge	N2O	128.79	128.79	0.11%	98.74%
2C3 Aluminium Production	CO2	125.37	125.37	0.11%	98.85%
5C Incineration and open burning of waste	CO2	96.88	96.88	0.08%	98.93%
3C Rice Cultivation	CH4	90.98	90.98	0.08%	99.01%
2A3 Glass production	CO2	87.63	87.63	0.08%	99.09%
1A3c Railways - All Fuels	N2O	74.66	74.66	0.07%	99.15%
1A3b Road transport - All Fuels	CH4	60.54	60.54	0.05%	99.21%
4E2 Land Converted to Settlements	CO2	59.56	59.56	0.05%	99.26%
1A1 Energy Industries - Solid fuels	N2O	56.37	56.37	0.05%	99.31%
4A2 Land Converted to Forest Land	CO2	-55.78	55.78	0.05%	99.36%
3F Field Burning of Agricultural Residues	CH4	51.96	51.96	0.05%	99.40%
1A4 Other sectors - Solid fuels	N2O	50.43	50.43	0.04%	99.45%
1A1 Energy Industries - Other fossil fuels	CO2	49.45	49.45	0.04%	99.49%
3I Other carbon containing fertilizers	CO2	48.11	48.11	0.04%	99.53%
1A3b Road transport - All Fuels	N2O	47.10	47.10	0.04%	99.57%
2C2 Ferroalloys Production	CO2	40.24	40.24	0.04%	99.61%
4D1 Wetland Remaining wetlands	CO2	37.07	37.07	0.03%	99.64%
4C1 Grassland Remaining Grassland	CO2	-31.14	31.14	0.03%	99.67%
4(IV) Biomass Burning	CH4	26.18	26.18	0.02%	99.69%
4C2 Land Converted to Grassland	CO2	25.48	25.48	0.02%	99.71%
1A4 Other sectors - Liquid fuels	N2O	24.74	24.74	0.02%	99.73%
2B8 Petrochemical and carbon black production	CH4	22.85	22.85	0.02%	99.75%
1A4 Other sectors - Biomass	N2O	21.61	21.61	0.02%	99.77%
1A4 Other sectors - Liquid fuels	CH4	20.48	20.48	0.02%	99.79%
4(V) Biomass Burning	N2O	15.90	15.90	0.01%	99.80%
1A5b Liquid Fuel	CO2	14.45	14.45	0.01%	99.82%
1A2 Manufacturing industries - Solid fuels	N2O	12.93	12.93	0.01%	99.83%
3F Field Burning of Agricultural Residues	N2O	12.75	12.75	0.01%	99.84%
1A2 Manufacturing industries - Liquid fuels	N2O	12.43	12.43	0.01%	99.85%
2C1 Iron and Steel Production	CH4	12.19	12.19	0.01%	99.86%
4B2 Land Converted to Cropland	CO2	-11.90	11.90	0.01%	99.87%
1A1 Energy Industries - Liquid fuels	N2O	11.14	11.14	0.01%	99.88%
1A4 Other sectors - Gaseous fuels	CH4	9.96	9.96	0.01%	99.89%
5C Incineration and open burning of waste	N2O	9.21	9.21	0.01%	99.90%
1A2 Manufacturing industries - Solid fuels	CH4	9.20	9.20	0.01%	99.91%
5C Incineration and open burning of waste	CH4	9.19	9.19	0.01%	99.91%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	N2O	7.87	7.87	0.01%	99.92%

Category	Direct Greenhouse Gas	Base Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	7.52	7.52	0.01%	99.93%
1A1 Energy Industries - Liquid fuels	CH4	6.03	6.03	0.01%	99.93%
5B Biological Treatment of Solid Waste	CH4	5.60	5.60	0.00%	99.94%
1B2a Oil	CO2	5.57	5.57	0.00%	99.94%
1A3a Domestic aviation - All fuels	CO2	5.41	5.41	0.00%	99.95%
1A2 Manufacturing industries - Liquid fuels	CH4	4.86	4.86	0.00%	99.95%
1A2 Manufacturing industries - Gaseous fuels	CH4	4.42	4.42	0.00%	99.96%
1A5a Stationary	CH4	4.37	4.37	0.00%	99.96%
1A2 Manufacturing industries - Gaseous fuels	N2O	4.18	4.18	0.00%	99.96%
1A1 Energy Industries - Solid fuels	CH4	4.03	4.03	0.00%	99.97%
1A5a Stationary	N2O	3.61	3.61	0.00%	99.97%
1B1 Solid fuels	CO2	3.60	3.60	0.00%	99.97%
4(II) Emissions and removals from drainage and rewetting and other management of organic and mineral soils	CH4	3.58	3.58	0.00%	99.98%
5B Biological Treatment of Solid Waste	N2O	3.18	3.18	0.00%	99.98%
4D2 Land Converted to Wetlands	CO2	3.15	3.15	0.00%	99.98%
1A1 Energy Industries - Gaseous fuels	CH4	2.88	2.88	0.00%	99.98%
1A1 Energy Industries - Gaseous fuels	N2O	2.73	2.73	0.00%	99.99%
1A3d Domestic navigation - All Liquid fuels	N2O	2.55	2.55	0.00%	99.99%
1B2b Natural Gas	CO2	2.28	2.28	0.00%	99.99%
1A4 Other sectors - Gaseous fuels	N2O	1.88	1.88	0.00%	99.99%
4(III). Total for all land-use categories (Direct + Indirect)	N2O	1.42	1.42	0.00%	99.99%
1A3c Railways - All Fuels	CH4	1.16	1.16	0.00%	99.99%
1B2c Venting and flaring	N2O	1.13	1.13	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	CH4	0.94	0.94	0.00%	100.00%
1A1 Energy Industries - Biomass	N2O	0.83	0.83	0.00%	100.00%
1A1 Energy Industries - Other fossil fuels	N2O	0.83	0.83	0.00%	100.00%
1A1 Energy Industries - Biomass	CH4	0.66	0.66	0.00%	100.00%
1A1 Energy Industries - Other fossil fuels	CH4	0.66	0.66	0.00%	100.00%
1A2 Manufacturing industries - Biomass	N2O	0.41	0.41	0.00%	100.00%
1A2 Manufacturing industries - Biomass	CH4	0.33	0.33	0.00%	100.00%
2C2 Ferroalloys Production	CH4	0.28	0.28	0.00%	100.00%
1A5b Liquid Fuel	N2O	0.11	0.11	0.00%	100.00%
1A3e Other Transportation - Pipelines	CH4	0.08	0.08	0.00%	100.00%
1A3e Other Transportation - Pipelines	N2O	0.07	0.07	0.00%	100.00%
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.04	0.04	0.00%	100.00%
1A5b Liquid Fuel	CH4	0.00	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Other fossil fuels	CH4	0.00	0.00	0.00%	100.00%

Category	Direct Greenhouse Gas	Base Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A2 Manufacturing industries - Other fossil fuels	CO2	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Other fossil fuels	N2O	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CH4	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CO2	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	N2O	0.00	0.00	0.00%	100.00%
1A4 Other sectors - Other Fossil Fuels	CH4	0.00	0.00	0.00%	100.00%
1A4 Other sectors - Other Fossil Fuels	CO2	0.00	0.00	0.00%	100.00%
1A4 Other sectors - Other Fossil Fuels	N2O	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	N2O	0.00	0.00	0.00%	100.00%
1B2b Natural Gas	N2O	0.00	0.00	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	N2O	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	CH4	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	N2O	0.00	0.00	0.00%	100.00%
2B8 Petrochemical and carbon black production	N2O	0.00	0.00	0.00%	100.00%
2B10 Other	CO2	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	N2O	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	N2O	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CH4	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	N2O	0.00	0.00	0.00%	100.00%
2D Non-energy products from fuels and solvent use	CH4	0.00	0.00	0.00%	100.00%
2E Electronics industry	SF6	0.00	0.00	0.00%	100.00%
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F2 Foam Blowing - HFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F3 Fire extinguishers - HFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F4 Aerosol + MDI - HFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F5 Solvent - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
3D Agricultural Soils	CH4	0.00	0.00	0.00%	100.00%
3J Other	CH4	0.00	0.00	0.00%	100.00%
3J Other	CO2	0.00	0.00	0.00%	100.00%
3J Other	N2O	0.00	0.00	0.00%	100.00%
4(I) Direct N2O emissions from N inputs to managed soils	N2O	0.00	0.00	0.00%	100.00%
4(V) Biomass Burning	CO2	0.00	0.00	0.00%	100.00%
4E1 Settlements Remaining Settlements	CO2	0.00	0.00	0.00%	100.00%
4F1 Other Land Remaining Other Land	CO2	0.00	0.00	0.00%	100.00%
4F2 Land Converted to Other Land	CO2	0.00	0.00	0.00%	100.00%
4H Other	CH4	0.00	0.00	0.00%	100.00%
4H Other	CO2	0.00	0.00	0.00%	100.00%
4H Other	N2O	0.00	0.00	0.00%	100.00%

Category	Direct Greenhouse Gas	Base Year Emission [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
5A Solid waste disposal	CO2	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	N2O	0.00	0.00	0.00%	100.00%
5B Biological Treatment of Solid Waste	CO2	0.00	0.00	0.00%	100.00%
5D Wastewater Treatment and Discharge	CO2	0.00	0.00	0.00%	100.00%
5E Other	CH4	0.00	0.00	0.00%	100.00%
5E Other	CO2	0.00	0.00	0.00%	100.00%
5E Other	N2O	0.00	0.00	0.00%	100.00%

Table A1-7 Tier 1 level assessment excluding LULUCF (Base year)

Category	GHG	Base Year Emission exluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A1 Energy Industries - Solid fuels	CO2	14 354.24	14 354.24	12.96%	12.96%
1A4 Other sectors - Solid fuels	CO2	12 328.29	12 328.29	11.13%	24.09%
1A2 Manufacturing industries - Gaseous fuels	CO2	8 774.25	8 774.25	7.92%	32.01%
1A3b Road transport - All Fuels	CO2	7 173.02	7 173.02	6.48%	38.49%
1A4 Other sectors - Liquid fuels	CO2	6 324.89	6 324.89	5.71%	44.20%
1A1 Energy Industries - Liquid fuels	CO2	5 880.16	5 880.16	5.31%	49.51%
1A1 Energy Industries - Gaseous fuels	CO2	5 731.22	5 731.22	5.17%	54.68%
3A Enteric Fermentation	CH4	4 649.52	4 649.52	4.20%	58.88%
2C1 Iron and Steel Production	CO2	4 578.59	4 578.59	4.13%	63.01%
1A2 Manufacturing industries - Liquid fuels	CO2	4 240.03	4 240.03	3.83%	66.84%
3.D.1 Direct N2O Emissions From Managed Soils	N2O	4 173.13	4 173.13	3.77%	70.61%
1A4 Other sectors - Gaseous fuels	CO2	3 953.57	3 953.57	3.57%	74.18%
2B2 Nitric Acid Production	N2O	3 882.26	3 882.26	3.51%	77.68%
1A2 Manufacturing industries - Solid fuels	CO2	3 816.20	3 816.20	3.45%	81.13%
5A Solid waste disposal	CH4	2 448.24	2 448.24	2.21%	83.34%
1B1 Solid fuels	CH4	1 790.74	1 790.74	1.62%	84.96%
2A1 Cement Production	CO2	1 744.64	1 744.64	1.58%	86.53%
2B1 Ammonia Production	CO2	1 714.65	1 714.65	1.55%	88.08%
3B Manure Management	CH4	1 366.98	1 366.98	1.23%	89.31%
1B2b Natural Gas	CH4	1 155.71	1 155.71	1.04%	90.36%
1A4 Other sectors - Solid fuels	CH4	980.03	980.03	0.88%	91.24%
1A5a Stationary	CO2	886.77	886.77	0.80%	92.04%
5D Wastewater Treatment and Discharge	CH4	834.89	834.89	0.75%	92.80%
3B Manure Management	N2O	824.08	824.08	0.74%	93.54%
1A3c Railways - All Fuels	CO2	752.98	752.98	0.68%	94.22%
2A2 Lime Production	CO2	606.79	606.79	0.55%	94.77%
2B8 Petrochemical and carbon black production	CO2	571.26	571.26	0.52%	95.28%
1B2c Venting and flaring	CO2	570.66	570.66	0.52%	95.80%
2A4 Other Process Uses of Carbonates	CO2	453.29	453.29	0.41%	96.21%
1B2c Venting and flaring	CH4	408.36	408.36	0.37%	96.58%
3.D.2 Indirect N2O Emissions From Managed Soils	N2O	394.20	394.20	0.36%	96.93%
1A3d Domestic navigation - All Liquid fuels	CO2	340.55	340.55	0.31%	97.24%
2C3 Aluminium Production	PFC	333.36	333.36	0.30%	97.54%
2D Non-energy products from fuels and solvent use	CO2	242.62	242.62	0.22%	97.76%
3H Urea application	CO2	229.03	229.03	0.21%	97.97%
1B2a Oil	CH4	217.91	217.91	0.20%	98.16%
1A4 Other sectors - Biomass	CH4	171.21	171.21	0.15%	98.32%
1A3e Other Transportation - Pipelines	CO2	154.38	154.38	0.14%	98.46%

Category	GHG	Base Year Emission exluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1B2d Other (Thermal water extraction + NatGas storage)	CH4	144.76	144.76	0.13%	98.59%
2G Other Product Manufacture and Use - N2O	N2O	139.01	139.01	0.13%	98.71%
3G Liming	CO2	130.21	130.21	0.12%	98.83%
5D Wastewater Treatment and Discharge	N2O	128.79	128.79	0.12%	98.95%
2C3 Aluminium Production	CO2	125.37	125.37	0.11%	99.06%
5C Incineration and open burning of waste	CO2	96.88	96.88	0.09%	99.15%
3C Rice Cultivation	CH4	90.98	90.98	0.08%	99.23%
2A3 Glass production	CO2	87.63	87.63	0.08%	99.31%
1A3c Railways - All Fuels	N2O	74.66	74.66	0.07%	99.38%
1A3b Road transport - All Fuels	CH4	60.54	60.54	0.05%	99.43%
1A1 Energy Industries - Solid fuels	N2O	56.37	56.37	0.05%	99.48%
3F Field Burning of Agricultural Residues	CH4	51.96	51.96	0.05%	99.53%
1A4 Other sectors - Solid fuels	N2O	50.43	50.43	0.05%	99.58%
1A1 Energy Industries - Other fossil fuels	CO2	49.45	49.45	0.04%	99.62%
3I Other carbon containing fertilizers	CO2	48.11	48.11	0.04%	99.66%
1A3b Road transport - All Fuels	N2O	47.10	47.10	0.04%	99.71%
2C2 Ferroalloys Production	CO2	40.24	40.24	0.04%	99.74%
1A4 Other sectors - Liquid fuels	N2O	24.74	24.74	0.02%	99.76%
2B8 Petrochemical and carbon black production	CH4	22.85	22.85	0.02%	99.79%
1A4 Other sectors - Biomass	N2O	21.61	21.61	0.02%	99.80%
1A4 Other sectors - Liquid fuels	CH4	20.48	20.48	0.02%	99.82%
1A5b Liquid Fuel	CO2	14.45	14.45	0.01%	99.84%
1A2 Manufacturing industries - Solid fuels	N2O	12.93	12.93	0.01%	99.85%
3F Field Burning of Agricultural Residues	N2O	12.75	12.75	0.01%	99.86%
1A2 Manufacturing industries - Liquid fuels	N2O	12.43	12.43	0.01%	99.87%
2C1 Iron and Steel Production	CH4	12.19	12.19	0.01%	99.88%
1A1 Energy Industries - Liquid fuels	N2O	11.14	11.14	0.01%	99.89%
1A4 Other sectors - Gaseous fuels	CH4	9.96	9.96	0.01%	99.90%
5C Incineration and open burning of waste	N2O	9.21	9.21	0.01%	99.91%
1A2 Manufacturing industries - Solid fuels	CH4	9.20	9.20	0.01%	99.92%
5C Incineration and open burning of waste	CH4	9.19	9.19	0.01%	99.93%
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	7.52	7.52	0.01%	99.93%
1A1 Energy Industries - Liquid fuels	CH4	6.03	6.03	0.01%	99.94%
5B Biological Treatment of Solid Waste	CH4	5.60	5.60	0.01%	99.94%
1B2a Oil	CO2	5.57	5.57	0.01%	99.95%
1A3a Domestic aviation - All fuels	CO2	5.41	5.41	0.00%	99.95%
1A2 Manufacturing industries - Liquid fuels	CH4	4.86	4.86	0.00%	99.96%
1A2 Manufacturing industries - Gaseous fuels	CH4	4.42	4.42	0.00%	99.96%
1A5a Stationary	CH4	4.37	4.37	0.00%	99.97%
1A2 Manufacturing industries - Gaseous fuels	N2O	4.18	4.18	0.00%	99.97%

Category	GHG	Base Year Emission exluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1A1 Energy Industries - Solid fuels	CH4	4.03	4.03	0.00%	99.97%
1A5a Stationary	N2O	3.61	3.61	0.00%	99.98%
1B1 Solid fuels	CO2	3.60	3.60	0.00%	99.98%
5B Biological Treatment of Solid Waste	N2O	3.18	3.18	0.00%	99.98%
1A1 Energy Industries - Gaseous fuels	CH4	2.88	2.88	0.00%	99.98%
1A1 Energy Industries - Gaseous fuels	N2O	2.73	2.73	0.00%	99.99%
1A3d Domestic navigation - All Liquid fuels	N2O	2.55	2.55	0.00%	99.99%
1B2b Natural Gas	CO2	2.28	2.28	0.00%	99.99%
1A4 Other sectors - Gaseous fuels	N2O	1.88	1.88	0.00%	99.99%
1A3c Railways - All Fuels	CH4	1.16	1.16	0.00%	99.99%
1B2c Venting and flaring	N2O	1.13	1.13	0.00%	100.00%
1A3d Domestic navigation - All Liquid fuels	CH4	0.94	0.94	0.00%	100.00%
1A1 Energy Industries - Biomass	N2O	0.83	0.83	0.00%	100.00%
1A1 Energy Industries - Other fossil fuels	N2O	0.83	0.83	0.00%	100.00%
1A1 Energy Industries - Biomass	CH4	0.66	0.66	0.00%	100.00%
1A1 Energy Industries - Other fossil fuels	CH4	0.66	0.66	0.00%	100.00%
1A2 Manufacturing industries - Biomass	N2O	0.41	0.41	0.00%	100.00%
1A2 Manufacturing industries - Biomass	CH4	0.33	0.33	0.00%	100.00%
2C2 Ferroalloys Production	CH4	0.28	0.28	0.00%	100.00%
1A5b Liquid Fuel	N2O	0.11	0.11	0.00%	100.00%
1A3e Other Transportation - Pipelines	CH4	0.08	0.08	0.00%	100.00%
1A3e Other Transportation - Pipelines	N2O	0.07	0.07	0.00%	100.00%
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	0.00%	100.00%
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.04	0.04	0.00%	100.00%
1A5b Liquid Fuel	CH4	0.00	0.00	0.00%	100.00%
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A1 Energy Industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Other fossil fuels	CH4	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Other fossil fuels	CO2	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Other fossil fuels	N2O	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	CH4	0.00	0.00	0.00%	100.00%
1A2 Manufacturing industries - Peat	N2O	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CH4	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	CO2	0.00	0.00	0.00%	100.00%
1A3d Domestic navigation - Gaseous fuels	N2O	0.00	0.00	0.00%	100.00%
1A4 Other sectors - Other Fossil Fuels	CH4	0.00	0.00	0.00%	100.00%
1A4 Other sectors - Other Fossil Fuels	CO2	0.00	0.00	0.00%	100.00%
1A4 Other sectors - Other Fossil Fuels	N2O	0.00	0.00	0.00%	100.00%
1B1 Solid fuels	N2O	0.00	0.00	0.00%	100.00%
1B2b Natural Gas	N2O	0.00	0.00	0.00%	100.00%

Category	GHG	Base Year Emission exluding LULUCF [Gg CO2-eq]	Emission in absolute value [Gg CO2-eq]	Level Assessment	Cumulative Total%
1B2d Other (Thermal water extraction + NatGas storage)	N2O	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	CH4	0.00	0.00	0.00%	100.00%
2B1 Ammonia Production	N2O	0.00	0.00	0.00%	100.00%
2B8 Petrochemical and carbon black production	N2O	0.00	0.00	0.00%	100.00%
2B10 Other	CO2	0.00	0.00	0.00%	100.00%
2C1 Iron and Steel Production	N2O	0.00	0.00	0.00%	100.00%
2C2 Ferroalloys Production	N2O	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	CH4	0.00	0.00	0.00%	100.00%
2C3 Aluminium Production	N2O	0.00	0.00	0.00%	100.00%
2D Non-energy products from fuels and solvent use	CH4	0.00	0.00	0.00%	100.00%
2E Electronics industry	SF6	0.00	0.00	0.00%	100.00%
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F2 Foam Blowing - HFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F3 Fire extinguishers - HFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F4 Aerosol + MDI - HFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
2F5 Solvent - HFC+PFC	Aggregate F-gases	0.00	0.00	0.00%	100.00%
3D Agricultural Soils	CH4	0.00	0.00	0.00%	100.00%
3J Other	CH4	0.00	0.00	0.00%	100.00%
3J Other	CO2	0.00	0.00	0.00%	100.00%
3J Other	N2O	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	CO2	0.00	0.00	0.00%	100.00%
5A Solid waste disposal	N2O	0.00	0.00	0.00%	100.00%
5B Biological Treatment of Solid Waste	CO2	0.00	0.00	0.00%	100.00%
5D Wastewater Treatment and Discharge	CO2	0.00	0.00	0.00%	100.00%
5E Other	CH4	0.00	0.00	0.00%	100.00%
5E Other	CO2	0.00	0.00	0.00%	100.00%
5E Other	N2O	0.00	0.00	0.00%	100.00%

ANNEX 2. Assessment of uncertainty

A2.1 Description of methodology used for uncertainty calculation

The first uncertainty calculation for the Hungarian greenhouse gas inventory was reported in 2006 for the year 2004 to fulfil the IPCC requirements for a complete emission inventory. For the 2012 submission the full coverage of the emission sources and sinks has been achieved both in key category analysis and in uncertainty estimation. The disaggregation of the categories used in uncertainty analysis is the same as listed in Table A1-1 (currently without LULUCF).

“Uncertainty estimates are an essential element of a complete emissions inventory. Uncertainty information is not intended to dispute the validity of the inventory estimates but to help prioritize efforts to improve the accuracy of inventories in the future and guide decisions on methodological choice.” (IPCC, 2000) There are two methods for the uncertainty estimation suggested by the 2006 IPCC Guidelines, a basic method (Tier 1) which is mandatory and an analytic one (Tier 2). The combination of uncertainties of the sectors “in order to arrive at the overall uncertainty in the national emissions and the trend” in the Hungarian inventory is carried out on the basis of Tier 1 method (error propagation rule). The uncertainty calculation was performed using the relevant Table of the 2006 IPCC Guidelines.

The calculations of the emissions estimates uncertainty are presented without LULUCF sectors, in the Table A2-1 below. Uncertainty calculation for each GHG (without LULUCF sector) is presented in Table A2-2. Calculation of the uncertainty with LULUCF is a planned improvement.

Table A2-1 Uncertainty calculation without LULUCF, Tier 1 method

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A1 Energy Industries - Biomass	CH4	0.66	17.94	5	100	100.12	0.033	0.000	0.000	0.016	0.001	0.016
1A1 Energy Industries - Biomass	N2O	0.83	22.62	5	200	200.06	0.084	0.000	0.000	0.040	0.001	0.040
1A1 Energy Industries - Gaseous fuels	CH4	2.88	2.34	1	100	100.00	0.004	0.000	0.000	0.001	0.000	0.001
1A1 Energy Industries - Gaseous fuels	CO_2	5 731.22	4 720.12	1	3	3.16	0.278	0.018	0.043	0.053	0.060	0.080
1A1 Energy Industries - Gaseous fuels	N2O	2.73	2.21	1	200	200.00	0.008	0.000	0.000	0.002	0.000	0.002
1A1 Energy Industries - Liquid fuels	CH4	6.03	0.60	1	100	100.00	0.001	0.000	0.000	-0.002	0.000	0.002
1A1 Energy Industries - Liquid fuels	CO_2	5 880.16	901.56	1	2.00	2.24	0.038	-0.018	0.008	-0.035	0.012	0.037

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A1 Energy Industries - Liquid fuels	N2O	11.14	0.86	1	200	200.00	0.003	0.000	0.000	-0.008	0.000	0.008
1A1 Energy Industries - Other fossil fuels	CH4	0.66	2.14	1	100	100.00	0.004	0.000	0.000	0.002	0.000	0.002
1A1 Energy Industries - Other fossil fuels	CO_2	49.45	216.26	1	5	5.10	0.021	0.002	0.002	0.009	0.003	0.009
1A1 Energy Industries - Other fossil fuels	N2O	0.83	2.82	1	200	200.00	0.010	0.000	0.000	0.004	0.000	0.004
1A1 Energy Industries - Solid fuels	CH4	4.03	0.75	1	100	100.00	0.001	0.000	0.000	-0.001	0.000	0.001
1A1 Energy Industries - Solid fuels	CO_2	14 354.24	2 821.72	1	2	2.24	0.118	-0.037	0.025	-0.075	0.036	0.083
1A1 Energy Industries - Solid fuels	N2O	56.37	10.42	1	200	200.00	0.039	0.000	0.000	-0.030	0.000	0.030

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A2 Manufacturing industries - Biomass	CH4	0.33	9.75	5	100	100.12	0.018	0.000	0.000	0.009	0.001	0.009
1A2 Manufacturing industries - Biomass	N2O	0.41	12.45	5	200	200.06	0.046	0.000	0.000	0.022	0.001	0.022
1A2 Manufacturing industries - Gaseous fuels	CH4	4.42	1.32	5	100	100.12	0.002	0.000	0.000	-0.001	0.000	0.001
1A2 Manufacturing industries - Gaseous fuels	CO_2	8 774.25	2 673.32	5	5	7.07	0.352	-0.014	0.024	-0.071	0.171	0.185
1A2 Manufacturing industries - Gaseous fuels	N2O	4.18	1.25	5	200	200.06	0.005	0.000	0.000	-0.001	0.000	0.001
1A2 Manufacturing industries - Liquid fuels	CH4	4.86	0.27	5	100	100.12	0.000	0.000	0.000	-0.002	0.000	0.002

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A2 Manufacturing industries - Liquid fuels	CO_2	4 240.03	887.06	5	2	5.39	0.089	-0.011	0.008	-0.021	0.057	0.060
1A2 Manufacturing industries - Liquid fuels	N2O	12.43	8.16	5	200	200.06	0.030	0.000	0.000	0.004	0.001	0.004
1A2 Manufacturing industries - Other fossil fuels	CH4	0.00	3.59	5	100	100.12	0.007	0.000	0.000	0.003	0.000	0.003
1A2 Manufacturing industries - Other fossil fuels	CO_2	0.00	296.60	5	5	7.07	0.039	0.003	0.003	0.013	0.019	0.023
1A2 Manufacturing industries - Other fossil fuels	N2O	0.00	4.53	5	200	200.06	0.017	0.000	0.000	0.008	0.000	0.008
1A2 Manufacturing industries - Solid fuels	CH4	9.20	0.32	5	100	100.12	0.001	0.000	0.000	-0.004	0.000	0.004

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A2 Manufacturing industries - Solid fuels	CO_2	3 816.20	180.24	5	5	7.07	0.024	-0.015	0.002	-0.075	0.012	0.076
1A2 Manufacturing industries - Solid fuels	N2O	12.93	0.84	5	200	200.06	0.003	0.000	0.000	-0.010	0.000	0.010
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	5	100	100.12	0.000	0.000	0.000	0.000	0.000	0.000
1A3a Domestic aviation - All fuels	CO_2	5.41	4.91	5	5	7.07	0.001	0.000	0.000	0.000	0.000	0.000
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	5	150	150.08	0.000	0.000	0.000	0.000	0.000	0.000
1A3b Road transport - All Fuels	CH4	60.54	22.18	5	100	100.12	0.041	0.000	0.000	-0.006	0.001	0.007
1A3b Road transport - All Fuels	CO_2	7 173.02	13 604.87	5	1.5	5.22	1.324	0.091	0.123	0.137	0.869	0.879

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G*D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I*F$ Note C	$J*E*\sqrt{2}$ Note D	K^2+L^2
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A3b Road transport - All Fuels	N2O	47.10	214.01	5	200	200.06	0.798	0.002	0.002	0.345	0.014	0.346
1A3c Railways - All Fuels	CH4	1.16	0.16	5	250	250.05	0.001	0.000	0.000	-0.001	0.000	0.001
1A3c Railways - All Fuels	CO_2	752.98	101.77	5	1	5.10	0.010	-0.002	0.001	-0.002	0.006	0.007
1A3c Railways - All Fuels	N2O	74.66	10.33	5	300	300.04	0.058	0.000	0.000	-0.070	0.001	0.070
1A3d Domestic navigation - All Liquid fuels	CH4	0.94	0.03	5	50	50.25	0.000	0.000	0.000	0.000	0.000	0.000
1A3d Domestic navigation - All Liquid fuels	CO_2	340.55	12.67	5	1.5	5.22	0.001	-0.001	0.000	-0.002	0.001	0.002
1A3d Domestic navigation - All Liquid fuels	N2O	2.55	0.09	5	140	140.09	0.000	0.000	0.000	-0.001	0.000	0.001
1A3e Other Transportation (as specified in table 1A(a) sheet 3) - Pipeline, only gaseous	CH4	0.08	0.02	5	100	100.12	0.000	0.000	0.000	0.000	0.000	0.000

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A3e Other Transportation (as specified in table 1A(a) sheet 3) - Pipeline, only gaseous	CO_2	154.38	45.12	5	5	7.07	0.006	0.000	0.000	-0.001	0.003	0.003
1A3e Other Transportation (as specified in table 1A(a) sheet 3) - Pipeline, only gaseous	N2O	0.07	0.02	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
1A4 Other sectors - Biomass	CH4	171.21	433.47	20	100	101.98	0.824	0.003	0.004	0.316	0.111	0.335
1A4 Other sectors - Biomass	N2O	21.61	54.71	20	200	201.00	0.205	0.000	0.000	0.080	0.014	0.081
1A4 Other sectors - Gaseous fuels	CH4	9.96	19.02	5	100	100.12	0.035	0.000	0.000	0.013	0.001	0.013
1A4 Other sectors - Gaseous fuels	CO_2	3 953.57	7 681.47	5	5	7.07	1.012	0.052	0.069	0.260	0.490	0.555

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A4 Other sectors - Gaseous fuels	N2O	1.88	3.60	5	200	200.06	0.013	0.000	0.000	0.005	0.000	0.005
1A4 Other sectors - Liquid fuels	CH4	20.48	2.42	5	100	100.12	0.005	0.000	0.000	-0.007	0.000	0.007
1A4 Other sectors - Liquid fuels	CO_2	6 324.89	1 294.73	5	2	5.39	0.130	-0.016	0.012	-0.032	0.083	0.089
1A4 Other sectors - Liquid fuels	N2O	24.74	11.85	5	200	200.06	0.044	0.000	0.000	0.000	0.001	0.001
1A4 Other sectors - Other Fossil Fuels	CH4	0.00	1.06	5	100	100.12	0.002	0.000	0.000	0.001	0.000	0.001
1A4 Other sectors - Other Fossil Fuels	CO_2	0.00	153.48	5	7	8.60	0.025	0.001	0.001	0.010	0.010	0.014
1A4 Other sectors - Other Fossil Fuels	N2O	0.00	1.34	5	200	200.06	0.005	0.000	0.000	0.002	0.000	0.002
1A4 Other sectors - Solid fuels	CH4	980.03	8.31	5	100	100.12	0.016	-0.004	0.000	-0.421	0.001	0.421

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1A4 Other sectors - Solid fuels	CO_2	12 328.29	99.94	5	7	8.60	0.016	-0.053	0.001	-0.371	0.006	0.371
1A4 Other sectors - Solid fuels	N2O	50.43	0.40	5	200	200.06	0.001	0.000	0.000	-0.043	0.000	0.043
1A5b Other	CH4	4.37	0.14	10	100	100.50	0.000	0.000	0.000	-0.002	0.000	0.002
1A5b Other	CO_2	901.22	81.30	10	5	11.18	0.017	-0.003	0.001	-0.016	0.010	0.019
1A5b Other	N2O	3.71	0.39	10	200	200.25	0.001	0.000	0.000	-0.003	0.000	0.003
1B1 Solid fuels	CH4	1 790.74	29.98	5	200	200.06	0.112	-0.008	0.000	-1.512	0.002	1.512
1B1 Solid fuels	CO_2	3.60	NA,NO	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
1B1 Solid fuels	N2O	0.00	0.00	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
1B2a Oil	CH4	217.91	68.53	0	90.1	90.05	0.115	0.000	0.001	-0.030	0.000	0.030
1B2a Oil	CO_2	5.57	0.47	0	47	46.81	0.000	0.000	0.000	-0.001	0.000	0.001
1B2b Natural Gas	CH4	1 155.71	992.67	0	353	353.13	6.533	0.004	0.009	1.380	0.000	1.380
1B2b Natural Gas	CO_2	2.28	0.61	0	249	249.45	0.003	0.000	0.000	-0.001	0.000	0.001
1B2c Venting and flaring	CH4	408.36	52.76	0	35	34.63	0.034	-0.001	0.000	-0.045	0.000	0.045
1B2c Venting and flaring	CO_2	570.66	150.99	0	424	424.19	1.194	-0.001	0.001	-0.481	0.000	0.481

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
1B2c Venting and flaring	N2O	1.13	0.32	0	611	611.16	0.004	0.000	0.000	-0.001	0.000	0.001
1B2d Other (Thermal water extraction + NatGas storage)	CH4	144.76	77.57	5	200	200.06	0.289	0.000	0.001	0.013	0.005	0.014
1B2d Other (Thermal water extraction + NatGas storage)	CO_2	0.04	0.01	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
2A1 Cement Production	CO_2	1 744.64	543.32	2.5	2.5	3.54	0.036	-0.003	0.005	-0.007	0.017	0.019
2A2 Lime Production	CO_2	606.79	46.72	2.5	2.5	3.54	0.003	-0.002	0.000	-0.006	0.001	0.006
2A3 Glass production	CO_2	87.63	13.87	2.5	2.5	3.54	0.001	0.000	0.000	-0.001	0.000	0.001
2A4 Other Process Uses of Carbonates	CO_2	453.29	112.19	2.5	2.5	3.54	0.007	-0.001	0.001	-0.002	0.004	0.004
2B1 Ammonia Production	CO_2	1 714.65	746.43	5	5	7.07	0.098	-0.001	0.007	-0.004	0.048	0.048
2B2 Nitric Acid Production	N2O	3 882.26	39.19	7.5	7.5	10.61	0.008	-0.017	0.000	-0.125	0.004	0.125

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
2B8 Petrochemical and carbon black production	CH4	22.85	41.13	3	10	10.44	0.008	0.000	0.000	0.003	0.002	0.003
2B8 Petrochemical and carbon black production	CO_2	571.26	1 335.77	7.5	7.5	10.61	0.264	0.010	0.012	0.072	0.128	0.147
2B10 Other	CO_2	0.00	431.91	7.5	7.5	10.61	0.085	0.004	0.004	0.029	0.041	0.051
2C1 Iron and Steel Production	CH4	12.19	0.00	10	10	14.14	0.000	0.000	0.000	-0.001	0.000	0.001
2C1 Iron and Steel Production	CO_2	4 578.59	15.13	7.5	5	9.01	0.003	-0.020	0.000	-0.099	0.001	0.099
2C2 Ferroalloys Production	CH4	0.28	0.00	5	37.5	37.83	0.000	0.000	0.000	0.000	0.000	0.000
2C2 Ferroalloys Production	CO_2	40.24	0.00	5	37.5	37.83	0.000	0.000	0.000	-0.007	0.000	0.007
2C3 Aluminium Production	CO_2	125.37	0.00	2	10	10.20	0.000	-0.001	0.000	-0.005	0.000	0.005
2C3 Aluminium Production	PFC	333.36	0.00	2	99	99.02	0.000	-0.001	0.000	-0.144	0.000	0.144

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
2D Non-energy products from fuels and solvent use	CO_2	242.62	95.34	5	50	50.25	0.089	0.000	0.001	-0.010	0.006	0.012
2F1 Refrigeration and Air Conditioning Equipment - HFC+PFC	Aggregate F-gases	0.00	1 403.74	10	10	14.14	0.370	0.013	0.013	0.127	0.179	0.220
2F2 Foam Blowing - HFC	Aggregate F-gases	0.00	81.88	50	21	54.23	0.083	0.001	0.001	0.016	0.052	0.055
2F3 Fire extinguishers - HFC	Aggregate F-gases	0.00	5.76	15	2	15.13	0.002	0.000	0.000	0.000	0.001	0.001
2F4 Aerosol + MDI - HFC	Aggregate F-gases	0.00	30.12	10	50	50.99	0.029	0.000	0.000	0.014	0.004	0.014
2G Other Product Manufacture and Use - SF6	Aggregate F-gases	7.52	118.30	3	40	40.11	0.088	0.001	0.001	0.041	0.005	0.042
2G Other Product Manufacture and Use	N2O	139.01	250.54	3	3	4.24	0.020	0.002	0.002	0.005	0.010	0.011

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G*D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I*F$ Note C	$J*E*\sqrt{2}$ Note D	K^2+L^2
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
3A Enteric Fermentation	CH4	4 649.52	2 257.81	0	12.55	12.55	0.528	0.000	0.020	0.001	0.000	0.001
3B Manure Management	CH4	1 366.98	634.17	0	12.95	12.95	0.153	0.000	0.006	-0.003	0.000	0.003
3B Manure Management	N2O	824.08	371.85	0	129.43	129.43	0.897	0.000	0.003	-0.032	0.000	0.032
3C Rice Cultivation	CH4	90.98	17.82	5	75.44	75.61	0.025	0.000	0.000	-0.018	0.001	0.018
3D Agricultural Soils	N2O	4 567.33	2 825.93	0	188.16	188.16	9.910	0.006	0.026	1.041	0.000	1.041
3F Field Burning of Agricultural Residues	CH4	51.96	0.20	40	50.00	64.03	0.000	0.000	0.000	-0.011	0.000	0.011
3F Field Burning of Agricultural Residues	N2O	12.75	0.05	40	50.00	64.03	0.000	0.000	0.000	-0.003	0.000	0.003
3G Liming	CO_2	130.21	1.22	10	20	22.36	0.001	-0.001	0.000	-0.011	0.000	0.011
3H Urea application	CO_2	229.03	114.58	5	20	20.62	0.044	0.000	0.001	0.001	0.007	0.007
3I Other carbon containing fertilizers	CO_2	48.11	80.90	5	20	20.62	0.031	0.001	0.001	0.010	0.005	0.012
5A Solid waste disposal	CH4	2 448.24	3 258.59	10	33	34.48	2.094	0.019	0.029	0.617	0.416	0.744

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
5B Biological Treatment of Solid Waste	CH4	5.60	128.00	10	140	140.36	0.335	0.001	0.001	0.158	0.016	0.159
5B Biological Treatment of Solid Waste	N2O	3.18	39.02	10	130	130.38	0.095	0.000	0.000	0.044	0.005	0.044
5C Incineration and open burning of waste	CH4	9.19	1.09	10	100	100.50	0.002	0.000	0.000	-0.003	0.000	0.003
5C Incineration and open burning of waste	CO_2	96.88	15.74	10	25	26.93	0.008	0.000	0.000	-0.007	0.002	0.007
5C Incineration and open burning of waste	N2O	9.21	1.13	10	100	100.50	0.002	0.000	0.000	-0.003	0.000	0.003
5D Wastewater Treatment and Discharge	CH4	834.89	255.00	30	40	50.00	0.238	-0.001	0.002	-0.054	0.098	0.112
5D Wastewater Treatment and Discharge	N2O	128.79	304.80	15	200	200.56	1.139	0.002	0.003	0.438	0.058	0.442
		Σ C	Σ D				$(\Sigma H^2)^{1/2}$					$(\Sigma M^2)^{1/2}$

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Input data	Input data	Input data Note A	Input data Note A	$\sqrt{E^2 + F^2}$	$\frac{(G * D)^2}{(\sum D)^2}$	Note B	$\left\|\frac{D}{\sum C}\right\|$	$I * F$ Note C	$J * E * \sqrt{2}$ Note D	$K^2 + L^2$
		Gg CO2 equivalent	Gg CO2 equivalent	%	%	%		%	%	%	%	%
TOTAL excluding LULUCF		110 760.57	53 659.11				12.4					2.9
TOTAL excluding LULUCF CRT		110 760.57	53 659.11				% SUM Uncertainty					

Table A2-2 Uncertainty calculation for CO_2 without LULUCF, Tier 1 method

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
1A1 Energy Industries - Gaseous fuels	CO2	5 731.22	4 720.12	1	3	3.16	0.378	0.024	0.055	0.073	0.078	0.106
1A1 Energy Industries - Liquid fuels	CO2	5 880.16	901.56	1	2	2.24	0.051	-0.021	0.010	-0.042	0.015	0.044
1A1 Energy Industries - Other fossil fuels	CO2	49.45	216.26	1	5	5.10	0.028	0.002	0.003	0.011	0.004	0.012
1A1 Energy Industries - Solid fuels	CO2	14 354.24	2 821.72	1	2	2.24	0.160	-0.044	0.033	-0.087	0.046	0.099
1A2 Manufacturing industries - Gaseous fuels	CO2	8 774.25	2 673.32	5	5	7.07	0.479	-0.016	0.031	-0.079	0.220	0.233
1A2 Manufacturing industries - Liquid fuels	CO2	4 240.03	887.06	5	2	5.39	0.121	-0.012	0.010	-0.025	0.073	0.077
1A2 Manufacturing industries - Other fossil fuels	CO2	0.00	296.60	5	5	7.07	0.053	0.003	0.003	0.017	0.024	0.030
1A2 Manufacturing industries - Solid fuels	CO2	3 816.20	180.24	5	5	7.07	0.032	-0.018	0.002	-0.091	0.015	0.092
1A3a Domestic aviation - All fuels	CO2	5.41	4.91	5	5	7.07	0.001	0.000	0.000	0.000	0.000	0.000
1A3b Road trasport - All Fuels	CO2	7 173.02	13 604.87	5	2	5.22	1.799	0.120	0.158	0.180	1.118	1.133
1A3c Railways - All Fuels	CO2	752.98	101.77	5	1	5.10	0.013	-0.003	0.001	-0.003	0.008	0.009

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
1A3d Domestic navigation - All Liquid fuels	CO2	340.55	12.67	5	2	5.22	0.002	-0.002	0.000	-0.003	0.001	0.003
1A3e Other Transportation (as specified in table 1A(a) sheet 3) - Pipeline, only gaseous	CO2	154.38	45.12	5	5	7.07	0.008	0.000	0.001	-0.001	0.004	0.004
1A4 Other sectors - Gaseous fuels	CO2	3 953.57	7 681.47	5	5	7.07	1.376	0.068	0.089	0.341	0.631	0.717
1A4 Other sectors - Liquid fuels	CO2	6 324.89	1 294.73	5	2	5.39	0.177	-0.019	0.015	-0.037	0.106	0.113
1A4 Other sectors - Other Fossil Fuels	CO2	0.00	153.48	5	7	8.60	0.033	0.002	0.002	0.012	0.013	0.018
1A4 Other sectors - Solid fuels	CO2	12 328.29	99.94	5	7	8.60	0.022	-0.065	0.001	-0.452	0.008	0.452
1A5b Other - Mobile	CO2	901.22	81.30	10	5	11.18	0.023	-0.004	0.001	-0.019	0.013	0.023
1B1 Solid fuels	CO2	3.60	NA,NO	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
1B2a Oil	CO2	5.57	0.47	0	47	46.81	0.001	0.000	0.000	-0.001	0.000	0.001
1B2b Natural Gas	CO2	2.28	0.61	0	249	249.45	0.004	0.000	0.000	-0.001	0.000	0.001
1B2c Venting and flaring	CO2	570.66	150.99	0	424	424.19	1.622	-0.001	0.002	-0.547	0.000	0.547
1B2d Other (Thermal water extraction + NatGas storage)	CO2	0.04	0.01	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
2A1 Cement Production	CO2	1 744.64	543.32	3	3	3.54	0.049	-0.003	0.006	-0.007	0.022	0.024
2A2 Lime Production	CO2	606.79	46.72	3	3	3.54	0.004	-0.003	0.001	-0.007	0.002	0.007

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
2A3 Glass production	CO2	87.63	13.87	3	3	3.54	0.001	0.000	0.000	-0.001	0.001	0.001
2A4 Other Process Uses of Carbonates	CO2	453.29	112.19	3	3	3.54	0.010	-0.001	0.001	-0.003	0.005	0.005
2B1 Ammonia Production	CO2	1 714.65	746.43	5	5	7.07	0.134	0.000	0.009	-0.002	0.061	0.061
2B8 Petrochemical and carbon black production	CO2	571.26	1 335.77	8	8	10.61	0.359	0.012	0.016	0.094	0.165	0.189
2B10 Other	CO3	0.00	431.91	8	8	10.61	0.116	0.005	0.005	0.038	0.053	0.065
2C1 Iron and Steel Production	CO2	4 578.59	15.13	8	5	9.01	0.003	-0.024	0.000	-0.121	0.002	0.121
2C2 Ferroalloys Production	CO2	40.24	0.00	5	38	37.83	0.000	0.000	0.000	-0.008	0.000	0.008
2C3 Aluminium Production	CO2	125.37	0.00	2	10	10.20	0.000	-0.001	0.000	-0.007	0.000	0.007
2D Non-energy products from fuels and solvent use	CO2	242.62	95.34	5	50	50.25	0.121	0.000	0.001	-0.009	0.008	0.012
3G Liming	CO2	130.21	1.22	10	20	22.36	0.001	-0.001	0.000	-0.014	0.000	0.014
3H Urea application	CO2	229.03	114.58	5	20	20.62	0.060	0.000	0.001	0.002	0.009	0.010
3I Other carboncontaining fertilizers	CO2	48.11	80.90	5	20	20.62	0.042	0.001	0.001	0.014	0.007	0.015
5C Incineration and open burning of waste	CO2	96.88	15.74	10	25	26.93	0.011	0.000	0.000	-0.008	0.003	0.009
		Σ C	Σ D				(ΣH2)1/2					(ΣM2)1/2

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
TOTAL excluding LULUCF		86 031.31	39 482.35				2.9					1.6
TOTAL excluding LULUCF CRF		86 031.31	39 482.35				% SUM Uncertainty					

Table A2-3 Uncertainty calculation for CH4 without LULUCF, Tier 1 method

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
1A1 Energy Industries - Biomass	CH4	0.66	17.94	5	100	100.12	0.215	0.001	0.001	0.121	0.009	0.121
1A1 Energy Industries - Gaseous fuels	CH4	2.88	2.34	1	100	100.00	0.028	0.000	0.000	0.005	0.000	0.005
1A1 Energy Industries - Liquid fuels	CH4	6.03	0.60	1	100	100.00	0.007	0.000	0.000	-0.020	0.000	0.020
1A1 Energy Industries - Other fossil fuels	CH4	0.66	2.14	1	100	100.00	0.026	0.000	0.000	0.012	0.000	0.012
1A1 Energy Industries - Solid fuels	CH4	4.03	0.75	1	100	100.00	0.009	0.000	0.000	-0.011	0.000	0.011
1A2 Manufacturing industries - Biomass	CH4	0.33	9.75	5	100	100.12	0.117	0.001	0.001	0.066	0.005	0.066
1A2 Manufacturing industries - Gaseous fuels	CH4	4.42	1.32	5	100	100.12	0.016	0.000	0.000	-0.008	0.001	0.008
1A2 Manufacturing industries - Liquid fuels	CH4	4.86	0.27	5	100	100.12	0.003	0.000	0.000	-0.017	0.000	0.017
1A2 Manufacturing industries - Other fossil fuels	CH4	0.00	3.59	5	100	100.12	0.043	0.000	0.000	0.025	0.002	0.025
1A2 Manufacturing industries - Solid fuels	CH4	9.20	0.32	5	100	100.12	0.004	0.000	0.000	-0.034	0.000	0.034
1A3a Domestic aviation - All fuels	CH4	0.00	0.00	5	100	100.12	0.000	0.000	0.000	0.000	0.000	0.000
1A3b Road transport - All Fuels	CH4	60.54	22.18	5	100	100.12	0.266	-0.001	0.002	-0.087	0.011	0.088
1A3c Railways - All Fuels	CH4	1.16	0.16	5	250	250.05	0.005	0.000	0.000	-0.009	0.000	0.009
1A3d Domestic navigation - All Liquid fuels	CH4	0.94	0.03	5	50	50.25	0.000	0.000	0.000	-0.002	0.000	0.002

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
1A3e Other Transportation (as specified in table 1A(a) sheet 3) - Pipeline, only gaseous	CH4	0.078	0.022	5	100	100.12	0.000	0.000	0.000	0.000	0.000	0.000
1A4 Other sectors - Biomass	CH4	171.21	433.47	20	100	101.98	5.300	0.023	0.030	2.311	0.846	2.461
1A4 Other sectors - Gaseous fuels	CH4	9.96	19.02	5	100	100.12	0.228	0.001	0.001	0.092	0.009	0.092
1A4 Other sectors - Liquid fuels	CH4	20.48	2.42	5	100	100.12	0.029	-0.001	0.000	-0.065	0.001	0.065
1A4 Other sectors - Other Fossil Fuels	CH4	0.00	1.06	5	100	100.12	0.013	0.000	0.000	0.007	0.001	0.007
1A4 Other sectors - Solid fuels	CH4	980.03	8.31	5	100	100.12	0.100	-0.038	0.001	-3.832	0.004	3.832
1A5b Other - Mobile	CH4	4.37	0.14	10	100	100.50	0.002	0.000	0.000	-0.016	0.000	0.016
1B1 Solid fuels	CH4	1 790.74	29.98	5	200	200.06	0.719	-0.069	0.002	-13.794	0.015	13.794
1B2a Oil	CH4	217.91	68.53	0	90	90.05	0.740	-0.004	0.005	-0.353	0.000	0.353
1B2b Natural Gas	CH4	1 155.71	992.67	0	353	353.13	42.026	0.023	0.068	7.973	0.000	7.973
1B2c Venting and flaring	CH4	408.36	52.76	0	35	34.63	0.219	-0.013	0.004	-0.435	0.000	0.435
1B2d Other (Thermal water extraction + NatGas storage)	CH4	144.76	77.57	5	200	200.06	1.861	0.000	0.005	-0.079	0.038	0.088
2B8 Petrochemical and carbon black production	CH4	22.85	41.13	3	10	10.44	0.051	0.002	0.003	0.019	0.012	0.023
2C1 Iron and Steel Production	CH4	12.19	0.00	10	10	14.14	0.000	0.000	0.000	-0.005	0.000	0.005
2C2 Ferroalloys Production	CH4	0.28	0.00	5	38	37.83	0.000	0.000	0.000	0.000	0.000	0.000
3A Enteric Fermentation	CH4	4 649.52	2 257.81	0	13	12.55	3.398	-0.029	0.156	-0.361	0.000	0.361
3B Manure Management	CH4	1 366.98	634.17	0	13	12.95	0.984	-0.011	0.044	-0.136	0.000	0.136
3C Rice Cultivation	CH4	90.98	17.82	5	75	75.61	0.162	-0.002	0.001	-0.180	0.009	0.180

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq	%								
3F Field Burning of Agricultural Residues	CH4	51.96	0.20	40	50	64.03	0.002	-0.002	0.000	-0.102	0.001	0.102
5A Solid waste disposal	CH4	2 448.24	3 258.59	10	33	34.48	13.471	0.127	0.225	4.204	3.180	5.271
5B Biological Treatment of Soild Waste	CH4	5.60	128.00	10	140	140.36	2.154	0.009	0.009	1.205	0.125	1.212
5C Incineration and open burning of waste	CH4	9.19	1.09	10	100	100.50	0.013	0.000	0.000	-0.029	0.001	0.029
5D Wastewater Treatment and Discharge	CH4	834.89	255.00	30	40	50.00	1.529	-0.016	0.018	-0.622	0.747	0.972
		Σ C	Σ D				(ΣH2)1/2					(ΣM2)1/2
TOTAL excluding LULUCF		14 492.00	8 341.16				**44.7**					**17.5**
TOTAL excluding LULUCF CRF		**14 492.00**	**8 341.16**				**% SUM Uncertainty**					

Table A2-4 Uncertainty calculation for N_2O without LULUCF, Tier 1 method

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq									%
1A1 Energy Industries - Biomass	N2O	0.83	22.62	5	200	200.06	1.079	0.002	0.002	0.450	0.016	0.450
1A1 Energy Industries - Gaseous fuels	N2O	2.73	2.21	1	200	200.00	0.106	0.000	0.000	0.021	0.000	0.021
1A1 Energy Industries - Liquid fuels	N2O	11.14	0.86	1	200	200.00	0.041	0.000	0.000	-0.078	0.000	0.078
1A1 Energy Industries - Other fossil fuels	N2O	0.83	2.82	1	200	200.00	0.134	0.000	0.000	0.050	0.000	0.050
1A1 Energy Industries - Solid fuels	N2O	56.37	10.42	1	200	200.00	0.497	-0.001	0.001	-0.272	0.001	0.272
1A2 Manufacturing industries - Biomass	N2O	0.41	12.45	5	200	200.06	0.594	0.001	0.001	0.248	0.009	0.248
1A2 Manufacturing industries - Gaseous fuels	N2O	4.18	1.25	5	200	200.06	0.060	0.000	0.000	-0.011	0.001	0.011
1A2 Manufacturing industries - Liquid fuels	N2O	12.43	8.16	5	200	200.06	0.389	0.000	0.001	0.058	0.006	0.059
1A2 Manufacturing industries - Other fossil fuels	N2O	0.00	4.53	5	200	200.06	0.216	0.000	0.000	0.092	0.003	0.092
1A2 Manufacturing industries - Solid fuels	N2O	12.93	0.84	5	200	200.06	0.040	0.000	0.000	-0.094	0.001	0.094
1A3a Domestic aviation - All fuels	N2O	0.04	0.04	5	150	150.08	0.001	0.000	0.000	0.000	0.000	0.000
1A3b Road transport - All Fuels	N2O	47.10	214.01	5	200	200.06	10.204	0.020	0.022	3.921	0.153	3.924
1A3c Railways - All Fuels	N2O	74.66	10.33	5	300	300.04	0.739	-0.002	0.001	-0.646	0.007	0.646
1A3d Domestic navigation - All Liquid fuels	N2O	2.55	0.09	5	140	140.09	0.003	0.000	0.000	-0.014	0.000	0.014
1A3e Other Transportation (as specified in table 1A(a) sheet 3) - Pipeline, only gaseous	N2O	0.07	0.02	5	200	200.06	0.001	0.000	0.000	0.000	0.000	0.000
1A4 Other sectors - Biomass	N2O	21.61	54.71	20	200	201.00	2.621	0.005	0.006	0.921	0.156	0.934
1A4 Other sectors - Gaseous fuels	N2O	1.88	3.60	5	200	200.06	0.172	0.000	0.000	0.057	0.003	0.057
1A4 Other sectors - Liquid fuels	N2O	24.74	11.85	5	200	200.06	0.565	0.000	0.001	0.027	0.008	0.029
1A4 Other sectors - Other Fossil Fuels	N2O	0.00	1.34	5	200	200.06	0.064	0.000	0.000	0.027	0.001	0.027

CRT	Pollutant	Base year emissions	Year t emissions	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in the year t	Type A sensitivity	Type B sensitivity	Uncertainty introduced in trend in national emissions introduced by emission factor uncertainty	Uncertainty introduced in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced in trend in national emissions
		Gg CO2 eq	Gg CO2 eq									%
1A4 Other sectors - Solid fuels	N2O	50.43	0.40	5	200	200.06	0.019	-0.002	0.000	-0.424	0.000	0.424
1A5b Other - Mobile	N2O	3.71	0.39	10	200	200.25	0.018	0.000	0.000	-0.024	0.001	0.024
1B1 Solid fuels	N2O	0.00	0.00	5	200	200.06	0.000	0.000	0.000	0.000	0.000	0.000
1B2c Venting and flaring	N2O	1.13	0.32	0	611	611.16	0.047	0.000	0.000	-0.010	0.000	0.010
2B2 Nitric Acid Production	N2O	3 882.26	39.19	8	8	10.61	0.099	-0.162	0.004	-1.213	0.042	1.214
2G Other Product Manufacture and Use	N2O	139.01	250.54	3	3	4.24	0.253	0.019	0.025	0.058	0.107	0.122
3B Manure Management	N2O	824.08	371.85	0	129	129.43	11.471	0.002	0.038	0.294	0.000	0.294
3D Agricultural Soils	N2O	4 567.33	2 825.93	0	188	188.16	126.731	0.089	0.286	16.835	0.000	16.835
3F Field Burning of Agricultural Residues	N2O	12.75	0.05	40	50	64.03	0.001	-0.001	0.000	-0.027	0.000	0.027
5B Biological Treatment of Solid Waste	N2O	3.18	39.02	10	130	130.38	1.213	0.004	0.004	0.495	0.056	0.498
5C Incineration and open burning of waste	N2O	9.21	1.13	10	100	100.50	0.027	0.000	0.000	-0.028	0.002	0.028
5D Wastewater Treatment and Discharge	N2O	128.79	304.80	15	200	200.56	14.570	0.025	0.031	5.056	0.653	5.098
		Σ C	Σ D				(ΣH2)1/2					(ΣM2)1/2
TOTAL excluding LULUCF		**9 896.39**	**4 195.79**				**128.5**					**18.1**
TOTAL excluding LULUCF CRF		**9 896.39**	**4 195.79**				**% SUM Uncertainty**					

ANNEX 3. Detailed methodological descriptions for individual source or sink categories

A3.1 Fugitive emissions

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			Source of EMISSION FACTORS		Recovery/Flaring[2]
	Description	Unit	Source	CH_4[1]	CO_2	-
1. B. 1. a. Coal mining and handling						
i.Underground mines[4]	Underground coal production	kt	IEA	-	Recovery/ flaring of Mecsek basin	Data from the Hungarian Office for Mining (2007)
Mining activities	Coal production in Mecsek basin - including surfaces mines	Mt	Supervisory Authority for Regulatory Affairs of Hungary (SARA)	CS: Regional Centre for Energy Policy Research, 2005 (http://www.rekk.eu/images/stories/letoltheto/uhg-ag-vol2.pdf)	-	-
	Coal production from all other underground Mines	Mt	Supervisory Authority for Regulatory Affairs of Hungary (SARA)	CS: Regional Centre for Energy Policy Research, 2005 (http://www.rekk.eu/images/stories/letoltheto/uhg-ag-vol2.pdf)	-	-
Post-mining activities	Underground coal production	kt	IEA	-	-	-
	Coal production in Mecsek basin - including surfaces mines	Mt	Supervisory Authority for Regulatory Affairs of Hungary (SARA)	CS: 10% of the mining emission factor - like IPCC 2006 GLs T1 methodology	-	-

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			Source of EMISSION FACTORS		Recovery/Flaring[2]
	Description	Unit	Source	CH_4[1]	CO_2	-
1. B. 1. a. Coal mining and handling						
	Coal production from all other underground Mines	Mt	Supervisory Authority for Regulatory Affairs of Hungary (SARA)	CS: 10% of the mining emission factor - like IPCC 2006 GLs T1 methodology	-	-
Abandoned underground mines	Abandoned and still unflooded mines	number of abandoned and unflooded mines year by yearl	Mecsek Mining Resources and Extraction Nonprofit Ltd.	IPCC 2006 GLs, T1 emission factors (extended with the 2019 Refinement)	-	-
ii. Surface mines[4]	Mined Hungarian lignite is relatively young in the coalification therefore - according to the research project conducted by Regional Centre for Energy Policy Research - mining activities do not cause emissions. Emissions are only calculated for Hungarian „brown coal”			-	-	-
Mining activities				-	-	-
Post-mining activities				-	-	-
1. B. 1. b. Solid fuel transformation[5]	Coke production	Mt	IEA	Refinement Table 4.3.7	ETS	ETS
1. B. 1. c. Other (*please specify*)[6]	-	-	-			-

REENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			Source of EMISSION FACTORS		
	Description	Unit	Source of data	CO_2	CH_4	N_2O
1. B. 2. a. Oil						
1. Exploration		NA	IE to 1B2c			
2. Production	Conventional oil production	1000 m3	**IEA, data converted kt to thousand m³**	**IPCC 2006 GLs, production**	**IPCC 2006 GLs, production**	
3. Transport	Oil transported by pipeline	1000 m3	**MOL Hungary**	**IPCC 2006 GLs, pipelines**	**IPCC 2006 GLs, mpipelines**	
	Oil transported by tanker trucks and rail cars	1000 m3	**MOL Hungary**	**IPCC 2006 GLs, tanker trucks and rail cars**	**IPCC 2006 GLs, tanker trucks and rail cars**	
	Condensate and Pentanes Plus transport	1000 m3	**MOL Hungary**	**IPCC 2006 GLs, condensates**	**IPCC 2006 GLs, condensates**	
	LPG	1000 m3	**MOL Hungary**	**IPCC 2006 GLs, LPG**		
4. Refining/storage	Oil refined	1000 m3	**IEA, data converted kt to thousand m³**		**IPCC 2006 GLs, refining**	
5. Distribution of oil products		NA	NA			
6. Other		NO	NO			
1. B. 2. b. Natural gas						
1. Exploration		NA	IE			
2. Production	Gas production	million m3	**IEA**	**IPCC 2006 GLs, gas production**	**IPCC 2006 GLs, gas production**	
3. Processing	Sweet gas plants-raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas processing**	**IPCC 2006 GLs, gas processing**	

REENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			Source of EMISSION FACTORS		
	Description	Unit	Source of data	CO_2	CH_4	N_2O
	Sour Gas Plants - raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas processing**	**IPCC 2006 GLs, gas processing**	
	Deep cut Plants - raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas processing**	**IPCC 2006 GLs, gas processing**	
4. Transmission and storage	Pipeline length	km3	Supervisory Authority for Regulatory Affairs of Hungary (SARA)	IPCC 2006 GLs, transmission	CS + 2019 Refinement: transmission + FGSZ Ltd, operator of the Hungarian high-pressure natural gas pipeline system	
	Inland consumption	million m3	IEA/ Hungarian Energy and Public Utility Regulatory Authority	IPCC 2006 GLs, storage	CS + 2019 Refinement: storage + plant specific information	
5. Distribution	Pipeline length	km	Supervisory Authority for Regulatory Affairs of Hungary (SARA)	IPCC 2006 GLs, gas distribution	CS + 2019 Refinement: gas distribution + Hungarian Energy and Public Utility Regulatory Authority (MEKH)	
6. Other		NO	**NO**			
1. B. 2. c. Venting and flaring						
Venting						
i. Oil	Conventional oil production	1000 m3	**IEA, data converted kt to thousand m³**	**IPCC 2006 GLs, oil production venting**	**IPCC 2006 GLs, oil production venting**	
ii. Gas	Sour gas plants-raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas production venting (raw CO_2 venting)**		
iii. Combined		NO	IE to 1B2c1.Venting i. Oil			
Flaring						

REENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			Source of EMISSION FACTORS		
	Description	Unit	Source of data	CO_2	CH_4	N_2O
i. Oil	Conventional oil production	1000 m3	**IEA, data converted kt to thousand m³**	**IPCC 2006 GLs, oil production flaring**	**IPCC 2006 GLs, oil production flaring**	**IPCC 2006 GLs, oil production flaring**
	Conventional oil production	1000 m3	**IEA, data converted kt to thousand m³**	**IPCC 2006 GLs, wells drilling**	**IPCC 2006 GLs, wells drilling**	
	Conventional oil production	1000 m3	**IEA, data converted kt to thousand m³**	**IPCC 2006 GLs, wells testing**	**IPCC 2006 GLs, wells testing**	**IPCC 2006 GLs, wells testing**
	Conventional oil production	1000 m3	**IEA, data converted kt to thousand m³**	**IPCC 2006 GLs, wells servicing**	**IPCC 2006 GLs, wells servicing**	**IPCC 2006 GLs, wells servicing**
	Gas flared	million m3	**EU ETS: 2006-2018, extrapolation with IEA "refinery intake": 1985-2004**	**EU ETS: 2006-2018, extrapolation with IEA "refinery intake": 1985-2005**	**IPCC 2006 GLs, oil refinery flaring**	**IPCC 2006 GLs, oil refinery flaring**
ii. Gas	Gas production	million m3	**IEA**	**IPCC 2006 GLs, gas production flaring**	**IPCC 2006 GLs, gas production flaring**	**IPCC 2006 GLs, gas production flaring**
	Sweet Gas Plants - raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas processing - sweet gas plants flaring**	**IPCC 2006 GLs, gas processing - sweet gas plants flaring**	**IPCC 2006 GLs, gas processing - sweet gas plants flaring**
	Sour Gas Plants - raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas processing - sour gas plants flaring**	**IPCC 2006 GLs, gas processing - sour gas plants flaring**	**IPCC 2006 GLs, gas processing - sour gas plants flaring**
	Deep cut Plants - raw gas feed	million m3	**MOL Hungary**	**IPCC 2006 GLs, gas processing -deep-cut plants flaring**	**IPCC 2006 GLs, gas processing -deep-cut plants flaring**	**IPCC 2006 GLs, gas processing - deep-cut plants flaring**
iii. Combined		NA	IE to 1B2c2. Flaring i. Oil			
1.B.2.d. Other						

REENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			Source of EMISSION FACTORS		
	Description	Unit	Source of data	CO_2	CH_4	N_2O
Groundwater extraction and CO2 mining	Annual freshwater abstraction	million m3	**EUROSTAT, HCSO**		**MFGI (Geological and Geophysical Institute of Hungary)**	
	CO_2 mined in HU	million m3	**MBFH (Hungarian Office for Mining and Geology)**	**IPCC 2006 GLs, natural gas production CO_2 EF**		

A3.2 IPPU sector

Non-energy use of fuels

Year: 2024				Unit	Solids							Liquids												Gas	
					Coal	Coke	Coal tars	Coal oils	BF/OF gas	(CO gas) b)	Total solids	Naphtha	Gas oil	Fuel Oil	Ethane	LPG b)	Pet.coke	Other	Chem. gas	Lubricants	Waxes	Bitumen	Total liquids	Nat Gas	Total gas
A: Declared NEU (from commodity balance)				TJ	0.0	438.3	570.0	0.0	0.0	0.0		40866.0	0.0	0	0	10417.5	0	14342.0	0	1194.0	537.0	7089.5		26716.5	
B: Carbon Content				kg C/GJ	25.8	29.2	22.0	29.1	70.8	70.8		20.0	20.2	21.1	16.8	17.2	26.6	20.0	20.0	20.0	20.0	22.0		15.3	
C: Total supplied for feedstock/non-energy	[C = A * B / 1000]			Gg C	0.0	12.8	12.5	0.0	0.0	0.0	25.3	817.3	0.0	0.0	0.0	179.2	0.0	286.8	0.0	23.9	10.7	156.0	1473.9	408.8	408.8
D: Total supplied for feedstock/non-energy	**[D = C * 44/12]**			Gg CO_2-eq.	0.0	46.9	46.0	0.0	0.0	0.0	92.9	2996.8	0.0	0.0	0.0	657.0	0.0	1051.7	0.0	87.6	39.4	571.9	5404.4	1498.8	1498.8
E: Implied carbon fraction oxidised	**[E = F / D * 100]**			%		0.0	0.0				0.0	0.0				0.0		0.0		0.2	0.2	0.0	0.2	1.0	1.0
	Activity a)	CO_2 Emissions a	IEF CO_2																						
F: Total fossil IPPU CO_2 reported		2534.2		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	7.9	0.0	1097.7	1436.5	1436.5
2 INDUSTRIAL PROCESSES				Gg CO_2																					
2A: Mineral Industry		0.0		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Please specify the subcategory.)				Gg CO_2																					
2B: Chemical Industry		2509.1		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1072.6	1436.5	1436.5
2B1: Ammonia Production		1229.2		Gg CO_2																				1229.2	1229.2
2B5: Carbide Production				Gg CO_2																					
2B6: Titanium Dioxide Production				Gg CO_2																					
2B8: Petrochemical and Carbon Black Production		1279.8		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0												1072.6	207.2	207.2
2B8a: Methanol				Gg CO_2																					
2B8b: Ethylene				Gg CO_2																					
2B8f: Carbon Black				Gg CO_2																					
2B10: Other				Gg CO_2																					
2C: Metal Industry		0.0		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2C1: Iron and Steel Production				Gg CO_2		0.0					0.0													0.0	0.0
2C2: Ferroalloys Production				Gg CO_2																					
2C3: Aluminium Production				Gg CO_2																					
2C5: Lead Production				Gg CO_2																					
2C6: Zinc Production				Gg CO_2																					
2C7: Other				Gg CO_2																					
2D: Non-Energy Products from Fuels and Solvent Use		25.1		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	7.9	0.0	25.1	0.0	0.0
2D1: Lubricant Use		17.3		Gg CO_2																17.3			17.3		
2D2: Paraffin Wax Use		7.9		Gg CO_2																	7.9		7.9		
2D3: Solvent Use				Gg CO_2																			0.0		
2D4: Other				Gg CO_2																			0.0		
2H: Other		0.0		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2H1: Pulp and Paper Industry				Gg CO_2																					
2H2: Food and Beverages Industry				Gg CO_2																					
2F3: Other				Gg CO_2																					
EXCEPTIONS REPORTED ELSEWHERE				Gg CO_2																					
1A FUEL COMBUSTION ACTIVITIES		0.0		Gg CO_2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1A1a: Main Activity Electricity and Heat Production				Gg CO_2		0.0					0.0														
1A1b: Petroleum Refining				Gg CO_2																					
1A1c: Manufacture of Solid Fuels and Other Energy Industries				Gg CO_2																					
1A2: Manufacturing Industries and Construction				Gg CO_2																					

A3.3 WASTE sector

Activity data used in the IPCC Waste model and the resulting methane emissions are summarized in the table below.

Year	Food	Garden	Paper	Wood	Textile	Nappies/ Clinical	Sludge	C&D	Total	CH4 Emission
1950	366	37	270	95	61	1	25	364	NE	-
1960	429	43	307	93	78	1	25	364	NE	-
1970	532	51	355	90	102	1	42	611	NE	-
1980	951	90	611	121	196	1	69	993	NE	-
1985-87	1272	121	807	131	275	1	77	1109	19351	**83.8**
1990	1265	119	787	110	279	1	77	993	19414	**101.3**
1991	1240	100	608	94	113	15	68	843	18524	**105.1**
1992	1309	105	658	97	159	29	65	803	16935	**107.3**
1993	1124	102	591	94	233	42	65	784	17354	**110.0**
1994	1131	107	659	98	198	58	67	835	16866	**112.0**
1995	1167	104	601	97	158	71	59	711	17493	**114.4**
1996	1135	111	711	102	135	112	61	751	17944	**116.3**
1997	1043	118	764	108	237	138	69	805	17602	**118.6**
1998	1161	118	730	108	261	119	70	900	17373	**121.3**
1999	1157	121	822	110	214	122	60	953	17257	**124.2**
2000	1452	112	521	103	139	50	76	998	16940	**127.2**
2001	1429	111	601	102	101	75	83	1062	16188	**128.0**
2002	1108	115	635	105	124	89	77	1198	15436	**132.1**
2003	1104	119	629	109	128	100	88	1269	14685	**135.5**
2004	1111	116	596	106	121	86	35	1337	13933	**136.6**
2005	1157	81	575	93	125	94	67	1526	11150	**138.1**
2006	962	74	567	97	134	101	51	1842	10962	**137.5**
2007	856	63	397	93	131	90	53	1784	10898	**137.9**
2008	828	55	452	86	145	118	48	1932	9864	**136.8**
2009	814	57	419	67	150	147	39	1373	8912	**137.8**
2010	659	20	380	53	135	127	27	939	7549	**136.5**
2011	645	20	360	50	132	127	25	755	8639	**130.5**
2012	623	16	356	42	126	126	22	491	6952	**133.3**
2013	672	3	350	33	120	135	22	144	5942	**126.1**
2014	599	3	440	31	113	122	21	82	5161	**122.6**
2015	454	2	320	41	97	109	20	37	5078	**121.1**
2016	430	2	304	51	100	121	14	37	4796	**117.4**
2017	462	1	330	61	97	125	17	47	4155	**117.5**
2018	509	1	377	67	113	139	9	40	4159	**117.0**
2019	508	3	397	78	138	142	8	78	4109	**116.8**
2020	479	10	348	80	127	162	8	72	4212	**116.0**
2021	418	6	404	94	122	127	10	58	3998	**115.2**
2022	396	6	441	91	125	150	10	63	3966	**116.2**
2023	496	4	413	84	126	144	9	75	3753	**117.2**
2024	426	1	267	87	133	130	6	102	3683	**116.4**
Trend 1990-2024	**-66%**	**-99%**	**-66%**	**-21%**	**-52%**	**10967%**	**-92%**	**-90%**	**-81%**	**15%**
Trend 2005-2024	**-63%**	**-99%**	**-54%**	**-7%**	**6%**	**38%**	**-90%**	**-93%**	**-67%**	**-16%**

ANNEX 4. The national energy balance for the most recent inventory year

In the following page, the aggregated energy balance of Hungary is presented. This energy balance was produced by the energy statistics provider (i.e. Hungarian Energy and Public Utility Regulatory Authority) and was downloaded from their site:

https://mekh.hu/download/3/c5/b1000/7_2_annual_national_energy_balance_2014_2024.xlsx

In addition, the time series of the primary energy balance as published by the HCSO is presented in the table below. (https://www.ksh.hu/stadat_files/ene/en/ene0002.html)

HUNGARIAN CENTRAL STATISTICAL OFFICE

6.1.1.2. Primary energy balance

Year	Production [a]	Imports [b]	Exports [c]	Change in stocks (–) [d]	Energy consumption, total [e]
	petajoules				
1990	614.9	665.4	72.6	3.1	1,210.9
1991	604.7	580.5	51.8	21.9	1,155.3
1992	582.6	532.8	65.2	6.0	1,056.2
1993	573.5	604.3	91.5	-4.0	1,082.3
1994	556.2	594.1	103.2	4.8	1,051.9
1995	581.6	623.7	103.5	-10.8	1,091.0
1996	571.2	666.2	93.5	-24.8	1,119.2
1997	557.9	658.4	96.0	-22.5	1,097.8
1998	521.8	684.3	92.7	-29.9	1,083.5
1999	499.0	672.5	97.8	2.6	1,076.4
2000	486.4	685.2	104.6	-10.5	1,056.5
2001	473.2	703.2	126.4	30.6	1,080.7
2002	468.9	753.3	138.9	-2.7	1,080.6
2003	435.9	816.2	131.8	-17.4	1,102.8
2004	428.6	804.0	131.8	0.5	1,101.2
2005	455.1	910.4	172.0	-7.9	1,185.6
2006	452.5	911.6	185.8	-3.0	1,175.3
2007	449.3	885.3	192.3	8.5	1,150.8
2008	456.2	897.3	186.0	-31.0	1,136.5
2009	490.3	750.0	127.9	-33.1	1,079.4
2010	496.9	789.2	156.4	-9.9	1,119.8
2011	493.2	732.5	185.1	55.2	1,095.7
2012	492.1	720.8	201.8	30.2	1,041.3
2013	480.4	721.4	220.3	25.8	1,007.3
2014	464.1	806.1	210.2	-55.0	1,005.1
2015	472.9	757.2	189.4	21.5	1,062.2
2016	480.2	771.0	175.1	-0.3	1,075.8
2017	474.7	887.9	188.6	-49.9	1,124.1
2018	462.4	854.6	204.9	12.5	1,124.6
2019	460.9	975.9	196.8	-112.4	1,127.5
2020	451.7	797.9	178.2	31.4	1,102.7
2021	454.1	796.2	175.9	80.2	1,154.6
2022	451.0	851.1	158.4	-58.1	1,085.6
2023	450.1	799.7	168.2	-58.9	1,022.6
2024	475.8	725.9	226.1	49.8	1,025.5

MEKH
Hungarian Energy and Public Utility Regulatory Authority

7.2 Annual National Energy Balance, 2024

Select the Unit of Measure: terajoule

Name	Coal and coal products	Oil and petroleum products	Natural gas	Combustible renewables and waste	Nuclear	Water	Wind	Solar	Geothermal	Electricity	Heat	Total
Production	**26,654**	**53,245**	**54,794**	**121,080**	**175,102**	**832**	**2,372**	**33,863**	**7,891**		**0**	**475,833**
Import	**6,336**	**428,279**	**195,069**	**14,468**					**0**	**81,778**	**0**	**725,930**
Export	**-3,888**	**-156,174**	**0**	**-22,854**					**0**	**-43,157**	**0**	**-226,074**
International aviation		**-15,738**	**0**	**0**					**0**	**0**		**-15,738**
Stocks changes	**1,853**	**587**	**47,178**	**175**					**0**	**0**		**49,792**
Domestic supply	**30,955**	**310,198**	**297,041**	**112,870**	**175,102**	**832**	**2,372**	**33,863**	**7,891**	**38,621**	**0**	**1,009,744**
Interproduct transfers	**0**	**78**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**78**
Statistical difference	**-93**	**100**	**4,023**	**-76**	**0**	**0**	**0**	**0**	**0**	**-4,160**	**-946**	**-1,153**
Transformation sector	**-26,994**	**277**	**-78,855**	**-32,983**	**-175,102**	**-832**	**-2,372**	**-33,120**	**-4,127**	**136,580**	**43,209**	**-174,318**
Energy sector own use	**-445**	**-15,617**	**-8,932**	**-646**	**0**	**0**	**0**	**0**	**0**	**-10,254**	**-2,357**	**-38,250**
Network losses	**-1**	**0**	**-3,213**	**0**	**0**	**0**	**0**	**0**	**0**	**-9,713**	**-3,469**	**-16,396**
Final consumption	**3,422**	**295,036**	**210,064**	**79,165**	**0**	**0**	**0**	**743**	**3,764**	**151,074**	**36,437**	**779,704**
Industry	**1,852**	**24,015**	**50,883**	**15,683**	**0**	**0**	**0**	**0**	**69**	**67,234**	**13,654**	**173,390**
Iron and steel	104	43	876	11	0	0	0	0	0	1,505	341	**2,879**
Chemical and petrochemical	0	12,207	11,007	377	0	0	0	0	0	15,527	10,757	**49,874**
Non-ferrous metals	0	89	2,660	2	0	0	0	0	0	1,850	30	**4,631**
Non-metallic minerals	638	1,204	4,744	4,221	0	0	0	0	15	3,395	92	**14,308**
Transport equipment	0	89	2,741	5	0	0	0	0	4	6,386	430	**9,655**
Machinery	9	397	7,502	85	0	0	0	0	8	13,280	83	**21,365**
Mining and quarrying	0	937	175	2	0	0	0	0	0	382	0	**1,495**
Food, beverages and tobacco	88	900	13,217	3,912	0	0	0	0	13	9,900	1,255	**29,285**
Paper, pulp and printing	804	105	2,278	3,542	0	0	0	0	0	3,200	512	**10,440**
Wood and wood products	9	305	179	3,199	0	0	0	0	0	1,411	0	**5,103**
Construction	45	7,564	1,357	80	0	0	0	0	15	1,901	68	**11,030**
Textiles and leather	0	0	377	3	0	0	0	0	0	590	23	**994**
Not elsewhere specified (Industry)	155	177	3,770	244	0	0	0	0	14	7,906	63	**12,329**
Transport	**0**	**185,924**	**1,301**	**12,291**	**0**	**0**	**0**	**0**	**0**	**5,069**	**0**	**204,585**
Road	0	184,346	503	12,291	0	0	0	0	0	778	0	**197,918**
Domestic aviation	0	44	0	0	0	0	0	0	0	0	0	**44**
Rail	0	1,363	0	0	0	0	0	0	0	4,259	0	**5,622**
Pipeline transport	0	0	798	0	0	0	0	0	0	32	0	**831**
Domestic navigation	0	170	0	0	0	0	0	0	0	0	0	**170**
Non-specified - transport	0	0	0	0	0	0	0	0	0	0	0	**0**
Other sectors	**1,000**	**18,327**	**135,787**	**51,191**	**0**	**0**	**0**	**743**	**3,695**	**78,772**	**22,783**	**312,298**
Residential	988	2,438	103,325	49,458	0	0	0	730	0	46,354	17,597	**220,889**
Commercial and public services	12	1,142	29,057	1,305	0	0	0	13	1,453	29,063	5,132	**67,176**
Agriculture/forestry/fishing	0	14,060	2,860	421	0	0	0	0	2,242	3,024	23	**22,630**
Not elsewhere specified (Other)	0	688	545	7	0	0	0	0	0	331	31	**1,603**
Non-energy use	**570**	**66,770**	**22,092**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**89,432**

ANNEX 5. Additional information

Quality Assurance and Quality Control

Please see below the (automatic) English translation of the QA/QC Plan.

HungaroMet	WORK INSTRUCTION	Identifier: **LRK/LMEO 02**
		Version: **01**
	Fulfilment of reporting obligations arising from international treaties	Date of entry into force: **15/10/2024**

LRK/LMEO 02

Fulfilment of reporting obligations under international treaties on greenhouse gas and air pollutant emissions

Created by:	Krisztina Labancz	Senior air chemistry analyst	
Verified by:	Gábor Kis-Kovács	Head of Unit	
Approved by:	Viktor Dézsi	Director	

PURPOSE OF the WORK Instruction

The purpose of the work instruction is to describe and regulate the process of preparing national emission inventories, indicative inventory reports, emission projections and other supplementary reports required by domestic and international law. This work instruction is a first version work instruction.

RESPONSIBILITIES AND COMPETENCES

The followings shall be competent or responsible for carrying out the activities covered by the work instruction:

For drawing up the work instruction:	Staff member(s) designated by the LMEO Head of Unit
For the application of the work instruction:	Staff member(s) designated by the LMEO Head of Unit
For verifying the application of the work instruction:	LMEO Head of Unit
In the course of an internal review, for the control of the activities regulated in the work instruction:	Integrated Management Manager

DESCRIPTION OF THE JOB PROCESS

1.1. DEFINITIONS

UNFCCC: United Nations Framework Convention on Climate Change;
CLRTAP: 1979 Geneva Convention on Long-Range Transboundary Air Pollution
NECD: Directive 2016/2284 of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants;
NID: National Inventory Document on greenhouse gases;
IIR: National Inventory Report on air pollutants (information cadastre report: Informative Inventory Report).

Any document required by domestic and international legislation or organization to be prepared in connection with the emission inventory of domestic greenhouse gases and air pollutants and to be submitted to a domestic and/or international body shall be considered a report. The reporting guidelines and methodological guidelines required by the decisions of the Conventions shall be used in the preparation of the reports.

	UNFCCC + EU	**CLRTAP+ NECD**
Reporting guidelines	UN: Decision 18/CMA.1 EU: Regulation (EU) 2018/1999 of the European Parliament and of the Council and Commission Regulation (EU) 2020/1208 implementing it and Commission Delegated Regulation (EU) 2020/1044	2023 Guidelines for Reporting Emissions and Projections Data under the Convention on Long-range Transboundary Air Pollution Directive (EU) 2016/2284 of the European Parliament and of the Council
Methodological guidelines	2006 IPCC Guidelines + 2019 Refinement	2023 EMEP/EEA Guidebook

CRT (UNFCCC - Common Reporting Tables) and NFR (CLRTAP - Nomenclature For Reporting) according to the above guidelines define the current format and content requirements of the report and the source categories to be reported. The elements of the report to be submitted in tabular form (hereinafter: CRT/NFR tables) are complemented, inter alia, by textual descriptions with content also

specified in the reporting directives (hereinafter: NID/IIR). The name, content, deadlines, method, location and contact details of the reports are set out in the Summary table in Annex 1.

The working process shall always take into account the principles of reporting under the Conventions, the definitions of which are set out in Annex 4:

- completeness,
- consistency (both for the time series and across sectors),
- comparability (comparability)
- accuracy,
- transparency,
- compliance with deadlines (timeliness),
- continuous improvement (improvement).

1.2. PARTICULAR TASKS OF RESPONSIBLE PERSONS

Inventory experts, sector managers:

- the choice of estimation methods;
- obtaining, managing and archiving data for calculations;
- verifying the data received relating to their sector;
- communication with external experts;
- performing, documenting and archiving calculations;
- the completion of the sector-specific part of the UN ETF/GHG Inventory Reporting Tool (hereinafter referred to as 'reporting software');
- run the automated QA/QC checks built into the reporting software and make the appropriate corrections;
- input to the relevant chapters of the NID/IIR;
- input to answering questions from international reviews on their sector;
- input into the development plan.

LMEO Head of Unit:

- verifying the input of inventory experts and sector managers to the reports;
- compiling, finalising, submitting reports for approval and, where appropriate (e.g. UNFCCC reporting);
- organisation of communication during international reviews and finalisation of responses to be sent;
- finalisation of the development plan (LMEO 02 Certificate).

Requirements for external experts

When concluding contracts with external experts who provide input to the preparation of the reports, the following elements should be included as far as possible:

- the external experts must provide all the documentation (background information + calculations) at the time of performance of the contract and follow the same principle of transparency in their work;
- external experts should be available for international reviews;
- it is recommended to impose liquidated damages in case of non-compliance with the deadline.

1.3. GENERAL TASKS

The main elements of the process are:

- data collection and choice of estimation method;
- performing calculations, i.e. estimating emissions and removals;
- uncertainty test;

- quality activity (description of its elements in the other sub-headings);
- compiling a report;
- submission of a report;
- documentation and archiving;
- reviews;
- elaboration of a development plan.

Choice of estimation method

The task of the sector managers is to select the methods, in the case of external experts to coordinate and document them, to continuously develop the methods used so far and, if necessary, to supplement and improve them. Estimation methods can be selected from different TIER-level (complex) methods according to the guidelines. The choice of estimation method shall take into account the results of the previous year/preliminary key category analysis (at least TIER2 level method should be used if possible for key categories), the content of the development plan, the results of the various reviews and the resulting mandatory method changes.

In fact, when choosing the estimation method, it is necessary to decide which activity data and which emission factors are to be used for the calculation. An estimation method shall be chosen for which activity data consistent over the whole time series, or at least suitable for trend extrapolation, and transparently documentable emission factors are available. Although methods using country-specific emission factors and/or facility-level activity data (higher TIER level) may result in more accurate and realistic estimations, they can only be used if they also comply with the principles and requirements of consistency, comparability and transparency.

Feedback to the estimation method may be provided at any time during the compilation of the inventory (e.g. switching when new data are available; recalculation, etc.) entailing the recalculation of the entire time series. The recalculations shall also be detailed in Table 8 of the CRT and in a separate chapter in the narrative report.

The estimation methods used for each source category shall be transparently recorded in the relevant chapters of the NID/IIR, in the CRT tables and in the calculation files (activity data and their source + emission factors and their source).

Account should be taken of the consistency of emission factors and activity data (and results) in reporting under different international obligations (e.g. UNFCCC, CLRTAP, IEA, NAMEA) and the comparability of results with reports from other countries (and the EU).

Sector managers discuss both general questions and more complex, sector-specific questions and the choice or change of methods with the head of department. In cross-sectoral cases, all relevant sector-responsible parties shall be involved in the conciliation.

Sector managers always update the NID/IIR chapters with proofreading, which is accepted by the Head of Unit before submission.

Collection of data

It is the responsibility of the sector-responsible institutions/persons to obtain the data necessary for the application of the estimation method in the required quantity, form and quality and for a specified period of time. Data may be obtained through the use of public databases, authorised by law, or on the basis of a contract concluded with data-holding institutions and organisations.

In order to obtain the data necessary for the preparation of inventories, the relevant Act and Implementing Decree 278/2014. Government Decree No 487/2011 grants HungaroMet the authorisation, including the power to impose fines in the event of non-fulfilled or incomplete data provision, as well as the power to obtain data qualifying as individual data.

Particular care should be taken in the case of data where the number of respondents is low (usually: less than three), in this case the provisions of Act CLV of 2016 on official statistics shall be followed.

Sector managers can contact external experts, data providers and members of the National Registration System by e-mail, telephone or letter. Oral information influencing the preparation of reports should also be documented in writing (e.g. 'minutes of xxx_Abbreviated IPCC kat._date.doc').

Performing calculations, i.e. estimating emissions and removals

The compilation of inventories is the responsibility of experts working at LMEO, statutory bodies or contracted external experts. When compiling the inventory, the sector managers perform the calculations in the work files stored in the U:\GHG\D. WORKING FOLDER\1-7. SECTORS folders. Estimation methods, activity data with their source, emission factors with their source and uncertainty of the data with their source shall be transparently included in the work files used for the calculations (in addition to the NID/IIR documents to be completed later and the CRT/NRF tables). This ensures compliance with the requirement of reproducibility and the substitutability of sector operators.

Further quality recommendations on the content of work files:

- where more than one data source is included in a time series, it is recommended to indicate and/or insert comments by colour coding per data/cell;
- where appropriate and possible, automatic checks should be included in the work files (e.g.: conditional formatting, cross-checks, references, macros) to eliminate calculation and copying errors;
- a summary table in the work file should preferably be arranged (also) in the same way as the corresponding table in the reporting software, in order to allow for the final verification of the uploaded CRT tables;
- always indicate clearly the year to which the data belongs (years should always be clearly displayed above/beside the time series);
- activity data, emission factors, conversion factors, other parameters, unit conversions are displayed separately (in steps);
- all calculation steps can be traced back to formulas (if the formula is in another worksheet/file, at least the reference should be included);
- the externally sourced input data can be clearly separated from the processed data (converted to the appropriate unit of measurement or having undergone the calculation steps);
- emission factors, conversion factors and other parameters are not included directly in formulas, but are displayed in a separate cell to which reference is made in the formula;
- the unit of measurement shall be indicated in a separate cell at the beginning of each row;
- particular attention shall be paid to updating conversion factors and periodic coefficients where necessary.

In addition to the above recommendations, as a basic element of the quality activity, they should be checked in parallel (or afterwards, as appropriate) with the calculations. Audits should be carried out annually, focusing on as many categories as possible and, in particular, on key categories and categories that have undergone major methodological changes, as recommended in the 2006 IPCC Guidelines. When planning the categories to be audited in a given year, it should be taken into account that all categories should be audited preferably within 5 years. Errors, deviations and remedial actions shall be documented.

It is recommended that any errors detected in the meantime (at any stage of the inventory cycle) (even for previous years) be recorded together with the results of (subsequent) external reviews. These records serve as the basis for the recalculations for the year in question if corrections are made after delivery. Points from the list of improvements that cannot be implemented in a given year, together with the planned improvements that can be recorded here, will be included in the next year's development plan (LMEO 02 Certificate).

Efforts should also be made to carry out verifications with as many external sources as possible (other countries, EU NID/IIR, etc.), which should also be documented.

Recalculations

If the estimation method (including either activity data or emission factor) changes, the whole time series shall be recalculated. Corrections to previous years' data are also counted as recalculations. As required, the reason for the recalculation should then be explained in a separate chapter in the NID/IIR and a comparative table with the old and new series and their differences should be included. It is also recommended to clearly mark the old and new data series (e.g. with colour codes) in the work files.

Uncertainty analysis and key category analysis

Uncertainty is first determined on a list of sectors or sources at the level of detail recommended by the methodological guides. (The lists may be amended at a later stage, if appropriate, with the agreement of all sector-responsible parties.) The sector-responsible parties copy the uncertainty of the activity data and emission factors they use, as well as the aggregate uncertainty, to D. WORKING FOLDER\0. The uncertainty analysis work file in the GENERAL folder or the table drawn up by the person in charge of the uncertainty analysis is checked. The responsible person shall calculate the aggregate uncertainty, the uncertainty per gas and the uncertainty per sector. It shall include this information in the NID/IIR documents and update the relevant chapters, including the relevant annexes.

Deviations from the default sector or source list (e.g. Table 4.1 of the 2006 IPCC Guidelines) shall be justified in the KCA analysis. The key category analysis at TIER2 level (including uncertainties) shall be performed, mutatis mutandis, on a sector list at the level of detail corresponding to the sector list of uncertainties.

The key category analysis is prepared in the work file in the U:\GHG\D. WORKING FOLDER\0. GENERAL folder. Then the detailed tables are inserted in the annex to the NID, the summary results are inserted in the corresponding chapter of the NID/IIR, including a comparison with the results of the previous year.

Compilation, submission for approval and submission of the report

When compiling the GHG inventory, sector managers import the time series prepared (and verified) in the work files into the reporting software, run the automatic verification functions available there, and then make the necessary corrections.

For NECD and CLRTAP reports, sector managers copy sector data from the work files to the time series work files located in the U:\GHG\D. WORKING FOLDER\0. GENERAL\G. NFR Total folder. This file is referenced in the annual work file containing the official NFR table format required under the CLRTAP/NECD reporting guidelines. For official submission, the latter file must be saved otherwise known as delinking.

In parallel, the sector officers update the text of the relevant chapters of the NID/IIR and also write the chapters on the recalculations for the given year (together with the corresponding comparative tables). All these are verified and finalized by the LMEO Head of Unit.

The system of approval and submission of reports to be submitted is governed by the relevant Act and its implementing Act No 278/2014. Government Regulation regulates it. In the case of the UNFCCC report, the head of the LMEO shall submit the report to the UNFCCC Secretariat. The NECD and CLRTAP reports shall be provided to the Ministry of Energy.

Any opinions and contributions received from external experts, institutions, bodies and committees in connection with the reports to be submitted shall be documented.

International reviews

In the context of international reviews (see in detail. The LMEO Head of Unit shall be responsible for communication (see table in Annex 1). In case of questionnaires to be filled in, the questions should be saved in the folder named after the respective review:
(U:\GHG\E. QA-QC\C. INTERNATIONAL REVIEWS)

The questionnaires are uploaded by the sector managers with their answers and saved in the folder named after the respective review. The LMEO Head of Unit verifies the replies and prepares the formal reply to be submitted. In the case of an online review, the answers compiled by the sector managers may be sent only after the approval of the head of unit.

Developing a development plan

Improvements and planned improvements for each source category/sector can be collected during the year, including:

- the obligations and recommendations arising from the results of the reviews;
- the errors to be corrected detected during the previous year;
- the results of the key category analysis of the previous year;
- problems encountered during the previous inventory cycle ('lessons learned');
- new available data (e.g. new data collections, new international obligations);
- the impact of changes in the legislative environment;
- modification planned in the spirit of 'continuous improvement'.

Improvements and short- and medium-term development plans arising during the inventory cycle until the final reports are drawn up, but which cannot be implemented in the given inventory cycle, will be included by the sector managers in the 'Planned improvement' chapter of the NID/IIR, after consultation with the LMEO Head of Unit.

During the inventory cycle, sector managers update the LMEO 02 Certificate with a list of further planned developments and improvements in their sector since its submission.

It is essential that the Development Plan reflects the outcome of external reviews, in particular by the EU and the UN, and strives to ensure that parts of the plan can be easily integrated into the NID/IIR documents.

QUALITY ASSURANCE

Legal basis for the process:	HungaroMet SZMSZ, 547/2023. (XII. Government Decree (Statute), Act LX of 2007, No 278/2014. Government Decree No 306/2010. (XII. 23), Regulation (EU) 2018/1999 of the European Parliament and of the Council, Commission Implementing Regulation (EU) 2020/1208, Commission Delegated Regulation (EU) 2020/1044
Documents generated during the process:	Work files detailing calculations, output inventories, national inventory reports (NID/IIR), additional tables, executive summaries.
Responsible for the process:	LMEO Head of Unit and designated staff according to their job description
Deadline:	In accordance with Annex 1
Checkpoints:	
• Management control:	Exercise of the right to sign. The sector-by-sector input is checked by the Head of Unit for each report.
• Operational (completeness and accuracy) controls:	Control built into the workflow, checking the content and form of the documents. Data control, self-:monitoring of the employee(s) performing the activity.

CERTIFICATES

LMEO 01 Certificate: responsibilities

LMEO 02 Certificate: development plan

DOCUMENTATION MANAGEMENT

The completed reports and the background calculations related to the reports shall be stored on a server dedicated to HungaroMet LMEO. All data and information in the workflow must be collected, managed, documented and archived in such a way that reports are transparent and fully reproducible.

Obligations related to document management and the retention of data and documents:

- the retention of all data relating to the drawing up of inventories and information on their source;
- to keep all calculations and reports necessary for the preparation of the inventory in such a way that changes (e.g. the impact of different control processes) can be traced;
- the up-to-date documentation of each source category and the storage of data and documentation in archives;
- archiving, scrapping, organizing and recording files in subdirectories belonging to sectors.

Data and documents stored on paper and on a machine data repository are stored in dedicated LMEO locations (currently: 5. meeting rooms, archives, libraries) shall be stored on a sector-by-sector basis. Efforts should be made to produce an electronic version (scanning) of paper documents (in particular documents containing data).

Data and documents stored electronically must be stored on a server dedicated to HungaroMet LMEO and accessible only to LMEO staff in the system detailed below (see Annex 2). LMEO staff can create additional directories to store their data and documents, but they are responsible for organizing, archiving and scrapping the files stored in the directories. The documents and data contained in the LMEO libraries are used by all sector managers and the LMEO Head of Unit with the same access rights for the sake of substitutability.

General principles of file management and further recommendations

Names

When naming both data and document files/libraries, consistency, clarity and the use of IPCC/NFR source categories are recommended. Either the name of the data/documentation file or the name of the directory containing the files should be specified according to the IPCC/NFR source categories. (The directory name is recommended for data and documentation files, and the file name according to IPCC/NFR category for calculations.) The abbreviations used to name IPCC/NFR source categories should be used consistently and uniformly. In case of multiple existing versions, it is recommended to include the version/release month number in the file name after 'v' to keep track of the changes. In the case of a newer version, the old version should be kept temporarily during the inventory period. If the change is the result of a verification process, it is recommended to keep the old version and the new version with version number/release month in order to keep track of the change. If several files may exist for the same year and source category, they should be distinguished by serial numbering/release month. If the data/document/calculation refers to more than one source category, it is recommended to include the name of the subsector as narrow as possible or the name of the entire sector in the name of the file/library in the case of the whole sector file(s). In order to clearly distinguish the names of calculation files from data files, it is recommended to start with the abbreviation 'Calc'. It is advisable to write the names of libraries in capital letters, and file names according to the rules of English title writing. The character '_' shall be used to separate a multi-word file/directory name.

Based on the above, it is recommended to specify file (counting files)/directory names according to the following rule:
*Abbreviated Subject_Abbreviated IPCC Cat_Year_Version Number/Month of Release**. (Note: numbering marked with * applies only to file names.)

The name of the report, the release date and the version number (or month of delivery) must be included in the name of the file containing the draft report. General format for naming the document file: *Subject_DateofSubmission_Version.docx*.

Placement of files in the directory structure according to Annex 2

Data collection files

Documents of correspondence relating to a request for data shall be stored in the U:\GHG\F. MANAGEMENT\A. DATA REQUESTS folder. Data and databases obtained as a result of data requests and used directly in the final, submitted inventory must be stored in the U:\GHG\A. OFFICIAL ARCHIVE\A. DATABASE\1-7. SECTORS folders, while data that cannot be clearly linked to the sectors must be stored in the U:\GHG\ A. OFFICIAL ARCHIVE\A. DATABASE\0. GENERAL folder.

Files related to calculations and text reports

The draft of the sector-specific reports and the related background materials, calculations and other works must be prepared by the sector managers in the U:\GHG\D. WORKING FOLDER\1-7. SECTORS folder. Uncertainty calculations, key category analyses, aggregate trends and charts prepared by the designated responsible person must be stored in the U:\GHG\ D. WORKING\0. GENERAL folder, and a compiled copy of the draft full reports must also be stored here.

Quality documents

The quality documents and the materials of the external and internal audits shall be stored in the U:\GHG\E. QA-QC folder together with the original blank copies of the certificates. The completed supporting documents shall be stored in the U:\GHG\E. QA-QC\A. GHG QA-QC PLAN folder or in another location clearly indicated in the Quality_records_logbook.xls table in the directory structure.

Data and background materials used in the inventory are archived at the end of the inventory cycles

The availability of the data and documents to be archived is ensured by the sector managers. Reports must be fully reproducible from archived files (or, in the case of paper-based documents, from documents stored in the physical archives of the LMEO). To this end, the calculations for the inventory must be archived, which is the responsibility of the sector managers. You can do this either in your own working directory or in a directory containing background materials (U:\GHG\A. OFFICIAL ARCHIVE\B. BACKGROUND DOCUMENTS). Tables of completed reports (the so-called CRT/NFR tables) and text reports (NID/IIR) shall be placed in the U:\GHG\ A. OFFICIAL ARCHIVE\C. SUBMISSIONS folder.

ANNEXES

ANNEX 5.1: Summary table

Timetables for reporting under the UNFCCC and the Paris Convention, CLRTAP its Protocols and the NEC Directive and QA/QC activities						
deadline	task	QC	Document 3/Reporting			QA
			name	where/consignee	contact details	
May - November	search for new data sources; collection and processing of data	(data quality) legal authorisation Government Decree on Documentation and Archiving	incoming data services	N/A (internal documents)	U:\GHG\A. OFFICIAL ARCHIVE\ U:\GHG\A. DATABASE \... or on paper in archives	
September - December (-April)	update methods (if necessary); calculations, recalculations;	(T1, T2 checklists, verifications); Class meetings; documentation	counting files	N/A (internal documents)	U:\GHG\D. WORKING FOLDER \...	Preferably audited by external experts
September - December (-April)	Receipt of calculations/tasks from external experts	Evaluation of suppliers documentation	calculations received	N/A (internal documents)	U:\GHG\A. OFFICIAL ARCHIVE\ A. DATABASE \...	Sector manager checks
January-April	Completion of CRT	Completeness and Recalculation check Preferably back-check with *CALC files and experts with each other*				
15 January	Compilation and submission **of the preliminary report** referred to in Article 26(3) of Regulation (EU) 2018/1999	Documentation and archiving Consistency checks in accordance with Annex V to Regulation (EU) 2018/1999 Completeness check of the LULUCF sector	EU) 2018/1999 Article 26(3) preliminary report (CRT table, preliminary NID, indicators, SEF)	EM → EU Commission (DG Climate Action)	http://cdr.eionet.europa.eu/hu/eu/ghgmm	First phase of the EU annual review
15 February	*Compilation and submission of **CLRTAP** report*	*Documentation and archiving* *RepDab check*	Table CLRTAP NFR	EM -> EMEP Centre on Emission Inventories and Projections (CEIP) + letter to UNECE secretariat	http://www.ceip.at/overview-of-submissions-under-clrtap/	CLRTAP review process: 1. Status + 2. Synthesis and Assessment (Reports: http://www.ceip.at/review-results/ (password protected)) (3. Centralised review every 5 years)

Timetables for reporting under the UNFCCC and the Paris Convention, CLRTAP its Protocols and the NEC Directive and QA/QC activities						
deadline	task	QC	Document 3/Reporting			QA
			name	where/consignee	contact details	
15 March	*Compilation and submission of **CLRTAP** report*	Documentation and archiving	CLRTAP IIR (+grid+LPS)	EM -> EMEP Centre on Emission Inventories and Projections (CEIP) + letter to UNECE secretariat	http://www.ceip.at/overview-of-submissions-under-clrtap/	
15 March	Preparation and submission **of the final report pursuant to Article 26(3) of Regulation (EU) 2018/1999**	Documentation and archiving Consistency checks in accordance with Annex V to Regulation (EU) 2018/1999	(EU) 2018/1999 Article 26(3) final report (CRT tables, NID, indicators, SEF)	EM → EU Commission (DG Climate Action)	http://cdr.eionet.europa.eu/hu/eu/mmr/art07_inventory/	Possible second phase of the EU annual review Possible comprehensive EU review
15 April	Compilation and submission of UNFCCC report	Documentation and archiving	UNFCCC full report (CRT tables, NID, SEF)	EM UNFCCC Secretariat	http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/9492.php	Before submission: AM, EM ministerial approval After submission: *UNFCCC review:* 1. Status Reports: http://unfccc.int/national_reports/annex_i_ghg_inventories/inventory_review_reports/items/8109.php 2. Synthesis and Assessment Reports: http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600008003#beg
31 July	Compilation and submission **of the approximated data report referred to in Article 26(2) of** Regulation (EU) 2018/1999	Documentation and archiving Checks for consistency with ETS data.	Approximate report pursuant to Article 26(2) of Regulation (EU) 2018/1999 for year x-1	EM → EU Commission (DG Climate Action)	http://cdr.eionet.europa.eu/hu/eu/mmr/art08_proxy/	
May-August-October	evaluation, errors to be corrected and planned improvements (including September review results), Updating of quality documents, if necessary	LMEO 02 Development plan				

Timetables for reporting under the UNFCCC and the Paris Convention, CLRTAP its Protocols and the NEC Directive and QA/QC activities						
deadline	task	QC	Document 3/Reporting			QA
			name	where/consignee	contact details	
Mar-Sept.	Transmission of data according to HCSO data exchange		GHG - UNFCCC - CRT tables Air pollutants - CLRTAP - NFR tables Climate data	KSH	HCSO Statistical Yearbook + http://www.ksh.hu/stadat_eves_5 + NAMEA	cross-check with NAMEA
September-October	providing explanations during the annual review of the full UNFCCC report (CRT tables, NID, SEF); recalculations and retransmission of reports, if necessary	Class meetings documentation	Written answers	UNFCCC Secretariat	U:\GHG\E. QA-QC\C. INTERNATIONAL REVIEWS\UNFCCC	UNFCCC review: 3. Annual central or country visit review (Reports: http://unfccc.int/national_reports/annex_i_ghg_inventories/inventory_review_reports/items/8452.php)
before starting a new inventory cycle	archiving	archive all unarchived documents on drive U:\				
yearly	Setting LMEO quality targets for HungaroMet aggregation				U:\GHG\E. QA-QC\B. HMS ISO\QUALITY PROGRAMME	
Every 1-2 years	General review of LMEO in accordance with HungaroMet's quality system				Audit report	external audit

ANNEX 5.2 STRUCTURE OF THE U:\GHG\ DIRECTORY

A. OFFICIAL ARCHIVE

A DATABASE
0. GENERAL
1-7.SECTORS

B BACKGROUND DOCUMENTS
0. GENERAL
1-7.SECTORS

C SUBMISSIONS

D. WORKING FOLDER
0. GENERAL
G. NFR Total
1-7.SECTORS

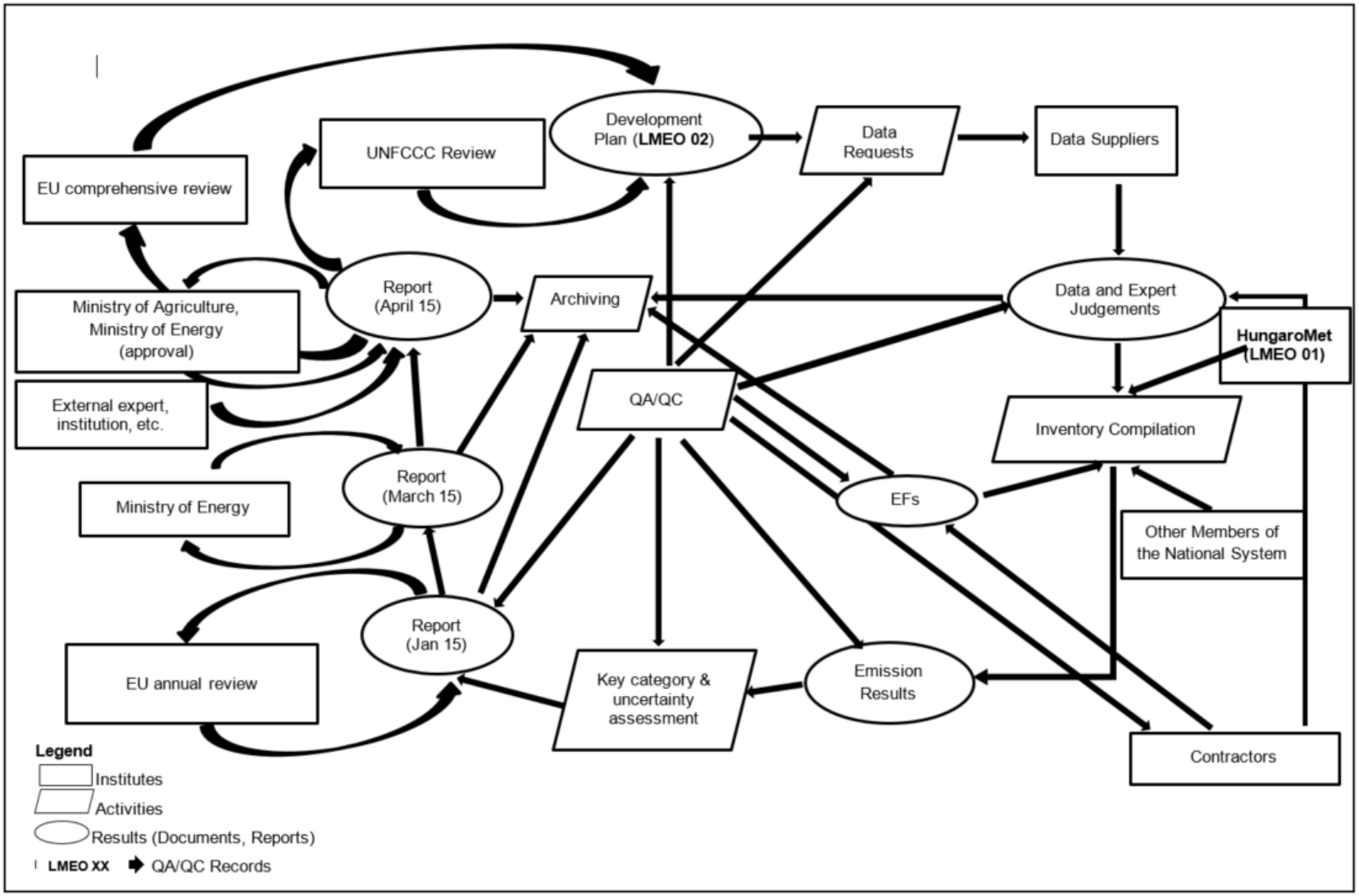
E. QA/QC

A. GHG QA/QC PLAN
B. HMS ISO
C. INTERNATIONAL REVIEWS
D. NATIONAL AUDITS REVIEWS
E. WORKING
F. ARCHIVE

F. MANAGEMENT
A. DATA REQUESTS

G. OTHERS

ANNEX 5.3: FLOWCHART



ANNEX 5.4: DEFINITIONS OF UNFCCC – IPCC – CLRTAP PRINCIPLES

<table>
<tr><th>CLRTAP (EMEP/EEA 2013)</th><th>UNFCCC 24/CP.19</th></tr>
<tr><td>Transparency means that the data sources, assumptions and methodologies used for an inventory should be clearly explained, in order to facilitate the replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of the information. The use of the Nomenclature For Reporting (NFR) tables and the preparation of a structured Informative Inventory Report (IIR) contribute to the transparency of the information and facilitate national and international reviews.</td><td>Transparency means that the data sources, assumptions and methodologies used for an inventory should be clearly explained, in order to facilitate the replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of the information. The use of the common reporting format (CRF) tables and the preparation of a structured national inventory report (NIR) contribute to the transparency of the information and facilitate national and international reviews.</td></tr>
<tr><td colspan="2">Transparency here means that the methods (and any assumptions) used for reporting are explained in a comprehensible manner in order to facilitate the reproducibility and verifiability of the reported data.</td></tr>
<tr><td>Consistency means that an annual inventory should be internally consistent for all reported years in all its elements across sectors, categories and pollutants. An inventory is consistent if the same methodologies are used for all years of the inventory and if consistent data sets are used to estimate emissions. For projections, consistency means that a year of the submitted inventory is used as a basis.</td><td>Consistency means that an annual GHG inventory should be internally consistent for all reported years in all its elements across sectors, categories and gases. An inventory is consistent if the same methodologies are used for the base and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances referred to in paragraphs 16 to 18 below, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, in accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (hereinafter referred to as the 2006 IPCC Guidelines).</td></tr>
<tr><td colspan="2">Consistency here means that inventories are consistent in all their elements, for any year of the time series, for any emission category, or for any air pollutant or greenhouse gas. The inventory is consistent if the same method is used for both the base year and subsequent years and the same series of data is consistently used to estimate emissions and removals. In some cases, different methodologies may be used within the time series, but related recalculations should be documented in a transparent manner in accordance with current IPCC guidelines. Where forecasts are made, emission inventories shall be used as a basis.</td></tr>
<tr><td>Comparability means that estimates of emissions reported by Parties in their inventories should be comparable. For that purpose, Parties should use the accepted methodologies as elaborated in the Guidebook and the NFR formats for making estimations and reporting their inventories.</td><td>Comparability means that estimates of emissions and removals reported by Annex I Parties in their inventories should be comparable among Annex I Parties. For that purpose, Annex I Parties should use the methodologies and formats agreed by the COP for making estimations and reporting their inventories. The allocation of different source/sink categories should follow the CRF tables provided in annex II to decision 24/CP.19 at the level of the summary and sectoral tables.</td></tr>
</table>

<table>
<tr><td colspan="2">Comparability here means that the national inventory report should be prepared in a way comparable to the inventory reports of other countries. To this end, commonly agreed methods and formats should be used. The classification of sources/sinks in the different categories shall be carried out according to the applicable decisions.</td></tr>
<tr><td>Completeness means that an annual inventory covers at least all sources, as well as all pollutants, for which methodologies are provided in the latest Guidebook or for which supplementary methodologies have been agreed to by the Executive Body. Completeness also means the full geographical coverage of the sources of a Party. Where numerical information on emissions under any source category is not provided, the appropriate notation key defined in the EMEP Reporting Guidelines should be used when filling in the reporting template and their absence should be documented.</td><td>Completeness means that an annual GHG inventory covers at least all sources and sinks, as well as all gases, for which methodologies are provided in the 2006 IPCC Guidelines or for which supplementary methodologies have been agreed by the COP.
Completeness also means the full geographical coverage of the sources and sinks of an Annex I Party.</td></tr>
<tr><td colspan="2">Completeness here means that inventories should include all gases and air pollutants and all their sources and sinks for which an internationally accepted calculation methodology exists. In the absence of a figure, the abbreviations defined in the reporting guidelines should be used.</td></tr>
<tr><td>Accuracy means that emission estimates should be accurate in the sense that they are systematically neither over nor under true emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies should be used (...) to promote accuracy in inventories.</td><td>Accuracy means that emission and removal estimates should be accurate in the sense that they are systematically neither over nor under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies should be used, in accordance with the 2006 IPCC Guidelines, to promote accuracy in inventories.</td></tr>
<tr><td colspan="2">Accuracy here means that emissions (and removals) are, as far as can be judged, neither intentionally underestimated nor overestimated, and inventory uncertainty is as low as possible. In order to facilitate accuracy, the most recent accepted calculation methodologies should always be used.</td></tr>
</table>

ANNEX 5.5 QUALITY RECORDS/CERTIFICATES

LMEO 02 **Development Plan (Fejlesztési terv)**

					Updated:	
SHORT TERM (WITHIN ONE INVENTORY CYCLE)						
GENERAL		Who		Deadline	Compl.	Cause of non-compliance
ENERGY	Category	Who	Key	Deadline	Compl.	Cause of non-compliance
INDUSTRIAL PROCESSES	Category	Who	Key	Deadline	Compl.	Cause of non-compliance
AGRICULTURE	Category	Who	Key	Deadline	Compl.	Cause of non-compliance
LULUCF	Category	Who	Key	Deadline	Compl.	Cause of non-compliance
WASTE	Category	Who	Key	Deadline	Compl.	Cause of non-compliance
LONG TERM						
GENERAL	Category	Who	Key	Timeline	Status	Remarks
ENERGY	Category	Who	Key	Timeline	Status	Remarks
INDUSTRIAL PROCESSES	Category	Who	Key	Timeline	Status	Remarks
AGRICULTURE	Category	Who	Key	Timeline	Status	Remarks

LULUCF	Category	Who	Key	Timeline	Status	Remarks
WASTE	Category	Who	Key	Timeline	Status	Remarks

LMEO 01 **Responsibilities**

Task	Name	Date
Compiler		
QA/QC		
Archiving		
Sector experts		
Energy		
Industry, solvents		
Agriculture		
LULUCF		
Waste		
Uncertainty, key category analysis		

ANNEX 6. List of abbreviations and units

A6.1 Abbreviations

AED	anode effect duration in minutes
AEF	number of anode effects per cellday
Aggr.	aggregate
BOF	basic oxygen furnace
CE	current efficiency
CLRTAP	Convention on Long-range Transboundary Air Pollution
CORINAIR	CORe INventory of AIR emissions
CKD	cement kiln dust
CRF	common reporting format
EAF	electric arc furnace
EF	emission factor
ERT	expert review team
EU	European Union
ETS	Emission Trading Scheme
GDP	gross domestic product
GHG	greenhouse gas
HCSO	Hungarian Central Statistical Office
HKVSZ	Association of Cooling and Air Conditioning Businesses (Hűtő- és Klímatechnikai Vállalkozások Szövetsége)
HMBC	Hungarian Monitoring Body for Certification
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
KTI	Institute for Transport Sciences (Közlekedéstudományi Intézet Kht.)
LULUCF	land use, land-use change and forestry
LPG	liquified petroleum gas
MVM Rt.	Hungarian Power Companies Ltd.
NCV	net calorific value
NFI	National Forest Inventory
OHF	open hearth furnace
QA	quality assurance
QC	quality control
UNFCCC	United Nations Framework Convention on Climate Change

A6.2 Chemical formulas

C	carbon
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
HFCs	hydrofluorocarbons
NMVOC	non-methane volatile organic compound
N_2O	nitrous oxide
NO_x	nitrogen oxide
PFCs	perfluorocarbons
SF_6	sulphur hexafluoride
SO_2	sulphur dioxide
$CaCO_3$	calcium carbonate, limestone
$MgCO_3$	magnesium carbonate
CaO	calcium oxide, quicklime
$Ca(OH)_2$	slack lime
NH_3	ammonia
HNO_3	nitric acid
CF_4	tetrafluoromethane
C_2F_6	hexafluoroethane

A6.3 Units

PJ	petajoule (10^{15} J)
TJ	terajoule (10^{12} J)
Gg	gigagram (10^9 g)
kt	kilotonnes (1000 t)