

## **ANNEX 3**

The uncertainty assessment of national air emissions was performed in accordance with the Tier 1 methodology described in the EMEP/EEA air pollutant emission inventory guidebook 2019, Chapter 5 Uncertainties 2019.

	A	B	C	D	E	F	G	H	I	J	K	L	M
	NRF sector	Pollutant	Emissions in 1986	Emissions in 2021	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in 2021	Type A sensitivity	Type B sensitivity	Uncertainty in trend in national emissions introduced by emission factor uncertainty	Uncertainty in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced into the trend in total national emissions
			kt	kt	%	%	%	%	%	%	%	%	%
1A2a	Stationary combustion in manufacturing industries and construction: Iron and steel	NH3		0,000	3	25	25,179	0,000	0,000	0,000	0,000	0,000	0,000
1A2c	Stationary combustion in manufacturing industries and construction: Chemicals	NH3	0,000	0,001	3	25	25,179	0,000	0,000	0,000	0,001	0,000	0,000
1A2d	Stationary combustion in manufacturing industries and construction: Pulp, Paper and Print	NH3		0,000	3	25	25,179	0,000	0,000	0,000	0,000	0,000	0,000
1A2e	Stationary combustion in manufacturing industries and construction: Food processing, beverages and tobacco	NH3		0,000	3	25	25,179	0,000	0,000	0,000	0,000	0,000	0,000
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	NH3		0,000	3	25	25,179	0,000	0,000	0,000	0,000	0,000	0,000
1A2gvi	Mobile combustion in manufacturing industries and construction (please specify in the IIR)	NH3	0,000	0,000	5	25	25,495	0,000	0,000	0,000	0,000	0,000	0,000
1A2gviii	Stationary combustion in manufacturing industries and construction: Other (please specify in the IIR)	NH3	0,006	0,003	3	25	25,179	0,000	0,000	0,000	0,002	0,000	0,000
1A3bi	Road transport: Passenger cars	NH3	0,012	0,183	5	20	20,616	0,042	0,007	0,007	0,139	0,052	0,022
1A3bii	Road transport: Light duty vehicles	NH3	0,000	0,011	5	20	20,616	0,000	0,000	0,000	0,008	0,003	0,000
1A3biii	Road transport: Heavy duty vehicles and buses	NH3	0,002	0,017	5	20	20,616	0,000	0,001	0,001	0,012	0,005	0,000
1A3biv	Road transport: Mopeds & motorcycles	NH3	0,000	0,000	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A3c	Railways	NH3	0,000	0,000	5	57	57,219	0,000	0,000	0,000	0,000	0,000	0,000
1A4ai	Commercial/Institutional: Stationary	NH3	0,082		10	50	50,990	0,000	0,002	0,000	0,122	0,000	0,015
1A4bi	Residential: Stationary	NH3	1,133	1,058	10	50	50,990	8,532	0,009	0,042	0,437	0,601	0,552
1A4bii	Residential: Household and gardening (mobile)	NH3	0,000	0,000	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	NH3	0,001	0,001	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1B2aiv	Fugitive emissions oil: Refining and storage	NH3	0,001		3	36	36,125	0,000	0,000	0,000	0,001	0,000	0,000
2G	Other product use (please specify in the IIR)	NH3	0,016	0,015	20	93	95,126	0,006	0,000	0,001	0,012	0,017	0,000
3B1a	Manure management - Dairy cattle	NH3	3,236	2,369	50	100	111,803	205,690	0,001	0,095	0,122	6,726	45,257
3B1b	Manure management - Non-dairy cattle	NH3	2,819	3,364	50	100	111,803	414,638	0,051	0,135	5,106	9,550	117,274
3B2	Manure management - Sheep	NH3	0,023	0,115	50	100	111,803	0,487	0,004	0,005	0,393	0,327	0,262
3B3	Manure management - Swine	NH3	3,785	0,810	50	100	111,803	24,026	0,080	0,033	8,006	2,299	69,374
3B4d	Manure management - Goats	NH3	0,017	0,043	50	100	111,803	0,068	0,001	0,002	0,122	0,122	0,030
3B4e	Manure management - Horses	NH3	0,134	0,166	50	100	111,803	1,008	0,003	0,007	0,268	0,471	0,293
3B4gi	Manure management - Laying hens	NH3	0,603	0,407	50	100	111,803	6,060	0,002	0,016	0,163	1,155	1,360
3B4gii	Manure management - Broilers	NH3	0,804	0,417	50	100	111,803	6,359	0,007	0,017	0,720	1,183	1,917
3B4giii	Manure management - Turkeys	NH3		0,073	50	100	111,803	0,197	0,003	0,003	0,295	0,208	0,130
3B4giv	Manure management - Other poultry	NH3		0,086	50	100	111,80	0,270	0,003	0,003	0,345	0,244	0,178
3B4h	Manure management - Other animals (please specify in the IIR)	NH3	0,071	0,031	50	100	111,80	0,035	0,001	0,001	0,089	0,087	0,016
3Da1	Inorganic N-fertilizers (includes also urea application)	NH3	1,581	1,450	10	100	100,50	62,248	0,011	0,058	1,114	0,823	1,920
3Da2a	Animal manure applied to soils	NH3	9,528	7,285	10	100	100,50	1571,530	0,009	0,293	0,878	4,137	17,884
3Da2b	Sewage sludge applied to soils	NH3	0,012		10	100	100,50	0,000	0,000	0,000	0,037	0,000	0,001
3Da2c	Other organic fertilisers applied to soils (including compost)	NH3	0,004	0,024	10	100	100,50	0,017	0,001	0,001	0,085	0,014	0,007
3Da3	Urine and dung deposited by grazing animals	NH3	0,261	0,490	10	100	100,50	7,107	0,012	0,020	1,190	0,278	1,494
5B1	Biological treatment of waste - Composting	NH3		0,032	10	42	43,17	0,005	0,001	0,001	0,053	0,018	0,003
5B2	Biological treatment of waste - Anaerobic digestion at biogas facilities	NH3		0,013	10	50	50,99	0,001	0,001	0,001	0,026	0,007	0,001
5C1a	Municipal waste incineration	NH3		0,000	10	17	19,72	0,000	0,000	0,000	0,000	0,000	0,000
5D1	Domestic wastewater handling	NH3	0,774	0,007	15	50	52,20	0,000	0,023	0,000	1,138	0,006	1,294
	NATIONAL TOTAL	NH3	24,906	18,469				2308					259
								48					16

	A	B	C	D	E	F	G	H	I	J	K	L	M
	NRF sector	Pollutant	Emissions in 1980	Emissions in 2021	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in 2021	Type A sensitivity	Type B sensitivity	Uncertainty in trend in national emissions introduced by emission factor uncertainty	Uncertainty in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced into the trend in total national emissions
			kt	kt	%	%	%	%	%	%	%	%	%
1A1a	Public electricity and heat production	SOx	148,576	1,622	3	10	10,440	17,121	0,004	0,007	0,036	0,028	0,002
1A1b	Petroleum refining	SOx	0,364		3	10	10,440	0,000	0,000	0,000	0,000	0,000	0,000
1A1c	Manufacture of solid fuels and other energy industries	SOx		0,000	3	10	10,440	0,000	0,000	0,000	0,000	0,000	0,000
1A2a	Stationary combustion in manufacturing industries and construction: Iron and steel	SOx	9,996	0,119	3	10	10,440	0,091	0,000	0,000	0,002	0,002	0,000
1A2b	Stationary combustion in manufacturing industries and construction: Non-ferrous metals	SOx	5,752	0,042	3	10	10,440	0,011	0,000	0,000	0,002	0,001	0,000
1A2c	Stationary combustion in manufacturing industries and construction: Chemicals	SOx	4,049	0,015	3	10	10,440	0,001	0,000	0,000	0,002	0,000	0,000
1A2d	Stationary combustion in manufacturing industries and construction: Pulp, Paper and Print	SOx	6,422	0,037	3	10	10,440	0,009	0,000	0,000	0,003	0,001	0,000
1A2e	Stationary combustion in manufacturing industries and construction: Food processing, beverages and tobacco	SOx	4,021	0,006	3	10	10,440	0,000	0,000	0,000	0,003	0,000	0,000
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	SOx	1,292	0,653	3	10	10,440	2,772	0,003	0,003	0,026	0,011	0,001
1A2gvi	Mobile combustion in manufacturing industries and construction (please specify in the IIR)	SOx		0,000	5	10	11,180	0,000	0,000	0,000	0,000	0,000	0,000
1A2gvii	Stationary combustion in manufacturing industries and construction: Other (please specify in the IIR)	SOx	22,605	0,048	3	10	10,440	0,015	0,001	0,000	0,014	0,001	0,000
1A3ai(i)	International aviation LTO (civil)	SOx	0,004	0,002	5	50	50,249	0,001	0,000	0,000	0,000	0,000	0,000
1A3aii(i)	Domestic aviation LTO (civil)	SOx	0,000	0,000	5	50	50,249	0,000	0,000	0,000	0,000	0,000	0,000
1A3bi	Road transport: Passenger cars	SOx	1,130	0,020	5	20	20,616	0,010	0,000	0,000	0,000	0,001	0,000
1A3bii	Road transport: Light duty vehicles	SOx	0,194	0,003	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A3biii	Road transport: Heavy duty vehicles and buses	SOx	2,113	0,009	5	20	20,616	0,002	0,000	0,000	0,002	0,000	0,000
1A3biv	Road transport: Mopeds & motorcycles	SOx	0,009	0,000	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A3c	Railways	SOx	0,218	0,000	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A3dii	National navigation (shipping)	SOx	0,000	0,000	5	10	11,180	0,000	0,000	0,000	0,000	0,000	0,000
1A3ei	Pipeline transport	SOx		0,000	5	60	60,208	0,000	0,000	0,000	0,000	0,000	0,000
1A4ai	Commercial/Institutional: Stationary	SOx	14,798	0,096	10	20	22,361	0,272	0,001	0,000	0,013	0,006	0,000
1A4bi	Residential: Stationary	SOx	18,152	0,383	10	20	22,361	4,368	0,000	0,002	0,006	0,022	0,001
1A4bii	Residential: Household and gardening (mobile)	SOx	0,001	0,000	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	SOx	1,228	0,001	5	20	20,616	0,000	0,000	0,000	0,002	0,000	0,000
1A4ciii	Agriculture/Forestry/Fishing: National fishing	SOx	0,002	0,000	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A5b	Other, Mobile (including military, land based and recreational boats)	SOx	0,014	0,001	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1B2aiv	Fugitive emissions oil: Refining and storage	SOx	0,330		3	34	34,132	0,000	0,000	0,000	0,001	0,000	0,000
1B2c	Venting and flaring (oil, gas, combined oil and gas)	SOx	0,000	0,000	3	7,7	8,264	0,000	0,000	0,000	0,000	0,000	0,000
2B6	Titanium dioxide production	SOx	0,098	0,183	10	50	50,990	5,176	0,001	0,001	0,037	0,011	0,002
2B10a	Chemical industry: Other (please specify in the IIR)	SOx	0,399	0,513	10	33	34,482	18,706	0,002	0,002	0,069	0,030	0,006
2C1	Iron and steel production	SOx	0,108	0,041	10	40	41,231	0,171	0,000	0,000	0,006	0,002	0,000
2C3	Aluminium production	SOx	0,222	0,232	10	20	22,361	1,606	0,001	0,001	0,019	0,014	0,001
2C5	Lead production	SOx	0,094	0,062	10	34	35,440	0,286	0,000	0,000	0,008	0,004	0,000
2C6	Zinc production	SOx	0,005	0,002	10	15	18,028	0,000	0,000	0,000	0,000	0,000	0,000
2C7a	Copper production	SOx	0,006	0,001	10	38	39,294	0,000	0,000	0,000	0,000	0,000	0,000
2G	Other product use (please specify in the IIR)	SOx	0,001	0,001	20	50	53,852	0,000	0,000	0,000	0,000	0,000	0,000
2H1	Pulp and paper industry	SOx	0,310		20	2	20,100	0,000	0,000	0,000	0,000	0,000	0,000
5C1a	Municipal waste incineration	SOx		0,000	10	18	20,591	0,000	0,000	0,000	0,000	0,000	0,000
5C1bii	Hazardous waste incineration	SOx		0,000	10	10	14,142	0,000	0,000	0,000	0,000	0,000	0,000
5C1biii	Clinical waste incineration	SOx		0,000	10	9,3	13,656	0,000	0,000	0,000	0,000	0,000	0,000
5C1bv	Cremation	SOx		0,002	3	10	10,440	0,000	0,000	0,000	0,000	0,000	0,000
	NATIONAL TOTAL	SOx	242,512	4,093				51					0,012
								7,1					0,1

A	B	C	D	E	F	G	H	I	J	K	L	M
NRF sector	Pollutant	Emissions in 1990	Emissions in 2021	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in 2021	Type A sensitivity	Type B sensitivity	Uncertainty in trend in national emissions introduced by emission factor uncertainty	Uncertainty in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced into the trend in total national emissions
		kt	kt	%	%	%	%	%	%	%	%	%
Public electricity and heat production	NMVO	0,090	0,147	3	50	50,090	0,059	0,002	0,002	0,081	0,010	0,007
Petroleum refining	NMVO	0,007		3	50	50,090	0,000	0,000	0,000	0,002	0,000	0,000
Manufacture of solid fuels and other energy industries	NMVO	0,003	0,000	3	50	50,090	0,000	0,000	0,000	0,001	0,000	0,000
Stationary combustion in manufacturing industries and construction: Iron and steel	NMVO	0,196	0,095	3	50	50,090	0,025	0,000	0,001	0,003	0,006	0,000
Stationary combustion in manufacturing industries and construction: Non-ferrous metals	NMVO	0,244	0,059	3	50	50,090	0,010	0,001	0,001	0,041	0,004	0,002
Stationary combustion in manufacturing industries and construction: Chemicals	NMVO	0,086	0,284	3	50	50,090	0,223	0,004	0,004	0,187	0,019	0,035
Stationary combustion in manufacturing industries and construction: Pulp, Paper and Print	NMVO	0,220	0,229	3	50	50,090	0,144	0,002	0,004	0,097	0,015	0,010
Stationary combustion in manufacturing industries and construction: Food processing, beverages and tobacco	NMVO	0,083	0,056	3	50	50,090	0,009	0,000	0,001	0,014	0,004	0,000
Stationary combustion in manufacturing industries and construction: Non-metallic minerals	NMVO	0,175	0,133	3	50	50,090	0,049	0,001	0,002	0,040	0,009	0,002
Mobile combustion in manufacturing industries and construction (please specify in the IIR)	NMVO	0,130	0,105	5	50	50,249	0,030	0,001	0,002	0,034	0,011	0,001
Stationary combustion in manufacturing industries and construction: Other (please specify in the IIR)	NMVO	1,391	0,867	3	50	50,090	2,079	0,003	0,013	0,172	0,057	0,033
International aviation LTO (civil)	NMVO	0,011	0,004	5	50	50,249	0,000	0,000	0,000	0,001	0,000	0,000
Domestic aviation LTO (civil)	NMVO	0,006	0,008	5	50	50,249	0,000	0,000	0,000	0,004	0,001	0,000
Road transport: Passenger cars	NMVO	16,877	1,420	5	20	20,616	0,944	0,098	0,022	1,962	0,154	3,872
Road transport: Light duty vehicles	NMVO	0,057	0,031	5	20	20,616	0,000	0,000	0,000	0,001	0,003	0,000
Road transport: Heavy duty vehicles and buses	NMVO	0,719	0,068	5	20	20,616	0,002	0,004	0,001	0,081	0,007	0,007
Road transport: Mopeds & motorcycles	NMVO	0,458	0,179	5	20	20,616	0,015	0,001	0,003	0,010	0,019	0,000
Road transport: Gasoline evaporation	NMVO	3,284	0,927	5	20	20,616	0,402	0,009	0,014	0,183	0,101	0,044
Railways	NMVO	0,096	0,030	5	43	43,290	0,002	0,000	0,000	0,009	0,003	0,000
National navigation (shipping)	NMVO	0,000	0,000	5	25	25,495	0,000	0,000	0,000	0,000	0,000	0,000
Pipeline transport	NMVO		0,000	5	61	61,205	0,000	0,000	0,000	0,000	0,000	0,000
Commercial/Institutional: Stationary	NMVO	0,963	0,082	10	50	50,990	0,019	0,006	0,001	0,280	0,018	0,079
Residential: Stationary	NMVO	7,627	5,805	10	50	50,990	96,473	0,035	0,089	1,744	1,262	4,634
Residential: Household and gardening (mobile)	NMVO	0,170	0,137	5	20	20,616	0,009	0,001	0,002	0,018	0,015	0,001
Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	NMVO	3,388	1,305	5	20	20,616	0,797	0,004	0,020	0,081	0,142	0,027
Agriculture/Forestry/Fishing: National fishing	NMVO	0,001	0,001	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
Other, Mobile (including military, land based and recreational boats)	NMVO	0,024	0,003	5	20	20,616	0,000	0,000	0,000	0,002	0,000	0,000
Fugitive emission from solid fuels: Coal mining and handling	NMVO	1,730	0,840	3	0,5	3,041	0,007	0,001	0,013	0,000	0,055	0,003
Fugitive emissions oil: Exploration, production, transport	NMVO	0,001		3	2,2	3,720	0,000	0,000	0,000	0,000	0,000	0,000
Fugitive emissions oil: Refining and storage	NMVO	0,106		3	35	35,128	0,000	0,001	0,000	0,027	0,000	0,001
Distribution of oil products	NMVO	2,101	0,278	3	10	10,440	0,009	0,011	0,004	0,107	0,018	0,012
Fugitive emissions from natural gas (exploration, production, processing, transmission, storage, distribution and other)	NMVO	0,002	0,001	3	0,5	3,041	0,000	0,000	0,000	0,000	0,000	0,000
Venting and flaring (oil, gas, combined oil and gas)	NMVO	0,000	0,000	3	2,8	4,104	0,000	0,000	0,000	0,000	0,000	0,000
Chemical industry: Other (please specify in the IIR)	NMVO	0,083	0,005	10	42	43,174	0,000	0,001	0,000	0,022	0,001	0,000
Iron and steel production	NMVO	0,029	0,031	10	35	36,401	0,001	0,000	0,000	0,010	0,007	0,000
Domestic solvent use including fungicides	NMVO	3,641	4,400	20	30	36,056	27,717	0,042	0,068	1,251	1,913	5,224
Road paving with asphalt	NMVO	0,012	0,033	20	19	27,586	0,001	0,000	0,001	0,008	0,014	0,000
Asphalt roofing	NMVO	0,001	0,000	20	33	38,588	0,000	0,000	0,000	0,000	0,000	0,000
Coating applications	NMVO	7,385	2,447	20	30	36,056	8,573	0,015	0,038	0,448	1,064	1,333
Degreasing	NMVO	0,203	0,014	20	30	36,056	0,000	0,001	0,000	0,037	0,006	0,001
Dry cleaning	NMVO	0,029	0,004	20	30	36,056	0,000	0,000	0,000	0,004	0,002	0,000
Chemical products	NMVO	2,635	2,564	20	30	36,056	9,408	0,021	0,039	0,619	1,115	1,625
Printing	NMVO	0,955	0,108	20	30	36,056	0,017	0,005	0,002	0,154	0,047	0,026
Other solvent use (please specify in the IIR)	NMVO	0,906	0,239	20	50	53,852	0,182	0,003	0,004	0,139	0,104	0,030
Other product use (please specify in the IIR)	NMVO	0,229	0,211	20	50	53,852	0,142	0,002	0,003	0,081	0,092	0,015
Pulp and paper industry	NMVO	0,300	0,038	20	50	53,852	0,005	0,002	0,001	0,077	0,017	0,006
Food and beverages industry	NMVO	4,710	0,871	20	50	53,852	2,425	0,001	0,013	0,061	0,379	0,147

Manure management - Dairy cattle	NMVOC	1,765	1,319	10	30	31,623	1,915	0,008	0,020	0,231	0,287	0,136
Manure management - Non-dairy cattle	NMVOC	1,143	2,205	10	30	31,623	5,354	0,026	0,034	0,772	0,479	0,827
Manure management - Sheep	NMVOC	0,003	0,018	10	30	31,623	0,000	0,000	0,000	0,008	0,004	0,000
Manure management - Swine	NMVOC	0,336	0,063	10	30	31,623	0,004	0,001	0,001	0,043	0,014	0,002
Manure management - Goats	NMVOC	0,001	0,004	10	30	31,623	0,000	0,000	0,000	0,001	0,001	0,000
Manure management - Horses	NMVOC	0,016	0,027	10	30	31,623	0,001	0,000	0,000	0,009	0,006	0,000
Manure management - Laying hens	NMVOC	0,133	0,100	10	30	31,623	0,011	0,001	0,002	0,018	0,022	0,001
Manure management - Broilers	NMVOC	0,406	0,216	10	30	31,623	0,052	0,000	0,003	0,013	0,047	0,002
Manure management - Turkeys	NMVOC		0,022	10	30	31,623	0,001	0,000	0,000	0,010	0,005	0,000
Manure management - Other poultry	NMVOC		0,046	10	30	31,623	0,002	0,001	0,001	0,021	0,010	0,001
Manure management - Other animals (please specify in the IIR)	NMVOC	0,011	0,002	10	30	31,623	0,000	0,000	0,000	0,001	0,000	0,000
Animal manure applied to soils	NMVOC	2,456	1,713	10	100	100,499	32,650	0,009	0,026	0,885	0,372	0,922
Urine and dung deposited by grazing animals	NMVOC	0,013	0,028	10	100	100,499	0,009	0,000	0,000	0,034	0,006	0,001
Cultivated crops	NMVOC	0,166	0,149	10	100	100,499	0,248	0,001	0,002	0,111	0,032	0,013
Biological treatment of waste - Solid waste disposal on land	NMVOC	0,234	0,116	20	32	37,736	0,021	0,000	0,002	0,004	0,050	0,003
Municipal waste incineration	NMVOC		0,000	10	46	47,074	0,000	0,000	0,000	0,000	0,000	0,000
Hazardous waste incineration	NMVOC	0,006	0,041	10	10	14,142	0,000	0,001	0,001	0,006	0,009	0,000
Clinical waste incineration	NMVOC		0,000	10	43	44,147	0,000	0,000	0,000	0,000	0,000	0,000
Cremation	NMVOC	0,000	0,000	3	10	10,440	0,000	0,000	0,000	0,000	0,000	0,000
Domestic wastewater handling	NMVOC	0,001	0,002	10	33	34,482	0,000	0,000	0,000	0,001	0,001	0,000
Industrial wastewater handling	NMVOC	0,000	0,000	25	33	41,400	0,000	0,000	0,000	0,000	0,000	0,000
NATIONAL TOTAL	NMVOC	65,056	30,135				190					19
							14					4

	A	B	C	D	E	F	G	H	I	J	K	L	M
	NRF sector	Pollutant	Emissions in 1980	Emissions in 2021	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in 2021	Type A sensitivity	Type B sensitivity	Uncertainty in trend in national emissions introduced by emission factor uncertainty	Uncertainty in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced into the trend in total national emissions
			kt	kt	%	%	%	%	%	%	%	%	%
1A1a	Public electricity and heat production	NOx	18,116	3,262	3	20	20,224	6,547	0,044	0,045	0,884	0,192	0,819
1A1b	Petroleum refining	NOx	0,105		3	20	20,224	0,000	0,001	0,000	0,010	0,000	0,000
1A1c	Manufacture of solid fuels and other energy industries	NOx		0,000	3	20	20,224	0,000	0,000	0,000	0,000	0,000	0,000
1A2a	Stationary combustion in manufacturing industries and construction: Iron and steel	NOx	2,630	0,287	3	20	20,224	0,051	0,009	0,004	0,180	0,017	0,033
1A2b	Stationary combustion in manufacturing industries and construction: Non-ferrous metals	NOx	0,881	0,184	3	20	20,224	0,021	0,002	0,003	0,036	0,011	0,001
1A2c	Stationary combustion in manufacturing industries and construction: Chemicals	NOx	1,658	0,214	3	20	20,224	0,028	0,005	0,003	0,104	0,013	0,011
1A2d	Stationary combustion in manufacturing industries and construction: Pulp, Paper and Print	NOx	1,455	0,381	3	20	20,224	0,089	0,002	0,005	0,038	0,022	0,002
1A2e	Stationary combustion in manufacturing industries and construction: Food processing, beverages and tobacco	NOx	1,161	0,168	3	20	20,224	0,017	0,003	0,002	0,068	0,010	0,005
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	NOx	1,661	1,462	3	20	20,224	1,315	0,012	0,020	0,241	0,086	0,065
1A2gvi	Mobile combustion in manufacturing industries and construction (please specify in the IIR)	NOx	1,468	0,982	5	20	20,616	0,617	0,006	0,014	0,127	0,096	0,025
1A2gviii	Stationary combustion in manufacturing industries and construction: Other (please specify in the IIR)	NOx	8,032	0,893	3	20	20,224	0,491	0,027	0,012	0,545	0,052	0,300
1A3ai(i)	International aviation LTO (civil)	NOx	0,059	0,028	5	50	50,249	0,003	0,000	0,000	0,005	0,003	0,000
1A3ai(ii)	Domestic aviation LTO (civil)	NOx	0,001	0,002	5	50	50,249	0,000	0,000	0,000	0,001	0,000	0,000
1A3bi	Road transport: Passenger cars	NOx	11,650	6,296	5	20	20,616	25,337	0,030	0,087	0,591	0,616	0,729
1A3bii	Road transport: Light duty vehicles	NOx	0,274	2,200	5	20	20,616	3,095	0,029	0,030	0,582	0,215	0,385
1A3biii	Road transport: Heavy duty vehicles and buses	NOx	4,525	1,847	5	20	20,616	2,180	0,003	0,026	0,064	0,181	0,037
1A3biv	Road transport: Mopeds & motorcycles	NOx	0,031	0,027	5	20	20,616	0,000	0,000	0,000	0,005	0,003	0,000
1A3c	Railways	NOx	1,142	0,343	5	48	48,260	0,413	0,001	0,005	0,043	0,034	0,003
1A3dii	National navigation (shipping)	NOx	0,000	0,001	5	20	20,616	0,000	0,000	0,000	0,000	0,000	0,000
1A3ei	Pipeline transport	NOx		0,001	5	62	62,201	0,000	0,000	0,000	0,001	0,000	0,000
1A4ai	Commercial/Institutional: Stationary	NOx	3,608	0,749	10	50	50,990	2,193	0,007	0,010	0,373	0,147	0,160
1A4bi	Residential: Stationary	NOx	2,408	1,728	10	50	50,990	11,671	0,012	0,024	0,601	0,338	0,475
1A4bii	Residential: Household and gardening (mobile)	NOx	0,005	0,006	5	20	20,616	0,000	0,000	0,000	0,001	0,001	0,000
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	NOx	8,193	2,146	5	20	20,616	2,944	0,011	0,030	0,215	0,210	0,090
1A4ciii	Agriculture/Forestry/Fishing: National fishing	NOx	0,016	0,017	5	20	20,616	0,000	0,000	0,000	0,003	0,002	0,000
1A5b	Other, Mobile (including military, land based and recreational boats)	NOx	0,061	0,007	5	20	20,616	0,000	0,000	0,000	0,004	0,001	0,000
1B2aiv	Fugitive emissions oil: Refining and storage	NOx	0,128		3	33	33,136	0,000	0,001	0,000	0,021	0,000	0,000
1B2c	Venting and flaring (oil, gas, combined oil and gas)	NOx	0,000	0,000	3	79	79,057	0,000	0,000	0,000	0,000	0,000	0,000
2B6	Titanium dioxide production	NOx	0,003	0,007	10	46	47,074	0,000	0,000	0,000	0,004	0,001	0,000
2C1	Iron and steel production	NOx	0,116	0,089	10	92	92,542	0,102	0,001	0,001	0,060	0,017	0,004
2C3	Aluminium production	NOx	0,044	0,006	10	50	50,990	0,000	0,000	0,000	0,007	0,001	0,000
2G	Other product use (please specify in the IIR)	NOx	0,007	0,006	20	75	77,621	0,000	0,000	0,000	0,004	0,003	0,000
2H1	Pulp and paper industry	NOx	0,155		20	85	87,321	0,000	0,001	0,000	0,065	0,000	0,004
3B1a	Manure management - Dairy cattle	NOx	0,023	0,009	50	100	111,803	0,001	0,000	0,000	0,001	0,009	0,000
3B1b	Manure management - Non-dairy cattle	NOx	0,022	0,010	50	100	111,803	0,002	0,000	0,000	0,003	0,010	0,000
3B2	Manure management - Sheep	NOx	0,001	0,005	50	100	111,803	0,000	0,000	0,000	0,006	0,005	0,000
3B3	Manure management - Swine	NOx	0,055	0,013	50	100	111,803	0,003	0,000	0,000	0,009	0,013	0,000
3B4d	Manure management - Goats	NOx	0,001	0,002	50	100	111,803	0,000	0,000	0,000	0,002	0,002	0,000
3B4e	Manure management - Horses	NOx	0,004	0,005	50	100	111,803	0,001	0,000	0,000	0,005	0,005	0,000
3B4gi	Manure management - Laying hens	NOx	0,021	0,018	50	100	111,803	0,006	0,000	0,000	0,014	0,017	0,000
3B4gii	Manure management - Broilers	NOx	0,053	0,026	50	100	111,803	0,013	0,000	0,000	0,009	0,025	0,001
3B4giii	Manure management - Turkeys	NOx		0,003	50	100	111,803	0,000	0,000	0,000	0,004	0,002	0,000
3B4giv	Manure management - Other poultry	NOx		0,005	50	100	111,803	0,001	0,000	0,000	0,007	0,005	0,000
3B4h	Manure management - Other animals (please specify in the IIR)	NOx	0,003	0,001	50	100	111,803	0,000	0,000	0,000	0,000	0,001	0,000
3Da1	Inorganic N-fertilizers (includes also urea application)	NOx	1,115	1,166	10	100	100,499	20,643	0,011	0,016	1,062	0,228	1,181
3Da2a	Animal manure applied to soils	NOx	1,260	0,945	10	100	100,499	13,565	0,007	0,013	0,685	0,185	0,504
3Da2b	Sewage sludge applied to soils	NOx	0,003		10	100	100,499	0,000	0,000	0,000	0,002	0,000	0,000
3Da2c	Other organic fertilisers applied to soils (including compost)	NOx	0,002	0,012	10	100	100,499	0,002	0,000	0,000	0,016	0,002	0,000
3Da3	Urine and dung deposited by grazing animals	NOx	0,097	0,201	10	100	100,499	0,616	0,002	0,003	0,231	0,039	0,055
5C1a	Municipal waste incineration	NOx		0,000	10	70	70,711	0,000	0,000	0,000	0,000	0,000	0,000
5C1bii	Hazardous waste incineration	NOx		0,005	10	10	14,142	0,000	0,000	0,000	0,001	0,001	0,000
5C1biii	Clinical waste incineration	NOx		0,001	10	8,7	13,255	0,000	0,000	0,000	0,000	0,000	0,000
5C1bv	Cremation	NOx		0,017	3	10	10,440	0,000	0,000	0,000	0,002	0,001	0,000
	NATIONAL TOTAL	NOx	72,253	25,785				92					5
								10					2

	A	B	C	D	E	F	G	H	I	J	K	L	M
	NRF sector	Pollutant	Emissions in 2000	Emissions in 2021	Activity data uncertainty	Emission factor uncertainty	Combined uncertainty	Combined uncertainty as % of total national emissions in 2021	Type A sensitivity	Type B sensitivity	Uncertainty in trend in national emissions introduced by emission factor uncertainty	Uncertainty in trend in national emissions introduced by activity data uncertainty	Uncertainty introduced into the trend in total national emissions
			kt	kt	%	%	%	%	%	%	%	%	%
1A1a	Public electricity and heat production	PM2.5	0,545	0,254	3	50	50,090	1,588	0,009	0,018	0,468	0,076	0,225
1A1b	Petroleum refining	PM2.5	0,007		3	50	50,090	0,000	0,000	0,000	0,017	0,000	0,000
1A1c	Manufacture of solid fuels and other energy industries	PM2.5	0,000	0,000	3	50	50,090	0,000	0,000	0,000	0,000	0,000	0,000
1A2a	Stationary combustion in manufacturing industries and construction: Iron and steel	PM2.5	0,024	0,022	3	50	50,090	0,012	0,000	0,002	0,019	0,007	0,000
1A2b	Stationary combustion in manufacturing industries and construction: Non-ferrous metals	PM2.5	0,005	0,008	3	50	50,090	0,001	0,000	0,001	0,014	0,002	0,000
1A2c	Stationary combustion in manufacturing industries and construction: Chemicals	PM2.5	0,055	0,122	3	50	50,090	0,365	0,006	0,009	0,292	0,036	0,087
1A2d	Stationary combustion in manufacturing industries and construction: Pulp, Paper and Print	PM2.5	0,245	0,087	3	50	50,090	0,185	0,006	0,006	0,307	0,026	0,095
1A2e	Stationary combustion in manufacturing industries and construction: Food processing, beverages and tobacco	PM2.5	0,028	0,011	3	50	50,090	0,003	0,001	0,001	0,031	0,003	0,001
1A2f	Stationary combustion in manufacturing industries and construction: Non-metallic minerals	PM2.5	0,134	0,056	3	50	50,090	0,078	0,003	0,004	0,136	0,017	0,019
1A2gvii	Mobile combustion in manufacturing industries and construction (please specify in the IIR)	PM2.5	0,095	0,063	5	50	50,249	0,099	0,000	0,004	0,014	0,031	0,001
1A2gviii	Stationary combustion in manufacturing industries and construction: Other (please specify in the IIR)	PM2.5	0,171	0,343	3	50	50,090	2,901	0,016	0,024	0,779	0,102	0,617
1A3ai(i)	International aviation LTO (civil)	PM2.5	0,001	0,000	5	100	100,125	0,000	0,000	0,000	0,001	0,000	0,000
1A3aii(i)	Domestic aviation LTO (civil)	PM2.5		0,000	5	100	100,125	0,000	0,000	0,000	0,000	0,000	0,000
1A3bi	Road transport: Passenger cars	PM2.5	0,293	0,149	5	100	100,125	2,178	0,004	0,010	0,416	0,074	0,179
1A3bii	Road transport: Light duty vehicles	PM2.5	0,117	0,033	5	100	100,125	0,106	0,004	0,002	0,354	0,016	0,126
1A3biii	Road transport: Heavy duty vehicles and buses	PM2.5	0,255	0,024	5	100	100,125	0,057	0,011	0,002	1,107	0,012	1,225
1A3biv	Road transport: Mopeds & motorcycles	PM2.5	0,007	0,003	5	100	100,125	0,001	0,000	0,000	0,009	0,002	0,000
1A3bvi	Road transport: Automobile tyre and brake wear	PM2.5	0,185	0,273	5	100	100,125	7,333	0,010	0,019	0,994	0,136	1,007
1A3bvii	Road transport: Automobile road abrasion	PM2.5	0,078	0,119	5	100	100,125	1,400	0,005	0,008	0,451	0,059	0,207
1A3c	Railways	PM2.5	0,016	0,009	5	146	146,086	0,017	0,000	0,001	0,027	0,004	0,001
1A3dii	National navigation (shipping)	PM2.5	0,000	0,000	5	25	25,495	0,000	0,000	0,000	0,000	0,000	0,000
1A3ei	Pipeline transport	PM2.5		0,000	5	37	37,336	0,000	0,000	0,000	0,000	0,000	0,000
1A4ai	Commercial/Institutional: Stationary	PM2.5	0,205	0,038	10	50	50,990	0,036	0,008	0,003	0,380	0,037	0,146
1A4bi	Residential: Stationary	PM2.5	10,063	7,338	10	50	50,990	1375,981	0,014	0,516	0,680	7,303	53,802
1A4bii	Residential: Household and gardening (mobile)	PM2.5	0,009	0,002	5	100	100,125	0,000	0,000	0,000	0,032	0,001	0,001
1A4cii	Agriculture/Forestry/Fishing: Off-road vehicles and other machinery	PM2.5	0,585	0,232	5	100	100,125	5,306	0,013	0,016	1,289	0,115	1,676
1A4ciii	Agriculture/Forestry/Fishing: National fishing	PM2.5	0,002	0,001	5	100	100,125	0,000	0,000	0,000	0,001	0,001	0,000
1A5b	Other, Mobile (including military, land based and recreational boats)	PM2.5	0,000	0,000	5	100	100,125	0,000	0,000	0,000	0,001	0,000	0,000
1B1a	Fugitive emission from solid fuels: Coal mining and handling	PM2.5	0,022	0,013	3	14	14,318	0,000	0,000	0,001	0,003	0,004	0,000
1B2aiv	Fugitive emissions oil: Refining and storage	PM2.5	0,001		3	23	23,195	0,000	0,000	0,000	0,001	0,000	0,000
1B2c	Venting and flaring (oil, gas, combined oil and gas)	PM2.5	0,015	0,011	3	10	10,440	0,000	0,000	0,001	0,000	0,003	0,000
2A1	Cement production	PM2.5	0,121	0,026	10	50	50,990	0,018	0,004	0,002	0,209	0,026	0,044
2A2	Lime production	PM2.5	0,080	0,003	10	43	44,147	0,000	0,004	0,000	0,164	0,003	0,027
2A3	Glass production	PM2.5	0,013	0,023	10	33	34,482	0,006	0,001	0,002	0,032	0,023	0,002
2A5a	Quarrying and mining of minerals other than coal	PM2.5	0,040	0,038	100	50	111,803	0,181	0,001	0,003	0,034	0,382	0,147
2A5b	Construction and demolition	PM2.5	0,189	0,309	100	50	111,803	11,744	0,012	0,022	0,615	3,077	9,847
2B10a	Chemical industry: Other (please specify in the IIR)	PM2.5	0,000	0,001	10	50	50,990	0,000	0,000	0,000	0,003	0,001	0,000

2C1	Iron and steel production	PM2.5	0,010	0,014	10	50	50,990	0,005	0,001	0,001	0,026	0,014	0,001
2C2	Ferroalloys production	PM2.5	0,014		10	10	14,142	0,000	0,001	0,000	0,007	0,000	0,000
2C3	Aluminium production	PM2.5	0,030	0,015	10	33	34,482	0,003	0,000	0,001	0,015	0,015	0,000
2C5	Lead production	PM2.5	0,000	0,000	10	16	18,868	0,000	0,000	0,000	0,000	0,000	0,000
2C6	Zinc production	PM2.5	0,000	0,000	10	20	22,361	0,000	0,000	0,000	0,000	0,000	0,000
2C7a	Copper production	PM2.5	0,003	0,000	10	32	33,526	0,000	0,000	0,000	0,004	0,000	0,000
2D3b	Road paving with asphalt	PM2.5	0,002	0,001	20	0,25	20,002	0,000	0,000	0,000	0,000	0,001	0,000
2D3c	Asphalt roofing	PM2.5	0,002		20	33	38,588	0,000	0,000	0,000	0,003	0,000	0,000
2D3i	Other solvent use (please specify in the IIR)	PM2.5	0,002	0,000	20	50	53,852	0,000	0,000	0,000	0,005	0,000	0,000
2G	Other product use (please specify in the IIR)	PM2.5	0,112	0,109	20	50	53,852	0,341	0,002	0,008	0,106	0,218	0,059
2H1	Pulp and paper industry	PM2.5	0,073		20	25	32,016	0,000	0,004	0,000	0,091	0,000	0,008
3B1a	Manure management - Dairy cattle	PM2.5	0,051	0,036	10	100	100,499	0,127	0,000	0,003	0,001	0,036	0,001
3B1b	Manure management - Non-dairy cattle	PM2.5	0,046	0,049	10	100	100,499	0,235	0,001	0,003	0,113	0,048	0,015
3B2	Manure management - Sheep	PM2.5	0,000	0,001	10	100	100,499	0,000	0,000	0,000	0,002	0,001	0,000
3B3	Manure management - Swine	PM2.5	0,002	0,001	10	100	100,499	0,000	0,000	0,000	0,005	0,001	0,000
3B4d	Manure management - Goats	PM2.5	0,000	0,000	10	100	100,499	0,000	0,000	0,000	0,001	0,000	0,000
3B4e	Manure management - Horses	PM2.5	0,001	0,002	10	100	100,499	0,000	0,000	0,000	0,005	0,002	0,000
3B4gi	Manure management - Laying hens	PM2.5	0,005	0,005	10	100	100,499	0,003	0,000	0,000	0,013	0,005	0,000
3B4gii	Manure management - Broilers	PM2.5	0,006	0,008	10	100	100,499	0,006	0,000	0,001	0,028	0,008	0,001
3B4giii	Manure management - Turkeys	PM2.5	0,005	0,002	10	100	100,499	0,000	0,000	0,000	0,011	0,002	0,000
3B4giv	Manure management - Other poultry	PM2.5	0,001	0,002	10	100	100,499	0,000	0,000	0,000	0,006	0,002	0,000
3Dc	Farm-level agricultural operations including storage, handling and transport of agricultural products	PM2.5	0,015	0,015	10	50	50,990	0,006	0,000	0,001	0,014	0,015	0,000
5A	Biological treatment of waste - Solid waste disposal on land	PM2.5	0,000	0,000	20	1,2	20,036	0,000	0,000	0,000	0,000	0,000	0,000
5C1a	Municipal waste incineration	PM2.5		0,000	10	37	38,328	0,000	0,000	0,000	0,000	0,000	0,000
5C1bii	Hazardous waste incineration	PM2.5	0,000	0,000	10	10	14,142	0,000	0,000	0,000	0,000	0,000	0,000
5C1bv	Cremation	PM2.5	0,000	0,001	3	10	10,440	0,000	0,000	0,000	0,000	0,000	0,000
5E	Other waste (please specify in the IIR)	PM2.5	0,223	0,215	20	50	53,852	1,315	0,004	0,015	0,200	0,428	0,223
	NATIONAL TOTAL	PM2.5	14,209	10,087				1412					70
								37,6					8,4