

ANNEX 1

Annex 1: Key sources

Methodology

IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Chapter 7 Methodological Choice and Recalculation

The Tier 1 method to identify *key source categories* assesses the impacts of various source categories on the level and, if possible, the trend, of the national emissions inventory. When the national inventory estimates are available for several years, it is *good practice* to assess the contribution of each source category to both the level and trend of the national inventory. If only a single year's inventory is available, only a Level Assessment can be performed.

The Tier 1 method to identify *key source categories* can be readily completed using a spreadsheet analysis.

Level Assessment – TIER 1

The contribution of each source category to the total national inventory level is calculated according to

Equation 7.1

$$\text{Source Category Level Assessment} = \text{Source Category Estimate} / \text{Total Estimate} \\ L_{x,t} = E_{x,t} / E_t$$

Where:

L_{x,t} is the Level Assessment for source x in year t

Source Category Estimate ($E_{x,t}$) is the emission estimate of source category x in year t

Total Estimate (E_t) is the total inventory estimate in year t

Trend Assessment - TIER 1

The contribution of each source category's trend to the trend in the total inventory can be assessed if more than one year of inventory data are available, according to

Equation 7.2:

$$\text{Source Category Trend Assessment} = (\text{Source Category Level Assessment}) \square / \\ (\text{Source Category Trend} - \text{Total Trend}) \mid \\ T_{x,t} = L_{x,t} \ast \square \mid \{[(E_{x,t} - E_{x,0}) / E_{x,t}] - [(E_t - E_0) / E_t]\} \mid$$

Where:

T_{x,t} is the contribution of the source category trend to the overall inventory trend, called the Trend Assessment. The Trend Assessment is always recorded as an

absolute value, i.e. a negative value is always recorded as the equivalent positive value.

$L_{x,t}$ is the Level Assessment for source x in year t (derived in Equation 7.1)

$E_{x,t}$ and $E_{x,0}$ are the emissions estimates of source category x in years t and 0 , respectively

E_t and E_0 are the total inventory estimates in years t and 0 , respectively

The Source Category Trend is the change in the source category emissions over time, computed by subtracting the base year (year 0) estimate for source category x from the current year (year t) estimate and dividing by the current year estimate.

The Total Trend is the change in the total inventory emissions over time, computed by subtracting the base year (year 0) estimate for the total inventory from the current year (year t) estimate and dividing by the current year estimate.

Table 1: GPG Table 7.A1 (Tier 1 approach) – KC analyze with LULUCF

rank	CRF				GHG emissions Gg CO2 eq		contribution to level		contribution	key category	
2010	#	Sector	Category	gas	1986	2010	1986	2020	to trend	2020	1986
1	5	LULUCF/ A Forest land	1. Forest Land remaining Forest Land	CO2	9,160.325	10,869.439	29.10	32.63	10.26	L.T	L
2	1A	1. Energy Industries	a. Public Electricity and Heat Production	CO2	6,533.755	6,174.341	20.76	18.54	6.46	L.T	L
3	1A	3. Transport	b. Road Transportation	CO2	1,910.236	5,142.861	6.07	15.44	27.25	L.T	L
4	5	LULUCF/ B Cropland	2. Land converted to Cropland	CO2	1,082.685	1,200.776	3.44	3.61	0.48	L.T	L
5	1A	4. Other Sectors	b. Residential	CO2	1,100.185	1,194.086	3.50	3.58	0.26	L	L
6	1A	2. Manufacturing Industries and Const.	f. Other	CO2	1,774.835	981.421	5.64	2.95	7.83	L.T	L
7	1A	4. Other Sectors	a. Commercial/Institutional	CO2	612.110	647.380	1.94	1.94	0.00	L	L
8	5	LULUCF/ E Settlements	2. Land converted to Settlements	CO2	468.340	606.695	1.49	1.82	0.97	L.T	L
9	5	LULUCF/ B Cropland	1. Cropland remaining Cropland	CO2	123.973	411.873	0.39	1.24	2.45	L.T	L
10	4	A. Enteric Fermentation	1. Non-Dairy Cattle	CH4	263.057	385.140	0.84	1.16	0.93	L.T	L
11	4	D. Agricultural Soils	1. Direct Soil Emissions	N2O	435.343	380.633	1.38	1.14	0.70	L.T	L
12	1A	2. Manufacturing Industries and Const.	d. Pulp, Paper and Print	CO2	649.556	380.493	2.06	1.14	2.68	L.T	L
13	2	Industrial Processes	1. Cement Production	CO2	514.615	367.873	1.64	1.10	1.54	L.T	L
14	6	A. Solid Waste Disposal on Land	1. Managed Waste Disposal on Land	CH4	298.801	356.003	0.95	1.07	0.35	L	L
15	5	LULUCF/ C Grasland	2. Land converted to Grassland	CO2	64.347	343.038	0.20	1.03	2.40	L.T	
16	4	D. Agricultural Soils ⁽²⁾	3. Indirect Emissions	N2O	334.663	292.988	1.06	0.88	0.53	L.T	L
17	5	LULUCF/ A Forest land	2. Land converted to Forest Land	CO2	268.889	268.889	0.85	0.81	0.14	L	L
18	1B	Fugitive Emissions from Fuels	a. Coal Mining and Handling	CH4	358.906	249.343	1.14	0.75	1.14	L.T	L
19	4	A. Enteric Fermentation	1. Dairy Cattle	CH4	383.587	235.876	1.22	0.71	1.48	L.T	L
20	1A	4. Other Sectors	c. Agriculture/Forestry/Fisheries	CO2	424.674	207.053	1.35	0.62	2.12	L.T	L
21	1A	2. Manufacturing Industries and Const.	a. Iron and Steel	CO2	1141.586	197.708	3.63	0.59	8.82	L.T	L
22	2	Industrial Processes	1. Refrigeration and AC Equipment	HFC		190.375	0.00	0.57	1.66	L.T	
23	4	B. Manure Management	1. Non-Dairy Cattle	CH4	66.046	168.361	0.21	0.51	0.86	L.T	
24	2	Industrial Processes	3. Limestone and Dolomite Use	CO2	47.390	152.226	0.15	0.46	0.89	L.T	L
25	6	B. Waste Water Handling	2. Domestic and Commercial WW	CH4	113.217	143.686	0.36	0.43	0.21	L	
26	4	B. Manure Management	1. Dairy Cattle	CH4	152.449	131.914	0.48	0.40	0.26	L	L
27	4	B. Manure Management	13. Solid Storage and Dry Lot	N2O	267.309	129.554	0.85	0.39	1.34	T	L
28	1A	4. Other Sectors	b. Residential	CH4	134.558	124.936	0.43	0.38	0.15		L
29	4	B. Manure Management	8. Swine	CH4	232.857	121.249	0.74	0.36	1.09	T	L
30	1A	2. Manufacturing Industries and Const.	c. Chemicals	CO2	98.052	114.901	0.31	0.34	0.10		
31	1A	2. Manufacturing Industries and Const.	e. Food Processing, Bev. and Tob.	CO2	247.754	111.581	0.79	0.33	1.31	T	L
32	2	Industrial Processes	2. Lime Production	CO2	220.206	90.248	0.70	0.27	1.25	T	L

33	1A	2. Manufacturing Industries and Const.	b. Non-Ferrous Metals	CO2	440.325	88.351	1.40	0.27	3.30	T	L
34	5	LULUCF	B Cropland	N2O	83.879	83.879	0.27	0.25	0.04		
35	1B	Fugitive Emissions from Fuels	a. Coal Mining and Handling	CO2	120.238	80.626	0.38	0.24	0.41	T	
36	1A	3. Transport	b. Road Transportation	N2O	28.636	75.636	0.09	0.23	0.40	T	
37	6	B. Waste Water Handling	2. Domestic and Commercial WW	N2O	58.858	59.102	0.19	0.18	0.03		
38	2	Industrial Processes	3. Aluminium Production	CO2	89.402	58.591	0.28	0.18	0.31		
39	4	D. Agricultural Soils	2. Pasture. Range and Paddock Manure	N2O	23.871	52.820	0.08	0.16	0.24		
40	2	Industrial Processes	1. Iron and Steel Production	CO2	40.149	44.953	0.13	0.13	0.02		
41	1A	3. Transport	c. Railways	CO2	68.182	37.471	0.22	0.11	0.30		
42	3	Solvent and Other Product Use	D. 1. Use of N2O for Anaesthesia	N2O	81.903	30.380	0.26	0.09	0.49	T	
43	1B	Fugitive Emissions from Fuels	b. Natural Gas	CH4	56.205	29.112	0.18	0.09	0.27		
44	1A	1. Energy Industries	a. Public Electricity and Heat Production	N2O	26.201	26.732	0.08	0.08	0.01		
45	1A	4. Other Sectors	b. Residential	N2O	20.760	26.281	0.07	0.08	0.04		
46	1A	4. Other Sectors	c. Agriculture/Forestry/Fisheries	N2O	49.388	25.016	0.16	0.08	0.24		
47	4	A. Enteric Fermentation	3. Sheep	CH4	4.242	21.804	0.01	0.07	0.15		
48	1A	2. Manufacturing Industries and Const.	f. Other	N2O	35.046	16.589	0.11	0.05	0.18		
49	2	Industrial Processes	8. Electrical Equipment	SF6	10.241	16.542	0.03	0.05	0.05		
50	1A	1. Energy Industries	b. Petroleum Refining	CO2	62.225	14.435	0.20	0.04	0.45	T	
51	2	Industrial Processes	3. Aluminium Production	PFC	276.291	13.682	0.88	0.04	2.43	T	L
52	6	B. Waste Water Handling	1. Industrial Wastewater	CH4	19.916	13.432	0.06	0.04	0.07		
53	4	A. Enteric Fermentation	8. Swine	CH4	23.103	13.246	0.07	0.04	0.10		
54	2	Industrial Processes	7. Other (Glass Production)	CO2	4.528	9.572	0.01	0.03	0.04		
55	4	B. Manure Management	12. Liquid Systems	N2O	6.456	9.142	0.02	0.03	0.02		
56	1A	3. Transport	b. Road Transportation	CH4	23.405	9.110	0.07	0.03	0.14		
57	2	Industrial Processes	4. Soda Ash Production and Use	CO2	7.827	8.857	0.02	0.03	0.01		
58	4	B. Manure Management	9. Poultry	CH4	16.446	7.565	0.05	0.02	0.09		
59	4	A. Enteric Fermentation	6. Horses	CH4	5.498	7.417	0.02	0.02	0.01		
60	2	Industrial Processes	5. Aluminium anode burn-off	CO2		5.492	0.00	0.02	0.05		
61	6	C. Waste Incineration	a. and b. waste incineration	CO2		5.228	0.00	0.02	0.05		
62	2	Industrial Processes	4. Aerosols and MDI	HFC		4.873	0.00	0.01	0.04		
63	1A	3. Transport	c. Railways	N2O	8.651	4.754	0.03	0.01	0.04		
64	1A	2. Manufacturing Industries and Const.	f. Other	CH4	6.291	3.563	0.02	0.01	0.03		
65	2	Industrial Processes	5. Other (Methanol)	CH4	2.929	3.443	0.01	0.01	0.00		
66	1A	5. Other	b. Mobile - Military use	CO2	41.093	2.867	0.13	0.01	0.35		
67	4	A. Enteric Fermentation	4. Goats	CH4	1.050	2.751	0.00	0.01	0.01		
68	1A	1. Energy Industries	a. Public Electricity and Heat Production	CH4	1.595	2.199	0.01	0.01	0.00		
69	2	Industrial Processes	2. Foam Blowing	HFC		2.034	0.00	0.01	0.02		
70	1A	4. Other Sectors	a. Commercial/Institutional	CH4	15.279	1.728	0.05	0.01	0.13		
71	1A	3. Transport	a. Civil Aviation	CO2	0.622	1.675	0.00	0.01	0.01		

72	1A	4. Other Sectors	a. Commercial/Institutional	N2O	5.087	1.404	0.02	0.00	0.03		
73	1A	2. Manufacturing Industries and Const.	d. Pulp, Paper and Print	N2O	1.383	1.314	0.00	0.00	0.00		
74	2	Industrial Processes	3. Fire Extinguishers	HFC		1.262	0.00	0.00	0.01		
75	4	B. Manure Management	14. Other AWMS	N2O	1.322	1.175	0.00	0.00	0.00		
76	2	Industrial Processes	4. Carbide Production	CO2	44.985	1.142	0.14	0.00	0.41	T	
77	5	LULUCF	A. Forest Land	CH4	0.000	0.994	0.00	0.00	0.01		
78	1A	2. Manufacturing Industries and Const.	d. Pulp, Paper and Print	CH4	1.060	0.939	0.00	0.00	0.00		
79	1A	1. Energy Industries	c. Manufacture of Solid Fuels and Other EI	CO2	1,04.728	0.818	0.33	0.00	0.96	T	
80	1A	2. Manufacturing Industries and Const.	c. Chemicals	N2O	0.248	0.779	0.00	0.00	0.00		
81	4	B. Manure Management	6. Horses	CH4	0.428	0.577	0.00	0.00	0.00		
82	1A	4. Other Sectors	c. Agriculture/Forestry/Fisheries	CH4	1.436	0.524	0.00	0.00	0.01		
83	4	B. Manure Management	3. Sheep	CH4	0.101	0.518	0.00	0.00	0.00		
84	1A	2. Manufacturing Industries and Const.	c. Chemicals	CH4	0.107	0.485	0.00	0.00	0.00		
85	1A	2. Manufacturing Industries and Const.	e. Food Processing, Bev. and Tob.	N2O	0.615	0.378	0.00	0.00	0.00		
86	1A	2. Manufacturing Industries and Const.	a. Iron and Steel	CH4	2.057	0.370	0.01	0.00	0.02		
87	1A	2. Manufacturing Industries and Const.	a. Iron and Steel	N2O	3.270	0.299	0.01	0.00	0.03		
88	5	LULUCF	A. Forest Land	N2O	0.000	0.179	0.00	0.00	0.00		
89	1A	2. Manufacturing Industries and Const.	b. Non-Ferrous Metals	N2O	1.252	0.167	0.00	0.00	0.01		
90	1A	2. Manufacturing Industries and Const.	e. Food Processing, Bev. and Tob.	CH4	0.178	0.159	0.00	0.00	0.00		
91	1A	2. Manufacturing Industries and Const.	b. Non-Ferrous Metals	CH4	0.691	0.136	0.00	0.00	0.01		
92	1A	1. Energy Industries	c. Manufacture of Solid Fuels and Other EI	N2O	0.226	0.104	0.00	0.00	0.00		
93	4	B. Manure Management	11. Anaerobic Lagoons	N2O	0.948	0.076	0.00	0.00	0.01		
94	4	B. Manure Management	4. Goats	CH4	0.025	0.066	0.00	0.00	0.00		
95	1A	3. Transport	c. Railways	CH4	0.078	0.043	0.00	0.00	0.00		
96	1A	1. Energy Industries	b. Petroleum Refining	CH4	0.094	0.027	0.00	0.00	0.00		
97	1A	5. Other	b. Mobile - Military use	N2O	0.356	0.025	0.00	0.00	0.00		
98	1A	1. Energy Industries	b. Petroleum Refining	N2O	0.069	0.017	0.00	0.00	0.00		
99	1A	3. Transport	a. Civil Aviation	N2O	0.005	0.015	0.00	0.00	0.00		
100	6	C. Waste Incineration	a. and b. waste incineration	N2O		0.005	0.00	0.00	0.00		
101	1B	Fugitive Emissions from Fuels	b. Natural Gas	CO2	0.007	0.003	0.00	0.00	0.00		
102	1A	1. Energy Industries	c. Manufacture of Solid Fuels and Other EI	CH4	0.201	0.001	0.00	0.00	0.00		
103	1A	5. Other	b. Mobile - Military use	CH4	0.012	0.001	0.00	0.00	0.00		
104	1A	3. Transport	a. Civil Aviation	CH4	0.000	0.000	0.00	0.00	0.00		
	2	Industrial Processes	4. Carbide Production	CH4	0.783	0.000	0.00	0.00	0.00		
	1B	Fugitive Emissions from Fuels	a. Oil	CH4	0.422	0.000	0.00	0.00	0.00		
	2	Industrial Processes	2. Ferroalloys Production	CO2	57.635		0.18	0.00	0.00		
					31,474.848	33,307.889	100.00	100.00	100.00		

Table 2: GPG Table 7.A1 (Tier 1 approach) – KC analyze w/o LULUCF

rank	CRF				GHG emissions Gg CO ₂ eq		contribution to level		contribution	key category	
2010	#	Sector	Category	gas	1986	2010	1986	2020	to trend	2020	1986
1	1A	1. Energy Industries	a. Public Electricity and Heat Production	CO ₂	6,533.755	6,174.341	32.31	31.63	1.56	L.T	L
2	1A	3. Transport	b. Road Transportation	CO ₂	1,910.236	5,142.861	9.45	26.34	38.65	L.T	L
3	1A	4. Other Sectors	b. Residential	CO ₂	1,100.185	1,194.086	5.44	6.12	1.55	L.T	L
4	1A	2. Manufacturing Industries and Const.	f. Other	CO ₂	1,774.835	981.421	8.78	5.03	8.57	L.T	L
5	1A	4. Other Sectors	a. Commercial/Institutional	CO ₂	612.110	647.380	3.03	3.32	0.66	L.T	L
6	4	A. Enteric Fermentation	1. Non-Dairy Cattle	CH ₄	263.057	385.140	1.30	1.97	1.54	L.T	L
7	4	D. Agricultural Soils	1. Direct Soil Emissions	N ₂ O	435.343	380.633	2.15	1.95	0.46	L.T	L
8	1A	2. Manufacturing Industries and Const.	d. Pulp, Paper and Print	CO ₂	649.556	380.493	3.21	1.95	2.89	L.T	L
9	2	Industrial Processes	1. Cement Production	CO ₂	514.615	367.873	2.54	1.88	1.51	L.T	L
10	6	A. Solid Waste Disposal on Land	1. Managed Waste Disposal on Land	CH ₄	298.801	356.003	1.48	1.82	0.79	L.T	L
11	4	D. Agricultural Soils	3. Indirect Emissions	N ₂ O	334.663	292.988	1.65	1.50	0.35	L	L
12	1B	Fugitive Emissions from Fuels	a. Coal Mining and Handling	CH ₄	358.906	249.343	1.77	1.28	1.14	L.T	L
13	4	A. Enteric Fermentation	1. Dairy Cattle	CH ₄	383.587	235.876	1.90	1.21	1.57	L.T	L
14	1A	4. Other Sectors	c. Agriculture/Forestry/Fisheries	CO ₂	424.674	207.053	2.10	1.06	2.38	L.T	L
15	1A	2. Manufacturing Industries and Const.	a. Iron and Steel	CO ₂	1,141.586	197.708	5.65	1.01	10.59	L.T	L
16	2	Industrial Processes	1. Refrigeration and AC Equipment	HFC		190.375	0.00	0.98	2.23	L.T	
17	4	B. Manure Management	1. Non-Dairy Cattle	CH ₄	66.046	168.361	0.33	0.86	1.23	L.T	
18	2	Industrial Processes	3. Limestone and Dolomite Use	CO ₂	47.390	152.226	0.23	0.78	1.25	L.T	
19	6	B. Waste Water Handling	2. Domestic and Commercial Waste Water	CH ₄	113.217	143.686	0.56	0.74	0.40	L	L
20	4	B. Manure Management	1. Dairy Cattle	CH ₄	152.449	131.914	0.75	0.68	0.18	L	L
21	4	B. Manure Management	13. Solid Storage and Dry Lot	N ₂ O	267.309	129.554	1.32	0.66	1.51	L.T	L
22	1A	4. Other Sectors	b. Residential	CH ₄	134.558	124.936	0.67	0.64	0.06	L	L
23	4	B. Manure Management	8. Swine	CH ₄	232.857	121.249	1.15	0.62	1.21	L.T	L
24	1A	2. Manufacturing Industries and Const.	c. Chemicals	CO ₂	98.052	114.901	0.48	0.59	0.24	T	L
25	1A	2. Manufacturing Industries and Const.	e. Food Processing, Beverages and Tobacco	CO ₂	247.754	111.581	1.23	0.57	1.49	T	L
26	2	Industrial Processes	2. Lime Production	CO ₂	220.206	90.248	1.09	0.46	1.43		L
27	1A	2. Manufacturing Industries and Const.	b. Non-Ferrous Metals	CO ₂	440.325	88.351	2.18	0.45	3.94	T	L
28	1B	Fugitive Emissions from Fuels	a. Coal Mining and Handling	CO ₂	120.238	80.626	0.59	0.41	0.42		L
29	1A	3. Transport	b. Road Transportation	N ₂ O	28.636	75.636	0.14	0.39	0.56		
30	6	B. Waste Water Handling	2. Domestic and Commercial Waste Water	N ₂ O	58.858	59.102	0.29	0.30	0.03		
31	2	Industrial Processes	3. Aluminium Production	CO ₂	89.402	58.591	0.44	0.30	0.32		L
32	4	D. Agricultural Soils ⁽²⁾	2. Pasture, Range and Paddock Manure	N ₂ O	23.871	52.820	0.12	0.27	0.35		
33	2	Industrial Processes	1. Iron and Steel Production	CO ₂	40.149	44.953	0.20	0.23	0.07		

34	1A	3. Transport	c. Railways	CO2	68.182	37.471	0.34	0.19	0.33		
35	3	Solvent and Other Product Use	D. 1. Use of N ₂ O for Anaesthesia	N2O	81.903	30.380	0.41	0.16	0.57	T	
36	1B	Fugitive Emissions from Fuels	b. Natural Gas	CH4	56.205	29.112	0.28	0.15	0.29		
37	1A	1. Energy Industries	a. Public Electricity and Heat Production	N2O	26.201	26.732	0.13	0.14	0.02		
38	1A	4. Other Sectors	b. Residential	N2O	20.760	26.281	0.10	0.13	0.07		
39	1A	4. Other Sectors	c. Agriculture/Forestry/Fisheries	N2O	49.388	25.016	0.24	0.13	0.27		
40	4	A. Enteric Fermentation	3. Sheep	CH4	4.242	21.804	0.02	0.11	0.21		
41	1A	2. Manufacturing Industries and Const.	f. Other	N2O	35.046	16.589	0.17	0.08	0.20		
42	2	Industrial Processes	8. Electrical Equipment	SF6	10.241	16.542	0.05	0.08	0.08		
43	1A	1. Energy Industries	b. Petroleum Refining	CO2	62.225	14.435	0.31	0.07	0.53	T	
44	2	Industrial Processes	3. Aluminium Production	PFC	276.291	13.682	1.37	0.07	2.96	T	L
45	6	B. Waste Water Handling	1. Industrial Wastewater	CH4	19.916	13.432	0.10	0.07	0.07		
46	4	A. Enteric Fermentation	8. Swine	CH4	23.103	13.246	0.11	0.07	0.11		
47	2	Industrial Processes	7. Other (Glass Production)	CO2	4.528	9.572	0.02	0.05	0.06		
48	4	B. Manure Management	12. Liquid Systems	N2O	6.456	9.142	0.03	0.05	0.03		
49	1A	3. Transport	b. Road Transportation	CH4	23.405	9.110	0.12	0.05	0.16		
50	2	Industrial Processes	4. Soda Ash Production and Use	CO2	7.827	8.857	0.04	0.05	0.02		
51	4	B. Manure Management	9. Poultry	CH4	16.446	7.565	0.08	0.04	0.10		
52	4	A. Enteric Fermentation	6. Horses	CH4	5.498	7.417	0.03	0.04	0.02		
53	2	Industrial Processes	5. Aluminium anode burn-off	CO2		5.492	0.00	0.03	0.06		
54	6	C. Waste Incineration	a. and b. waste incineration	CO2		5.228	0.00	0.03	0.06		
55	2	Industrial Processes	4. Aerosols and MDI	HFC		4.873	0.00	0.02	0.06		
56	1A	3. Transport	c. Railways	N2O	8.651	4.754	0.04	0.02	0.04		
57	1A	2. Manufacturing Industries and Const.	f. Other	CH4	6.291	3.563	0.03	0.02	0.03		
58	2	Industrial Processes	5. Other (Methanol)	CH4	2.929	3.443	0.01	0.02	0.01		
59	1A	5. Other	b. Mobile - Military use	CO2	41.093	2.867	0.20	0.01	0.43	T	
60	4	A. Enteric Fermentation	4. Goats	CH4	1.050	2.751	0.01	0.01	0.02		
61	1A	1. Energy Industries	a. Public Electricity and Heat Production	CH4	1.595	2.199	0.01	0.01	0.01		
62	2	Industrial Processes	2. Foam Blowing	HFC		2.034	0.00	0.01	0.02		
63	1A	4. Other Sectors	a. Commercial/Institutional	CH4	15.279	1.728	0.08	0.01	0.15		
64	1A	3. Transport	a. Civil Aviation	CO2	0.622	1.675	0.00	0.01	0.01		
65	1A	4. Other Sectors	a. Commercial/Institutional	N2O	5.087	1.404	0.03	0.01	0.04		
66	1A	2. Manufacturing Industries and Const.	d. Pulp. Paper and Print	N2O	1.383	1.314	0.01	0.01	0.00		
67	2	Industrial Processes	3. Fire Extinguishers	HFC		1.262	0.00	0.01	0.01		
68	4	B. Manure Management	14. Other AWMS	N2O	1.322	1.175	0.01	0.01	0.00		
69	2	Industrial Processes	4. Carbide Production	CO2	44.985	1.142	0.22	0.01	0.50	T	
70	1A	2. Manufacturing Industries and Const.	d. Pulp. Paper and Print	CH4	1.060	0.939	0.01	0.00	0.00		
71	1A	1. Energy Industries	c. Manufacture of Solid Fuels and Other EI	CO2	104.728	0.818	0.52	0.00	1.17	T	L
72	1A	2. Manufacturing Industries and Const.	c. Chemicals	N2O	0.248	0.779	0.00	0.00	0.01		

73	4	B. Manure Management	6. Horses	CH4	0.428	0.577	0.00	0.00	0.00		
74	1A	4. Other Sectors	c. Agriculture/Forestry/Fisheries	CH4	1.436	0.524	0.01	0.00	0.01		
75	4	B. Manure Management	3. Sheep	CH4	0.101	0.518	0.00	0.00	0.00		
76	1A	2. Manufacturing Industries and Const.	c. Chemicals	CH4	0.107	0.485	0.00	0.00	0.00		
77	1A	2. Manufacturing Industries and Const.	e. Food Processing, Beverages and Tobacco	N2O	0.615	0.378	0.00	0.00	0.00		
78	1A	2. Manufacturing Industries and Const.	a. Iron and Steel	CH4	2.057	0.370	0.01	0.00	0.02		
79	1A	2. Manufacturing Industries and Const.	a. Iron and Steel	N2O	3.270	0.299	0.02	0.00	0.03		
80	1A	2. Manufacturing Industries and Const.	b. Non-Ferrous Metals	N2O	1.252	0.167	0.01	0.00	0.01		
81	1A	2. Manufacturing Industries and Const.	e. Food Processing, Beverages and Tobacco	CH4	0.178	0.159	0.00	0.00	0.00		
82	1A	2. Manufacturing Industries and Const.	b. Non-Ferrous Metals	CH4	0.691	0.136	0.00	0.00	0.01		
83	1A	1. Energy Industries	c. Manufacture of Solid Fuels and Other EI	N2O	0.226	0.104	0.00	0.00	0.00		
84	4	B. Manure Management	11. Anaerobic Lagoons	N2O	0.948	0.076	0.00	0.00	0.01		
85	4	B. Manure Management	4. Goats	CH4	0.025	0.066	0.00	0.00	0.00		
86	1A	3. Transport	c. Railways	CH4	0.078	0.043	0.00	0.00	0.00		
87	1A	1. Energy Industries	b. Petroleum Refining	CH4	0.094	0.027	0.00	0.00	0.00		
88	1A	5. Other	b. Mobile - Military use	N2O	0.356	0.025	0.00	0.00	0.00		
89	1A	1. Energy Industries	b. Petroleum Refining	N2O	0.069	0.017	0.00	0.00	0.00		
90	1A	3. Transport	a. Civil Aviation	N2O	0.005	0.015	0.00	0.00	0.00		
91	6	C. Waste Incineration	a. and b. waste incineration	N2O		0.005	0.00	0.00	0.00		
92	1B	Fugitive Emissions from Fuels	b. Natural Gas	CO2	0.007	0.003	0.00	0.00	0.00		
93	1A	1. Energy Industries	c. Manufacture of Solid Fuels and Other EI	CH4	0.201	0.001	0.00	0.00	0.00		
94	1A	5. Other	b. Mobile - Military use	CH4	0.012	0.001	0.00	0.00	0.00		
95	1A	3. Transport	a. Civil Aviation	CH4	0.000	0.000	0.00	0.00	0.00		
	2	Industrial Processes	4. Carbide Production	CH4	0.783	0.000	0.00	0.00			
	1B	Fugitive Emissions from Fuels	a. Oil	CH4	0.422	0.000	0.00	0.00			
	2	Industrial Processes	2. Ferroalloys Production	CO2	57.635		0.29	0.00			
					20,222.410	19,522.127	100.00	100.00	100.00		