

ANNEXES TO THE NATIONAL INVENTORY REPORT

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Annexes to the national inventory report

Annex 1: Key categories

1.1. Description of methodology used for identifying key categories, if different from the Intergovernmental Panel on Climate Change (IPCC) tier 1 approach

Key categories according to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC, 2006) are those found in the accumulative 95% (Tier 1) or 90% (Tier 2) of the total annual emissions in the last reported year or belonging to the total trend, when ranked from contributing the largest to smallest share in annual total and in the trend. As originally designed it applied only to source categories. Following the 2006 IPCC Guidelines, Croatia undertook a key category analysis using Tier 1 and Tier 2 Level and Trend methods.

1.1.1. Level assessment

Level assessment involves an identification of categories as a key by calculating the proportion of emissions and removals in each category to the total emissions and removals. The calculated values of proportion are added from the category that accounts for the largest proportion, until the sum reaches 95% for Tier 1, 90% for Tier 2. Tier 1 level assessment uses emissions and removals from each category directly and Tier 2 level assessment analyses the emissions and removals of each category, multiplied by the uncertainty (which is calculated in uncertainty analysis chapter) of each category.

1.1.2. Trend Assessment

The purpose of the trend assessment is to identify categories that may not be large enough to be identified by the level assessment, but whose trend is significantly different from the trend of the overall inventory and should therefore receive particular attention.

The difference between the rate of change in emissions and removals in a category and the rate of change in total emissions and removals is calculated. The trend assessment is calculated by multiplying this value by the ratio of contribution of the relevant category to total emissions and removals. The calculated results, regarded as trend assessment values, are added from the category of which the proportion to the total of trend assessment values is the largest, until the total reaches 95% for Tier 1, 90% for Tier 2. At this point, these categories are defined as the key categories. Tier 2 trend assessment is calculated multiplying the Tier 1 trend assessment with uncertainty of each category.

Table A1.1-1: Categories Assessed in Key Category Analysis

Source Categories Assessed in Key Source Category Analysis	Direct GHG
ENERGY	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O

Source Categories Assessed in Key Source Category Analysis	Direct GHG
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O
1.A.3.a Domestic Aviation	CO ₂
1.A.3.a Domestic Aviation	CH ₄
1.A.3.a Domestic Aviation	N ₂ O
1.A.3.b Road Transportation	CO ₂
1.A.3.b Road Transportation	CH ₄
1.A.3.b Road Transportation	N ₂ O
1.A.3.c Railways	CO ₂
1.A.3.c Railways	CH ₄
1.A.3.c Railways	N ₂ O
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O
1.A.4 Other Sectors - Liquid Fuels	CO ₂
1.A.4 Other Sectors - Liquid Fuels	CH ₄
1.A.4 Other Sectors - Liquid Fuels	N ₂ O
1.A.4 Other Sectors - Solid Fuels	CO ₂
1.A.4 Other Sectors - Solid Fuels	CH ₄
1.A.4 Other Sectors - Solid Fuels	N ₂ O
1.A.4 Other Sectors - Gaseous Fuels	CO ₂
1.A.4 Other Sectors - Gaseous Fuels	CH ₄
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O
1.A.4 Other Sectors - Biomass	CH ₄

Source Categories Assessed in Key Source Category Analysis	Direct GHG
1.A.4 Other Sectors - Biomass	N ₂ O
1.B.1 Fugitive emissions from Solid Fuels	CH ₄
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄
1.B.2.c. Venting and flaring	CO ₂
1.B.2.c. Venting and flaring	CH ₄
1.B.2.c. Venting and flaring	N ₂ O
INDUSTRIAL PROCESSES AND PRODUCT USE	
2.A.1 Cement Production	CO ₂
2.A.2 Lime Production	CO ₂
2.A.3 Glass Production	CO ₂
2.A.4 Other Process Uses of Carbonates	CO ₂
2.B.1 Ammonia Production	CO ₂
2.B.1 Ammonia Production	CH ₄
2.B.1 Ammonia Production	N ₂ O
2.B.2 Nitric Acid Production	N ₂ O
2.B.8 Petrochemical and Carbon Black Production	CO ₂
2.B.8 Petrochemical and Carbon Black Production	CH ₄
2.C.1 Iron and Steel Production	CO ₂
2.C.2 Ferroalloys Production	CO ₂
2.C.2 Ferroalloys Production	CH ₄
2.C.3 Aluminium Production	CO ₂
2.C.3 Aluminium Production	PFCs
2.D Non-energy Products from Fuels and Solvent Use	CO ₂
2.F.1 Refrigeration and Air conditioning	F-gases
2.F.2 Foam blowing agents	F-gases
2.F.3 Fire Protection	F-gases
2.F.4 Aerosols	F-gases
2.G Other Product Manufacture and Use	N ₂ O
2.G Other Product Manufacture and Use	F-gases
AGRICULTURE	
3.A Enteric Fermentation	CH ₄
3.B Manure Management	CH ₄
3.B Manure Management	N ₂ O
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O

Source Categories Assessed in Key Source Category Analysis	Direct GHG
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O
3.G Liming	CO ₂
3.H Urea Application	CO ₂
LAND USE, LAND USE CHANGE AND FORESTRY	
4.A.1 Forest Land Remaining Forest Land	CO ₂
4.A.2 Land Converted to Forest Land	CO ₂
4.B.1 Cropland Remaining Cropland	CO ₂
4.B.2 Land Converted to Cropland	CO ₂
4.C.1 Grassland Remaining Grassland	CO ₂
4.C.2 Land Converted to Grassland	CO ₂
4.D.2 Land Converted to Wetlands	CO ₂
4.E.2 Land Converted to Settlements	CO ₂
4.G Harvested Wood Products	CO ₂
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O
4(V) Biomass Burning	CO ₂
4(V) Biomass Burning	CH ₄
4(V) Biomass Burning	N ₂ O
WASTE	
5.A Solid Waste Disposal	CH ₄
5.B Biological Treatment of Solid Waste	CH ₄
5.B Biological Treatment of Solid Waste	N ₂ O
5.C Incineration and Open Burning of Waste	CO ₂
5.C Incineration and Open Burning of Waste	N ₂ O
5.C Incineration and Open Burning of Waste	N ₂ O
5.C Incineration and Open Burning of Waste	CH ₄
5.D Wastewater Treatment and Discharge	CH ₄
5.D Wastewater Treatment and Discharge	N ₂ O

1.2. Information on the level of disaggregation

The level of disaggregation is in accordance with the suggested source categories split of the 2006 IPCC Guidelines and Uncertainty Management in National Greenhouse Gas Inventories and additionally.

Approach 1 and Approach 2 have been done in defining and calculating key categories.

1.3. Tables 4.2 and 4.3 of volume 1 of the 2006 IPCC Guidelines, including and excluding land use, land-use change and forestry

Table A1.3-1: Key categories analysis – Level Assessment - Tier 1 (Excluding LULUCF) – 1990

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Level Assessment	Cumulative Total (%)
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	0.145	15%
1.A.3.b Road Transportation	CO ₂	3,505.880	0.111	26%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	0.078	33%
3.A Enteric Fermentation	CH ₄	2,336.027	0.074	41%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	0.063	47%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	0.060	53%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	0.050	58%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	0.049	63%
2.C.3 Aluminium Production	PFCs	1,117.284	0.035	67%
2.A.1 Cement Production	CO ₂	1,086.203	0.034	70%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	0.030	73%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	0.024	75%
2.B.2 Nitric Acid Production	N ₂ O	670.739	0.021	77%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	0.021	80%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	0.019	81%
2.B.1 Ammonia Production	CO ₂	558.672	0.018	83%
5.A Solid Waste Disposal	CH ₄	554.620	0.018	85%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	0.017	87%
3.B Manure Management	CH ₄	491.908	0.016	88%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	0.013	90%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	0.011	91%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	0.010	92%
3.B Manure Management	N ₂ O	284.426	0.009	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas – Oil	CH ₄	246.878	0.008	93%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.006	94%

2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	0.006	95%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.006	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	0.005	96%
2.A.2 Lime Production	CO ₂	156.820	0.005	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	0.005	97%
1.A.3.c Railways	CO ₂	140.079	0.004	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	0.004	97%
2.C.3 Aluminium Production	CO ₂	118.797	0.004	98%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	0.002	98%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.002	98%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	0.002	98%
1.A.3.b Road Transportation	N ₂ O	52.208	0.002	99%
3.H Urea Application	CO ₂	50.020	0.002	99%
1.A.3.b Road Transportation	CH ₄	46.028	0.001	99%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	0.001	99%
2.C.1 Iron and Steel Production	CO ₂	43.808	0.001	99%
2.A.3 Glass Production	CO ₂	43.216	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.001	99%
2.G Other Product Manufacture and Use	N ₂ O	32.648	0.001	100%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	0.001	100%
1.A.3.c Railways	N ₂ O	11.781	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	0.000	100%

1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	100%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	100%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	100%
3.G Liming	CO ₂	0.000	0.000	100%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	0.000	100%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	0.000	100%
TOTAL		31,553.093		

Table A1.3-2: Key categories analysis – Level Assessment - Tier 1 (Excluding LULUCF) – 2023

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2023) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.287	29%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.101	39%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.075	46%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.062	52%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.054	58%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.044	62%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.043	66%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.041	71%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.040	75%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.038	78%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.033	82%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.026	84%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.016	86%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.016	87%
3.B Manure Management	CH ₄	491.908	370.591	0.015	89%
1.A.4 Other Sectors – Biomass	CH ₄	354.228	346.922	0.014	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.012	91%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.011	93%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.011	94%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.008	94%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.008	95%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.006	96%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.004	96%
3.B Manure Management	N ₂ O	284.426	96.238	0.004	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.004	97%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.004	97%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.003	98%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.002	98%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.002	98%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.002	98%
1.A.3.c Railways	CO ₂	140.079	38.294	0.002	99%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.001	99%

1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.001	99%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.001	99%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.001	99%
3.H Urea Application	CO ₂	50.020	21.671	0.001	99%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.001	99%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.001	99%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.001	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	100%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	100%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.000	100%
3.G Liming	CO ₂	0.000	6.376	0.000	100%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	100%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	100%

1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	100%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.000	100%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	100%
TOTAL		31,553.093	25,418.948		

Table A1.3-3: Key categories analysis – Level Assessment - Tier 1 (Including LULUCF) – 1990

Tier 1 Analysis - Level Assessment Including LULUCF				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Level Assessment	Cumulative Total (%)
4.A.1 Forest Land Remaining Forest Land	CO ₂	6,483.656	0.167	17%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	0.118	28%
1.A.3.b Road Transportation	CO ₂	3,505.880	0.090	37%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	0.063	44%
3.A Enteric Fermentation	CH ₄	2,336.027	0.060	50%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	0.051	55%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	0.048	60%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	0.041	64%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	0.040	68%
2.C.3 Aluminium Production	PFCs	1,117.284	0.029	71%
2.A.1 Cement Production	CO ₂	1,086.203	0.028	73%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	0.024	76%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	0.019	78%
2.B.2 Nitric Acid Production	N ₂ O	670.739	0.017	80%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	0.017	81%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	0.015	83%
2.B.1 Ammonia Production	CO ₂	558.672	0.014	84%
5.A Solid Waste Disposal	CH ₄	554.620	0.014	86%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	0.013	87%
3.B Manure Management	CH ₄	491.908	0.013	88%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	0.011	89%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	0.009	90%
4.G Harvested Wood Products	CO ₂	317.852	0.008	91%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	0.008	92%
3.B Manure Management	N ₂ O	284.426	0.007	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	0.006	93%
4.E.2 Land Converted to Settlements	CO ₂	235.440	0.006	94%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.005	94%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	0.005	95%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.004	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	0.004	96%
2.A.2 Lime Production	CO ₂	156.820	0.004	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	0.004	96%
1.A.3.c Railways	CO ₂	140.079	0.004	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	0.003	97%
2.C.3 Aluminium Production	CO ₂	118.797	0.003	97%

4.B.1 Cropland Remaining Cropland	CO ₂	89.059	0.002	98%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	0.002	98%
4.D.2 Land Converted to Wetlands	CO ₂	77.232	0.002	98%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.002	98%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	0.002	98%
1.A.3.b Road Transportation	N ₂ O	52.208	0.001	99%
3.H Urea Application	CO ₂	50.020	0.001	99%
1.A.3.b Road Transportation	CH ₄	46.028	0.001	99%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	0.001	99%
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O	43.898	0.001	99%
2.C.1 Iron and Steel Production	CO ₂	43.808	0.001	99%
2.A.3 Glass Production	CO ₂	43.216	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.001	99%
2.G Other Product Manufacture and Use	N ₂ O	32.648	0.001	99%
4.A.2 Land Converted to Forest Land	CO ₂	28.890	0.001	100%
4.B.2 Land Converted to Cropland	CO ₂	25.846	0.001	100%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	0.000	100%
4(V) Biomass Burning	CO ₂	14.979	0.000	100%
1.A.3.c Railways	N ₂ O	11.781	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	0.000	100%
4.C.2 Land Converted to Grassland	CO ₂	9.952	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.000	100%
4.C.1 Grassland Remaining Grassland	CO ₂	2.069	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	0.000	100%
4(V) Biomass Burning	CH ₄	1.378	0.000	100%

1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.000	100%
4(V) Biomass Burning	N ₂ O	0.763	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	100%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	100%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	100%
3.G Liming	CO ₂	0.000	0.000	100%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	0.000	100%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	0.000	100%
TOTAL		38,884.108		

Table A1.3-4: Key categories analysis – Level Assessment - Tier 1 (Including LULUCF) – 2023

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Last Year (2023) Estimate (Gg eq-CO ₂)	Level Assessment	Cumulative Total (%)
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.222	22%
4.A.1 Forest Land Remaining Forest Land	CO ₂	6,483.656	5,554.992	0.169	39%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.078	47%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.058	53%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.048	57%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.041	62%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.034	65%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.033	68%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.031	71%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.031	75%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.029	77%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.025	80%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.020	82%
4.E.2 Land Converted to Settlements	CO ₂	235.440	545.989	0.017	84%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.012	85%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.012	86%
4.G Harvested Wood Products	CO ₂	317.852	391.428	0.012	87%
3.B Manure Management	CH ₄	491.908	370.591	0.011	88%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.011	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.009	90%
4.C.2 Land Converted to Grassland	CO ₂	9.952	289.228	0.009	91%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.008	92%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.008	93%
4.A.2 Land Converted to Forest Land	CO ₂	28.890	260.822	0.008	94%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.006	94%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.006	95%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.004	95%
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O	43.898	141.786	0.004	96%
4.B.1 Cropland Remaining Cropland	CO ₂	89.059	138.941	0.004	96%
4.B.2 Land Converted to Cropland	CO ₂	25.846	116.404	0.004	97%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.003	97%
3.B Manure Management	N ₂ O	284.426	96.238	0.003	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.003	98%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.003	98%

1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.002	98%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.002	98%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.002	99%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.001	99%
1.A.3.c Railways	CO ₂	140.079	38.294	0.001	99%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.001	99%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.001	99%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.001	99%
3.H Urea Application	CO ₂	50.020	21.671	0.001	99%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.001	99%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.001	99%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	100%
4.D.2 Land Converted to Wetlands	CO ₂	77.232	12.963	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	100%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.000	100%
4(V) Biomass Burning	CO ₂	14.979	9.962	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	100%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.000	100%
3.G Liming	CO ₂	0.000	6.376	0.000	100%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	100%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	100%
4.C.1 Grassland Remaining Grassland	CO ₂	2.069	2.069	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	100%
4(V) Biomass Burning	CH ₄	1.378	1.556	0.000	100%

5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	100%
4(V) Biomass Burning	N ₂ O	0.763	1.060	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	100%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.000	100%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	100%
TOTAL		38,884.108	32,886.148		

Table A1.3-5: Key categories analysis – Trend Assessment - Tier 1 (Excluding LULUCF)

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Last Year (2023) Estimate (Gg eq-CO ₂)	Trend Assessment	% Contribution to trend	Cumulative Total (%)
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.218	0.207	21%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.161	0.153	36%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.093	0.088	45%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.052	0.049	50%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.048	0.046	54%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.047	0.045	59%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.047	0.045	63%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.045	0.043	67%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.045	0.042	72%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.044	0.042	76%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.029	0.028	79%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.028	0.026	81%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.026	0.024	84%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.021	0.020	86%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.020	0.019	88%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.014	0.014	89%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.012	0.012	90%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.012	0.011	91%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.008	0.007	92%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.007	0.007	93%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.007	0.006	93%
3.B Manure Management	N ₂ O	284.426	96.238	0.006	0.006	94%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.006	0.006	95%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.005	0.004	95%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.005	0.004	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.005	0.004	96%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.004	0.004	96%
1.A.3.c Railways	CO ₂	140.079	38.294	0.004	0.003	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.003	0.003	97%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.003	0.003	97%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.003	0.002	97%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.002	0.002	98%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.002	0.002	98%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.002	0.002	98%

5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.002	0.002	98%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.001	0.001	98%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.001	0.001	98%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.001	0.001	99%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.001	0.001	99%
3.B Manure Management	CH ₄	491.908	370.591	0.001	0.001	99%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.001	0.001	99%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.001	0.001	99%
3.H Urea Application	CO ₂	50.020	21.671	0.001	0.001	99%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.001	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.001	0.001	99%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.001	0.000	99%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	0.000	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.000	0.000	100%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.000	0.000	100%
3.G Liming	CO ₂	0.000	6.376	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	0.000	100%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	0.000	100%

1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	0.000	100%
TOTAL		31,553.093	25,418.948			

Table A1.3-6: Key categories analysis – Trend Assessment - Tier 1 (Including LULUCF)

Tier 1 Analysis - Trend Assessment Including LULUCF						
IPCC Source/Sink Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Last Year (2023) Estimate (Gg eq-CO ₂)	Trend Assessment	% Contribution to trend	Cumulative Total (%)
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.155	0.184	18%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.125	0.148	33%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.068	0.081	41%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.038	0.045	46%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.037	0.044	50%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.036	0.043	54%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.035	0.042	59%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.034	0.041	63%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.034	0.040	67%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.032	0.038	71%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.023	0.028	73%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.021	0.025	76%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.020	0.023	78%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.018	0.021	80%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.016	0.019	82%
4.E.2 Land Converted to Settlements	CO ₂	235.440	545.989	0.012	0.015	84%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.011	0.013	85%
4.C.2 Land Converted to Grassland	CO ₂	9.952	289.228	0.010	0.012	86%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.010	0.012	87%
4.A.2 Land Converted to Forest Land	CO ₂	28.890	260.822	0.008	0.010	88%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.007	0.008	89%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.006	0.007	90%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.006	0.007	90%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.005	0.006	91%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.005	0.006	92%
3.B Manure Management	N ₂ O	284.426	96.238	0.005	0.006	92%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.005	0.006	93%
4.G Harvested Wood Products	CO ₂	317.852	391.428	0.004	0.005	93%
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O	43.898	141.786	0.004	0.004	94%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.004	0.004	94%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.004	0.004	95%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.004	0.004	95%
4.B.2 Land Converted to Cropland	CO ₂	25.846	116.404	0.003	0.004	96%

1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.003	0.004	96%
1.A.3.c Railways	CO ₂	140.079	38.294	0.003	0.003	96%
4.A.1 Forest Land Remaining Forest Land	CO ₂	6,483.656	5,554.992	0.003	0.003	97%
4.B.1 Cropland Remaining Cropland	CO ₂	89.059	138.941	0.002	0.003	97%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.002	0.002	97%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.002	0.002	97%
4.D.2 Land Converted to Wetlands	CO ₂	77.232	12.963	0.002	0.002	97%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.002	0.002	98%
3.B Manure Management	CH ₄	491.908	370.591	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.001	0.002	98%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.001	0.002	98%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.001	0.002	98%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.001	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.001	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.001	0.001	99%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.001	0.001	99%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.001	0.001	99%
3.H Urea Application	CO ₂	50.020	21.671	0.001	0.001	99%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.001	0.001	99%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.001	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.000	0.000	99%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	0.000	99%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.000	0.000	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	0.000	100%
3.G Liming	CO ₂	0.000	6.376	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	0.000	100%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	0.000	100%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.000	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	0.000	100%

4(V) Biomass Burning	CO ₂	14.979	9.962	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	0.000	100%
4(V) Biomass Burning	N ₂ O	0.763	1.060	0.000	0.000	100%
4(V) Biomass Burning	CH ₄	1.378	1.556	0.000	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO ₂	2.069	2.069	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	0.000	100%
TOTAL		38,884.108	32,886.148			

Table A1.3-7: Key categories analysis – Level Assessment - Tier 2 (Excluding LULUCF) – 1990

Tier 2 Analysis - Level Assessment - Excluding LULUCF				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Level Assessment Tier 2	Cumulative Total (%)
2.C.3 Aluminium Production	PFCs	1,117.284	0.176	18%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	0.124	30%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	0.054	35%
3.B Manure Management	N ₂ O	284.426	0.052	41%
2.A.1 Cement Production	CO ₂	1,086.203	0.043	45%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	0.043	49%
3.A Enteric Fermentation	CH ₄	2,336.027	0.042	53%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	0.040	57%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	0.033	61%
1.A.3.b Road Transportation	CO ₂	3,505.880	0.033	64%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	0.029	67%
1.A.4 Other Sectors – Biomass	CH ₄	354.228	0.024	69%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	0.023	72%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	0.022	74%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	0.019	76%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.018	77%
2.B.2 Nitric Acid Production	N ₂ O	670.739	0.018	79%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	0.016	81%
5.A Solid Waste Disposal	CH ₄	554.620	0.016	82%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	0.016	84%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	0.015	85%
1.A.3.b Road Transportation	N ₂ O	52.208	0.014	87%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	0.014	88%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	0.013	90%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	0.012	91%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	0.012	92%
3.B Manure Management	CH ₄	491.908	0.012	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	0.009	94%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	0.007	95%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.006	95%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	0.005	96%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	0.004	96%
1.A.3.c Railways	N ₂ O	11.781	0.003	97%
1.A.3.b Road Transportation	CH ₄	46.028	0.003	97%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	0.003	97%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.003	97%

1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.002	98%
2.B.1 Ammonia Production	CO ₂	558.672	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	0.002	98%
2.C.3 Aluminium Production	CO ₂	118.797	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	0.001	99%
3.H Urea Application	CO ₂	50.020	0.001	99%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	0.001	99%
1.A.3.c Railways	CO ₂	140.079	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	0.001	99%
2.G Other Product Manufacture and Use	N ₂ O	32.648	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	0.001	100%
2.A.2 Lime Production	CO ₂	156.820	0.001	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.001	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	0.000	100%
2.C.1 Iron and Steel Production	CO ₂	43.808	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.000	100%

1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	100%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	100%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	100%
3.G Liming	CO ₂	0.000	0.000	100%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	0.000	100%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	0.000	100%
TOTAL		31,553.093		

Table A1.3-8: Key categories analysis – Level Assessment - Tier 2 (Excluding LULUCF) – 2023

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Last Year (2023) Estimate (Gg eq-CO ₂)	Level Assessment Tier 2	Cumulative Total (%)
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.486	49%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.082	57%
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.065	63%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.046	68%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.033	71%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.026	74%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.022	76%
3.B Manure Management	N ₂ O	284.426	96.238	0.020	78%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.018	80%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.017	81%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.017	83%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.017	85%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.016	86%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.014	88%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.011	89%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.011	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.009	91%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.009	92%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.008	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.007	93%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.007	94%
3.B Manure Management	CH ₄	491.908	370.591	0.007	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.006	95%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.004	96%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.004	96%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.004	96%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.003	97%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.003	97%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.003	98%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.002	98%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.001	98%

1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.001	99%
3.G Liming	CO ₂	0.000	6.376	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.001	99%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.001	99%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.001	99%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.001	99%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.001	99%
3.H Urea Application	CO ₂	50.020	21.671	0.001	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.001	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.000	100%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.000	100%
1.A.3.c Railways	CO ₂	140.079	38.294	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	100%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	100%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.000	100%

1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	100%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.000	100%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	100%
TOTAL		31,553.093	25,418.948		

Table A1.3-9: Key categories analysis – Level Assessment - Tier 2 (Including LULUCF) – 1990

Tier 2 Analysis - Level Assessment - Including LULUCF				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
4.A.1 Forest Land Remaining Forest Land	CO ₂	6,483.656	0.428	43%
2.C.3 Aluminium Production	PFCs	1,117.284	0.081	51%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	0.057	57%
4.B.1 Cropland Remaining Cropland	CO ₂	89.059	0.049	62%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	0.025	64%
3.B Manure Management	N ₂ O	284.426	0.024	66%
4.E.2 Land Converted to Settlements	CO ₂	235.440	0.020	68%
2.A.1 Cement Production	CO ₂	1,086.203	0.020	70%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	0.020	72%
3.A Enteric Fermentation	CH ₄	2,336.027	0.019	74%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	0.019	76%
4.D.2 Land Converted to Wetlands	CO ₂	77.232	0.017	78%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	0.015	79%
1.A.3.b Road Transportation	CO ₂	3,505.880	0.015	81%
4.G Harvested Wood Products	CO ₂	317.852	0.014	82%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas – Oil	CH ₄	246.878	0.014	84%
1.A.4 Other Sectors – Biomass	CH ₄	354.228	0.011	85%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	0.011	86%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	0.010	87%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	0.009	88%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.008	89%
2.B.2 Nitric Acid Production	N ₂ O	670.739	0.008	89%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	0.008	90%
5.A Solid Waste Disposal	CH ₄	554.620	0.007	91%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	0.007	92%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	0.007	92%
1.A.3.b Road Transportation	N ₂ O	52.208	0.007	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	0.007	94%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	0.006	94%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	0.006	95%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	0.006	95%
3.B Manure Management	CH ₄	491.908	0.005	96%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	0.004	96%
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O	43.898	0.004	97%

1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	0.003	97%
4.B.2 Land Converted to Cropland	CO ₂	25.846	0.003	97%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.003	97%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	0.002	98%
4.A.2 Land Converted to Forest Land	CO ₂	28.890	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	0.002	98%
1.A.3.c Railways	N ₂ O	11.781	0.002	98%
1.A.3.b Road Transportation	CH ₄	46.028	0.001	98%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	0.001	98%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.001	99%
4.C.2 Land Converted to Grassland	CO ₂	9.952	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.001	99%
2.B.1 Ammonia Production	CO ₂	558.672	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	0.001	99%
2.C.3 Aluminium Production	CO ₂	118.797	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	0.001	99%
3.H Urea Application	CO ₂	50.020	0.001	99%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	0.001	99%
1.A.3.c Railways	CO ₂	140.079	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	0.001	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	0.000	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	0.000	100%
4(V) Biomass Burning	CO ₂	14.979	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	0.000	100%
2.A.2 Lime Production	CO ₂	156.820	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.000	100%
4.C.1 Grassland Remaining Grassland	CO ₂	2.069	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	0.000	100%
2.C.1 Iron and Steel Production	CO ₂	43.808	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.000	100%
4(V) Biomass Burning	CH ₄	1.378	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.000	100%

1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	100%
4(V) Biomass Burning	N ₂ O	0.763	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	100%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	100%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	100%
3.G Liming	CO ₂	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	100%
3.G Liming	CO ₂	0.000	0.000	100%
TOTAL		38,884.108		

Table A1.3-10: Key categories analysis – Level Assessment - Tier 2 (Including LULUCF) – 2023

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2023) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
4.A.1 Forest Land Remaining Forest Land	CO ₂	6,483.656	5,554.992	0.381	38%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.199	58%
4.E.2 Land Converted to Settlements	CO ₂	235.440	545.989	0.064	64%
4.B.1 Cropland Remaining Cropland	CO ₂	89.059	138.941	0.038	68%
3.D.1 Direct N2O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.034	72%
4.C.2 Land Converted to Grassland	CO ₂	9.952	289.228	0.028	74%
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.027	77%
4.B.2 Land Converted to Cropland	CO ₂	25.846	116.404	0.022	79%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.019	81%
4.A.2 Land Converted to Forest Land	CO ₂	28.890	260.822	0.018	83%
4.G Harvested Wood Products	CO ₂	317.852	391.428	0.017	85%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.014	86%
4(V) Biomass Burning	CO ₂	14.979	9.962	0.012	87%
3.D.2 Indirect N2O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.011	88%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.009	89%
3.B Manure Management	N ₂ O	284.426	96.238	0.008	90%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.007	91%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.007	92%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.007	92%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.007	93%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.007	94%
4(III).Direct N2O emissions from N mineralization/immobilization	N ₂ O	43.898	141.786	0.006	94%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.006	95%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.005	95%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.005	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.004	96%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.004	96%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.003	97%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.003	97%
3.B Manure Management	CH ₄	491.908	370.591	0.003	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.002	98%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.001	98%

1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.001	98%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.001	98%
4.D.2 Land Converted to Wetlands	CO ₂	77.232	12.963	0.001	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.001	99%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.001	99%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.001	99%
4(V) Biomass Burning	N ₂ O	0.763	1.060	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	99%
4(V) Biomass Burning	CH ₄	1.378	1.556	0.000	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	99%
3.G Liming	CO ₂	0.000	6.376	0.000	100%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.000	100%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	100%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	100%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.000	100%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	100%
3.H Urea Application	CO ₂	50.020	21.671	0.000	100%
4.C.1 Grassland Remaining Grassland	CO ₂	2.069	2.069	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.000	100%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.000	100%
1.A.3.c Railways	CO ₂	140.079	38.294	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	100%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	100%

1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	100%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	100%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.000	100%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	100%
TOTAL		38,884.108	32,886.148		

Table A1.3-11: Key categories analysis – Trend Assessment - Tier 2 (Excluding LULUCF)

Tier 2 Analysis - Trend Assessment Excluding LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Last Year (2023) Estimate (Gg eq-CO ₂)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.093	0.618	62%
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.218	0.051	67%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.045	0.039	71%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.161	0.037	74%
3.B Manure Management	N ₂ O	284.426	96.238	0.006	0.036	78%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.007	0.021	80%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.005	0.015	82%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.045	0.014	83%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.003	0.011	84%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.048	0.011	85%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.047	0.011	86%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.047	0.011	87%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.052	0.009	88%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.006	0.007	89%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.001	0.007	90%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.001	0.007	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.028	0.006	91%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.005	0.006	92%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.002	0.006	92%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.029	0.005	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.021	0.005	93%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.003	0.005	94%
5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.002	0.005	94%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.004	0.005	95%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.020	0.005	95%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.001	0.005	96%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.002	0.004	96%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.000	0.003	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.014	0.003	97%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.000	0.002	97%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.001	0.002	97%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.026	0.002	97%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.001	0.002	98%

1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	0.002	98%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	0.002	98%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.001	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.000	0.002	98%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	0.002	98%
3.G Liming	CO ₂	0.000	6.376	0.000	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.001	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	0.001	99%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.012	0.001	99%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.012	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	0.001	99%
1.A.3.c Railways	CO ₂	140.079	38.294	0.004	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	0.001	99%
3.B Manure Management	CH ₄	491.908	370.591	0.001	0.001	99%
3.H Urea Application	CO ₂	50.020	21.671	0.001	0.001	99%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	0.001	100%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.000	0.001	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.002	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	0.000	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.000	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.001	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.001	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	0.000	100%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.001	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	0.000	100%

1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.003	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.008	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.007	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	0.000	100%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.005	0.000	100%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.044	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	0.000	100%
TOTAL		31,553.093	25,418.948			

Table A1.3-12: Key categories analysis – Trend Assessment - Tier 2 (Including LULUCF)

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO ₂)	Last Year (2023) Estimate (Gg eq-CO ₂)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,898.568	0.068	0.421	42%
4.E.2 Land Converted to Settlements	CO ₂	235.440	545.989	0.012	0.086	51%
4.C.2 Land Converted to Grassland	CO ₂	9.952	289.228	0.010	0.058	57%
4.B.2 Land Converted to Cropland	CO ₂	25.846	116.404	0.003	0.038	60%
4.B.1 Cropland Remaining Cropland	CO ₂	89.059	138.941	0.002	0.037	64%
4.A.2 Land Converted to Forest Land	CO ₂	28.890	260.822	0.008	0.035	68%
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	0.155	0.033	71%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	0.125	0.026	74%
3.B Manure Management	N ₂ O	284.426	96.238	0.005	0.026	76%
5.A Solid Waste Disposal	CH ₄	554.620	1,364.330	0.032	0.026	79%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746	0.006	0.015	80%
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	952.297	670.116	0.005	0.014	82%
4.G Harvested Wood Products	CO ₂	317.852	391.428	0.004	0.011	83%
4.D.2 Land Converted to Wetlands	CO ₂	77.232	12.963	0.002	0.011	84%
4.A.1 Forest Land Remaining Forest Land	CO ₂	6,483.656	5,554.992	0.003	0.010	85%
3.A Enteric Fermentation	CH ₄	2,336.027	968.740	0.036	0.010	86%
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O	43.898	141.786	0.004	0.010	87%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966	0.003	0.009	88%
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	0.038	0.008	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	0.037	0.008	90%
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	0.034	0.007	90%
4(V) Biomass Burning	CO ₂	14.979	9.962	0.000	0.007	91%
5.D Wastewater Treatment and Discharge	CH ₄	659.515	409.124	0.005	0.006	92%
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	309.660	209.443	0.002	0.006	92%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	0.035	0.006	93%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680	0.001	0.006	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	0.023	0.005	94%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108	0.004	0.005	94%
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	0.001	0.004	95%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	0.018	0.004	95%
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	192.246	63.523	0.004	0.003	95%
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	0.016	0.003	96%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	0.021	0.003	96%

5.D Wastewater Treatment and Discharge	N ₂ O	59.478	89.177	0.001	0.003	96%
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	0.000	13.888	0.000	0.003	97%
5.B Biological Treatment of Solid Waste	CH ₄	0.000	34.236	0.001	0.003	97%
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	0.002	0.003	97%
2.F.3 Fire Protection	Aggregate F-gases	0.000	5.566	0.000	0.002	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	0.000	295.939	0.011	0.002	98%
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	0.001	0.002	98%
2.B.2 Nitric Acid Production	N ₂ O	670.739	17.512	0.020	0.002	98%
1.A.3.b Road Transportation	CH ₄	46.028	9.188	0.001	0.002	98%
1.A.3.c Railways	N ₂ O	11.781	3.917	0.000	0.001	98%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	0.000	0.001	98%
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	0.000	0.001	98%
5.C Incineration and Open Burning of Waste	CH ₄	19.200	5.918	0.000	0.001	99%
5.B Biological Treatment of Solid Waste	N ₂ O	0.000	10.303	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	0.000	0.001	99%
3.G Liming	CO ₂	0.000	6.376	0.000	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	15.429	0.001	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	0.000	0.001	99%
2.B.1 Ammonia Production	CO ₂	558.672	201.907	0.010	0.001	99%
3.B Manure Management	CH ₄	491.908	370.591	0.002	0.001	99%
2.A.1 Cement Production	CO ₂	1,086.203	1,117.777	0.007	0.001	99%
1.A.3.c Railways	CO ₂	140.079	38.294	0.003	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄	0.000	11.028	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O	0.000	2.194	0.000	0.000	100%
4(V) Biomass Burning	N ₂ O	0.763	1.060	0.000	0.000	100%
3.H Urea Application	CO ₂	50.020	21.671	0.001	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	0.001	0.000	100%
4(V) Biomass Burning	CH ₄	1.378	1.556	0.000	0.000	100%
2.G Other Product Manufacture and Use	N ₂ O	32.648	17.384	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	0.000	0.000	100%
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO ₂	43.808	17.904	0.001	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	0.000	0.000	100%
2.A.2 Lime Production	CO ₂	156.820	96.828	0.001	0.000	100%

2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.405	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄	0.000	1.738	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO ₂	2.069	2.069	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH ₄	0.660	0.021	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	0.000	0.000	100%
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	0.000	0.000	100%
1.B.2.c. Venting and flaring	N ₂ O	0.560	0.121	0.000	0.000	100%
2.A.3 Glass Production	CO ₂	43.216	31.277	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO ₂	11.322	13.420	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	0.000	0.000	100%
1.A.3.c Railways	CH ₄	0.195	0.048	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO ₂	0.002	0.000	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802	0.000	0.002	0.000	100%
2.B.1 Ammonia Production	CH ₄	0.000	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N ₂ O	0.000	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO ₂	192.426	0.000	0.006	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH ₄	6.101	0.000	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO ₂	173.798	0.000	0.005	0.000	100%
2.C.2 Ferroalloys Production	CH ₄	4.366	0.000	0.000	0.000	100%
2.C.3 Aluminium Production	CO ₂	118.797	0.000	0.004	0.000	100%
2.C.3 Aluminium Production	PFCs	1,117.284	0.000	0.034	0.000	100%
5.C Incineration and Open Burning of Waste	CO ₂	0.536	0.000	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	0.007	0.000	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N ₂ O	4.193	1.292	0.000	0.000	100%
TOTAL		38,884.108	32,886.148			

Table A1.3-13: Source Analysis Summary (Croatian Inventory NID 2025, 1990)

Tier 1 and Tier 2 Analysis - Key Source Analysis Summary (Croatian Inventory, year 1990)					
A	B	C	D		E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification		Com.
1. Energy					
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	Yes	L1e, L2e	L1i	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	Yes	L1e, L2e	L1i, L2i	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	Yes	L1e	L1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	Yes	L1e, L2e	L1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	Yes	L1e, L2e	L1i, L2i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	Yes	L1e, L2e	L1i	
1.A.3.b Road Transportation	CO ₂	Yes	L1e, L2e	L1i, L2i	
1.A.3.b Road Transportation	N ₂ O	Yes	L2e		
1.A.4 Other Sectors – Biomass	CH ₄	Yes	L1e, L2e	L1i, L2i	
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	Yes	L1e	L1i	
1.A.4 Other Sectors - Liquid Fuels	CO ₂	Yes	L1e, L2e	L1i, L2i	
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	Yes	L2e	L2i	
1.A.4 Other Sectors - Solid Fuels	CO ₂	Yes	L1e	L1i	
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	Yes	L2e	L2i	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	Yes	L1e, L2e	L1i, L2i	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	Yes			
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	Yes	L2e		
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	Yes	L1e, L2e	L1i, L2i	
2. Industrial processes and product use					
2.A.1 Cement Production	CO ₂	Yes	L1e, L2e	L1i, L2i	
2.A.2 Lime Production	CO ₂	Yes			
2.B.1 Ammonia Production	CO ₂	Yes	L1e	L1i	
2.B.2 Nitric Acid Production	N ₂ O	Yes	L1e, L2e	L1i,L2i	
2.B.8 Petrochemical and Carbon Black Production	CO ₂	Yes	L1e	L1i	
2.C.2. Ferroalloys Production	CO ₂	Yes	L1e	L1i	
2.C.3 Aluminium Production	PFCs	Yes	L1e, L2e	L1i, L2i	

Tier 1 and Tier 2 Analysis - Key Source Analysis Summary (Croatian Inventory, year 1990)					
A	B	C	D		E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification		Com.
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	Yes	L1e	L1i	
3. Agriculture					
3.A Enteric Fermentation	CH ₄	Yes	L1e, L2e	L1i, L2i	
3.B Manure Management	CH ₄	Yes	L1e	L1i	
3.B Manure Management	N ₂ O	Yes	L1e, L2e	L1i, L2i	
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	Yes	L1e, L2e	L1i, L2i	
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	Yes	L1e, L2e	L1i, L2i	
4. Land use, land use change and forestry					
4.A.1 Forest Land Remaining Forest Land	CO ₂	Yes		L1i, L2i	
4.B.1 Cropland Remaining Cropland	CO ₂	Yes		L2i	
4.D.2 Land Converted to Wetlands	CO ₂	Yes		L2i	
4.E.2 Land Converted to Settlements	CO ₂	Yes		L1i, L2i	
4.G Harvested Wood Products	CO ₂	Yes		L1i, L2i	
5. Waste					
5.A Solid Waste Disposal	CH ₄	Yes	L1e, L2e	L1i	
5.D Wastewater Treatment and Discharge	CH ₄	Yes	L1e, L2e	L1i, L2i	
5.D Wastewater Treatment and Discharge	N ₂ O	Yes	L2e	L2i	

L1e - Level excluding LULUCF Tier 1 L2e - Level excluding LULUCF Tier 2

L1i - Level including LULUCF Tier 1 L2i - Level including LULUCF Tier 2

Table A1.3-14: Source Analysis Summary (Croatian Inventory NID 2025, year t=2023)

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, year = 2023)								
A	B	C	D					E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification					Com.
1. Energy								
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	Yes	L1e L2e	T1e T2e	L1i	T1i		
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	Yes	L1e	T1e T2e	L1i	T1i T2i		
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	Yes	L1e	T1e	L1i	T1i		
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O	Yes						
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	Yes	L1e	T1e	L1i	T1i		
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	Yes	L1e	T1e	L1i	T1i		
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂	Yes	L1e	T1e	L1i	T1i		
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	Yes	L1e	T1e T2e	L1i	T1i T2i		
1.A.3.b Road Transportation	CO ₂	Yes	L1e L2e	T1e T2e	L1i L2i	T1i T2i		
1.A.3.b Road Transportation	N ₂ O	Yes	L2e	T2e				
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	Yes			L1i			
1.A.4 Other Sectors – Biomass	CH ₄	Yes	L1e L2e		L1i L2i			
1.A.4 Other Sectors – Biomass	N ₂ O	Yes	L2e					
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	Yes	L1e L2e	T1e T2e	L1i	T1i T2i		
1.A.4 Other Sectors - Liquid Fuels	CO ₂	Yes	L1e	T1e T2e	L1i	T1i T2i		
1.A.4 Other Sectors - Liquid Fuels	N ₂ O	Yes	L2e					
1.A.4 Other Sectors - Solid Fuels	CO ₂	Yes		T1e		T1i		
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	Yes				T1i		
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	Yes		T1e T2e		T1i T2i		
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	Yes	L2e	T2e				
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	Yes	L1e L2e	T2e	L1i L2i	T2i		
2. Industrial processes and product use								
2.A.1 Cement Production	CO ₂	Yes	L1e	T1e	L1i	T1i		
2.B.1 Ammonia Production	CO ₂	Yes	L1e	T1e	L1i	T1i		

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, year = 2023)

A	B	C	D				E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification				Com.
2.B.2 Nitric Acid Production	N ₂ O	Yes		T1e		T1i	
2.B.8 Petrochemical and Carbon Black Production	CO ₂	Yes		T1e		T1i	
2.C.2 Ferroalloys Production	CO ₂	Yes		T1e		T1i	
2.C.3 Aluminium Production	CO ₂	Yes		T1e		T1i	
2.C.3 Aluminium Production	PFCs	Yes		T1e		T1i	
2.D Non-energy Products from Fuels and Solvent Use	CO ₂	Yes				T1i	
2.F.1 Refrigeration and Air conditioning	F-gases	Yes	L1e L2e	T1e T2e	L1i L2i	T1i T2i	
3. Agriculture							
3.A Enteric Fermentation	CH ₄	Yes	L1e L2e	T1e T2e	L1i	T1i T2i	
3.B Manure Management	CH ₄	Yes	L1e, L2e		L1i		
3.B Manure Management	N ₂ O	Yes		T1e T2e	L2i	T1i T2i	
3.D.1 Direct N ₂ O Emissions From Managed Soils	N ₂ O	Yes	L1e L2e	T1e T2e	L1i L2i	T1i T2i	
3.D.2 Indirect N ₂ O Emissions From Managed Soils	N ₂ O	Yes	L1e L2e		L1i L2i		
4. Land use land use change and forestry							
4(III).Direct N ₂ O emissions from N mineralization/immobilization	N ₂ O	Yes				T1i T2i	
4(V) Biomass Burning	CO ₂	Yes			L2i		
4.A.1 Forest Land Remaining Forest Land	CO ₂	Yes			L1i L2i	T2i	
4.A.2 Land Converted to Forest Land	CO ₂	Yes			L1i L2i	T1i T2i	
4.B.1 Cropland Remaining Cropland	CO ₂	Yes			L2i	T2i	
4.B.2 Land Converted to Cropland	CO ₂	Yes			L2i	T2i	
4.C.2 Land Converted to Grassland	CO ₂	Yes			L1i L2i	T1i T2i	
4.D.2 Land Converted to Wetlands	CO ₂	Yes				T2i	
4.E.2 Land Converted to Settlements	CO ₂	Yes			L1i L2i	T1i T2i	
4.G Harvested Wood Products	CO ₂	Yes			L1i L2i	T1i T2i	
5. Waste							
5.A Solid Waste Disposal	CH ₄	Yes	L1e L2e	T1e T2e	L1i L2i	T1i T2i	
5.D Wastewater Treatment and Discharge	CH ₄	Yes	L1e L2e	T1e T2e	L1i	T1i	

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, year = 2023)							
A	B	C	D				E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification				Com.
5.D Wastewater Treatment and Discharge	N ₂ O	Yes					

L1e - Level excluding LULUCF – Tier 1	T1e - Trend excluding LULUCF – Tier 1
L2e - Level excluding LULUCF – Tier 2	T2e - Trend excluding LULUCF – Tier 2
L1i - Level including LULUCF – Tier 1	T1i - Trend including LULUCF – Tier 1
L2i - Level including LULUCF – Tier 2	T2i - Trend including LULUCF – Tier 2

Annex 2: Assessment of uncertainty

Annex 2: Assessment of uncertainty

2.1. Description of methodology used for identifying uncertainties

Uncertainty estimates are calculated using Approach 2 (Monte Carlo simulation). Approach 2 follows definition from the IPCC's General Guidance and Reporting: 2006 IPCC Guidelines for National Greenhouse gas Inventories (2006 Guidelines).

The Monte Carlo method was reviewed and revised in this submission, taking into account guidance from the 2006 Good Practice Guidance (IPCC, 2006). It will be discussed later in the chapter.

Uncertainty analysis using Approach 2 was calculated for every source. For LULUCF categories and subcategories the analysis was performed in the way of uncertainty determination of all input data and variables; which implies the determination of appropriate distribution for every input parameter needed for calculation of emission factors (EF) and for activity data (AD, areas). For categories of other sectors PDFs were defined for ADs and EFs, respectively. Monte Carlo simulation was applied afterwards. Results can be found in Table 3.3 according to IPCC 2006 Guidelines.

Uncertainty estimates were calculated in Excel spreadsheet application. Data have been divided into five sectors according to modus how the inventory work is organized (Energy, Industrial Processes and Other Product Use, Agriculture, Land Use, Land-Use Change and Forestry and Waste).

Every sector has been divided into sources. Each source was evaluated regarding uncertainties (%) on activity data (AD), emission factors (EF) or direct emissions (EM).

2.2. Estimation of Uncertainty by Monte Carlo Simulation (Approach 2)

2.2.1. Overview of the method

The Monte Carlo analysis is suitable for detailed category-by-category assessment of uncertainty, particularly where uncertainties are large, distribution is non-normal, distribution functions are complex and/or there are correlations between some of the activity sets, emissions factors, or both.

The principle of Monte Carlo analysis is to select random values of emission factor, activity data and other estimation parameters from within their individual probability density functions, and to calculate the corresponding emission values.

This procedure is repeated many times, using a computer, and the results of each calculation run build up the overall emission probability density function.

Monte Carlo analysis can be performed at the category level, for aggregations of categories or for the inventory as a whole.

Detailed procedure:

- A probability distribution function (PDF) was allocated to each emission factor and activity data. The PDFs were mostly normal, log-normal or triangle. The parameters of the PDFs were set by analysing the available data on emission factors and activity data or by expert judgement.
- If there was a lack of data for some emission source, associated uncertainties were extracted from the IPCC guidelines which imply that default uncertainty parameters were set.
- Using the software tool @RISK 5.7, each PDF was sampled 10,000 times and the emission calculations performed to produce a converged output distribution.
- The uncertainty in the trend between 1990 and the latest reported year, according to gas, was also estimated.

2.2.2. Uncertainty distributions and correlations for activity data and emission factors

Distributions:

- All of the input parameters in inventory are modelled using normal (95%), log-normal and triangle (some inputs in LULUCF) distributions.

Correlations:

- The Monte Carlo model contains a number of correlations. Omitting these correlations would lead to the uncertainties being underestimated. The trend uncertainty in the Monte Carlo model is particularly sensitive to some correlations.

Activity data and emission factor uncertainty:

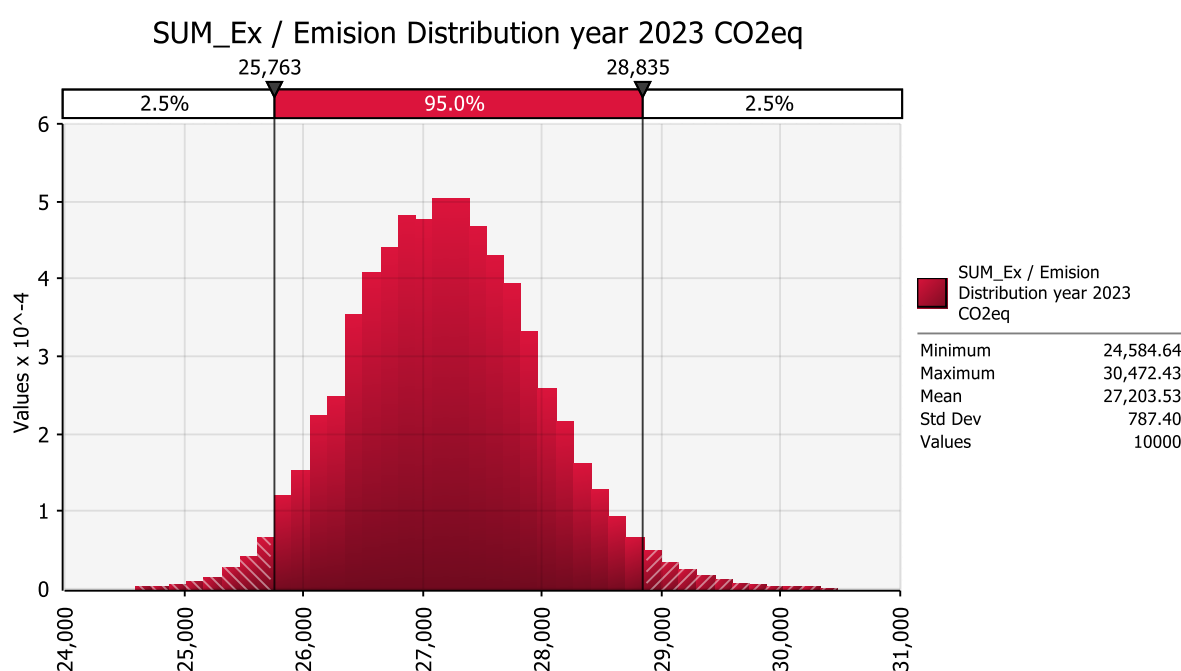
- If activity data or emission factor for uncertainty are default value from IPCC guidance was used, average value from range of given uncertainty was set.

2.2.3. Uncertainty excluding LULUCF sector

2.2.3.1. Uncertainty in the emissions excluding LULUCF

The estimations of CO₂-eq emissions were 25,418.95 kt CO₂-eq for the year 2023. and 31,553.09 kt CO₂-eq for the year 1990. without removals from LULUCF.

Figure A2.2-1: Distribution of the total CO₂ emissions for year 2023. excluding LULUCF



Monte Carlo analysis shows that with a certainty of 95% total emissions of all categories for the year 2023 (27,203.53 kt CO₂eq) according to simulation varies between 25,763 kt CO₂-eq (2.5 percentile) and 28,835 kt CO₂eq (97.5 percentile). Figure A2.2-1 shows the distribution of total CO₂ emission for year 2023.

Monte Carlo analysis shows that with a certainty of 95% total simulated emissions of all categories excluding LULUCF for the year 1990 (30,687.95 kt CO₂-eq) varies between 29,313 kt CO₂eq (2.5 percentile) and 32,210 kt CO₂eq (97.5 percentile).

Figure A2.2-2: Distribution of total CO₂ emission for year 1990 excluding LULUCF

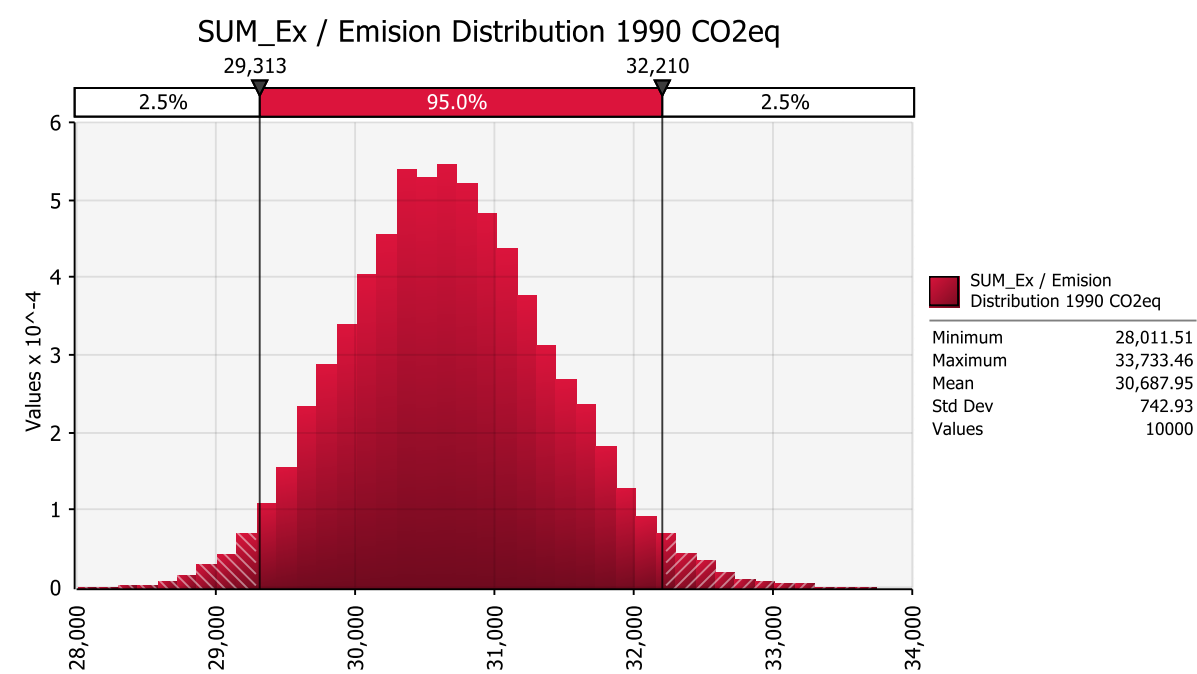


Figure A2.2-2 shows the distribution of total CO₂ emission for year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

2.2.3.2. Uncertainty in the trend excluding LULUCF

The trend in the inventory is estimated for each category and for the total summary emission (all categories included) with the following formula:

$$MeanTrend (\%) = \left(\frac{Year t emissions - Base year emissions}{Base year emissions} \right) \bullet 100 .$$

The Inventory trend excluding LULUCF is -19.44%, simulated trend is -16.00 % and the 95% probability range of the trend is -17.56% (2.5 percentile) to -4.69% (97.5 percentile).

Figure A2.2-3: Distribution of trend for year 2023 with the respect to year 1990

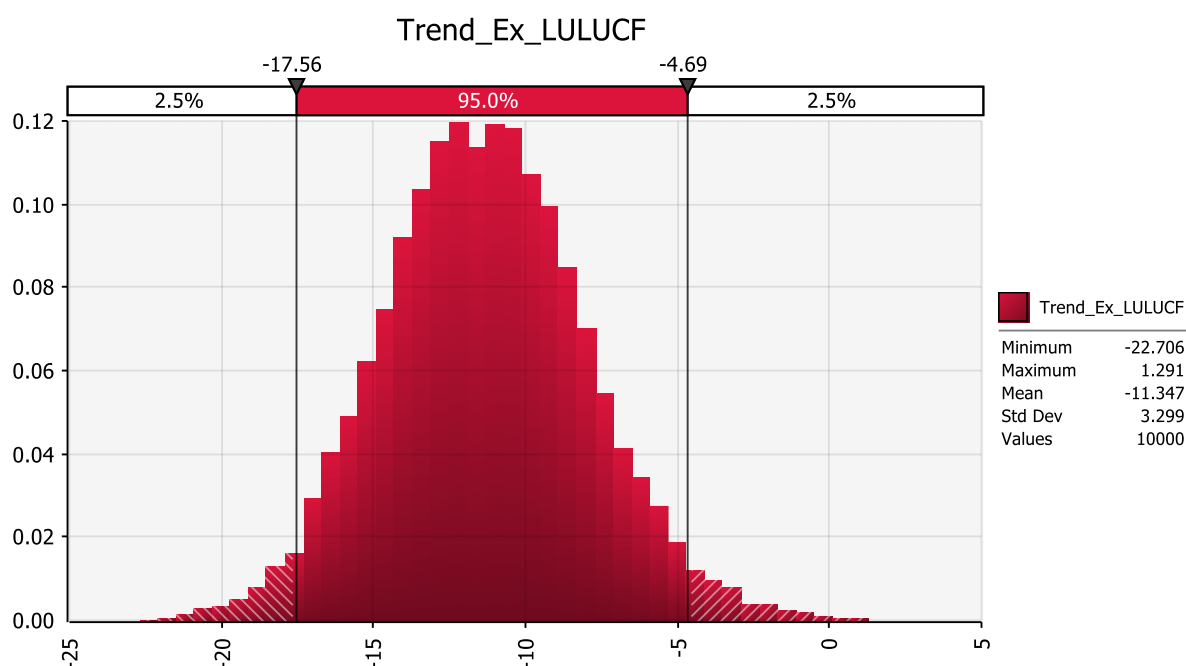


Figure A2.2-3: shows the distribution of trend for year 2023. respect to year 1990.

2.2.4. Uncertainty including LULUCF sector

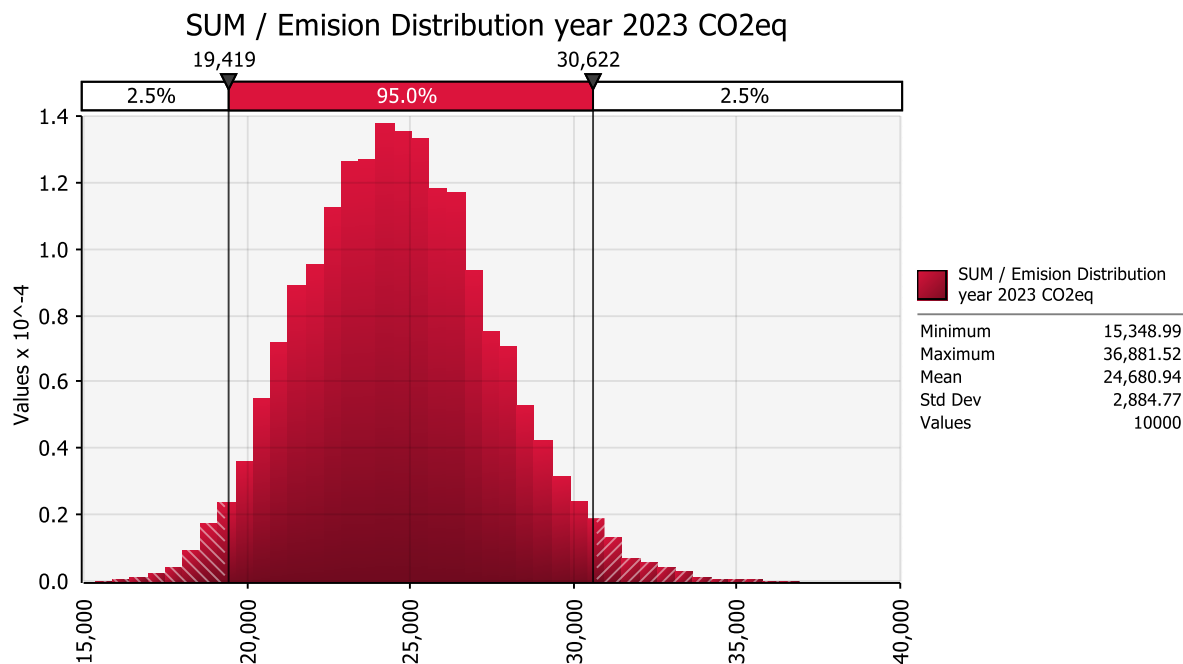
2.2.4.1. Uncertainty in the emissions including LULUCF

The estimations of CO₂-eq emissions were 19,893.21 kt CO₂-eq for the year 2023 and 25,418.95 kt CO₂-eq for the year 1990.

Monte Carlo analysis shows that with a certainty of 95% total emissions of categories for the year 2023 (24,680.94 kt CO₂eq) according to simulation varies between 19,419 kt CO₂eq (2.5 percentile) and 30,622 kt CO₂eq (97.5 percentile).

Figure A2.2-4 shows the distribution of total CO₂ emission including LULUCF for year 2023. with a corresponding probability density function (red line) that best matches the simulation results.

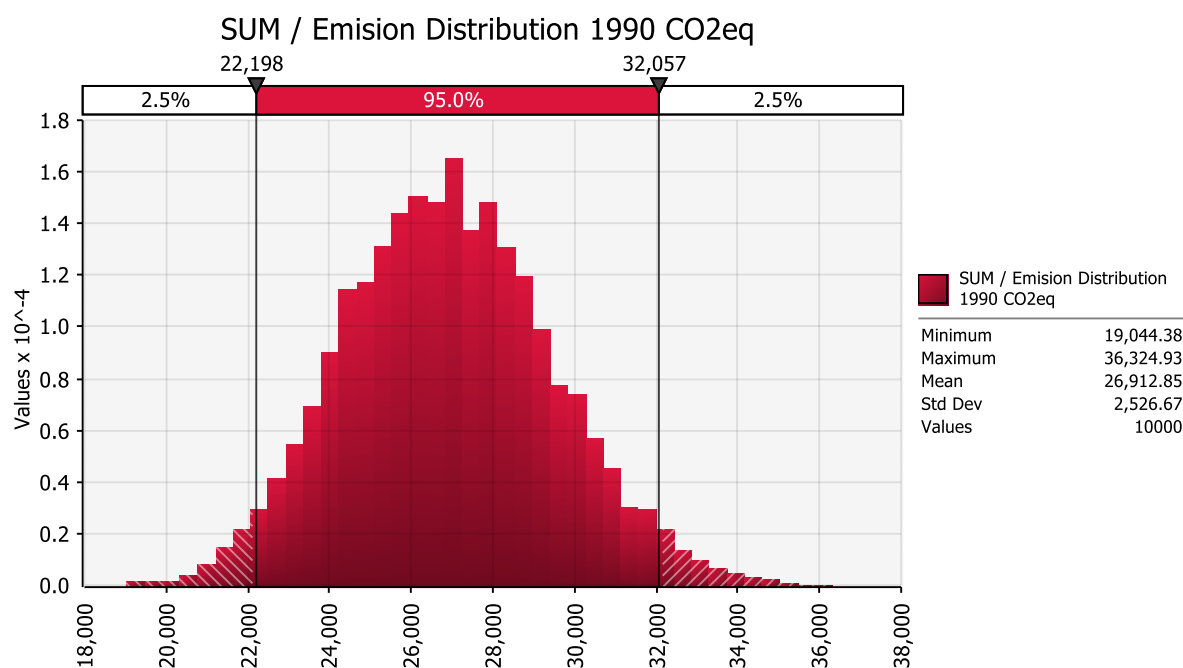
Figure A2.2-4: Distribution of total CO₂ emission for year 2023 including LULUCF



Monte Carlo analysis shows that with a certainty of 95% total simulated emissions of all categories including LULUCF for the year 1990 (26,912.85 kt CO₂eq) varies between 22,198 kt CO₂-eq (2.5 percentile) and 32,057 kt CO₂eq (97.5 percentile).

Figure A2.2-5 shows the distribution of total CO₂ emission for year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

Figure A2.2-5: Distribution of total CO₂ emission for year 1990 including LULUCF



2.2.4.2. Uncertainty in the trend including LULUCF

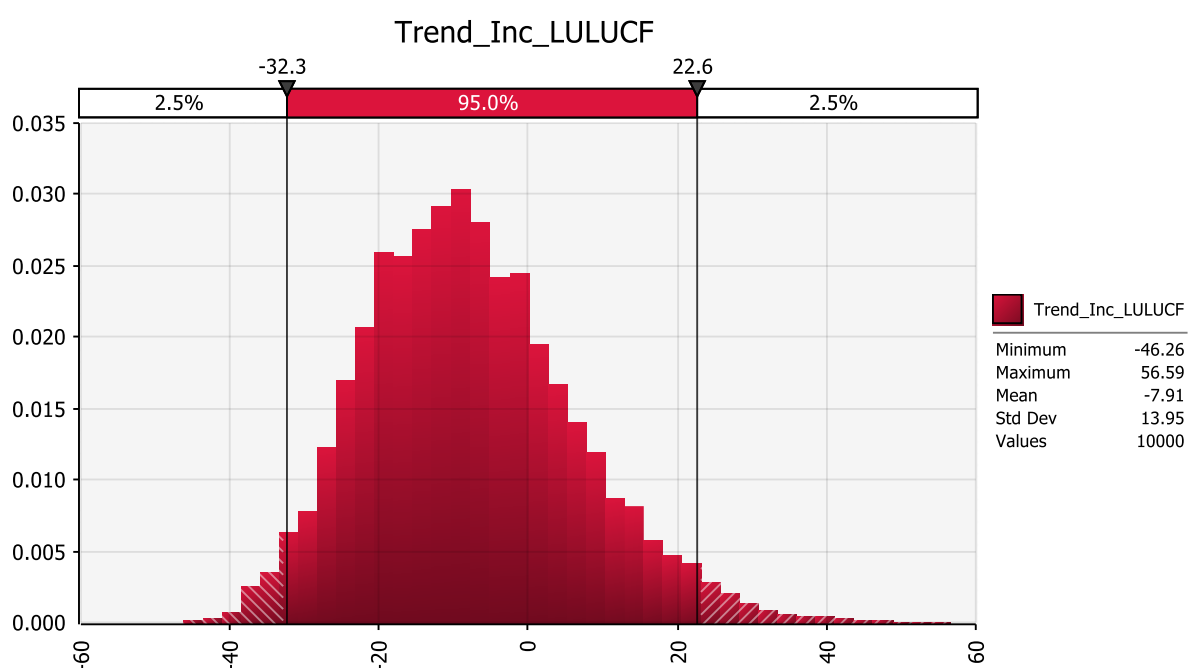
The trend in the inventory is estimated for each category and for the total summary emission (all categories included) with the following formula:

$$\text{Mean Trend (\%)} = \left(\frac{\text{Year emissions} - \text{Base year emissions}}{\text{Base year emissions}} \right) \cdot 100$$

The Inventory trend including LULUCF is -21.74%, simulated trend is -18.05% and the 95% probability range of the trend is -32.3% (2.5 percentile) to 22.6% (97.5 percentile).

Figure A2.2-6: shows the distribution of trend for year 2022 respect to year 1990 with a corresponding probability density function (red line) that best matches the simulation results, including LULUCF.

Figure A2.2-6: Distribution of trend for year 2023 with the respect to year 1990 including LULUCF



2.3. Table 3.3 of Volume 1 of the 2006 IPCC Guidelines

Table A2:3-1: Uncertainty estimates from the Monte Carlo simulation for the year t=2023 (IPCC 2006 Table 3.3)

TABLE 3.3 GENERAL REPORTING TABLE FOR UNCERTAINTY														
A	B	C	D	E		F		G		H	I	J		K
IPCC category	Gas	Base year emissions /removals	Year t emissions /removals	Activity data uncertainty		Emission factor/estimation parameter uncertainty (combined if more than one estimation parameter is used)		Combined uncertainty		Contribution to variance in Year t	Inventory trend in national emissions for year t increase with respect to base year	Uncertainty introduced into the trend in total national emissions with respect to base year		Approach and Comments
		Gg CO ₂ equivalent	Gg CO ₂ equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO ₂	4,590.624	402.530	-5	5	-5	5	-6.81	7.13	0.000025	-91.23	-0.84	0.94	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH ₄	4.139	0.242	-5	5	-50	50	-49.63	51.41	0.000000	-94.15	-3.24	7.06	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N ₂ O	7.839	0.570	-5	5	-200	200	-91.47	206.95	0.000000	-92.73	-6.82	104.39	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO ₂	595.119	1,082.109	-5	5	-1.5	1.5	-5.36	5.31	0.000102	81.83	-12.80	14.05	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH ₄	0.179	0.326	-5	5	-50	50	-49.86	50.46	0.000000	82.72	-98.91	227.71	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N ₂ O	2.535	4.632	-5	5	-200	200	-90.73	208.01	0.000002	82.72	-170.15	2936.27	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO ₂	1,880.045	2,569.713	-5	5	-1.65	1.65	-5.31	5.33	0.000587	36.68	-9.79	10.62	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH ₄	1.762	2.822	-5	5	-50	50	-49.97	49.81	0.000000	60.17	-87.31	190.40	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N ₂ O	5.102	9.523	-5	5	-200	200	-91.91	209.62	0.000007	86.65	-175.28	2698.85	
1.A.1 Fuel combustion - Energy Industries - Biomass	CH ₄		11.028	-5	5	-50	50	-50.54	49.54	0.000001				2
1.A.1 Fuel combustion - Energy Industries - Biomass	N ₂ O		13.888	-5	5	-200	200	-91.39	206.96	0.000015				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO ₂	1,990.850	1,032.604	-5	5	-5	5	-7.14	7.24	0.000171	-48.13	-4.98	5.51	

1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH ₄	2.156	1.033	-5	5	-50	50	-49.75	49.70	0.000000	-52.08	-26.41	55.79	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N ₂ O	4.060	1.945	-5	5	-200	200	-91.23	210.85	0.000000	-52.08	-44.76	818.21	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO ₂	1,536.292	274.099	-5	5	-5	5	-6.90	7.19	0.000012	-82.16	-1.64	1.87	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH ₄	4.263	0.779	-5	5	-50	50	-50.49	49.54	0.000000	-81.73	-10.02	23.32	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N ₂ O	6.052	1.106	-5	5	-200	200	-92.89	208.37	0.000000	-81.73	-17.24	282.22	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO ₂	1,575.900	832.356	-5	5	-5	5	-7.06	7.13	0.000112	-47.18	-5.07	5.59	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH ₄	0.787	0.415	-5	5	-50	50	-49.91	50.56	0.000000	-47.22	-28.75	62.79	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N ₂ O	0.745	0.393	-5	5	-200	200	-91.64	204.77	0.000000	-47.22	-49.48	806.98	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO ₂		295.939	-5	5	-5	5	-7.05	7.22	0.000014				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH ₄		1.738	-5	5	-50	50	-49.68	49.76	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N ₂ O		2.194	-5	5	-200	200	-92.67	204.92	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH ₄	3.024	2.688	-5	5	-50	50	-50.76	49.56	0.000000	-11.09	-49.18	109.52	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N ₂ O	3.816	3.393	-5	5	-200	200	-90.99	206.31	0.000001	-11.09	-83.17	1394.33	
1.A.3.a Domestic Aviation	CO ₂	6.601	30.163	-5	5	-5	5	-7.15	7.01	0.000000	356.95	-43.03	47.34	
1.A.3.a Domestic Aviation	CH ₄	0.001	0.006	-5	5	-50	50	-49.48	49.82	0.000000	356.78	-250.86	557.04	
1.A.3.a Domestic Aviation	N ₂ O	0.049	0.224	-5	5	-200	200	-90.62	208.19	0.000000	356.78	-426.20	6654.70	
1.A.3.b Road Transportation	CO ₂	3,505.880	7,288.176	-5	5	-5	5	-6.93	7.24	0.008365	107.88	-19.78	22.36	
1.A.3.b Road Transportation	CH ₄	46.028	9.188	-5	5	-50	50	-49.06	50.55	0.000001	-80.04	-10.89	24.02	
1.A.3.b Road Transportation	N ₂ O	52.208	62.537	-5	5	-200	200	-91.97	210.41	0.000305	19.79	-112.41	1792.68	
1.A.3.c Railways	CO ₂	140.079	38.294	-5	5	-5	5	-7.05	7.05	0.000000	-72.66	-2.62	2.88	
1.A.3.c Railways	CH ₄	0.195	0.048	-5	5	-50	50	-50.11	48.62	0.000000	-75.39	-13.56	29.37	
1.A.3.c Railways	N ₂ O	11.781	3.917	-5	5	-200	200	-91.13	209.79	0.000001	-66.75	-31.06	460.05	
1.A.3.d Domestic Navigation - Liquid Fuels	CO ₂	134.498	147.911	-5	5	-5	5	-7.12	7.18	0.000003	9.97	-10.56	11.69	
1.A.3.d Domestic Navigation - Liquid Fuels	CH ₄	0.355	0.391	-5	5	-50	50	-50.80	50.81	0.000000	10.18	-60.84	137.20	
1.A.3.d Domestic Navigation - Liquid Fuels	N ₂ O	0.961	1.058	-5	5	-200	200	-90.95	211.28	0.000000	10.18	-103.07	1533.62	
1.A.4 Other Sectors - Liquid Fuels	CO ₂	2,450.506	1,013.706	-5	5	-5	5	-6.98	7.08	0.000159	-58.63	-3.87	4.25	
1.A.4 Other Sectors - Liquid Fuels	CH ₄	7.091	2.261	-5	5	-50	50	-49.84	49.48	0.000000	-68.12	-17.39	36.98	

1.A.4 Other Sectors - Liquid Fuels	N ₂ O	78.389	64.813	-5	5	-200	200	-91.49	209.24	0.000327	-17.32	-77.68	1183.18	
1.A.4 Other Sectors - Solid Fuels	CO ₂	524.388	4.180	-5	5	-5	5	-6.95	7.08	0.000000	-99.20	-0.08	0.08	
1.A.4 Other Sectors - Solid Fuels	CH ₄	37.398	0.354	-5	5	-50	50	-49.94	50.90	0.000000	-99.05	-0.52	1.16	
1.A.4 Other Sectors - Solid Fuels	N ₂ O	2.114	0.017	-5	5	-200	200	-91.81	215.86	0.000000	-99.21	-0.74	12.71	
1.A.4 Other Sectors - Gaseous Fuels	CO ₂	744.057	1,581.061	-5	5	-5	5	-7.10	7.00	0.000389	112.49	-19.99	21.91	
1.A.4 Other Sectors - Gaseous Fuels	CH ₄	1.870	3.946	-5	5	-50	50	-49.12	49.37	0.000000	110.95	-115.38	268.52	
1.A.4 Other Sectors - Gaseous Fuels	N ₂ O	0.497	0.747	-5	5	-200	200	-92.29	207.07	0.000000	50.20	-141.07	2081.06	
1.A.4 Other Sectors - Biomass	CH ₄	354.228	346.922	-5	5	-50	50	-50.28	50.59	0.000964	-2.06	-54.13	121.58	
1.A.4 Other Sectors - Biomass	N ₂ O	44.700	43.779	-5	5	-200	200	-92.20	204.54	0.000147	-2.06	-92.09	1327.56	
1.B.1 Fugitive emissions from Solid Fuels	CH ₄	66.802												2
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO ₂	157.786	33.108											
1. Exploration	CO ₂	28.536	5.987	-5	5	-50	50	-49.47	50.82	0.000000	-79.02	-11.45	24.50	
2. Production(7)	CO ₂	129.245	27.117	-5	5	-50	50	-49.53	50.80	0.000006	-79.02	-11.58	24.86	
3. Transport	CO ₂	0.005	0.004	-5	5	-50	50	-50.19	49.61	0.000000	-26.17	-40.77	89.11	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH ₄	246.878	52.746											
1. Exploration	CH ₄	17.030	3.573	-5	5	-100	100	-84.43	100.55	0.000000	-79.02	-18.00	126.25	
2. Production(7)	CH ₄	223.474	46.888	-5	5	-100	100	-84.48	100.70	0.000061	-79.02	-18.04	124.63	
3. Transport	CH ₄	1.504	1.111	-5	5	-100	100	-84.32	100.27	0.000000	-26.17	-62.99	409.39	
4. Refining/storage	CH ₄	4.870	1.174	-5	5	-100	100	-83.87	100.97	0.000000	-75.89	-20.67	149.36	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N ₂ O	0.056	0.012	-5	5	-10	1000	-100.00	-100.00	0.000000	-79.02	-20.98	-20.98	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO ₂	424.729	270.966											
2. Production(7)	CO ₂	418.423	268.728	-5	5	-100	100	-83.68	100.66	0.001993	-35.78	-54.40	398.51	
3. Processing	CO ₂	6.276	2.189	-5	5	-100	100	-83.07	101.03	0.000000	-65.13	-29.65	207.41	
4. Transmission and storage	CO ₂	0.011	0.011	-5	5	-100	100	-85.80	101.68	0.000000	-3.60	-83.73	608.82	
5. Distribution	CO ₂	0.019	0.039	-5	5	-20	500	-88.99	543.66	0.000000	100.82	-192.28	4197.21	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH ₄	155.067	95.680											
2. Production(7)	CH ₄	74.418	25.952	-5	5	-100	100	-83.02	101.42	0.000018	-65.13	-29.31	202.29	
3. Processing	CH ₄	32.859	11.459	-5	5	-100	100	-84.59	103.08	0.000004	-65.13	-30.00	196.81	
4. Transmission and storage	CH ₄	36.108	34.808	-5	5	-100	100	-84.30	101.91	0.000034	-3.60	-81.62	587.46	

5. Distribution	CH ₄	11.682	23.460	-5	5	-20	500	-88.48	550.82	0.000197	100.82	-191.20	3889.48	
1.B.2.c. Venting and flaring	CO₂	0.002	0.000											
1. Venting - Oil	CO ₂	0.002	0.000	-5	5	-100	100	-84.75	101.61	0.000000	-96.80	-2.74	17.75	
1.B.2.c. Venting and flaring	CH₄	0.660	0.021											
1. Venting - Oil	CH ₄	0.660	0.021	-5	5	-100	100	-84.56	99.72	0.000000	-96.80	-2.72	19.26	
1.B.2.c. Venting and flaring	N₂O	0.560	0.121											
2. Flaring - Oil	N ₂ O	0.532	0.112	-5	5	-100	100	-84.55	101.35	0.000000	-79.02	-17.95	134.00	
2. Flaring - Gas	N ₂ O	0.028	0.010	-5	5	-100	100	-84.00	102.46	0.000000	-65.13	-30.04	188.37	
2.A.1 Cement Production	CO₂	1,086.203	1,117.777	-2	2	-2	2	-2.79	2.90	0.000031	2.91	-23.71	45.12	
2.A.2 Lime Production	CO₂	156.820	96.828	-2	2	-2	2	-2.84	2.79	0.000000	-38.26	-2.42	2.45	
2.A.3 Glass Production	CO₂	43.216	31.277	-2	2	-2	2	-2.80	2.78	0.000000	-27.62	-2.82	2.89	
2.A.4 Other Process Uses of Carbonates	CO₂	11.322	13.420											
2.A.4.a Ceramics	CO ₂	9.146	2.558	-2	2	-3	3	-3.66	3.64	0.000000	-72.04	-1.37	1.47	
2.A.4.d Other	CO ₂	2.176	10.862	-2	2	-3	3	-3.56	3.68	0.000000	399.13	-24.40	25.88	
2.B.1 Ammonia Production	CO₂	558.672	201.907	-2	2	-2	2	-2.79	2.87	0.000001	-63.86	-1.43	1.47	5
2.B.2 Nitric Acid Production	N₂O	670.739	17.512	-2	2	-2	2	-2.75	2.87	0.000000	-97.39	-0.44	0.68	
2.B.8 Petrochemical and Carbon Black Production	CO₂	192.426	-											
2.B.8.b Ethylene	CO ₂	125.652												
2.B.8.c Ethylene Dichloride and Vinyl Chloride Monomer	CO ₂	0.414												2
2.B.8.f Carbon Black	CO ₂	66.360												2
2.B.8 Petrochemical and Carbon Black Production	CH₄	6.101												
2.B.8.b Ethylene	CH ₄	6.101												
2.C.1 Iron and Steel Production	CO₂	43.808	17.904											
2.C.1.a Steel	CO ₂	19.505	17.904	-5	5	-5	5	-6.85	7.23	0.000000	-8.20	-13.18	16.25	
2.C.2 Ferroalloys Production	CO ₂	173.798												
2.C.2 Ferroalloys Production	CH ₄	4.366												
2.C.2 Ferroalloys Production	CO₂	173.798												2
2.C.2 Ferroalloys Production	CH₄	4.366												2
2.C.3 Aluminium Production	CO₂	118.797												

2.C.3.a CO2 Emissions	CO ₂	118.797												2
2.C.3 Aluminium Production	PFCs	1,117.284												
2.C.3.b By-Product Emission\CF4	PFCs	787.623												2
2.C.3.b By-Product Emission\C2F6	PFCs	329.661												2
2.D Non-energy Products from Fuels and Solvent Use	CO₂	192.246	63.523											
2.D Non-energy Products from Fuels and Solvent Use\2.D.1 Lubricant Use	CO ₂	31.217	19.784	-5	5	-50	50	-50.28	50.01	0.000003	-36.62	-34.32	72.80	
2.D Non-energy Products from Fuels and Solvent Use\2. Paraffin wax use	CO ₂	10.374	3.655	-5	5	-50	50	-51.46	51.56	0.000000	-64.77	-19.74	43.59	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Solvent use	CO ₂	150.631	31.639	NA	NA	-50	50	-40.37	58.93	0.000008	-79.00	-10.46	20.90	4
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Road paving with asphalt	CO ₂	0.015	0.081	-10	10	-50	50	-51.78	51.10	0.000000	453.74	-313.27	671.64	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Other\Urea based CC	CO ₂		8.354	-5	5	-5	5	-6.89	7.03	0.000000				
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Asphalt roofing	CO ₂	0.009	0.010	-10	10	-50	50	-50.46	51.86	0.000000	5.38	-58.79	129.04	
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases		1,898.568											
2.F.1.a Commercial Refrigeration\HFC-143a	HFC-143a	-	159.445	-50	50	-50	50	-16.71	300.94	0.002014				2
2.F.1.a Commercial Refrigeration\HFC-125	HFC-125	-	89.100	-50	50	-50	50	-14.31	299.19	0.000616				2
2.F.1.a Commercial Refrigeration\HFC-134a	HFC-134a	-	77.130	-50	50	-50	50	11.25	437.41	0.000859				2
2.F.1.a Commercial Refrigeration\HFC-32	HFC-32	-	-	0	0	0	0	#VALUE!	#VALUE!	0.000000				2
2.F.1.b Domestic Refrigeration\HFC-134a	HFC-134a	-	9.592	-30	30	-25	25	221.50	621.61	0.000012				2
2.F.1.c Industrial Refrigeration\HFC-134a	HFC-134a	-	3.163	-50	50	-50	50	-49.05	146.43	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-125	HFC-125	-	33.177	-50	50	-50	50	-35.68	207.49	0.000051				2
2.F.1.c Industrial Refrigeration\HFC-143a	HFC-143a	-	50.882	-50	50	-50	50	-34.40	205.61	0.000120				2
2.F.1.c Industrial Refrigeration\HFC-32	HFC-32	-	0.597	-50	50	-50	50	-77.10	9.22	0.000000				2
2.F.1.d Transport Refrigeration\HFC-134a	HFC-134a	-	8.985	-25	25	-25	25	45.66	198.23	0.000001				2
2.F.1.d Transport Refrigeration\HFC-125	HFC-125	-	19.382	-25	25	-25	25	43.10	198.00	0.000007				2
2.F.1.d Transport Refrigeration\HFC-143a	HFC-143a	-	34.684	-25	25	-25	25	45.17	196.92	0.000022				2
2.F.1.e Mobile Air-Conditioning\HFC-134a	HFC-134a	-	432.837	-25	25	-25	25	47.53	205.72	0.003623				2
2.F.1.f Stationary Air-Conditioning\HFC-32	HFC-32	-	233.932	-50	50	-50	50	-5.84	345.67	0.005372				2
2.F.1.f Stationary Air-Conditioning\HFC-125	HFC-125	-	687.246	-50	50	-50	50	-8.92	331.62	0.043631				2
2.F.1.f Stationary Air-Conditioning\HFC-134a	HFC-134a	-	58.339	-50	50	-50	50	-34.06	211.68	0.000162				2

2.F.1.f Stationary Air-Conditioning\HFC-143a	HFC-143a	-	-	0	0	0	0	#VALUE!	#VALUE!	0.000000				2
2.F.1.f Stationary Air-Conditioning\HFC-152a	HFC-152a	-	-	0	0	0	0	#VALUE!	#VALUE!	0.000000				2
2.F.3 Fire Protection	Aggregate F-gases		5.566											
2.F.3 Fire Protection\HFC-125	HFC-125	-	0.832	-25	25		10	-26.51	27.41	0.000000				2
2.F.3 Fire Protection\HFC-227ea	HFC-227ea	-	2.351	-25	25	-10	10	-26.25	27.88	0.000000				2
2.F.3 Fire Protection\HFC-236fa	HFC-236fa	-	2.383	-25	25	-10	10	494.53	929.73	0.000001				2
2.F.4 Aerosols	Aggregate F-gases	-	9.405											
2.F.4 Aerosols\2.F.4.a Metered Dose Inhalers\HFC-134a	HFC-134a	-	8.961	-10	10	0	0	-9.87	10.12	0.000000				2
2.G Other Product Manufacture and Use	N₂O	32.648	17.384											
2.G.3 N ₂ O from Product Uses\2.G.3.a Medical Applications	N ₂ O	32.118	17.374	-20	20	-10	10	-21.69	22.28	0.000000	-45.91	-14.74	20.95	
2.G.3 N ₂ O from Product Uses\2.G.3.b Other\Propellant for pressure and aerosol products	N ₂ O	0.530	0.011	-50	50	-10	10	-50.53	51.71	0.000000	-98.00	-1.10	2.47	2
2.G Other Product Manufacture and Use	Aggregate F-gases	11.055	10.473											
2.G.1 Electrical Equipment\SF ₆	SF ₆	11.055	10.473	-25	25	-30	30	-87.19	-71.32	0.000000	-5.27	37.98	334.91	
3.A Enteric Fermentation	CH₄	2,336.027	968.740											
Mature dairy cattle	CH ₄	1,427.140	259.522	-3.4	3.4	-21	21	-21.19	21.50	0.000097	-81.82	-4.91	6.48	
Other mature cattle	CH ₄	87.596	142.344	-2	2	-21	21	-21.21	21.03	0.000028	62.50	-43.06	58.28	
Growing cattle	CH ₄	537.468	378.422	-1	1	-11	11	-11.13	10.94	0.000055	-29.59	-10.32	12.24	
Sheep	CH ₄	168.224	123.667	-10	10	-40	40	-40.87	42.30	0.000082	-26.49	-33.79	65.65	
Market swine	CH ₄	56.322	32.158	-6	6	-40	40	-40.29	39.88	0.000005	-42.90	-26.10	45.41	
Breeding swine	CH ₄	9.744	3.648	-6	6	-40	40	-40.10	39.91	0.000000	-62.56	-17.18	31.99	
Goats	CH ₄	24.080	10.193	-10	10	-40	40	-40.28	42.88	0.000001	-57.67	-19.99	36.37	
Horses	CH ₄	19.656	16.781	-36	36	-40	40	-49.47	59.11	0.000003	-14.63	-48.02	106.36	
Mules and Asses	CH ₄	4.760	1.905	-5	5	-40	40	-39.62	40.38	0.000000	-59.97	-18.33	33.32	
Rabbits	CH ₄	1.037	0.100	-30	30	-20	20	-34.31	38.58	0.000000	-90.33	-3.91	6.91	
3.B Manure Management	CH₄	491.908	370.591											
Mature dairy cattle	CH ₄	179.558	79.308	-2	2	-38	38	-37.96	37.79	0.000028	-55.83	-19.24	34.45	
Other mature cattle	CH ₄	8.540	27.012	-2	2	-34	34	-34.07	34.13	0.000003	216.31	-125.64	206.14	
Growing cattle	CH ₄	62.321	87.996	-1	1	-21	21	-21.01	20.76	0.000010	41.20	-36.39	50.09	

Sheep	CH ₄	4.494	3.396	-10	10	-44	44	-43.61	46.01	0.000000	-24.44	-37.79	74.95	
Market swine	CH ₄	168.948	138.144	-7	7	-29	29	-28.85	29.58	0.000051	-18.23	-28.23	44.60	
Breeding swine	CH ₄	31.854	21.116	-7	7	-29	29	-30.44	30.46	0.000001	-33.71	-24.18	36.01	
Goats	CH ₄	0.655	0.284	-10	10	-30	30	-31.15	32.92	0.000000	-56.64	-15.97	25.65	
Horses	CH ₄	2.218	1.887	-36	36	-58	58	-61.16	74.94	0.000000	-14.95	-56.20	171.48	
Mules and Asses	CH ₄	0.397	0.159	-5	5	-43	43	-43.66	44.23	0.000000	-59.97	-19.65	38.48	
Poultry	CH ₄	31.885	11.189	-5	5	-44	44	-43.72	44.06	0.000001	-64.91	-17.35	33.17	
Rabbits	CH ₄	1.037	0.100	-30	30	-20	20	-33.70	38.30	0.000000	-90.33	-3.89	6.68	
3.B Manure Management	N₂O	284.426	96.238											
Mature dairy cattle	N ₂ O	65.915	4.620	-3.4	3.4	-50	153	-89.89	153.42	0.000001	-92.99	-6.44	77.41	
Other mature cattle	N ₂ O	4.323	4.836	-2	2	-50	153	-90.45	157.71	0.000001	11.86	-102.80	1224.68	
Growing cattle	N ₂ O	9.522	5.193	-1	1	-50	153	-90.27	154.12	0.000001	-45.46	-49.88	683.28	
Sheep	N ₂ O	3.529	3.148	-10	10	-50	100	-84.30	102.28	0.000000	-10.80	-76.12	538.01	
Market swine	N ₂ O	16.216	1.354	-7	7	-50	153	-90.22	155.48	0.000000	-91.65	-7.66	111.14	
Breeding swine	N ₂ O	8.375	0.786	-7	7	-50	153	-90.55	154.92	0.000000	-90.62	-8.66	115.26	
Goats	N ₂ O	0.193	0.150	-10	10	-50	100	-83.81	101.22	0.000000	-22.39	-66.11	438.82	
Horses	N ₂ O	0.872	0.732	-36	36	-50	100	-84.25	113.57	0.000000	-16.05	-71.88	512.60	
Mules and Asses	N ₂ O	0.044	0.017	-5	5	-50	100	-86.08	98.96	0.000000	-59.97	-34.85	223.82	
Poultry	N ₂ O	20.325	10.659	-5	5	-50	100	-83.95	98.96	0.000003	-47.56	-44.70	302.16	
Rabbits	N ₂ O	7.810	0.755	-30	30	-50	100	-83.88	110.69	0.000000	-90.33	-8.33	58.50	
<i>Indirect N₂O emission</i>	<i>N₂O</i>	147.302	63.988											
Total N volatilised as NH ₃ and NO _x	N ₂ O	147.302	63.988	-34	34	-400	400	-94.26	252.15	0.000421	-56.56	-41.59	799.68	
3.D.1 Direct N₂O Emissions From Managed Soils	N₂O	952.297	670.116											
Inorganic N fertilizers	N ₂ O	447.300	361.664	-20	20	-70	200	-99.99	-99.68	0.000000	-19.15	-75.86	1219.54	
Organic N fertilizers	N ₂ O	209.915	85.713	-10	10	-30	30	-99.93	-99.87	0.000000	-59.17	-28.66	453.95	
Urine and dung deposited by grazing animals	N ₂ O	119.511	43.843	-10	10	-50	150	-99.99	-99.74	0.000000	-63.31	-33.77	402.53	
Crop residues	N ₂ O	166.476	161.530	-20	20	-70	200	-99.99	-99.68	0.000000	-2.97	-91.09	1520.98	
Mineralization/immobilization associated with loss/gain of soil organic matter	N ₂ O	0.149	8.420	-20	20	-30	30	-99.93	-99.86	0.000000	5568.14	-4015.74	62261.51	
Cultivation of organic soils	N ₂ O	8.947	8.947	-10	10	-500	500	-89.21	546.32	0.000029	0.00	-95.60	2010.25	

3.D.2 Indirect N2O Emissions From Managed Soils	N₂O	309.660	209.443											
Atmospheric deposition	N ₂ O	104.399	61.420	-20	20	-250	250	-99.99	-99.62	0.000000	-41.17	-55.64	955.47	
Nitrogen leaching and run-off	N ₂ O	205.261	148.023	-34	34	-400	400	-99.99	-99.44	0.000000	-27.89	-68.62	1550.13	
3.G Liming	CO₂		6.376	-50	50	-50	50	-51.33	133.90	0.000001				
3.H Urea Application	CO₂	50.020	21.671	-20	20	-50	0	-20.06	19.90	0.000001	-56.68	-10.90	14.49	
4.A.1 Forest Land Remaining Forest Land	CO₂	-6,483.656	-5,554.992					-55.91	135.92	0.893291	-14.32			1, 3
4.A.2 Land Converted to Forest Land	CO₂	-28.890	-260.822					-29.11	138.38	0.000631	802.82			1, 3
4.B.1 Cropland Remaining Cropland	CO₂	89.059	138.941					-246.57	544.59	0.009071	56.01			1, 3
4.B.2 Land Converted to Cropland	CO₂	25.846	116.404					-380.21	267.17	0.004147	350.37			1, 3
4.C.1 Grassland Remaining Grassland	CO₂	2.069	2.069					-208.02	-191.74	0.000000	0.00			1, 3
4.C.2 Land Converted to Grassland	CO₂	-9.952	-289.228					-194.64	104.46	0.006082	2806.25			1, 3
4.D.2 Land Converted to Wetlands	CO₂	77.232	12.963					-65.67	190.15	0.000009	-83.22			1, 3
4.E.2 Land Converted to Settlements	CO₂	235.440	545.989					-26.85	231.80	0.010219	131.90			1, 3
4.G Harvested Wood Products	CO₂	-317.852	-391.428					-16.17	85.15	0.001218	23.15			1, 3
4(III).Direct N2O emissions from N mineralization/immobilization	N₂O	43.898	141.786					-89.39	-25.17	0.000065	222.99			1, 3
4(V) Biomass Burning	CO₂	14.979	9.962					1172.62	2456.80	0.000133	-33.49			1, 3
4(V) Biomass Burning	CH₄	1.378	1.556					-5.86	598.89	0.000001	12.94			1, 3
4(V) Biomass Burning	N₂O	0.763	1.060					-16.85	1033.83	0.000001	38.99			1, 3
5.A Solid Waste Disposal	CH₄	554.620	1,364.330											
5.A.1 Managed Waste Disposal Sites\5.A.1.a Anaerobic	CH ₄	525.006	1,364.330	-10	10	-20	20	-18.80	27.19	0.003085	159.87	-65.92	111.79	
5.A.2 Unmanaged Waste Disposal Sites	CH ₄	29.615												
5.B Biological Treatment of Solid Waste	CH₄		34.236											
5.B Biological Treatment of Solid Waste\5.B.1 Composting	CH ₄		18.144	-10	10	-100	100	-83.57	102.29	0.000009				2
5.B Biological Treatment of Solid Waste	N₂O		10.303											
5.B Biological Treatment of Solid Waste\5.B.1 Composting	N ₂ O		10.303	-10	10	-110	110	-86.78	111.02	0.000003				2
5.C Incineration and Open Burning of Waste	CO₂	0.536												
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Clinical Waste	CO ₂	0.123												
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Industrial Solid Wastes	CO ₂	0.413												2

5.C Incineration and Open Burning of Waste	N₂O	0.007												
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Industrial Solid Wastes	N ₂ O	0.007												2
5.C Incineration and Open Burning of Waste	N₂O	4.193	1.292											
5.C.2 Open burning waste\5.C.2.1 Biogenic\5.C.2.1.a Municipal Solid Wastes	N ₂ O	4.193	1.292	-30	30	-100	100	-85.69	112.65		-69.18	-26.65	181.85	
5.C Incineration and Open Burning of Waste	CH₄	19.200	5.918											
5.C.2 Open burning waste\5.C.2.1 Biogenic\5.C.2.1.a Municipal Solid Wastes	CH ₄	19.200	5.918	-30	30	-100	100	-84.08	113.74	0.000001	-69.18	-26.29	196.88	
5.D Wastewater Treatment and Discharge	CH₄	659.515	409.124											
5.D.1 Domestic wastewater	CH ₄	551.417	309.556	-30	30	-30	30	-39.81	44.45	0.000534	-43.86	-25.71	49.03	
5.D.2 Industrial wastewater	CH ₄	108.098	99.568	-30	30	-30	30	-39.00	46.40	0.000057	-7.89	-43.00	77.95	
5.D Wastewater Treatment and Discharge	N₂O	59.478	89.177											
5.D.1 Domestic wastewater	N ₂ O	59.478	89.177	-50	50	-50	50	-74.89	15.23	0.000051	49.93	-131.51	17.80	
TOTAL	CO₂eq	25,203.41	19,877.78					-2.48	53.87	1.00	-21.07	-10.86	43.68	

Approach and Comments:

1 - A more complex method for estimation of uncertainties is used, and therefore activity data and emission factor uncertainties are left blank. Only combined uncertainty and trend uncertainty is shown in model.

2 - Trend not calculated, when base year or year t emissions are zero or included elsewhere.

3 - Combined uncertainty was used through Monte Carlo simulation for LULUCF sector

4 - Different units of AD

5 - Recovery included in estimation of GHG emissi

Annex 3: Detailed methodological descriptions for individual source or sink categories

3.1. Energy sector

Table A3-1: 1A1ai - activity data NCV and emission factors

ACTIVITY DATA		1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption	UNIT									
Hard coal	1000 t	253.70	569.80	887.50	915.60	872.90	434.60	528.20	550.40	476.70
Fuel oil	1000 t	570.40	283.40	284.00	15.10	10.60	0.00	0.00	0.00	0.00
Light heating oil	1000 t	0.30	0.20	3.00	0.90	2.10	1.10	0.40	9.90	1.40
Natural gas	1000000 m3	201.70	155.80	36.30	24.00	52.50	5.60	4.30	7.60	6.20
Coke oven gas	1000000 m3	24.50								
Biogas	PJ			0.11	0.02	0.25	0.37	0.36	0.34	0.35
Other biomass	PJ				0.00	0.00	0.00	0.00	0.00	12.24
Net calorific values										
NCV for hard coal	MJ/kg	25.14	25.58	25.10	24.13	25.00	24.572	24.292	24.79	24.45
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
NCV for light heating oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
NCV for coke oven gas	MJ/kg	17.91								
NCV for biogas	TJ/PJ	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for other biomass										
EMISSION FACTORS		1990	2000	2005	2010	2015	2020	2021	2022	2023
EF CO2 t/TJ	t/TJ									
EF CO2 - Hard coal	t/TJ	93.31	93.31	93.31	93.31	92.69	92.39	93.10	92.88	92.85
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	55.28	55.28	55.28	55.28	55.56	55.34	55.46	56.01	55.80
EF CO2 - Gas coke	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - Biogass	t/TJ	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
EF CO2 - Other biomass	t/TJ	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EF CH4 kg/TJ	kg/TJ									
EF CH4 - Hard coal	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Fuel oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
EF N2O kg/TJ	kg/TJ									
EF N2O - Hard coal	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - Fuel oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O - Gas coke	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Biogass	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Other biomass	kg/TJ	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

Table A3-2: 1A1a ii - activity data NCV and emission factors

ACTIVITY DATA		1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption	UNIT									
Hard coal	1000 t									
Fuel oil	1000 t	118.00	108.60	162.00	108.30	35.80	0.00	0.00	0.00	0.00
Light heating oil	1000 t	0.00	0.90	1.50	0.10	0.00	0.00	0.00	5.40	0.00
Natural gas	1000000 m3	315.50	363.40	479.00	649.90	343.70	783.50	736.40	833.30	890.30
Coke oven gas	1000000 m3									
Biogas	PJ				0.14	1.07	2.97	3.64	3.31	2.89
Other biomass	TJ				1.90	2189.00	9524.20	11187.50	13289.30	12916.90
Net calorific values										
NCV for hard coal	MJ/kg	25.14	25.58	25.10	24.13	25.00	24.57	24.29	24.79	24.45
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
NCV for light heating oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
NCV for coke oven gas	MJ/kg	17.91								
NCV for biogas	TJ/PT	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for other biomass		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EMISSION FACTORS		1990	2000	2005	2010	2015	2020	2021	2022	2023
EF CO2 t/TJ	t/TJ									
EF CO2 - Hard coal	t/TJ	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	55.26	55.26	55.26	55.26	55.25	55.41	55.35	55.25	55.30
EF CO2 - Gas coke	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - Biogas	t/TJ	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
EF CO2 - Other biomass	t/TJ	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EF CH4 kg/TJ	kg/TJ									
EF CH4 - Hard coal	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Fuel oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	3.67	2.73	2.87	3.67	2.42	3.70	3.58	2.58	2.65
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
EF N2O kg/TJ	kg/TJ									
EF N2O - Hard coal	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - Fuel oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O - Gas coke	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Biogas	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Other biomass	kg/TJ	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

Table A3-3: 1A1aiii - activity data NCV and emission factors

ACTIVITY DATA		1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption	UNIT									
Hard coal	1000 t				0.00					
Fuel oil	1000 t	0.00	37.00	39.00	23.20	3.70	1.20	0.50	0.60	1.30
Light heating oil	1000 t	0.00	4.40	6.70	4.90	3.90	1.90	3.50	4.30	2.20
Natural gas	1000000 m3	0.00	53.00	71.30	86.50	72.40	53.00	53.60	45.20	43.70
Coke oven gas	1000000 m3									
Biogas	PJ				0.00	0.00	0.0000	0.0000	0.0000	0.0000
Other biomass	PJ				0.00	0.00	0.0214	0.0230	0.0170	0.1027
Gas works gas	1000000 m3			1.46						
Liquified petroleum gas	1000 t	0.00								
Net calorific values										
NCV for hard coal	MJ/kg	25.14	25.58	25.10	24.13		24.57	24.29	24.79	24.45
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
NCV for light heating oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
NCV for coke oven gas	MJ/kg	17.91								
NCV for biogas	TJ/PJ				1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for other biomass	TJ/PJ				1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for gas works gas	MJ/m3			21.47						
NCV for LPG	MJ/kg	46.89								
EMISSION FACTORS										
EF CO2 t/TJ	t/TJ									
EF CO2 -Hard coal	t/TJ	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - Gas coke	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 -Biogas	t/TJ	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
EF CO2 - Other biomass	t/TJ	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EF CO2 - Gas works gas	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - LPG	t/TJ	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CH4 kg/TJ	kg/TJ									
EF CH4 -Hard coal	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Fuel oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
EF CH4 - Gas works gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - LPG	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O kg/TJ	kg/TJ									
EF N2O -Hard coal	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - Fuel oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O - Gas coke	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Biogas	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Other biomass	kg/TJ	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
EF N2O - Gas works gas	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - LPG	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

Table A3-4: 1Ab - activity data NCV and emission factors

Refining - transformation		1990	2000	2006	2010	2015	2020	2021	2022	2023
Fuel consumption										
Fuel oil (1000 t)	1000 t	355.04	239.40	249.90	244.30	134.10	23.00	25.50	59.10	27.80
NCV for fuel oil (MJ/kg)	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG I Gas/diesel oil (1000 t)	1000 t	0.79	2.20	9.70	0.00	0.00	0.00	0.00	0.00	0.00
NCV for gas/diesel oil (MJ/kg)	MJ/kg	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
Petroleum coke (1000 t)	1000 t	53.69	63.00	61.90	55.90	31.30	21.70	22.50	19.70	20.50
NCV for petroleum coke (MJ/kg)	MJ/kg	29.31	29.31	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Refinery gas (1000 t)	1000 t	405.94	262.40	210.40	161.50	208.10	114.20	98.50	87.60	94.80
NCV for refinery gas (MJ/kg)	MJ/kg	48.57	48.57	48.57	48.57	42.60	42.60	42.60	42.60	42.60
Natural gas (1000000 m3)	1000 t	7.31	0.20	0.40	27.10	183.30	211.10	178.10	116.70	159.10
NCV for natural gas (MJ/m3)	MJ/kg	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
Total fuel consumption (TJ)	TJ	35844.4	24322.7	22649.9	20316.8	21567.0	13801.9	12151.9	10837.2	11678.0
Emission factors										
EF CO2 - fuel oil (t/TJ)	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	t/TJ	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - petroleum coke (t/TJ)	t/TJ	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - refinery gas (t/TJ)	t/TJ	57.60	57.60	57.60	57.60	57.60	57.60	57.60	57.60	57.60
EF CO2 - natural gas (t/TJ)	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	Gg	2,424.74	1,683.27	1,600.77	1,448.87	1,387.39	835.52	745.35	695.24	717.34
EF CH4 - fuel oil (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - LPG (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - petroleum coke (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - refinery gas (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - natural gas (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	Mg	64.38	43.57	42.74	39.95	32.35	15.65	14.20	15.59	13.91
EF N2O - fuel oil (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - LPG (kg/TJ)	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - petroleum coke (kg/TJ)	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - refinery gas (kg/TJ)	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - natural gas (kg/TJ)	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	Mg	12.92	9.83	9.97	9.37	6.21	2.78	2.70	3.13	2.62

Table A3-5: 1Aci - activity data NCV and emission factors

ind. Kotlovnica; Vlastita potrošnja (proizv. Nafta i pr.plina); narančasta boja														
Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020	2021	2022	2023
Fuel consumption														
LPG (1000 t)														
NCV for LPG (MJ/kg)														
Gas Coke (1000000 m3)	107.40													
NCV for gas coke (MJ/m3)	17.91													
Light heating oil (1000 t)		0.10												
NCV for light heating oil (MJ/kg)		42.71												
Natural gas (1000000 m3)														
NCV for natural gas (MJ/m3)														
Other Kerosene prod (petrolej) (1000 t)														
NCV for petroleum (MJ/m3)														
Total fuel consumption (TJ)	1,923.53	4.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions														
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	85.40	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	1.92	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A3-6: 1Aci - activity data NCV and emission factors

Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption										
LPG (1000 t)	11.87	0.00	1.00							
NCV for LPG (MJ/kg)	46.89		46.89							
Gas Coke (1000000 m3)										
NCV for gas coke (MJ/m3)										
Light heating oil (1000 t)	0.75	0.70	7.10	5.50						
NCV for light heating oil (MJ/kg)	42.71	42.71	42.71	42.71						
Natural gas (1000000 m3)	413.80	229.70	164.50	175.50	241.70	121.30	103.60	120.70	154.80	151.40
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
Other Kerosene prod (petrolej) (1000 t)										
NCV for petroleum (MJ/m3)										
Total fuel consumption (TJ)	14,657.46	7,839.70	5,943.13	6,201.91	8,217.80	4,196.98	3,602.17	4,224.50	5,464.44	5,601.80
Emissions										
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	826.75	440.35	339.20	352.16	461.02	235.45	202.08	236.99	306.56	314.26
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	14.72	7.90	6.55	6.67	8.22	4.20	3.60	4.22	5.46	5.60
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	1.48	0.80	0.75	0.74	0.82	0.42	0.36	0.42	0.55	0.56

Table A3-7: 1Aciii - activity data NCV and emission factors

Manufacture of solid fuels and other energy industries	1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption									
LPG (1000 t)									
NCV for LPG (MJ/kg)									
Gas Coke (1000000 m3)									
NCV for gas coke (MJ/m3)									
Light heating oil (1000 t)		0.40							
NCV for light heating oil (MJ/kg)		42.71							
Natural gas (1000000 m3)		0.50							
NCV for natural gas (MJ/m3)		34.00							
Other Kerosene prod (petrolej) (1000 t)									
NCV for petroleum (MJ/m3)									
Biogas					26.54	19.79082	40.58	44.34	37.63
NCV for biogas (TJ/TJ)					1.00	1.00	1.00	1.00	1.00
Total fuel consumption (TJ)	0.00	34.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions									
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - other kp (t/TJ)	71.15	71.15	71.15	71.15	71.15	71.15	71.15	71.15	71.15
EF CO2 - biogas (t/TJ)	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
CO2 Emission (Gg)	0.00	2.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - other kp (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - biogas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - biogas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A3-8: 1A2a-g – fuel consumption

1A2a Iron and Steel										
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	10 ³ t	7.474	0	0	0.6	0.9	0.9	3.7	4.3	4.7
Coking coal (kameni ugljen)	10 ³ t	0	0	1	0	1.8	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	18.248	0	0	0	0	0	0	0	0
Lignite	10 ³ t	9.349	0	0	0	0	0	0	0	0
Natural gas	10 ⁶ m ³	119.957	25.2	22.9	35	17.5	13.5	19.6	20.2	16.9
Wood	10 ³ m ³	0	0		0.8	0.5	0.2	0.2	0.1	0.1
Biogas	TJ	0	0		0	0	0	0	0	
Wood waste	TJ	0	0	0	0	0	1.8	3.5	3.9	53.7
Briketi ugljena	10 ³ t	0	0				0			
Coke oven coke	10 ³ t	179.937	11.8	4.3	3.7	0.6	0.3	0.2	0.2	0.2
Liquified petroleum gas	10 ³ t	3.554	2.1	4.2	1.4	0.8	0.7	0.7	2.3	2.1
Motor Gasoline	10 ³ t	0	0		0	0	0.1	0	0	0
Petroleum	10 ³ t					0	0	0	0	0
Diesel	10 ³ t	0	0	0	0	0	0.2	0.3	0.3	0.3
Gas/Diesel oil	10 ³ t	12.907	4	2.7	0.9	0.6	0.6	0.7	1	0.8
Residual fuel oil	10 ³ t	42.516	1.5	2.7	1.2	1.1	0	0	0	0
Petroleum coke	10 ³ t	8.602	0	0	0.7	0.3	0	0.8	0	0
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0
Other oil derivatives	10 ³ t	0	0		0	0	0	0	0	0
Visokopećni plin	10 ⁶ m ³	418.079	0				0			
Koksni plin	10 ³ m ³	0	0							
Gas works gas	10 ³ m ³	0	0	0.031	0	0	0	0	0	0

1A2b Non-Ferrous metals										
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	10 ³ t	0	0	0.1	0	0	0	0	0	0
Coking coal (kameni ugljen)	10 ³ t	0	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	0.2	0	0	0	0	0	0	0	0
Lignite	10 ³ t	0	0	0	0	0	0	0	0	0
Natural gas	10 ⁶ m ³	0	5	1	0.4	2.6	11.7	13.9	13.6	11.9
Wood	10 ³ m ³	0	0		0.6	0.2	0.3	0	0	0
Biogas	TJ	0	0		0	0	0	0	0	
Wood waste	TJ	0	0	0	0	0	0	0	0	0
Briketi ugljena	10 ³ t	0	0				0			
Coke oven coke	10 ³ t	0	0	0	0	0	0	0	0	0
Liquified petroleum gas	10 ³ t	1.534	1.1	2.1	3.1	0.8	0.7	0.8	0.8	0.9
Motor Gasoline	10 ³ t	0	0		0	0	0	0	0	0
Petroleum	10 ³ t					0.2	0	0	0	0
Diesel	10 ³ t	0	0	0	0	0	0.2	0.2	0.2	0.2
Gas/Diesel oil	10 ³ t	2.818	1	0.2	0.1	0.9	0.2	0.2	0.4	0.4
Residual fuel oil	10 ³ t	1.077	0.3	4	1.2	0	0	0	0	0
Petroleum coke	10 ³ t	0	0	0	0	0	0	0	0.1	0.3
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0
Other oil derivatives	10 ³ t	0	0		0	0	0	0	0	0
Visokopećni plin	10 ⁶ m ³	0	0							
Koksni plin	10 ³ m ³	0	0							
Gas works gas	10 ³ m ³	0	0	0	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2c Chemicals										
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	10 ³ t	0	0	0.2	0	0	0	0	0	0
Coking coal (kameni ugljen)	10 ³ t	0	0	0	1.2	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	43.77	1.2	0	0	0	0	0	0.5	0.1
Lignite	10 ³ t	27.507	0.6	0	0	0	0	0	0	0
Natural gas	10 ⁶ m ³	181.214	186.5	183.1	227.6	146.9	169.1	115.6	33.1	51.1
Wood	10 ³ m ³	0	0		0.1	0	0	0	0	0.21
Biogas	TJ	0	0		0	0	0	0	0	
Wood waste	TJ	0	0	0	0	0	0.2	0.2	0.3	0.2
Briketi ugljena	10 ³ t	0	0				0			
Coke oven coke	10 ³ t	0	0	0	0	0	0	0	0	0
Liquified petroleum gas	10 ³ t	0.724	6.9	0	0.1	0	0	0	0	0
Motor Gasoline	10 ³ t	0	0		0	0	0	0	0	0
Petroleum	10 ³ t					2.4	1.5	1.8	1	1.1
Diesel	10 ³ t	0	0	0	0	0	0	0	0	0
Gas/Diesel oil	10 ³ t	3.868	2	0.5	0.4	0.5	0.4	0.4	0.9	1.7
Residual fuel oil	10 ³ t	89.079	102.8	73	3.6	0	0.1	0.1	0	0
Petroleum coke	10 ³ t	0	0	0.7	0	0	0	0	0	0
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0
Other oil derivatives	10 ³ t	0	0		0	0	0	0	0	0
Visokopećni plin	10 ⁶ m ³	0	0							
Koksni plin	10 ³ m ³	0	0							
Gas works gas	10 ⁶ m ³	0	0	0	0	0	0	0	0	0

1A2d Pulp, paper and print										
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	10 ³ t	0	0	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10 ³ t	0	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	42.51	0	0	0	0	0	0	0	0
Lignite	10 ³ t	0	0	0	0	0	0	0	0	0
Natural gas	10 ⁶ m ³	92.536	75	69.2	68.8	27.6	57.9	60.4	58.1	53.4
Wood	10 ³ m ³	0	0		13.2	0.1	0	0.7	4.3	3.7
Biogas	TJ	0	0		0	0	0	0	0	
Wood waste	TJ	81.9	1.4	169.4	151.8	20	192.2	87.1	73.2	53.5
Briketi ugljena	10 ³ t	0	0				0			
Coke oven coke	10 ³ t	0	0	0	0	0	0	0	0	0
Liquified petroleum gas	10 ³ t	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Motor Gasoline	10 ³ t	0	0		0	0	0	0	0	0
Petroleum	10 ³ t					0	0	0	0	0
Diesel	10 ³ t	0	0	0	0	0	0	0	0	0
Gas/Diesel oil	10 ³ t	0.405	0.9	1.6	0.1	0	0	0	0.1	0
Residual fuel oil	10 ³ t	18.364	2.4	11.9	9.5	5.2	0.7	0.8	0.8	0.8
Petroleum coke	10 ³ t	0	0	0	0	0	0	0	0	0
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0
Other oil derivatives	10 ³ t	0	0		0	0	0	0	0	0
Visokopećni plin	10 ⁶ m ³	0	0							
Koksni plin	10 ³ m ³	0	0							
Gas works gas	10 ⁶ m ³	0	0	0.031	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2e Food Processing, Beverages and Tobacco											
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023	
Anthracite	10 ³ t	0	0	0	0.7	0	0	0	0.1	0	0
Coking coal (kameni ugljen)	10 ³ t	0.426	0	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	89.92	23.9	47.7	39.9	34	11.9	0	0	0	0
Lignite	10 ³ t	35.745	11.2	0	0	0	0	0	0.6	0	0
Natural gas	10 ⁶ m ³	92.34	101.6	173	166.6	114.7	112.1	97.5	122	113.1	
Wood	10 ³ m ³	0	0		0.5	13.5	1.5	1.6	1.9	1.6	
Biogas	TJ	0	0		0	0	0	0	0	0	
Wood waste	TJ	0	0	0	0	0	290.6	362.1	313.5	255.9	
Briketi ugljena	10 ³ t	0.16	0				0				
Coke oven coke	10 ³ t	6.841	2.3	9.6	6.4	4	3.6	1.9	2.3	2.2	
Liquified petroleum gas	10 ³ t	1.09	0.8	1.6	1.3	1.4	1	1.2	1.3	1.3	
Motor Gasoline	10 ³ t	0	0		0	0	0	0	0	0	
Petroleum	10 ³ t					0	0	0	0	0	
Diesel	10 ³ t	0	0	0	0	0	0.3	0.2	0.2	0.3	
Gas/Diesel oil	10 ³ t	36.196	15.2	13.3	10	8.7	5.3	6	10.3	9.9	
Residual fuel oil	10 ³ t	72.165	40.3	32.4	22.9	9.1	7.7	7.1	9.1	8.6	
Petroleum coke	10 ³ t	0	0	0	0	0	0	0	0	0	
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0	
Other oil derivatives	10 ³ t	0	0		0	0	0	0	0	0	
Visokopećni plin	10 ⁶ m ³	0	0								
Koksni plin	10 ³ m ³	0	0								
Gas works gas	10 ⁶ m ³	6.1	0	0.1099	0	0	0	0	0	0	

1A2f Non-Metallic Minerals											
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023	
Anthracite	10 ³ t	0	0	0.1	0	0	0	0	0	0	
Coking coal (kameni ugljen)	10 ³ t	0	0	0	0	0	0	0	0	0	
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	0	0	0	0	0	0	0	0	0	
Lignite	10 ³ t	0	0	0	0	0	0	0	0	0	
Natural gas	10 ⁶ m ³	121.384	52.6	73.4	56.4	41.8	45.7	51.9	51.9	48.1	
Wood	10 ³ m ³	0	0		0	0	0	0	0	0	
Biogas	TJ	0	0		0	0	0	0	0		
Wood waste	TJ	0	0	0	0	0	0.3	1.6	0.5	0.7	
Briketi ugljena	10 ³ t	0	0				0				
Coke oven coke	10 ³ t	6.804	7.2	7.7	0.1	0	0	0	0	0	
Liquified petroleum gas	10 ³ t	6.567	3	2.2	0.2	0.2	0.2	0.3	0.3	0.3	
Motor Gasoline	10 ³ t	0	0		0	0	0	0	0	0	
Petroleum	10 ³ t					0	0	0	0	0	
Diesel	10 ³ t	0	0	0.1	0	0	0.1	0.1	0.1	0.1	
Gas/Diesel oil	10 ³ t	1.627	0.4	2.7	0	0	0	0	0	0	
Residual fuel oil	10 ³ t	6.093	2.3	3.8	2.2	0	0	0	0	0	
Petroleum coke	10 ³ t	0	0	0	0	0	0	1.8	0	0	
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0	
Other oil derivatives	10 ³ t	0	0		0	0	0	0	0	0	
Visokopećni plin	10 ⁶ m ³	0	0								
Koksni plin	10 ³ m ³	0	0								
Gas works gas	10 ⁶ m ³	0	3.3	0.923	0	0	0	0	0	0	

Table A3-8: 1A2a-g – fuel consumption

1A2g v Construction										
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	10 ³ t	99.727	0	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10 ³ t	40.732	53.2	168.3	193.4	74.7	119.8	132.8	81.2	68.9
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	18.129	3	5	1.1	2.7	0	0.1	2.6	1.6
Lignite	10 ³ t	0.065	2.5	0	0	0	0	0	0	0
Natural gas	10 ⁶ m ³	137.217	178.9	124.4	76.4	40.7	53.4	62.4	62.5	63.2
Wood	10 ³ m ³	0	0		0.3	0.9	6.6	6.9	5.7	1.3
Biogas	TJ	0	0		0	0	0	0	0	
Wood waste	TJ	0	57.8	0	370.6	289	138.5	67	89.5	2208.2
Briketi ugljena	10 ³ t	2.829	0				0			
Coke oven coke	10 ³ t	3.64	16.1	0	17.3	20.6	26.3	27.4	30.2	26
Liquified petroleum gas	10 ³ t	0	3.3	4.6	3.2	1.6	0.5	1.2	0.6	0.4
Motor Gasoline	10 ³ t	0	0		0	0	0.1	0.2	0.1	0.1
Petroleum	10 ³ t					0	0	0	0	0
Diesel	10 ³ t	0	0	15	14.3	11.1	6.9	6.7	7.5	7.8
Gas/Diesel oil	10 ³ t	17.142	34	7	4.3	2.7	4	4.6	5	4.1
Residual fuel oil	10 ³ t	127.115	135	53.1	7.3	3.9	2.1	1.7	2.5	2.5
Petroleum coke	10 ³ t	0	0	171.6	115.3	167.2	100.7	88	109.8	145.6
Refinery gas	10 ³ t	0	0	0	0	0	0			0
Other oil derivates	10 ³ t	0	0		0	0	0	0	0	0
Visokopećni plin	10 ⁶ m ³	0	0							
Koksni plin	10 ³ m ³	0	0							
Gas works gas	10 ⁶ m ³	0	0	0	0	0	0	0	0	0
Industrial waste-non ren.	TJ				319.1	390	1630.3	1875	1929	2019.5

1A2g viii Other industry (analiza industrije+Opća potrošnja-Građevinarstvo)										
Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	10 ³ t	0	0	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10 ³ t	0.794	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t	48.369	0.1	4.2	0	0	0	0	0	0
Lignite	10 ³ t	0.431	0.1	0.2	0	0	0	0	0	0
Natural gas	10 ⁶ m ³	79.309	55	65.3	54.4	44.2	45.5	50.2	50	43.3
Wood	10 ³ m ³	0	0		39.4	27.4	21.9	21	21.8	24.3
Biogas	TJ	0	0		0	0	0	0	0	
Wood waste	TJ	3518.1	2224.4	2087.5	1456.677	579	584.9	524.8	395.9	347.5
Briketi ugljena	10 ³ t	0.311	0				0			
Coke oven coke	10 ³ t	2.549	0.3	1	0.1	0	0	0	0	0
Liquified petroleum gas	10 ³ t	3.317	3.2	8	6.8	5.7	5.3	6.7	3.7	2.9
Motor Gasoline	10 ³ t	0	0	6.9	5.1	4	0.1	3.5	3.5	0.1
Petroleum	10 ³ t					0	0	0	0	0
Diesel	10 ³ t	0	0	110.6	102.2	79.2	92.7	106.2	114.5	1.8
Gas/Diesel oil	10 ³ t	17.87	7.6	23	12.2	8.7	4.4	9.6	10.1	5.1
Residual fuel oil	10 ³ t	59.519	19.4	17.7	8.4	3.8	1.8	2.1	1.9	2.1
Petroleum coke	10 ³ t	0	0	0	0	0	0	0	0	0
Refinery gas	10 ³ t	0	0	0	0	0	0	0	0	0
Other oil derivates	10 ³ t	0	0		0	0	0	0	0	0
Visokopećni plin	10 ⁶ m ³	0	0							
Koksni plin	10 ³ m ³	0	0							
Gas works gas	10 ⁶ m ³	0	3.5	2.456	0	0	0	0	0	0

Fuel consumption	Unit	1990	2000	2005	2010	2015	2020	2021	2022	2023
Motorni benzin	TJ	477.113	169.442	236.327	245.245	191.737	169.442	164.983	160.5240000	187.2780000
Dizelsko gorivo	TJ	3993.385	2861.57	4856.127	4527.26	3562.014	4288.084	4856.127	5244.7880000	5911.0640000

Table A3-8: 1A2a-g – NCV and emission factors

Net Calorific Value		1990	2000	2005	2010	2015	2020	2021	2022	2023
Anthracite	MJ/kg	29.29	29.31	29.31	29.31	29.31	29.31	29.31	29.31	29.31
Coking coal (kameni ugljen)	MJ/kg	25.14	26.15	25.1	24.77332	26.7	27	26.48	26.78	25.92
Sub-Bituminous Coal (Mrki ugljen)	MJ/kg	16.74	17.8	18.5	17.6	17	18.43	18.5	18.5	15.70
Lignite	MJ/kg	10.9	12	12.1		0	11.2	0		0
Natural gas	MJ/m3	34	34	34.0	34.0	34.6	34.77	35	35.3	37.0
Wood	GJ/m3	9	9	9.0	9.0	9	9	9	9	9.0
Biogas	TJ/TJ	1	1	1.0	1.0	1	1	1	1	1.0
Wood waste	TJ/TJ	1	1	1.0	1.0	1	1	1	1	1.0
Briketi ugljena	MJ/kg	16.74								
Coke oven coke	MJ/kg	29.31	29.31	29.3	29.3	29.31	29.31	29.31	29.31	29.3
Liquified petroleum gas	MJ/kg	46.89	46.89	46.9	46.9	46.89	46.89	46.89	46.89	46.9
Motor Gasoline	MJ/kg	44.59	44.59	44.6	44.6	44.59	44.59	44.59	44.59	44.6
Petroleum	MJ/kg	43.94	43.96			43.96	43.96	43.96	43.96	44.0
Diesel	MJ/kg	42.71	42.71	42.7	42.7	42.71	42.71	42.71	42.71	42.7
Gas/Diesel oil	MJ/kg	42.71	42.71	42.7	42.7	42.71	42.71	42.71	42.71	42.7
Residual fuel oil	MJ/kg	40.19	40.19	40.2	40.2	40.19	40.19	40.19	40.19	40.2
Petroleum coke	MJ/kg	29.31	31	31.0	31.0	31	31	31	31	31.0
Refinery gas	MJ/kg					0	42.6	0	0	
Other oil derivatives	MJ/kg					0	40.19	0	0	
Visokopećni plin	MJ/m3									
Koksni plin	MJ/m3	17.91								
Gas works gas	MJ/m3	15.82	15.8	21.47		0		0	0	
Industrial waste-non ren.	TJ/TJ	1.0	1.0	1.0	1.0	1	1	1	1	1

Table A3-9: 1A2a-g –emission factors

Fuel type	EF CO ₂ , t/TJ	EF CH ₄ , kg/TJ	EF N ₂ O, kg/TJ
Anthracite	98.3	10	1.5
Coking coal (kameni ugljen)	94.6	10	1.5
Sub-Bituminous Coal (Mrki ugljen)	96.1	10	1.5
Lignite	101	10	1.5
Natural gas	56.1	1	0.1
Wood	112	30	4
Biogas	79.6	3	0.6
Wood waste	143	30	4
Coke oven coke	107	10	1.5
Liquified petroleum gas	63.1	1	0.1
Motor Gasoline	69.3	3	0.6
Diesel	74.1	3	0.6
Gas/Diesel oil	74.1	3	0.6
Residual fuel oil	77.4	3	0.6
Petroleum coke	97.5	3	0.6
Refinery gas	57.6	1	0.1
Other oil derivatives	0	3	0.6
Gas works gas	44.4	1	0.1
Other fossil fuels	143	30	4

Table A3-11: 1A3a – fuel consumption, NCV and emission factors

		1990	1995	2000	2010	2015	2020	2021	2022	2023
Domestic aviation										
Fuel consumption										
Aviation gasoline	1000 t	0.00	0.00	0.00	1.00	0.30	0.40	0.50	0.40	0.50
NCV for gasoline	MJ/kg	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
Jet kerosene	1000 t	2.00	7.00	8.00	9.00	9.50	4.90	6.60	7.80	9.10
NCV for jet kerosene	MJ/kg	44.00	43.96	43.96	43.96	43.96	43.96	43.96	43.96	43.96
Motor gasoline	1000 t	0.10	0.30	0.10						
NCV motor gasoline	MJ/kg	44.59	44.59	44.59						
Total fuel consumption	TJ	92.46	321.10	356.14	440.23	431.00	233.24	312.43	360.72	422.33
Emissions										
EF CO ₂ - aviation gasoline	t/TJ	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00
EF CO ₂ - jet kerosene	t/TJ	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50
EF CO ₂ - motor gasoline	t/TJ	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
CO₂ Emission	Gg	6.60	22.93	25.45	31.41	30.80	16.65	22.31	25.77	30.16
EF CH ₄ - gasoline	kg/TJ	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
EF CH ₄ - jet kerosene	kg/TJ	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
EF CH ₄ - motor gasoline	kg/TJ	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CH₄ Emission	Mg	0.05	0.16	0.18	0.22	0.22	0.12	0.16	0.18	0.21
EF N ₂ O - gasoline	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N ₂ O - jet kerosene	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N ₂ O - motor gasoline	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
N₂O Emission	Mg	0.18	0.64	0.71	0.88	0.86	0.47	0.62	0.72	0.84

Table A3-12: 1A3b – fuel consumption, NCV and emission factors

1A3bi	CARS		1990	2000	2005	2010	2015	2020	2021	2022	2023
	FUEL CONSUMPTION										
Gasoline	TJ		31889.08	32292.86	29259.62	26732.34	21817.61	16082.50	18016.03	19327.90	21575.94
Diesel oil	TJ		1638.19	8880.71	19728.46	25322.92	32003.51	33384.62	36234.77	39065.64	44482.81
LPG	TJ	#DIV/0!	459.52	1036.27	2752.44	3141.63	2475.79	2593.02	2175.70	1988.14	
CNG	TJ					2.34	3.62	12.84	12.228	10.311	12.323
Biodiesel	TJ					59.130177	598.420095	1702.05292	2367.61217	545.14	7.30
	NCV										
Gasoline	MJ/kg		1	1	1	1	1	1	1	1	1
Diesel oil	MJ/kg		1	1	1	1	1	1	1	1	1
LPG	MJ/kg		1	1	1	1	1	1	1	1	1
CNG	MJ/106m3		1	1	1	1	1	1	1	1	1
Biodiesel	MJ/kg										
	EF CO₂										
EF CO ₂ - gasoline (t/TJ)	t/TJ		69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
EF CO ₂ - diesel (t/TJ)	t/TJ		74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
EF CO ₂ -LPG (t/TJ)	t/TJ		63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
EF CO ₂ - CNG(t/TJ)	t/TJ		56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
EF CO ₂ - Biodiesel (t/TJ)	t/TJ		70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

1A3bii	LIGHT DUTY TRUCKS		1990	2000	2005	2010	2015	2020	2021	2022	2023
	FUEL CONSUMPTION										
	Gasoline	TJ	1394.4738	1040.8302	666.77447	421.99073	228.306471	221.492924	234.429233	253.39277	285.728682
	Diesel oil	TJ	3357.0545	5345.5403	9130.0068	7984.733	5372.14792	6774.61926	8264.92243	9487.8339	11099.3204
	LPG	TJ	0	0	0	0	0	0	0	0	0
	CNG	TJ									
	Biodiesel	TJ				23.550799	131.686879	336.435199	467.99254	107.75551	1.44275157
	NCV										
	Gasoline	MJ/kg	1	1	1	1	1	1	1	1	1
	Diesel oil	MJ/kg	1	1	1	1	1	1	1	1	1
	LPG	MJ/kg	1	1	1	1	1	1	1	1	1
	CNG	MJ/106m3	1	1	1	1	1	1	1	1	1
	Biodiesel	MJ/kg									
	EF CO2										
	EF CO2 - gasoline (t/TJ)	t/TJ	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

1A3biii	HEAVY DUTY TRUCKS+BUSSES		1990	2000	2005	2010	2015	2020	2021	2022	2023
	FUEL CONSUMPTION										
	Gasoline	TJ	149.5810	54.2238	53.9165	26.2786	30.4085	9.8617	4.9062	5.2771	4.5676
	Diesel oil	TJ	10645.1605	9597.3914	11955.2053	13673.2825	14636.2389	16234.2970	15613.6958	17013.8924	19269.9302
	LPG	TJ	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CNG	TJ				86.0566	134.7824	115.8095	155.7717	141.4787	109.7769
	Biodiesel	TJ				31.7089	290.0421	684.1301	951.6477	219.1173	2.9338
	NCV										
	Gasoline	MJ/kg	1	1	1	1	1	1	1	1	1
	Diesel oil	MJ/kg	1	1	1	1	1	1	1	1	1
	LPG	MJ/kg	1	1	1	1	1	1	1	1	1
	CNG	MJ/106m3	1	1	1	1	1	1	1	1	1
	Biodiesel	MJ/kg	0	0	1	1	1	1	1	1	1
	EF CO2										
	EF CO2 - gasoline (t/TJ)	t/TJ	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

1A3biv	MOTORCYCLES		1990	2000	2005	2010	2015	2020	2021	2022	2023
	FUEL CONSUMPTION										
	Gasoline	TJ	432.971	687.760	942.854	1205.384	1110.474	902.343	1029.812	1107.647	1351.775
	Diesel oil	TJ	0.000	0.000	0.000	0.063	0.344	0.745	0.941	1.024	1.485
	LPG	TJ									
	CNG	TJ									
	Biodiesel	TJ				0.0001431	0.00622107	21.9344675	30.5115732	7.0253044	0.09406265
	NCV										
	Gasoline	MJ/kg	1	1	1	1	1	1	1	1	1
	Diesel oil	MJ/kg	1	1	1	1	1	1	1	1	1
	LPG	MJ/kg	1	1	1	1	1	1	1	1	1
	CNG	MJ/106m3	1	1	1	1	1	1	1	1	1
	Biodiesel	MJ/kg	0	0	1	1	1	1	1	1	1
	EF CO2										
	EF CO2 - gasoline (t/TJ)	t/TJ	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

Table A3-13: 1A3c– fuel consumption, NCV and emission factors

Rail transport										
		1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption										
Gasoline (1000 t)	1000 t	0.10	0.10							
NCV for gasoline (MJ/kg)	MJ/kg	44.59	44.59							
Diesel (1000 t)	1000 t	36.10	27.20	30.50	28.50	17.50	13.30	14.30	14.70	12.10
NCV for diesel (MJ/kg)	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	1000 t	0.20								
NCV for fuel oil (MJ/kg)	MJ/kg	40.19								
Light heating oil (1000 t)	1000 t	1.10								
NCV for light heating oil (MJ/	MJ/kg	42.71								
Brown coal (1000 t)	1000 t	10.00								
NCV for brown coal (MJ/kg)	MJ/kg	16.74								
Lignite (1000 t)	1000 t	4.30								
NCV for lignite (MJ/kg)	MJ/kg	10.90								
Jet Kerosene (1000 t)	1000 t	0.10								
NCV for jet kerosene (MJ/m3)	MJ/kg	43.94								
Total fuel consumption (TJ)	TJ	1,819.97	1,166.17	1,302.66	1,217.24	747.43	568.04	610.75	627.84	516.79
Emissions										
EF CO2 - gasoline (t/TJ)	t/TJ	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - diesel (t/TJ)	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - fuel oil (t/TJ)	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - light heating oil (t/TJ)	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - brown coal (t/TJ)	t/TJ	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10
EF CO2 - lignite (t/TJ)	t/TJ	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - jet kerosene (t/TJ)	t/TJ	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50
EF CO2 - petroleum (t/TJ)	t/TJ									
CO2 Emission (Gg)	Gg	140.08	86.39	96.53	90.20	55.38	42.09	45.26	46.52	38.29
EF CH4 - gasoline (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - diesel (kg/TJ)	kg/TJ	4.15	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32
EF CH4 - fuel oil (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - light heating oil (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - brown coal (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF CH4 - lignite (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - jet kerosene (t/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - petroleum (t/TJ)	kg/TJ									
CH4 Emission (Mg)	Mg	6.97	3.87	4.32	4.04	2.48	1.89	2.03	2.08	1.72
EF N2O - gasoline (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - diesel (kg/TJ)	kg/TJ	28.60	28.60	28.60	28.60	28.60	28.60	28.60	28.60	28.60
EF N2O - fuel oil (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - light heating oil (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - brown coal (kg/TJ)	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - lignite (kg/TJ)	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - jet kerosene (t/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - petroleum (t/TJ)	kg/TJ									
N2O Emission (Mg)	Mg	44.46	33.23	37.26	34.81	21.38	16.25	17.47	17.96	14.78

Table A3-14: 1A3d– fuel consumption, NCV and emission factors

National navigation		1990	1995	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption											
Gasoline (1000 t)	1000 t	0.10	0.60	0.30							
NCV for gasoline (MJ/kg)	MJ/kg	44.59	44.59	44.59							
Diesel (1000 t)	1000 t	38.70	23.20	25.70	31.80	34.80	41.20	40.20	46.90	48.30	46.70
NCV for diesel (MJ/kg)	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	1000 t	2.10	6.20	1.40		2.00					
NCV for fuel oil (MJ/kg)	MJ/kg	40.19	40.19	40.19		40.19					
Light heating oil (1000 t)	1000 t	1.60	1.50								
NCV for light heating oil (MJ/kg)	MJ/kg	42.71	42.71								
Total fuel consumption (TJ)		1,810.07	1,330.87	1,167.29	1,358.18	1,566.69	1,759.65	1,716.94	2,003.10	2,062.89	1,994.56
Emissions											
EF CO ₂ - gasoline (t/TJ)	t/TJ	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO ₂ - diesel (t/TJ)	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO ₂ - fuel oil (t/TJ)	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO ₂ - light heating oil (t/TJ)	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
CO₂ Emission (Gg)	Gg	134.38	99.31	86.62	100.64	116.36	130.39	127.23	148.43	152.86	147.80
EF CH ₄ - gasoline (kg/TJ)	kg/TJ	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
EF CH ₄ - diesel (kg/TJ)	kg/TJ	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
EF CH ₄ - fuel oil (kg/TJ)	kg/TJ	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
EF CH ₄ - light heating oil (kg/TJ)	kg/TJ	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
CH₄ Emission (Mg)	Mg	12.67	9.32	8.17	9.51	10.97	12.32	12.02	14.02	14.44	13.96
EF N ₂ O - gasoline (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N ₂ O - diesel (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N ₂ O - fuel oil (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N ₂ O - light heating oil (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
N₂O Emission (Mg)	Mg	3.48	2.53	2.33	2.72	3.13	3.52	3.43	4.01	4.13	3.99

Table A3-15: 1A4a– fuel consumption, NCV and emission factors

Commercial/Institutional	1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption									
Petroleum (1000 t)	3.80								
NCV for jet kerosene (MJ/kg)	43.94								
Light heating oil (1000 t)	90.30	120.50	131.60	73.80	44.60	25.60	22.70	24.70	23.20
NCV for light heating oil (MJ/kg)	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	67.60	3.90	6.60	8.00	2.70	0.00	0.00	0.00	0.00
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	4.30	13.90	20.10	12.90	12.30	10.00	11.70	8.60	6.70
NCV for LPG (MJ/kg)	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
Anthracite (1000 t)									
NCV for anthracite (MJ/kg)									
Brown coal (1000 t) (MU)	24.50	9.50	0.20	2.20		0.00	0.00	0.00	0.00
NCV for brown coal (MJ/kg)	16.74	17.80	18.50	17.60	16.89	18.43	18.50	18.50	15.70
Lignite (1000 t)	40.00	1.20	0.60	0.30	0.10	0.00	0.00	0.00	0.00
NCV for lignite (MJ/kg)	10.90	12.00	12.10	11.60	10.50	11.20	11.50	11.50	11.50
Briquettes (1000 t)	2.90								
NCV for briquettes (MJ/kg)	16.74								
Gas work gas (1000000 m3)	4.90	1.50	3.43	2.84	0.39				
NCV for gas work gas (MJ/m3)	15.82	19.49	21.47	18.72	17.10				
Natural gas (1000000 m3)	124.30	98.20	151.20	192.70	204.80	235.90	278.70	232.00	193.90
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
Gasoline (1000 t)									
NCV for gasoline (MJ/kg)									
Petroleum coke (1000 t)	1.50								
NCV for petroleum coke (MJ/kg)	33.57								
Anthracite (1000 t)									
NCV for anthracite (MJ/kg)									
Solid Biomass-Wood (TJ) + characoal	0.00	0.00	0.00	129.80	213.50	558.30	559.20	573.70	572.20
Bio gass (TJ)				102.26	116.59	120.39	107.74	113.78	96.39
Total fuel consumption (TJ)	12,190.9	9,506.6	12,053.9	10,957.7	10,014.1	10,443.2	11,939.6	10,335.3	9,147.9
Emissions									
EF CO2 - petroleum (t/TJ)	73.30	73.30	73.30	73.30	73.30	73.30	73.30	73.30	73.30
EF CO2 - diesel (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - fuel oil (t/TJ)	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - anthracite (t/TJ)									
EF CO2 - brown coal (t/TJ)	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10
EF CO2 - lignite (t/TJ)	101.00	101.00	101.00	101.00	101.00	101.00	101.00	101.00	101.00
EF CO2 - briquettes (t/TJ)	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50
EF CO2 - gas works gas (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - gasoline (t/TJ)									
EF CO2 - sub bit coal (t/TJ)									
EF CO2 - petroleum coke (t/TJ)	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50
EF CO2 - anthracite (t/TJ)	98.30	98.30	98.30	98.30	98.30	98.30	98.30	98.30	98.30
EF CO2 - solid biomass wood (t/TJ)	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00
EF CO2 - landfill gas(t/TJ)	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
CO2 Emission (Gg)	854.65	640.93	789.25	690.73	614.15	639.86	722.20	633.52	565.07

Table A3-15: 1A4a– fuel consumption, NCV and emission factors, cont

CH4 emission- petroleum (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission- diesel (Gg)	0.04	0.05	0.06	0.03	0.02	0.01	0.01	0.01	0.01
CH4 emission-fuel oil (Gg)	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-LPG (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-antracite (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-brown coal (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-lignite (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-briquets (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-gas works gas (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-natural gas (Gg)	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.04	0.04
CH4 emission-gasoline (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-petroleum coke(Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-anthracite(Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CH4 emission-wood (Gg)	0.00	0.00	0.00	0.04	0.06	0.17	0.17	0.17	0.17
CH4 emission - landfill gas (Gg)				0.00	0.00	0.00	0.00	0.00	0.00
CH4 Emission (Gg)	0.10	0.07	0.09	0.11	0.12	0.22	0.23	0.23	0.22
N2O emission- petroleum (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission- diesel (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-fuel oil (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-LPG (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-antracite (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-brown coal (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-lignite (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-briquets (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-gas works gas (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-natural gas (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-gasoline (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-petroleum coke (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-anthracite (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission-wood (Gg)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N2O emission - landfill gas (Gg)				0.00	0.00	0.00	0.00	0.00	0.00
N2O Emission (Gg)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A3-16: 1A4b– fuel consumption, NCV and emission factors

Residential	1990	2000	2010	2015	2020	2021	2022	2023
Fuel consumption								
Fuel consumption - mobile								
Gasoline (1000 t)	4.00	12.10	8.20	7.50	7.60	7.80	7.50	7.90
NCV for gasoline (MJ/kg)	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
Fuel consumption - stationary								
Petroleum (1000 t)		1.60	0.90					
NCV for petroleum (MJ/kg)		43.96	43.96	43.96				
Light heating oil (1000 t)	215.90	231.50	138.80	84.50	58.20	42.30	56.10	52.80
NCV for light heating oil (MJ/kg)	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	48.70	8.10	10.40	4.30	0.00	0.00	0.00	0.00
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	97.90	51.90	72.20	47.60	40.90	41.00	37.50	31.80
NCV for LPG (MJ/kg)	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
Brown coal (1000 t)	123.10	12.00	6.10	1.20	1.70	1.50	1.10	1.00
NCV for brown coal (MJ/kg)	16.74	17.80	17.60	17.00	18.43	18.50	18.50	15.70
Lignite (1000 t)	207.30	15.00	9.40	7.00	4.30	4.00	3.10	2.30
NCV for lignite (MJ/kg)	10.90	12.00	11.60	10.50	11.20	11.50	11.50	11.50
Hard coal (1000 t)								
NCV for hard coal (MJ/kg)								
Anthracite (1000 t)								
NCV for anthracite (MJ/kg)								
Briquettes (1000 t)	6.10							
NCV for briquettes (MJ/kg)	16.74							
Gas work gas (1000000 m3)	24.40	9.90	7.20	0.19				
NCV for gas work gas (MJ/m3)	15.82	19.49	17.20	17.10				
Natural gas (1000000 m3)	230.00	496.60	732.90	540.00	584.80	627.00	580.20	542.80
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
Solid Biomass-Wood (TJ)	42,170.0	39,690.0	49,539.0	48,622.7	42,763.0	46,453.4	42,071.6	40,726.4
Charcoal (TJ)	0.00	0.00	154.00					
Total fuel consumption (TJ)	70,745.6	70,417.3	85,088.7	73,752.1	67,918.4	72,549.1	67,097.5	64,950.6
Residential								
Emissions i+ii								
EF CO2 - gasoline (t/TJ)	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - petroleum (t/TJ)	73.30	73.30	73.30	73.30	73.30	73.30	73.30	73.30
EF CO2 - diesel (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - fuel oil (t/TJ)	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - brown coal (t/TJ)-mrki	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10
EF CO2 - lignite (t/TJ)	101.00	101.00	101.00	101.00	101.00	101.00	101.00	101.00
EF CO2 -hard coal (t/TJ)-kameni	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60
EF CO2 - anthracite (t/TJ)	98.30	98.30	98.30	98.30	98.30	98.30	98.30	98.30
EF CO2 - briquettes (t/TJ)	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50
EF CO2 - gas work gas (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - solid biomass wood (t/TJ)	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00
EF CO2 - Charcoal (t/TJ)	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00
CO2 Emission (Gg)	6,751.88	6,393.72	7,703.87	6,948.26	6,266.73	6,720.49	6,178.24	5,977.83

Table A3-16: 1A4b– fuel consumption, NCV and emission factors, cont.

EF CH4 - gasoline (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - petroleum (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - diesel (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - fuel oil (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - LPG (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - brown coal (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 - lignite (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 - hard coal (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 - anthracite (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 - briquettes (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 - gas work gas (t/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - natural gas (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 -solid biomass wood (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 -Charcoal (kg/TJ)	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00
CH4 Emission (Mg)	14,155.3	12,230.9	15,167.1	14,760.7	12,992.2	14,099.0	12,776.8	12,364.5
EF N2O - gasoline (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - petroleum (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - diesel (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - fuel oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - brown coal (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - lignite (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - hard coal (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - anthracite (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - briquettes (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - gas work gas (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - solid biomass wood (kg/TJ)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
EF N2O - Charcoal (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
N2O Emission (Mg)	183.95	168.07	205.70	199.20	175.09	189.60	172.23	166.69

Table A3-17: 1A4c– fuel consumption, NCV and emission factors

Agriculture/forestry/fishing	1990	2000	2005	2010	2015	2020	2021	2022	2023
Fuel consumption									
Other kerosene (1000 t)	0.10								
NCV for other kerosene (MJ/kg)	43.94								
Diesel + light heating oil (1000 t)	232.60	237.60	197.40	200.10	182.60	193.40	192.00	197.90	198.30
NCV for diesel (MJ/kg)	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel consumption - mobile (TJ)	9,938.7	10,147.9	8,431.0	8,546.3	7,798.8	8,260.1	8,200.3	8,452.3	8,469.4
Fuel oil (1000 t)	12.30	13.40	4.70	4.40	2.10	0.00	0.00	0.00	0.00
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	4.40	2.60	2.70	2.70	2.50	2.70	2.70	2.30	2.40
NCV for LPG (MJ/kg)	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
Gas work gas (1000000 m3)									
NCV for gas work gas (MJ/m3)									
Natural gas (1000000 m3)	25.00	14.50	23.20	22.20	21.40	30.30	36.30	30.30	25.00
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.60	34.77	35.00	35.30	37.00
Fuel consumption - stationary (TJ)	1,550.7	1,153.5	1,104.3	1,058.2	942.1	1,180.1	1,397.1	1,177.4	1,037.5
Total fuel consumption (TJ)	11,489.4	11,301.4	9,535.3	9,604.5	8,740.9	9,440.2	9,597.4	9,629.7	9,506.9
Agriculture/forestry/fishing									
Emissions									
EF CO2 - gasoline (t/TJ)	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - other kerosene (t/TJ)	71.90	71.90	71.90	71.90	71.90	71.90	71.90	71.90	71.90
EF CO2 - diesel (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
CO2 emission (Gg) - mobile	736.45	751.96	624.73	633.28	577.89	612.07	607.64	626.32	627.58
EF CO2 - fuel oil (t/TJ)	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas work gas (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 emission (Gg) - stationary	98.97	77.03	66.86	64.02	55.47	67.09	79.26	66.81	58.99
Total CO2 emission (Gg)	835.42	828.99	691.59	697.30	633.36	679.17	686.91	693.13	686.58
EF CH4 - gasoline (kg/TJ)	140.00	140.00	140.00	140.00	140.00	140.00	140.00	140.00	140.00
EF CH4 - other kerosene (kg/TJ)	140.00	140.00	140.00	140.00	140.00	140.00	140.00	140.00	140.00
EF CH4 - diesel (kg/TJ)	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15	4.15
CH4 emission (Mg) - mobile	41.84	42.11	34.99	35.47	32.37	34.28	34.03	35.08	35.15
EF CH4 - fuel oil (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - LPG (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - gas work gas (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - natural gas (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CH4 emission (Mg) - stationary	10.22	8.46	6.47	6.18	5.13	5.90	6.99	5.89	5.19
Total CH4 emission (Mg)	52.07	50.57	41.45	41.64	37.50	40.18	41.02	40.96	40.34
EF N2O - gasoline (kg/TJ)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
EF N2O - other kerosene (kg/TJ)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
EF N2O - diesel (kg/TJ)	28.60	28.60	28.60	28.60	28.60	28.60	28.60	28.60	28.60
N2O emission (Mg) - mobile	284.12	290.23	241.13	244.42	223.05	236.24	234.53	241.74	242.22
EF N2O - fuel oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas work gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O emission (Mg) - stationary	0.40	0.38	0.20	0.19	0.14	0.12	0.14	0.12	0.10
Total N2O emission (Mg)	284.53	290.61	241.33	244.62	223.18	236.36	234.67	241.85	242.33

Table A3-18: 1B1 –coal production data and CH4 emissions

		STEP 1										
		A	B	C	D	E						
		Amount of Coal	Emission Factor	Methane	Conversion	Methane						
		Produced		Emissions	Factors	Emissions						
		(millions t)	(m ³ CH ₄ / t)	(millions m ³)	(0.67 Gg CH ₄ /million m ³)	(Gg CH ₄)						
				C=(AxB)		E=(Cx D)						
Underground Mines	Mining	0.1737	18	3.13	0.67	2.09						
	Post-Mining	0.1737	2.5	0.43	0.67	0.29						
Surface Mines	Mining			0.00	0.67	0.00						
	Post-Mining			0.00	0.67	0.00						
		Total										
		2.39										
ZA CRF		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Fuel produced	Mt	0.173700000	0.154797	0.120274	0.1151	0.103205	0.0822	0.0663	0.0485	0.0508	0.0153	NO
Emission												
CH ₄ , Gg	Mining	2.094822	1.86685182	1.45050444	1.388106	1.2446523	0.991332	0.799578	0.58491	0.612648	0.184518	NO
	Post-Mining	0.2909475	0.25928498	0.20145895	0.1927925	0.17286838	0.137685	0.111053	0.081238	0.08509	0.025628	NO
	TOTAL	2.3857695	2.1261368	1.65196339	1.5808985	1.41752068	1.129017	0.910631	0.666148	0.697738	0.210146	NO

Table A3-19: 1B2a –activity data and emission factors for oil

1. B. 2. a. Oil				1990	2000	2005	2010	2015	2020	2021	2022	2023
1. Exploration	Unit	Emission source	IPCC Code									
ACTIVITY DATA												
Well Drilling	10 ³ m ³ total oil production		1.B.2.a.ii	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
Well Testing	10 ³ m ³ total oil production		1.B.2.a.ii	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
Well Servicing	10 ³ m ³ total oil production		1.B.2.a.ii	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
EMISSION FACTOR												
CO ₂												
Well Drilling	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Well Testing	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03
Well Servicing	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06
CH ₄												
Well Drilling	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05
Well Testing	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05
Well Servicing	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
N ₂ O												
Well Drilling	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	ND	ND	ND	ND	ND	ND	ND	ND	ND
Well Testing	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08
Well Servicing	Gg/10 ³ m ³ total oil production	Flaring and Venting	1.B.2.a.ii	ND	ND	ND	ND	ND	ND	ND	ND	ND
2. Production	Unit	Emission source	IPCC Code									
ACTIVITY DATA												
Conventional oil	10 ³ m ³ total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
Conventional oil	10 ³ m ³ total oil production	Venting	1.B.2.a.i	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
Conventional oil	10 ³ m ³ total oil production	Flaring	1.B.2.a.ii	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
EMISSION FACTOR												
CO ₂												
Conventional oil	Gg/10 ³ m ³ total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
Conventional oil	Gg/10 ³ m ³ total oil production	Venting	1.B.2.a.i	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05
Conventional oil	Gg/10 ³ m ³ total oil production	Flaring	1.B.2.a.ii	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02
CH ₄												
Conventional oil	Gg/10 ³ m ³ total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	1.80E-03	1.80E-03	1.80E-03	1.80E-03	1.80E-03	1.80E-03	1.80E-03	1.80E-03	1.80E-03
Conventional oil	Gg/10 ³ m ³ total oil production	Venting	1.B.2.a.i	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04
Conventional oil	Gg/10 ³ m ³ total oil production	Flaring	1.B.2.a.ii	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05
N ₂ O												
Conventional oil	Gg/10 ³ m ³ total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conventional oil	Gg/10 ³ m ³ total oil production	Venting	1.B.2.a.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conventional oil	Gg/10 ³ m ³ total oil production	Flaring	1.B.2.a.ii	6.4E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07
3. Transport	Unit	Emission source	IPCC Code									
ACTIVITY DATA												
Pipelines	10 ⁶ m ³ total oil transported by pipelines	All	1.B.2.a.iii.3	9948.84	5552.33	8244.19	10390.70	9490.70	10759.30	10648.84	10726.74	7345.24
Tanker Trucks and Rail	10 ³ m ³ total oil transported by tanker...	Venting	1.B.2.a.i	943.49	275.30	273.51	124.13	50.01066	54.994852	28.874954	40.512385	30.152603
Natural gas liquids transport-LPG	10 ³ m ³ LPG	All	1.B.2.a.iii.3									
EMISSION FACTOR												
CO ₂												
Pipelines	Gg/10 ³ m ³ total oil transported	All	1.B.2.a.iii.3	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07	4.90E-07
Tanker Trucks and Rail	Gg/10 ³ m ³ total oil transported	Venting	1.B.2.a.i	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06
CH ₄												
Pipelines	Gg/10 ³ m ³ total oil transported	All	1.B.2.a.iii.3	5.40E-06	5.40E-06	5.40E-06	5.40E-06	5.40E-06	5.40E-06	5.40E-06	5.40E-06	5.40E-06
Tanker Trucks and Rail	Gg/10 ³ m ³ total oil transported	Venting	1.B.2.a.i	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05
N ₂ O												
Pipelines	Gg/10 ³ m ³ total oil transported	All	1.B.2.a.iii.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tanker Trucks and Rail	Gg/10 ³ m ³ total oil transported	Venting	1.B.2.a.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Refining/Storage	Unit	Emission source	IPCC Code									
ACTIVITY DATA												
Oil Refining	10 ³ m ³ oil refined	All	1.B.2.a.iii.4	7977.5581	6120.6977	5803.6047	3769.186	3328.372	2311.5116	2164.535	2043.953	1923.140
EMISSION FACTOR												
CO ₂												
Oil Refining	Gg/10 ³ m ³ total oil refined	All	1.B.2.a.iii.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
CH ₄												
Oil Refining	Gg/10 ³ m ³ total oil refined	All	1.B.2.a.iii.4	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05	2.18E-05
N ₂ O												
Oil Refining	Gg/10 ³ m ³ total oil refined	All	1.B.2.a.iii.4	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table A3-20: 1B2b –activity data and emission factors for natural gas

1. B. 2. b. Natural Gas				1990	2000	2005	2010	2015	2020	2021	2022	2023
1. Exploration	Unit	Emission source	IPCC Code									
ACTIVITY DATA												
Well Drilling	10 ⁶ m ³ total natural gas production		1.B.2.a.ii	1982.30	1638.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
Well Testing	10 ⁶ m ³ total natural gas production		1.B.2.a.ii	1982.30	1638.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
Well Servicing	10 ⁶ m ³ total natural gas production		1.B.2.a.ii	1982.30	1638.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
EMISSION FACTOR												
CO ₂												
Well Drilling	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
Well Testing	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
Well Servicing	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
CH ₄												
Well Drilling	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
Well Testing	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
Well Servicing	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
N ₂ O												
Well Drilling	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	ND	ND	ND	ND	ND	ND	ND	ND	ND
Well Testing	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	IE	IE	IE	IE	IE	IE	IE	IE	IE
Well Servicing	Gg/10 ⁶ m ³ total natural gas production	Flaring and Venting	1.B.2.a.ii	ND	ND	ND	ND	ND	ND	ND	ND	ND
2. Production												
ACTIVITY DATA												
Gas production	10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.2	1982.30	1658.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
Gas production	10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	1982.30	1658.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
EMISSION FACTOR												
CO ₂												
Gas production	Gg/10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.2	4.80E-05	4.80E-05	4.80E-05	4.80E-05	4.80E-05	4.80E-05	4.80E-05	4.80E-05	4.80E-05
Gas production	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	1.20E-03	1.20E-03	1.20E-03	1.20E-03	1.20E-03	1.20E-03	1.20E-03	1.20E-03	1.20E-03
CH ₄												
Gas production	Gg/10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.2	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03	1.34E-03
Gas production	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	7.60E-07	7.60E-07	7.60E-07	7.60E-07	7.60E-07	7.60E-07	7.60E-07	7.60E-07	7.60E-07
N ₂ O												
Gas production	Gg/10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gas production	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	2.1E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08
3. Processing												
ACTIVITY DATA												
Default weighted total	10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.3	1982.30	1658.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
Default weighted total	10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	1982.30	1658.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
Default weighted total	10 ⁶ m ³ gas produced	Raw CO ₂ venting	1.B.2.b.i	1982.30	1658.50	2283.40	2727.20	1780.50	849.00	745.90	745.00	691.30
EMISSION FACTOR												
CO ₂												
Default weighted total	Gg/10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.3	1.66E-04	1.66E-04	1.66E-04	1.66E-04	1.66E-04	1.66E-04	1.66E-04	1.66E-04	1.66E-04
Default weighted total	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03	3.00E-03
Default weighted total	Gg/10 ⁶ m ³ gas produced	Raw CO ₂ venting	1.B.2.b.i	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CH ₄												
Default weighted total	Gg/10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.3	5.90E-04	5.90E-04	5.90E-04	5.90E-04	5.90E-04	5.90E-04	5.90E-04	5.90E-04	5.90E-04
Default weighted total	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	2.00E-06	2.00E-06	2.00E-06	2.00E-06	2.00E-06	2.00E-06	2.00E-06	2.00E-06	2.00E-06
Default weighted total	Gg/10 ⁶ m ³ gas produced	Raw CO ₂ venting	1.B.2.b.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
N ₂ O												
Default weighted total	Gg/10 ⁶ m ³ gas produced	Fugitives	1.B.2.b.iii.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Default weighted total	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	3.3E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08
Default weighted total	Gg/10 ⁶ m ³ gas produced	Raw CO ₂ venting	1.B.2.b.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Transmission and storage												
ACTIVITY DATA												
Transmission	10 ⁶ m ³ marketable gas	Fugitives	1.B.2.b.iii.4	2686.6	2704.8	2909.9	3241.5	2519.2	3040.7	2905.9	2529.7	2589.9
Transmission	10 ⁶ m ³ marketable gas	Venting	1.B.2.b.i	2686.6	2704.8	2909.9	3241.5	2519.2	3040.7	2905.9	2529.7	2589.9
Storage	10 ⁶ m ³ marketable gas	All	1.B.2.b.iii.4	2686.6	2704.8	2909.9	3241.5	2519.2	3040.7	2905.9	2529.7	2589.9
EMISSION FACTOR												
CO ₂												
Transmission	Gg/10 ⁶ m ³ marketable gas	Fugitives	1.B.2.b.iii.4	8.80E-07	8.80E-07	8.80E-07	8.80E-07	8.80E-07	8.80E-07	8.80E-07	8.80E-07	8.80E-07
Transmission	Gg/10 ⁶ m ³ marketable gas	Venting	1.B.2.b.i	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06
Storage	Gg/10 ⁶ m ³ marketable gas	All	1.B.2.b.iii.4	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07
CH ₄												
Transmission	Gg/10 ⁶ m ³ marketable gas	Fugitives	1.B.2.b.iii.4	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04	2.73E-04
Transmission	Gg/10 ⁶ m ³ marketable gas	Venting	1.B.2.b.i	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04
Storage	Gg/10 ⁶ m ³ marketable gas	All	1.B.2.b.iii.4	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05
N ₂ O												
Transmission	Gg/10 ⁶ m ³ marketable gas	Fugitives	1.B.2.b.iii.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
Transmission	Gg/10 ⁶ m ³ marketable gas	Venting	1.B.2.b.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
Storage	Gg/10 ⁶ m ³ marketable gas	All	1.B.2.b.iii.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
5. Distribution of Natural Gas												
ACTIVITY DATA												
Gas distribution	10 ⁶ m ³ of utility sales (consumption of natural gas in 1A4-Other sectors)	All	1.B.2.a.iii.5	379.3	609.3	862.2	944.6	766.2	851	942	842.5	761.7
EMISSION FACTOR												
CO ₂												
Gas distribution	Gg/10 ⁶ m ³ of utility sales	All	1.B.2.a.iii.5	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05
CH ₄												
Gas distribution	Gg/10 ⁶ m ³ of utility sales	All	1.B.2.a.iii.5	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03	1.10E-03
N ₂ O												
Gas distribution	Gg/10 ⁶ m ³ of utility sales	All	1.B.2.a.iii.5	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table A3-21: 1B2c –activity data and emission factors for venting and flaring

1. B. 2. a. Oil				1990	2000	2005	2010	2015	2020	2021	2022	2023	
2. Production		Unit	mission source	IPCC Code									
ACTIVITY DATA													
	Conventional oil	10 ³ m ³ total oil production	Flaring	1.B.2.a.ii	3135.12	1411.51	1100.00	837.67	779.30	734.65	702.91	679.07	657.79
EMISSION FACTOR													
N2O													
	Conventional oil	Gg/10 ³ m ³ total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Conventional oil	Gg/10 ³ m ³ total oil production	Venting	1.B.2.a.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Conventional oil	Gg/10 ³ m ³ total oil production	Flaring	1.B.2.a.ii	0.00000064	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07
EMISSIONS													
N2O													
	Conventional oil	Gg	Fugitives (Onshore)	1.B.2.a.iii.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Conventional oil	Gg	Venting	1.B.2.a.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Conventional oil	Gg	Flaring	1.B.2.a.ii	0.002	0.001	0.001	0.001	0.000	0.000	0.0004499	0.0004346	0.0004210
3. Transport		Unit	mission source	IPCC Code									
ACTIVITY DATA										2020	2021	2022	2023
	Pipelines	10 ⁶ m ³ total oil transported by pipelines	All	1.B.2.a.iii.3	9948.84	5552.33	8244.19	10390.70	9490.70	10759.30	10648.84	10726.74	7345.24
	Tanker Trucks and Rail Cars	10 ³ m ³ total oil transported by tanker...	Venting	1.B.2.a.i	943.49	275.30	273.51	124.13	50.01	54.99	28.87	40.51	30.15
	Natural gas liquids transport-LPG	10 ³ m ³ LPG	All	1.B.2.a.iii.3									
EMISSION FACTOR													
CO2													
	Tanker Trucks and Rail Cars	Gg/10 ³ m ³ total oil transported	Venting	1.B.2.a.i	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06
	Tanker Trucks and Rail Cars	Gg/10 ³ m ³ total oil transported	Venting	1.B.2.a.i	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05
	Tanker Trucks and Rail Cars	Gg/10 ³ m ³ total oil transported	Venting	1.B.2.a.i	NA	NA	NA	NA	NA	NA	NA	NA	NA

1. B. 2. c. 2 ii Venting and Flaring - Gas				1990	2000	2010	2015	2020	2021	2022	2023	
2. Production		Unit	mission source	IPCC Code								
ACTIVITY DATA												
	Gas production	10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	1982.30	1658.50	2727.20	1780.50	849.00	745.90	745.00	691.30
EMISSION FACTOR												
	Gas production	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	2.1E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08
3. Processing		Unit	mission source	IPCC Code								
ACTIVITY DATA												
	Default weighted total	10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	1982.30	1658.50	2727.20	1780.50	849.00	745.90	745.00	691.30
EMISSION FACTOR												
N2O												
	Default weighted total	Gg/10 ⁶ m ³ gas produced	Flaring	1.B.2.b.ii	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08
4. Transmission and storage		Unit	mission source	IPCC Code								
ACTIVITY DATA												
	Transmission	10 ⁶ m ³ marketable gas	Fugitives	1.B.2.b.iii.4	2686.6	2704.8	3241.5	2519.2	3040.7	2905.9	2529.7	2589.9
EMISSION FACTOR												
N2O												
	Transmission	Gg/10 ⁶ m ³ marketable gas	Fugitives	1.B.2.b.iii.4	NA	NA	NA	NA	NA	NA	NA	NA
5. Distribution of Natural Gas		Unit	mission source	IPCC Code								
ACTIVITY DATA												
	Gas distribution	10 ⁶ m ³ of utility sales (consumption of natural gas in 1A4-Other sectors)	All	1.B.2.a.iii.5	379.3	609.3	944.6	766.2	851	942	842.5	761.7
EMISSION FACTOR												
N2O												
	Gas distribution	Gg/10 ⁶ m ³ of utility sales	All	1.B.2.a.iii.5	ND	ND	ND	ND	ND	ND	ND	ND

3.2. LULUCF sector - List of implemented and planned projects

Table A3.2-1: Implemented and planned projects in LUULCF sector

Project	Status	Main objectives
Improving Croatian reporting in Land use, Land Use change and Forestry (LULUCF) sector in the First commitment period of the Kyoto Protocol (abbreviated LULUCF 1).	Implemented (2014-2015)	The objective of the project was to comply with requirements set in the Saturday paper in 2012 regarding the traceability and identification of lands that were subject of forest activities (lands under the Article 3.3 and Article 3.4 of the KP). The main tasks of the project were: (i) identification of areas where an increase of forests occurred prior to 1990, which were a result of man's decision to support the natural spread of forests on the categories of land that haven't been forests before; (ii) identification of areas where an increase of forests occurred after 1990, which were a result of man's decision to support the natural spread of forests on the categories of land that haven't been forests before; (iii) identification of areas where an increase of forests occurred after the 1990, which were not the result of a man's decision to support the natural spread of forests to categories of land that haven't been forests before; (iv) identification of land that were subject of deforestation in period 1990-2014; The main outcome was the application of Approach 3 to identify and trace lands that are converted to and from forest lands. Registration system of LUC to/from forest land has been kept after the end of the project.
Upgrading the Croatian National System for the reporting of greenhouse gas emissions for the implementation of the Decision No 529/2013/EU of the European Parliament and of the Council of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities (abbreviated: LULUCF 2)	Implemented (2014-2015)	The main objective of the project was to improve national NIR reporting estimates of the emissions/removals from LULUCF sector. Project activities referred to the setting the preconditions for the development of a future land cover and land use information system as well as improvements in reporting system procedures.
The analysis of the national forest inventory data for fulfilling obligations under the UN Framework Convention on Climate Change and the Kyoto Protocol.	Implemented (2016)	The objective of the project was to analyse and discuss the importance and usability of data collected during National Forest Inventories (NFI) in fulfilment of national obligations set under the UN Framework Convention on climate change, Kyoto Protocol and according to the Decision No 529/2013/EU of the European Parliament and of the Council. One of the main outcomes was the international workshop that had been organized to exchange information, experience and knowledge among experts from EU member states on these data issues for the purpose of future planning in forestry sector and reporting from LULUCF sector.
Calculation of greenhouse gas emissions due to natural disturbances under the provisions of Decision 2/CMP.7	Implemented (2016-2017)	The main goal of the project was to determine types of the natural disturbances for the forests in Croatia and to define background level (BL) and margin level (ML) in areas under the forest management activity (FM) and afforestation activity (A).
Application of the IPCC Tier 2 method for the estimation of the carbon stock change in dead wood pool on the deforested areas in Republic of Croatia.	Implemented (2018)	The use of data from the national forest inventory databases (abbreviated: CRONFI) to perform the estimation of carbon stock changes in the deadwood pool using a higher level (Tier 2) of the IPCC methodology for the forest land areas that had been converted to perennial cropland and settlements (areas subject of deforestation).

Project	Status	Main objectives
Application of the IPCC Tier 2 method for the estimation of the greenhouse gases emissions from forest fires.	Implemented (2019-2020)	The assessment of the biomass structure on the burnt areas in order to develop national specific values of the M_B and C_f factors for the application of a higher level (Tier 2) of the IPCC methodology for calculating GHG emissions as a result of biomass burning in Croatia.
Croatian Land Information System (abbreviated: CROLIS).	Ongoing (2020-2024)	The aim of the project is a development of harmonized land monitoring system that enables integration and processing of Land Cover (LC), Land Use (LU) and land management data from different data sources and its use for a variety of purposes.
New uncertainty estimates in LULUCF sector	Implemented (2021-2022)	The aim of the project was to perform new uncertainty estimates in LULUCF sector.
Defining preconditions for applying IPCC higher Tiers in the estimation of GHG removals/emissions in Land use, land use change and forestry (LULUCF) sector (LULUCF 3)	Implemented (2020-2022)	The aim of the project was an examination and the review of the existing systems for determining the content of carbon stocks in biomass in the category of Forest land as well as in the categories of land that have been converted into forest land (Cropland and Grassland). Also, it is envisaged to define preconditions for the development of the appropriate models on national level for the future reporting.
Strengthening the capacity to make projections in the LULUCF sector (LULUCF projections project).	Implemented (2021-2023)	The aim of the project was to define the basic settings and preconditions on national level for the preparation of projections of emissions / removals by sink in the LULUCF sector (period up to 2030, 2050) and related activities.
Determining the deadwood pool carbon stocks based on new surveys at 2006 deadwood sampling sites.	Ongoing (2022-2024)	Through this project the carbon stock change in dead wood pool in category Forest land remaining Forest land needs to be determined.
Conducting analysis to determine the possibility of increasing removals by sinks and reducing emissions in LULUCF sector.	Implemented (2021-2024)	Defining management practices that will contribute to reducing emissions/increasing removals in Forest land, Grassland and Cropland categories of land.
Develop country-specific factors for BEFs.	Planned (in the long-term)	Develop country specific BEFs for Forest land category.
Establishing a reporting system for hard wood products (HWP) (abbreviated: CRO-WOODS).	Ongoing	The aim of the project is to define preconditions for the development of an information system on wood products (monitoring of the entire production cycle, final product production, export) and to define the national factors needed to calculate carbon stock changes in wood products using the Tier 3 level of IPCC methodology for the NIR report purposes in the part related to the calculation for HWPs.
Tier 3 application for CSC in dead wood in deforested areas.	Planned (in the long term)	The aim of this project is to develop model to apply Tier 3 in estimating CSC in DW pool on deforested areas in Croatia using the CRONFI data.

3.3. QA/QC checks conducted by EEA

Below is evidence of the QA / QC actions carried out at EU level by the EEA after the NIR has been submitted to EK.

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Task:	Automatic quality assessment
Referred file:	HRV_2021_1_04032021_1525494777527459380447287.xml
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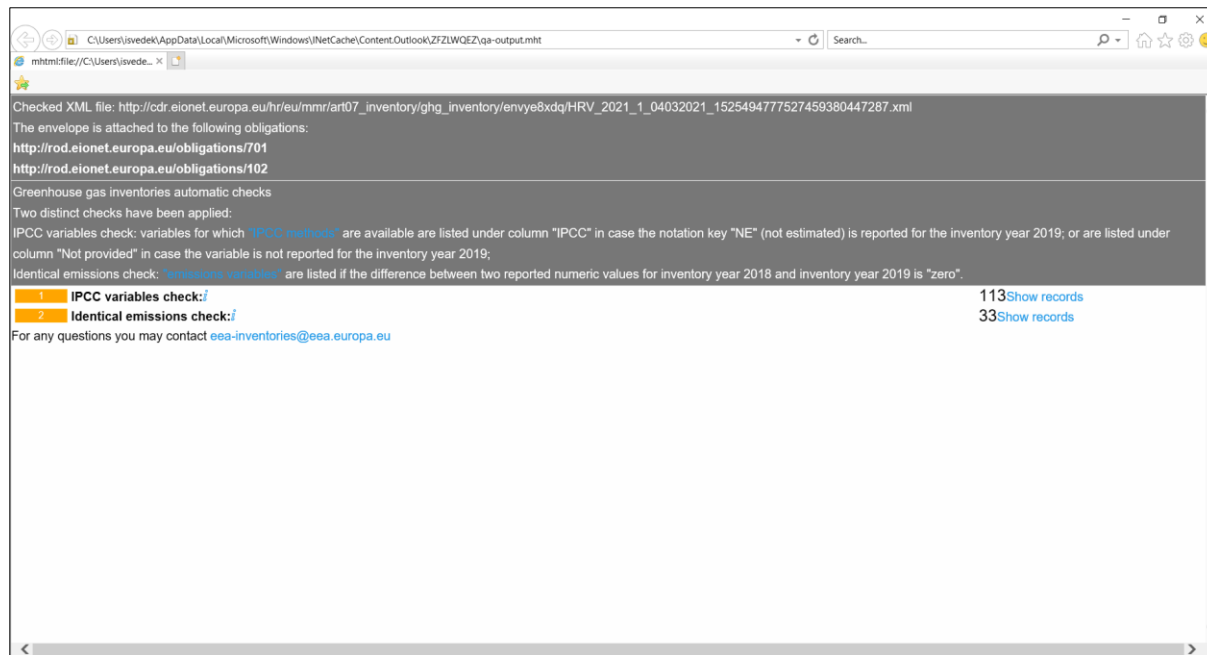
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XML Schema validation

OK
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The file was validated against http://schemas.unfccc.int/inventoryreporting/simple1_9.xsd

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Annex 4: The national energy balance for the most recent inventory year

Table A4-1: National Energy balance for 2023, natural units

ENERGY BALANCE 2023	Anthracite	Hard coal	Brown coal	Lignite	Crude oil	Natural gas
in PJ	100 t	100 t	100 t	100 t	100 t	100 m³
Production					565.7	491.3
Import	4.7	600.4	2.7	2.3	1334.6	2988.7
Export					286.3	1088.2
Import-processing						
Export-processing						
Stock change		-54.8			51.5	118.1
Reserves						
Energy supplied	4.7	545.6	2.7	2.3	1485.7	2598.9
Production						
Hydro power plants						
- small RPP						
Wind power plants						
Solar power plants						
Geothermal power plants						
Thermal power plants						
public cogeneration plants						
public heating plants						
industrial cogeneration plants						
- in refineries						
- in gas production						
industrial heating plants						
Petroleum refineries						
NGL plant						
Coke plant						
Gas works						
Total production						
Transformation sector						
Hydro power plants						
- small RPP						
Wind power plants						
Solar power plants						
Geothermal power plants						
Thermal power plants		476.7				6.2
public cogeneration plants						688.3
public heating plants						43.7
industrial cogeneration plants						238.8
- in refineries						33.6
- in gas production						51.7
industrial heating plants						63.2
Petroleum refineries					1653.9	75.1
NGL plant					31.8	3.7
Coke plant						
Gas works						
Total transformation sector		476.7			1485.7	1287.8
Energy sector own use						
Oil and gas extraction						37.3
Coal production						
Electric energy supply industry						
Hydro power plants						
Thermal power plants						
public cogeneration plants						
industrial cogeneration plants						
Wind power						
Petroleum refineries						30.7
NGL plant						42.4
Gas works						
Total energy sector own use						138.4
Losses						43.9
Final energy demand	4.7	68.9	2.7	2.3		1128.6
Non energy use						123.6
Energy sector						
Petroleum chemical industry						125.6
Other industry						
Construction						
Transport						
Agriculture						
Energy consumption	4.7	68.9	2.7	2.3		1005.0
Industry	4.7	68.9	1.7			238.8
Iron and steel	4.7					16.8
Non-ferrous metals						11.9
Non-metallic minerals						47.6
Chemical			0.1			9.3
Construction materials		68.9	1.6			63.2
Pulp and paper						4.8
Food production						43.3
Not elsewhere specified						37.5
Transport						3.3
Rail						
Road						
Air						
- international						
- domestic						
Sea and River						
Public transport						3.3
Not elsewhere specified						
Other sectors			1.0	2.3		784.7
Households			1.0	2.3		542.8
Services						193.9
Agriculture						25.0
Construction						

ENERGY BALANCE 2023	Hydro energy	Fuel wood	Wind energy	Solar energy	Geothermal energy	Landfill gas	Biofuels	Other biomass
<i>natural units</i>	TJ	103 m3	TJ	TJ	TJ	103 m3	103 t	TJ
Production	76163.8	4549.7	23884.0	4503.3	607.3	177424.9	0.9	22861.3
Import		127.3						1480.3
Export		419.6					0.4	5077.6
Import-processing								
Export-processing								
Stock change							0.0	-63.7
Bunkers								
Energy supplied	76163.8	4257.4	23884.0	4503.3	607.3	177424.9	0.5	19200.3
Production								
hydro power plants								
- small HPP								
Wind power plants								
Solar power plants								
Geothermal power plants								
thermal power plants								
public cogeneration plants								
public heating plants								
industrial cogeneration plants								
- in refineries								
- in gas production								
Industrial heating plants								
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total production								
Transformation sector								
hydro power plants	76163.8							
- small HPP	1613.2							
Wind power plants			23884.0					
Solar power plants				3814.6				
Geothermal power plants					432.9			
thermal power plants						18460.5		
public cogeneration plants						151930.4		12916.9
public heating plants								102.7
industrial cogeneration plants						7034.0		
- in refineries								
- in gas production								
Industrial heating plants								122.6
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total transformation sector	76163.8		23884.0	3814.6	432.9	177424.9		13142.2
Energy sector own use								
Oil and gas extraction								
Coal production								
Electric energy supply industry								
hydro power plants								
thermal power plants								
public cogeneration plants								
industrial cogeneration plants								
Wind power								
Petroleum refineries								
NGL-plant								
Gas works								
Total energy sector own use								
Losses								
Final energy demand		4257.4		688.7	174.4		0.5	6058.1
Non energy use								
Energy sector								
Petrochemical industry								
Other industry								
Construction								
Transport								
Agriculture								
Energy consumption		4257.4		688.7	174.4		0.5	6058.1

ENERGY BALANCE 2023	Coke oven coke	Liquefied petroleum	Unleaded motor	Standard motor	Petroleum	Jet fuel	Diesel oil	Light heating oil	Low sulphur fuel oil	Standard fuel oil
<i>natural units</i>	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t
Production		147.0	515.1			172.0	761.7	115.5	164.8	46.6
Import	27.6	119.7	245.3	0.5	1.1	38.2	2120.5	21.5	0.2	
Export		173.4	230.0			1.1	799.7	16.7	149.8	15.2
Import-processing										
Export-processing										
Stock change	0.8	1.8	2.4			-10.3	69.9		-1.0	4.7
Bunkers							16.1		7.2	
Energy supplied	28.4	95.1	532.8	0.5	1.1	198.8	2136.3	120.3	7.0	36.1
<i>Production</i>										
hydro power plants										
– small HPP										
Wind power plants										
Solar power plants										
Geothermal power plants										
thermal power plants										
public cogeneration plants										
public heating plants										
industrial cogeneration plants										
– in refineries										
– in gas production										
Industrial heating plants										
Petroleum refineries		121.2	515.1			172.0	761.7	115.5	164.8	46.6
NGL-plant		25.8								
Coke plant										
Gas works										
Total production		147.0	515.1			172.0	761.7	115.5	164.8	46.6
<i>Transformation sector</i>										
hydro power plants										
– small HPP										
Wind power plants										
Solar power plants										
Geothermal power plants										
thermal power plants								1.4		
public cogeneration plants										
public heating plants								2.2	1.3	
industrial cogeneration plants										27.0
– in refineries										27.0
– in gas production										
Industrial heating plants										7.2
Petroleum refineries										
NGL-plant										
Coke plant										
Gas works										
Total transformation sector								3.6	1.3	34.2
<i>Energy sector own use</i>										
Oil and gas extraction										
Coal production										
Electric energy supply industry										
hydro power plants										
thermal power plants										
public cogeneration plants										
industrial cogeneration plants										
Wind power										
Petroleum refineries										0.8
NGL-plant										
Gas works										
Total energy sector own use										0.8
<i>Losses</i>										
Final energy demand	28.4	95.1	532.8	0.5	1.1	198.8	2136.3	116.7	5.7	1.1
<i>Non energy use</i>										
Energy sector										
Petrochemical industry										
Other industry										
Construction										
Transport										
Agriculture										
Energy consumption	28.4	95.1	532.8	0.5	1.1	198.8	2136.3	116.7	5.7	1.1

ENERGY BALANCE 2023									
<i>natural units</i>	Naphta	White spirit	Bitumen	Other oils	Lubricants	Petroleum coke	Etan	Other derivatives	Refinery gas
	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t
Production	25.1			6.8		20.5		159.1	94.8
Import		5.3	166.4	48.7	6.4	145.9			
Export	20.3	2.3	2.4	15.4	0.2			134.8	
Import-processing									
Export-processing									
Stock change	1.3			0.6				-22.5	
Bunkers									
Energy supplied	6.1	3.0	164.0	40.7	6.2	166.4		1.8	94.8
<i>Production</i>									
hydro power plants									
- small HPP									
Wind power plants									
Solar power plants									
Geothermal power plants									
thermal power plants									
public cogeneration plants									
public heating plants									
industrial cogeneration plants									
- in refineries									
- in gas production									
Industrial heating plants									
Petroleum refineries	12.1			6.8		20.5		159.1	94.8
NGL-plant	13.0								
Coke plant									
Gas works									
Total production	25.1			6.8		20.5		159.1	94.8
<i>Transformation sector</i>									
hydro power plants									
- small HPP									
Wind power plants									
Solar power plants									
Geothermal power plants									
thermal power plants									
public cogeneration plants									
public heating plants									
industrial cogeneration plants									17.1
- in refineries									17.1
- in gas production									
Industrial heating plants									
Petroleum refineries	6.1								
NGL-plant									
Coke plant									
Gas works									
Total transformation sector	6.1								17.1
<i>Energy sector own use</i>									
Oil and gas extraction									
Coal production									
Electric energy supply industry									
hydro power plants									
thermal power plants									
public cogeneration plants									
industrial cogeneration plants									
Wind power									
Petroleum refineries						20.5			77.7
NGL-plant									
Gas works									
Total energy sector own use						20.5			77.7
<i>Losses</i>									
Final energy demand	0.0	3.0	164.0	40.7	6.2	145.9		1.8	0.0
<i>Non energy use</i>		3.0	164.0	40.4	6.2			1.8	
Energy sector				2.0					
Petrochemical industry					0.1			1.8	
Other industry		3.0	20.3	9.8	6.1				
Construction			143.7	1.5					
Transport				26.0					
Agriculture				1.1					
Energy consumption	0.0			0.3		145.9		0.0	0.0

ENERGY BALANCE 2023	Refinery		Gas works		Steam and	Industrial
<i>natural units</i>	semiproducts	Additives	gas	Electricity	hot water	waste, non
	103 t	103 t	103 m3	GWh	TJ	TJ
Production				17563.9	23366.5	2069.5
Import	544.6	47.8		5670.8		
Export				4093.1		
Import-processing						
Export-processing						
Stock change	-61.3	-0.9				
Bunkers						
Energy supplied	483.3	46.9		19141.6	23366.5	2069.5
<i>Production</i>						
hydro power plants				8248.1		
– small HPP				174.7		
Wind power plants				2586.5		
Solar power plants				413.1		
Geothermal power plants				20.6		
thermal power plants				1407.5		
public cogeneration plants				4611.3	12392.4	
public heating plants					1489.0	
industrial cogeneration plants				276.8	6501.0	
– in refineries				64.5	2910.0	
– in gas production				120.9	716.0	
Industrial heating plants					2328.0	
Petroleum refineries						
NGL-plant						
Coke plant						
Gas works						
Total production				17563.9	22710.4	
<i>Transformation sector</i>						
hydro power plants						
– small HPP						
Wind power plants						
Solar power plants						
Geothermal power plants						
thermal power plants						
public cogeneration plants						
public heating plants						
industrial cogeneration plants						
– in refineries						
– in gas production						
Industrial heating plants						
Petroleum refineries	483.3	46.9				
NGL-plant						
Coke plant						
Gas works						
Total transformation sector	483.3	46.9				
<i>Energy sector own use</i>						
Oil and gas extraction				121.7	400.0	
Coal production					300.8	
Electric energy supply industry				15.1		
hydro power plants				194.9		
thermal power plants				132.4		
public cogeneration plants				330.5	1953.7	
industrial cogeneration plants						
Wind power				14.6		
Petroleum refineries				171.1	2990.0	
NGL-plant				45.3	316.1	
Gas works						
Total energy sector own use				1025.6	5960.6	
Losses				1812.6	1673.8	
Final energy demand				16303.4	15732.1	2069.5
<i>Non energy use</i>						
Energy sector						
Petrochemical industry						
Other industry						
Construction						
Transport						
Agriculture						
Energy consumption				16303.4	15732.1	2069.5

Table A4-3 Industry analysis balance for 2023, energy units, cont.

ENERGY CONSUMPTION		Industrial cogenerations				Industrial heating plants	Own use (production of oil and gas)	Own use (refineries)	Own use (biogas production)	Industry									Commercial sector
		Rafineries	Production of oil and gas	Other sectors	Total					Total	Iron and Steel	Non-Ferrous metals	Non-Metallic Minerals	Chemicals	Construction	Paper	Food	Other	
Anthracite					0.0					4.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coking coal (kameni ugljen)	10 ³ t				0.0					68.9	0.0	0.0	0.0	0.0	68.9	0.0	0.0	0.0	0.0
Sub-Bituminous Coal (Mrki ugljen)	10 ³ t				0.0					1.7	0.0	0.0	0.0	0.1	1.6	0.0	0.0	0.0	0.0
Lignite	10 ³ t				0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Natural gas	10 ⁶ m ³				0.0		151.4	86.0		401.0	16.9	11.9	48.1	51.1	63.2	53.4	113.1	43.3	193.9
Wood	10 ³ m ³				0.0					31.0	0.1	0.0	0.0	0.0	1.3	3.7	1.6	24.3	12.2
Biogas	TJ				0.0				37.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.4
Wood waste	TJ				0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	206.6
Briqueti ugljena	TJ				0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.6
Coke oven coke	TJ				0.0					0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Liquified petroleum gas	TJ				0.0					2919.7	53.7	0.0	0.7	0.2	2208.2	53.5	255.9	347.5	462.4
Motor Gasoline	10 ³ t				0.0					2069.5	50.0	0.0	0.0	0.0	2019.5	0.0	0.0	0.0	0.0
Petroleum	10 ³ t				0.0			0.0		28.4	0.2	0.0	0.0	0.0	26.0	0.0	2.2	0.0	0.0
Diesel	10 ³ t				0.0					8.1	2.1	0.9	0.3	0.0	0.4	0.2	1.3	2.9	6.7
Gas/Diesel oil	10 ³ t				0.0					0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Residual fuel oil	10 ³ t				0.0					1.1	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
Petroleum coke	10 ³ t				0.0			0.0		10.5	0.3	0.2	0.1	0.0	7.8	0.0	0.3	1.8	0.0
Refinery gas	10 ³ t				0.0			27.8		22.0	0.8	0.4	0.0	1.7	4.1	0.0	9.9	5.1	23.2
Other oil derivatives	10 ³ t				0.0			20.5		14.0	0.0	0.0	0.0	0.0	2.5	0.8	8.6	2.1	0.0
Visokoplačni plin	10 ³ t				0.0			94.8		145.9	0.0	0.3	0.0	0.0	145.6	0.0	0.0	0.0	0.0
Koksni plin	10 ³ t				0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gas works gas	10 ³ m ³				0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electricity	GWh				0.0		46.1	106.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Steam and hot water	TJ				0.0			80.0	262.6	3433.6	438.0	103.4	148.2	217.5	601.2	183.1	617.2	1125.0	5731.8
(PROIZVODNJA)										2861.0	19.7	0.0	0.0	195.1	0.0	0.0	201.7	2444.5	2362.0

Annex 5: Any additional information

Annex 5-1: Archiving, inventory data record sheet

5.1.1. Inventory data record sheet

Year: 2023

MODULE: ENERGY	
SUBMODULE: CO ₂ from Fuel Combustion by Source Categories	
WORKSHEET: 1_1A1A_PUBLIC_ELE_HEAT_199 0-2023	SHEET: 1A1ai, 1A1aii, 1A1aiii
STEP: 1, 2, 3, 4, 5, 6	PAGE: 1 of 1
DIRECT DATA SOURCE: A. ACTIVITY DATA: Institution/organization: Energy Institute "Hrvoje Požar" Publications: National Energy Balance for 2023; Annual Energy Report: "Energy in Croatia 2023" Contact person: dr.sc. Branko Vuk (phone: +385 1 6326 149, +385 1 6326 206) Data: Fuel consumption data and net calorific values B. METHODOLOGY/EMISSION FACTOR: Publications: IPCC (2006): 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, Energy Default values for carbon emission factors and fractions of carbon stored were used	
ORIGINAL DATA SOURCE: A. ACTIVITY DATA: Fuel consumption data and net calorific values for 1A1 sector were provided by National energy balance	
METHOD: Tier 1 method based on fuel consumption data and net calorific values Tier 2 method for 1A1ai (natural gas and hard coal) for CO ₂ emission calculation – country specific EF from verified reports are used Tier 2 method for 1A1aii (natural gas) for CO ₂ emission calculation – country specific EF from verified reports are used	
ADDITIONAL INTERCALCULATION: Not necessary	
DATA ARCHIVATION: Hard copy and electronic copy	
DATA GAPS:	
SUGGESTION FOR THE FUTURE:	
NOTES: Default value for carbon emission factor, fraction of carbon stored and fraction of carbon oxidized were used.	
RESPONSIBILITY: Iva Švedek EKONERG Ltd. address: Koranska 5, 10000 Zagreb tel.: +385 1 6000 111/214 fax.: +385 1 6171 560 e-mail: iva.svedek@ekonerg.hr	

Annex 5-2: GHG emission trend

Table A5.2-1: GHG emission in Croatia, Base year, for first commitment period

Croatia	CO ₂	CH ₄		N ₂ O		HFC,PFC,SF ₆	Total	Share
Base year	Gg	Gg	Gg CO ₂ eq	Gg	Gg CO ₂ eq	Gg CO ₂ eq	Gg CO ₂ eq	%
1. Energy	20582.79	69.13	1451.68	0.37	114.52	NO	22148.99	70.71
A. Fuel Comb (Sectoral Appr.)	20166.84	9.61	201.74	0.55	114.52	NO	20483.11	65.40
1. Energy Industries	7126.54	0.17	3.61	0.07	13.80	NO	7143.95	22.81
2. Man. Ind. and Constr.	5447.30	0.48	10.08	0.09	17.96	NO	5475.33	17.48
3. Transport	3987.25	1.55	32.56	0.24	50.17	NO	4069.97	12.99
4. Comm./Inst, Resid., Agric.	3605.76	7.40	155.50	0.16	32.59	NO	3793.85	12.11
5. Other	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive Emissions from Fuels	415.95	59.52	1249.94	NO	NO	NO	1665.89	5.32
1. Solid Fuels	NO	NO	48.76	NO	NO	NO	48.76	NO
2. Oil and Natural Gas	415.95	57.20	1201.18	NO	NO	NO	1617.13	5.16
2. Industrial Processes	2417.36	0.78	16.45	2.59	804.08	947.58	4185.46	13.36
A. Mineral Products	1315.38	NE,NO	NE,NO	NE,NO	NE,NO	NO	1315.38	4.20
B. Chemical Industry	870.99	16.45	16.45	2.59	804.08	NO	1691.52	5.40
C. Metal Production	230.99	NE,NO	NE,NO	NO	NO	936.56	1167.56	3.73
D. Other Production	NE	NO	NO	NO	NO	NO	NE	NE
E. Prod. of Halocarbons & SF ₆	NO	NO	NO	NO	NO	NO	NO	NO
F. Cons. of Halocarbons & SF ₆	NO	NO	NO	NO	NO	11.01	11.01	0.04
G. Other	NO	NO	NO	NO	NO	NO	NO	NO
3. Solvent and Other Product Use	80.21	NO	NO	NE	NE	NO	80.21	0.26
4. Agriculture	NO	69.42	1457.81	9.26	2870.60	NO	4328.40	13.82
A. Enteric Fermentation	NO	58.54	1229.36	0.00	0.00	NO	1229.36	3.92
B. Manure Management	NO	10.88	228.44	1.22	378.74	NO	607.18	1.94
C. Rice Cultivation	NO	NO	NO	0.00	0.00	NO	NO	NO
D. Agricultural Soils	NO	NO	NO	8.04	2491.86	NO	2491.86	7.96
E. Burning of Savannas	NO	NO	NO	NO	NO	NO	NO	NO
F. Field Burning of Agr. Residues	NO	NE,NO	NE,NO	NE,NO	NE,NO	NO	NE,NO	NE,NO
G. Other	NO	NO	NO	NO	NO	NO	NO	NO
5. Land-Use Change and Forestry	-4184.93	0.00	0.01	0.00	0.00	NO	-4184.92	-13.36
A. Forest Land	-4184.93	0.00	0.01	0.00	0.00	NO	-4184.92	-13.36
B. Cropland	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NO	NE,NO	NO
C. Grassland	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NO	NE,NO	NO
D. Wetlands	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NO	NE,NO	NO
E. Settlements	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NO	NE,NO	NO
F. Other Land	NE,NO	NE,NO	NE,NO	NE,NO	NE,NO	NO	NE,NO	NO
G. Other	NE	NE	NE	NE	NE	NO	NE	NE
6. Waste	0.09	23.81	499.94	0.25	78.69	NO	578.72	1.85
A. Solid Waste Disp. on Land	NE,NO	10.53	221.21	0.00	0.00	NO	221.21	0.71
B. Waste-water Handling	0.00	13.27	278.73	0.25	78.69	NO	357.42	1.14
C. Waste Incineration	0.09	NE,NO	NE,NO	NE,NO	NE,NO	NO	0.09	0.00
D. Other	NO	NO	NO	NO	NO	NO	NO	NO
Total Em./Rem. with LUCF	18895.52	163.14	3425.89	12.48	3867.89	947.58	27136.87	86.64
Total Emissions without LUCF	23080.45	163.14	3425.89	12.48	3867.89	947.58	31321.79	100.0
Share of Gases in Total Em./Rem.	69.63		12.62		14.25		100.00	
Share of Gases in Total Emissions	73.69		10.94		12.35		100.00	
Memo Items:								
International Bunkers	451.83	0.01	0.20	0.01	3.28	NO	455.31	
Aviation	343.29	0.00	0.05	0.01	3.01	NO	346.35	
Marine	108.54	0.01	0.15	0.00	0.27	NO	108.96	
Multilateral Operations	C	C	C	C	C	NO	C	
CO₂ Emissions from Biomass	2,436.76	NO	NO	NO	NO	NO	2436.76	

Table A5.2-2: GHG emission in Croatia, 1990

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS
(Sheet 1 of 1)1990
HRV-CRT-2025-V0.1
Croatia[Back to Index](#)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽³⁾	16,489.49	5,006.00	2,579.57	NO	1,117.28	NO	11.06	NO	25,203.41
1. Energy	20,257.36	932.88	221.46						21,411.71
1.A. Fuel combustion	19,674.84	463.48	220.85						20,359.17
1.A.1. Energy industries	7,065.79	6.08	15.48						7,087.34
1.A.2. Manufacturing industries and construction	5,103.04	10.23	14.67						5,127.95
1.A.3. Transport	3,787.06	46.58	65.00						3,898.63
1.A.4. Other sectors	3,718.95	400.59	125.70						4,245.24
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	582.52	469.41	0.62						1,052.54
1.B.1. Solid fuels	NO	66.80	NA,NO						66.80
1.B.2. Oil and natural gas and other emissions from energy production	582.52	402.61	0.62						985.74
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,577.31	10.47	703.39	NO	1,117.28	NO	11.06	NO	4,419.50
2.A. Mineral industry	1,297.56	NO	NO						1,297.56
2.B. Chemical industry	751.10	6.10	670.74	NO	NO	NO	NO	NO	1,427.94
2.C. Metal industry	336.40	4.37	NO	NO	1,117.28	NO		NO	1,458.05
2.D. Non-energy products from fuels and solvent use	192.25	NA,NO	NA,NO						192.25
2.E. Electronic industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	11.06	NO	43.70
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	50.02	2,827.94	1,546.38						4,424.34
3.A. Enteric fermentation		2,336.03							2,336.03
3.B. Manure management		491.91	284.43						776.33
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,261.96						1,261.96
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	50.02								50.02
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-6,395.72	1.38	44.66						-6,349.69
4.A. Forest land	-6,497.57	1.26	1.14						-6,495.17
4.B. Cropland	114.91	NO	3.52						118.42
4.C. Grassland	-7.88	0.12	1.52						-6.24
4.D. Wetlands	77.23	NO	9.88						87.11
4.E. Settlements	235.44	NO	28.61						264.05
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-317.85								-317.85
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,233.33	63.68						1,297.55
5.A. Solid waste disposal		554.62							554.62
5.B. Biological treatment of solid waste		NO	NO						NO
5.C. Incineration and open burning of waste	0.54	19.20	4.20						23.94
5.D. Waste water treatment and discharge		659.52	59.48						718.99
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	643.85	0.48	4.71						649.03
1.D.1.a. Aviation	496.62	0.10	3.68						500.39
1.D.1.b. Navigation	147.23	0.38	1.03						148.64
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,237.84								5,237.84
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	3,493.79								3,493.79
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	31,553.09
Total CO₂ equivalent emissions with LULUCF	25,203.41
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	31,553.09
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	25,203.41

Table A5.2-3: GHG emission in Croatia, 1991

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	9,420.99	4,851.01	2,444.94	NO	766.41	NO	10.93	NO	17,494.28
1. Energy	15,021.34	877.79	190.33						16,089.46
1.A. Fuel combustion	14,444.43	495.49	189.88						15,129.80
1.A.1. Energy industries	4,742.10	4.45	10.66						4,757.22
1.A.2. Manufacturing industries and construction	3,773.02	7.71	10.86						3,791.59
1.A.3. Transport	2,866.99	35.16	52.27						2,954.42
1.A.4. Other sectors	3,062.32	448.16	116.09						3,626.57
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	576.92	382.30	0.45						959.66
1.B.1. Solid fuels	NO	59.53	NA,NO						59.53
1.B.2. Oil and natural gas and other emissions from energy production	576.92	322.77	0.45						900.13
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,926.61	9.79	622.03	NO	766.41	NO	10.93	NO	3,335.78
2.A. Mineral industry	860.77	NO	NO						860.77
2.B. Chemical industry	665.95	5.62	589.39	NO	NO	NO	NO	NO	1,260.95
2.C. Metal industry	270.10	4.18	NO	NO	766.41	NO		NO	1,040.68
2.D. Non-energy products from fuels and solvent use	129.79	NA,NO	NA,NO						129.79
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	10.93	NO	43.58
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	50.95	2,708.70	1,526.91						4,286.56
3.A. Enteric fermentation		2,207.56							2,207.56
3.B. Manure management		501.14	273.86						775.00
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,253.04						1,253.04
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	50.95								50.95
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,578.44	3.56	45.43						-7,529.45
4.A. Forest land	-8,167.20	3.37	2.25						-8,161.59
4.B. Cropland	127.70	NO	3.87						131.58
4.C. Grassland	3.98	0.20	2.15						6.32
4.D. Wetlands	67.51	NO	9.45						76.96
4.E. Settlements	213.33	NO	27.72						241.05
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	176.24								176.24
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,251.16	60.23						1,311.93
5.A. Solid waste disposal		578.40							578.40
5.B. Biological treatment of solid waste		NO	NO						NO
5.C. Incineration and open burning of waste	0.54	18.14	3.97						22.64
5.D. Waste water treatment and discharge		654.63	56.26						710.89
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	94.29	0.02	0.70						95.01
1.D.1.a. Aviation	94.29	0.02	0.70						95.01
1.D.1.b. Navigation	NO	NO	NO						NO
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,091.91								6,091.91
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	3,676.36								3,676.36
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									25,023.73
Total CO₂ equivalent emissions with LULUCF									17,494.28
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									25,023.73
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									17,494.28

Table A5.2-4: GHG emission in Croatia, 1992

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	8,679.86	4,350.10	2,463.33	NO	NO	NO	11.02	NO	15,504.31
1. Energy	14,350.80	917.30	171.47						15,439.57
1.A. Fuel combustion	13,763.01	422.32	171.07						14,356.40
1.A.1. Energy industries	5,342.75	5.05	13.58						5,361.38
1.A.2. Manufacturing industries and construction	3,083.15	6.09	8.53						3,097.77
1.A.3. Transport	2,776.79	31.12	45.70						2,853.60
1.A.4. Other sectors	2,560.33	380.07	103.26						3,043.65
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	587.79	494.97	0.41						1,083.17
1.B.1. Solid fuels	NO	46.25	NA,NO						46.25
1.B.2. Oil and natural gas and other emissions from energy production	587.79	448.72	0.41						1,036.91
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,962.32	8.48	802.06	NO	NO	NO	11.02	NO	2,783.88
2.A. Mineral industry	930.52	NO	NO						930.52
2.B. Chemical industry	832.68	5.74	769.41	NO	NO	NO	NO	NO	1,607.83
2.C. Metal industry	121.11	2.74	NO	NO	NO	NO		NO	123.85
2.D. Non-energy products from fuels and solvent use	78.01	NA,NO	NA,NO						78.01
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	11.02	NO	43.67
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	65.51	2,143.60	1,377.63						3,586.74
3.A. Enteric fermentation		1,742.71							1,742.71
3.B. Manure management		400.88	214.32						615.21
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,163.31						1,163.31
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	65.51								65.51
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-7,699.31	16.97	52.52						-7,629.81
4.A. Forest land	-8,352.78	15.28	8.48						-8,329.02
4.B. Cropland	129.64	NO	4.23						133.87
4.C. Grassland	-0.24	1.69	3.97						5.42
4.D. Wetlands	64.47	NO	9.02						73.49
4.E. Settlements	206.78	NO	26.83						233.61
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	252.83								252.83
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,263.76	59.64						1,323.94
5.A. Solid waste disposal		598.90							598.90
5.B. Biological treatment of solid waste		NO	NO						NO
5.C. Incineration and open burning of waste	0.54	13.91	3.05						17.49
5.D. Waste water treatment and discharge		650.95	56.60						707.54
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: ⁽³⁾									
1.D.1. International bunkers	72.29	0.01	0.54						72.84
1.D.1.a. Aviation	72.29	0.01	0.54						72.84
1.D.1.b. Navigation	NO	NO	NO						NO
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,308.28								5,308.28
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	3,847.65								3,847.65
Indirect N₂O			NA,NO						
Indirect CO₂ ⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									23,134.13
Total CO₂ equivalent emissions with LULUCF									15,504.31
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									23,134.13
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									15,504.31

Table A5.2-4: GHG emission in Croatia, 1993

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	8,912.06	4,280.42	2,120.33	NO	NO	NO	11.14	NO	15,323.95
1. Energy	15,116.98	804.40	179.87						16,101.25
1.A. Fuel combustion	14,330.72	441.10	179.46						14,951.27
1.A.1. Energy industries	5,940.22	5.48	15.25						5,960.95
1.A.2. Manufacturing industries and construction	2,916.99	5.75	8.03						2,930.77
1.A.3. Transport	2,925.16	30.91	49.06						3,005.14
1.A.4. Other sectors	2,548.34	398.96	107.12						3,054.42
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	786.27	363.30	0.41						1,149.97
1.B.1. Solid fuels	NO	44.27	NA,NO						44.27
1.B.2. Oil and natural gas and other emissions from energy production	786.27	319.03	0.41						1,105.71
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,641.38	7.00	612.64	NO	NO	NO	11.14	NO	2,272.15
2.A. Mineral industry	794.62	NO	NO						794.62
2.B. Chemical industry	715.96	5.77	579.99	NO	NO	NO	NO	NO	1,301.72
2.C. Metal industry	57.46	1.23	NO	NO	NO	NO		NO	58.69
2.D. Non-energy products from fuels and solvent use	73.33	NA,NO	NA,NO						73.33
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	11.14	NO	43.79
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	52.14	2,156.92	1,204.62						3,413.68
3.A. Enteric fermentation		1,733.21							1,733.21
3.B. Manure management		423.71	212.46						636.17
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	992.16						992.16
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	52.14								52.14
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,898.98	38.52	63.50						-7,796.96
4.A. Forest land	-8,355.32	36.75	19.74						-8,298.83
4.B. Cropland	131.57	NO	4.59						136.16
4.C. Grassland	-3.30	1.77	4.65						3.12
4.D. Wetlands	61.43	NO	8.58						70.01
4.E. Settlements	200.23	NO	25.94						226.17
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	66.40								66.40
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,273.59	59.71						1,333.84
5.A. Solid waste disposal		611.90							611.90
5.B. Biological treatment of solid waste		NO	NO						NO
5.C. Incineration and open burning of waste	0.54	13.37	2.93						16.83
5.D. Waste water treatment and discharge		648.32	56.79						705.11
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	182.30	0.04	1.35						183.69
1.D.1.a. Aviation	182.30	0.04	1.35						183.69
1.D.1.b. Navigation	NO	NO	NO						NO
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,583.98								5,583.98
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	4,035.83								4,035.83
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									23,120.91
Total CO₂ equivalent emissions with LULUCF									15,323.95
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									23,120.91
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									15,323.95

Table A5.2-6: GHG emission in Croatia, 1994

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	7,927.83	4,053.66	2,146.77	NO	NO	NO	11.96	NO	14,140.21
1. Energy	14,179.84	732.52	174.38						15,086.74
1.A. Fuel combustion	13,474.77	403.71	174.01						14,052.49
1.A.1. Energy industries	4,658.42	3.69	10.74						4,672.85
1.A.2. Manufacturing industries and construction	3,077.43	5.33	7.53						3,090.28
1.A.3. Transport	3,102.93	33.82	50.34						3,187.09
1.A.4. Other sectors	2,635.99	360.89	105.40						3,102.27
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	705.07	328.81	0.37						1,034.25
1.B.1. Solid fuels	NO	39.69	NA,NO						39.69
1.B.2. Oil and natural gas and other emissions from energy production	705.07	289.12	0.37						994.56
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,826.61	7.31	660.70	NO	NO	NO	11.96	NO	2,506.57
2.A. Mineral industry	953.71	NO	NO						953.71
2.B. Chemical industry	715.58	5.48	628.05	NO	NO	NO	NO	NO	1,349.12
2.C. Metal industry	81.17	1.83	NO	NO	NO	NO		NO	83.00
2.D. Non-energy products from fuels and solvent use	76.14	NA,NO	NA,NO						76.14
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	11.96	NO	44.60
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	47.57	2,005.42	1,200.16						3,253.16
3.A. Enteric fermentation		1,576.63							1,576.63
3.B. Manure management		428.79	204.08						632.87
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	996.08						996.08
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	47.57								47.57
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-8,126.72	12.89	49.40						-8,064.44
4.A. Forest land	-8,458.94	11.96	6.77						-8,440.20
4.B. Cropland	133.50	NO	4.94						138.45
4.C. Grassland	-7.89	0.92	4.49						-2.48
4.D. Wetlands	58.39	NO	8.15						66.54
4.E. Settlements	193.71	NO	25.05						218.76
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-45.49								-45.49
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,295.52	62.13						1,358.19
5.A. Solid waste disposal		631.74							631.74
5.B. Biological treatment of solid waste		0.61	0.35						0.96
5.C. Incineration and open burning of waste	0.54	12.56	2.75						15.85
5.D. Waste water treatment and discharge		650.60	59.03						709.63
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items: ⁽³⁾									
1.D.1. International bunkers	403.81	0.41	2.93						407.15
1.D.1.a. Aviation	264.02	0.05	1.96						266.03
1.D.1.b. Navigation	139.78	0.36	0.97						141.11
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	4,999.29								4,999.29
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	4,240.66								4,240.66
Indirect N₂O			NA,NO						

Indirect CO₂ ⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	22,204.65
Total CO₂ equivalent emissions with LULUCF	14,140.21
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	22,204.65
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	14,140.21

Table A5.2-7: GHG emission in Croatia, 1995

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	8,206.39	4,006.06	2,073.60	21.43	NO	NO	12.45	NO	14,319.92
1. Energy	15,115.44	750.44	165.98						16,031.87
1.A. Fuel combustion	14,279.66	425.87	165.62						14,871.16
1.A.1. Energy industries	5,261.60	4.54	11.00						5,277.14
1.A.2. Manufacturing industries and construction	2,868.29	5.24	7.42						2,880.96
1.A.3. Transport	3,292.91	35.27	45.83						3,374.01
1.A.4. Other sectors	2,856.86	380.82	101.37						3,339.05
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	835.78	324.57	0.36						1,160.71
1.B.1. Solid fuels	NO	31.61	NA,NO						31.61
1.B.2. Oil and natural gas and other emissions from energy production	835.78	292.96	0.36						1,129.09
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,652.22	6.55	635.45	21.43	NO	NO	12.45	NO	2,328.10
2.A. Mineral industry	739.76	NO	NO						739.76
2.B. Chemical industry	756.00	5.67	602.81	NO	NO	NO	NO	NO	1,364.48
2.C. Metal industry	40.32	0.88	NO	NO	NO	NO		NO	41.19
2.D. Non-energy products from fuels and solvent use	116.14	NA,NO	NA,NO						116.14
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				21.43	NO	NO	NO	NO	21.43
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	12.45	NO	45.09
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	46.29	1,927.22	1,158.53						3,132.04
3.A. Enteric fermentation		1,516.84							1,516.84
3.B. Manure management		410.38	190.45						600.83
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	968.07						968.07
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	46.29								46.29
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-8,608.10	8.45	46.58						-8,553.08
4.A. Forest land	-8,918.98	7.87	4.64						-8,906.47
4.B. Cropland	135.43	NO	5.30						140.74
4.C. Grassland	-11.98	0.58	4.76						-6.64
4.D. Wetlands	55.34	NO	7.72						63.06
4.E. Settlements	187.18	NO	24.16						211.33
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-55.09								-55.09
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,313.39	67.06						1,380.99
5.A. Solid waste disposal		657.19							657.19
5.B. Biological treatment of solid waste		0.65	0.37						1.01
5.C. Incineration and open burning of waste	0.54	11.99	2.62						15.15
5.D. Waste water treatment and discharge		643.57	64.07						707.64
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	348.25	0.31	2.54						351.10
1.D.1.a. Aviation	245.16	0.05	1.82						247.03
1.D.1.b. Navigation	103.08	0.27	0.72						104.07
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,288.54								5,288.54
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	4,455.22								4,455.22
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									22,873.00
Total CO₂ equivalent emissions with LULUCF									14,319.92
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									22,873.00
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									14,319.92

Table A5.2-8: GHG emission in Croatia, 1996

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	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	9,071.31	3,978.93	2,079.02	24.32	NO	NO	12.90	NO	15,166.48
1. Energy	15,630.57	786.58	210.77						16,627.92
1.A. Fuel combustion	14,820.27	474.03	210.42						15,504.72
1.A.1. Energy industries	5,085.53	4.56	11.51						5,101.60
1.A.2. Manufacturing industries and construction	2,857.50	5.14	7.26						2,869.90
1.A.3. Transport	3,620.22	38.22	70.92						3,729.36
1.A.4. Other sectors	3,257.02	426.10	120.74						3,803.86
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	810.30	312.55	0.35						1,123.20
1.B.1. Solid fuels	NO	25.50	NA,NO						25.50
1.B.2. Oil and natural gas and other emissions from energy production	810.30	287.05	0.35						1,097.70
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,654.89	5.80	594.42	24.32	NO	NO	12.90	NO	2,292.32
2.A. Mineral industry	826.77	NO	NO						826.77
2.B. Chemical industry	701.63	5.44	561.78	NO	NO	NO	NO	NO	1,268.84
2.C. Metal industry	19.17	0.35	NO	NO	NO	NO		NO	19.53
2.D. Non-energy products from fuels and solvent use	107.32	NA,NO	NA,NO						107.32
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				24.32	NO	NO	NO	NO	24.32
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	12.90	NO	45.54
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	52.44	1,838.98	1,157.86						3,049.29
3.A. Enteric fermentation		1,428.37							1,428.37
3.B. Manure management		410.61	180.35						590.96
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	977.51						977.51
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	52.44								52.44
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-8,267.12	18.52	51.83						-8,196.77
4.A. Forest land	-8,609.49	16.96	9.41						-8,583.12
4.B. Cropland	137.37	NO	5.66						143.03
4.C. Grassland	-15.71	1.55	6.21						-7.95
4.D. Wetlands	52.30	NO	7.29						59.59
4.E. Settlements	180.69	NO	23.27						203.95
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-12.27								-12.27
4.H. Other	NO	NO	NO						NO
5. Waste	0.54	1,329.06	64.13						1,393.73
5.A. Solid waste disposal		684.34							684.34
5.B. Biological treatment of solid waste		0.68	0.39						1.07
5.C. Incineration and open burning of waste	0.54	11.92	2.61						15.06
5.D. Waste water treatment and discharge		632.12	61.14						693.25
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: ⁽³⁾									
1.D.1. International bunkers	339.28	0.34	2.46						342.09
1.D.1.a. Aviation	223.16	0.04	1.65						224.86
1.D.1.b. Navigation	116.12	0.30	0.81						117.23
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,877.64								5,877.64
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	4,677.42								4,677.42
Indirect N₂O			NA,NO						
Indirect CO₂ ⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									23,363.25
Total CO₂ equivalent emissions with LULUCF									15,166.48
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									23,363.25
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									15,166.48

Table A5.2-9: GHG emission in Croatia, 1997

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	10,912.17	3,952.62	2,253.82	28.30	NO	NO	12.52	NO	17,159.44
1. Energy	16,682.92	749.73	210.59						17,643.23
1.A. Fuel combustion	15,920.57	443.70	210.23						16,574.51
1.A.1. Energy industries	5,557.16	5.00	13.43						5,575.58
1.A.2. Manufacturing industries and construction	3,088.88	5.83	8.17						3,102.89
1.A.3. Transport	3,966.11	40.41	83.17						4,089.68
1.A.4. Other sectors	3,308.41	392.47	105.47						3,806.35
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	762.35	306.03	0.35						1,068.73
1.B.1. Solid fuels	NO	18.65	NA,NO						18.65
1.B.2. Oil and natural gas and other emissions from energy production	762.35	287.37	0.35						1,050.07
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,816.04	6.17	624.06	28.30	NO	NO	12.52	NO	2,487.10
2.A. Mineral industry	948.72	NO	NO						948.72
2.B. Chemical industry	743.07	5.34	591.42	NO	NO	NO	NO	NO	1,339.83
2.C. Metal industry	40.82	0.83	NO	NO	NO	NO		NO	41.65
2.D. Non-energy products from fuels and solvent use	83.42	NA,NO	NA,NO						83.42
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				28.30	NO	NO	NO	NO	28.30
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	12.52	NO	45.17
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	68.39	1,817.88	1,302.59						3,188.85
3.A. Enteric fermentation		1,402.54							1,402.54
3.B. Manure management		415.34	176.66						592.00
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,125.92						1,125.92
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	68.39								68.39
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,657.00	19.74	52.03						-7,585.23
4.A. Forest land	-8,117.88	18.23	10.07						-8,089.58
4.B. Cropland	139.30	NO	6.01						145.31
4.C. Grassland	-20.57	1.51	6.71						-12.34
4.D. Wetlands	49.26	NO	6.86						56.11
4.E. Settlements	172.93	NO	22.37						195.30
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	119.97								119.97
4.H. Other	NO	NO	NO						NO
5. Waste	1.82	1,359.10	64.56						1,425.49
5.A. Solid waste disposal		712.08							712.08
5.B. Biological treatment of solid waste		0.72	0.41						1.12
5.C. Incineration and open burning of waste	1.82	11.47	2.53						15.82
5.D. Waste water treatment and discharge		634.84	61.62						696.46
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	310.14	0.24	2.26						312.64
1.D.1.a. Aviation	235.74	0.05	1.75						237.53
1.D.1.b. Navigation	74.41	0.19	0.52						75.12
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,526.07								5,526.07
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	4,899.18								4,899.18
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
--	-------	--	--	--	--	--	--	--	--

Total CO₂ equivalent emissions without LULUCF	24,744.67
Total CO₂ equivalent emissions with LULUCF	17,159.44
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,744.67
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	17,159.44

Table A5.2-10: GHG emission in Croatia, 1998

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	11,528.45	3,955.26	1,958.28	33.88	NO	NO	13.40	NO	17,489.28
1. Energy	17,274.13	736.27	195.55						18,205.95
1.A. Fuel combustion	16,596.67	447.82	195.23						17,239.72
1.A.1. Energy industries	6,238.88	5.83	14.98						6,259.68
1.A.2. Manufacturing industries and construction	3,091.23	5.63	7.99						3,104.85
1.A.3. Transport	4,098.78	41.34	61.01						4,201.13
1.A.4. Other sectors	3,167.79	395.02	111.25						3,674.06
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	677.45	288.45	0.33						966.23
1.B.1. Solid fuels	NO	19.54	NA,NO						19.54
1.B.2. Oil and natural gas and other emissions from energy production	677.45	268.91	0.33						946.69
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,717.95	5.48	477.89	33.88	NO	NO	13.40	NO	2,248.60
2.A. Mineral industry	1,014.42	NO	NO						1,014.42
2.B. Chemical industry	592.72	5.05	445.24	NO	NO	NO	NO	NO	1,043.01
2.C. Metal industry	29.65	0.42	NO	NO	NO	NO		NO	30.08
2.D. Non-energy products from fuels and solvent use	81.16	NA,NO	NA,NO						81.16
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				33.88	NO	NO	NO	NO	33.88
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	13.40	NO	46.05
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	44.25	1,787.45	1,152.71						2,984.41
3.A. Enteric fermentation		1,368.17							1,368.17
3.B. Manure management		419.28	170.83						590.11
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	981.88						981.88
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	44.25								44.25
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other		NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,511.58	50.53	69.24						-7,391.81
4.A. Forest land	-7,847.01	44.61	23.89						-7,778.51
4.B. Cropland	141.23	NO	6.37						147.60
4.C. Grassland	-24.06	5.92	11.08						-7.06
4.D. Wetlands	46.21	NO	6.42						52.64
4.E. Settlements	168.37	NO	21.47						189.84
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	3.68								3.68
4.H. Other	NO	NO	NO						NO
5. Waste	3.70	1,375.55	62.88						1,442.13
5.A. Solid waste disposal		739.50							739.50
5.B. Biological treatment of solid waste		0.75	0.43						1.18
5.C. Incineration and open burning of waste	3.70	11.34	2.53						17.57
5.D. Waste water treatment and discharge		623.95	59.92						683.87
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	336.44	0.26	2.46						339.16
1.D.1.a. Aviation	254.59	0.05	1.89						256.53
1.D.1.b. Navigation	81.85	0.21	0.57						82.63
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,535.75								5,535.75
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	5,145.63								5,145.63
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									24,881.08
Total CO₂ equivalent emissions with LULUCF									17,489.28
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									24,881.08
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									17,489.28

Table A5.2-11: GHG emission in Croatia, 1999

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	11,844.47	3,971.51	2,141.96	40.89	NO	NO	13.35	NO	18,012.18
1. Energy	17,954.41	709.95	247.57						18,911.94
1.A. Fuel combustion	17,292.55	441.92	247.27						17,981.74
1.A.1. Energy industries	6,459.12	6.13	15.48						6,480.73
1.A.2. Manufacturing industries and construction	2,925.26	4.74	6.81						2,936.81
1.A.3. Transport	4,329.18	42.04	104.73						4,475.95
1.A.4. Other sectors	3,578.99	389.01	120.25						4,088.25
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	661.86	268.03	0.30						930.19
1.B.1. Solid fuels	NO	5.88	NA,NO						5.88
1.B.2. Oil and natural gas and other emissions from energy production	661.86	262.14	0.30						924.31
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,072.94	5.54	557.50	40.89	NO	NO	13.35	NO	2,690.22
2.A. Mineral industry	1,268.53	NO	NO						1,268.53
2.B. Chemical industry	701.41	5.06	524.85	NO	NO	NO	NO	NO	1,231.33
2.C. Metal industry	27.67	0.48	NO	NO	NO	NO		NO	28.15
2.D. Non-energy products from fuels and solvent use	75.34	NA,NO	NA,NO						75.34
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				40.89	NO	NO	NO	NO	40.89
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	13.35	NO	46.00
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	50.49	1,836.31	1,225.03						3,111.83
3.A. Enteric fermentation		1,375.91							1,375.91
3.B. Manure management		460.40	178.69						639.09
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,046.34						1,046.34
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	50.49								50.49
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-8,237.75	6.62	44.55						-8,186.59
4.A. Forest land	-8,500.25	4.77	3.06						-8,492.42
4.B. Cropland	143.17	NO	6.73						149.89
4.C. Grassland	-27.56	1.85	8.19						-17.52
4.D. Wetlands	43.17	NO	5.99						49.16
4.E. Settlements	161.98	NO	20.58						182.56
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-58.26								-58.26
4.H. Other	NO	NO	NO						NO
5. Waste	4.38	1,413.09	67.31						1,484.78
5.A. Solid waste disposal		772.11							772.11
5.B. Biological treatment of solid waste		0.79	0.45						1.23
5.C. Incineration and open burning of waste	4.38	10.44	2.35						17.17
5.D. Waste water treatment and discharge		629.75	64.51						694.26
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	311.54	0.22	2.28						314.04
1.D.1.a. Aviation	245.16	0.05	1.82						247.03
1.D.1.b. Navigation	66.37	0.17	0.47						67.01
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,328.01								5,328.01
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	5,391.24								5,391.24
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									26,198.76
Total CO₂ equivalent emissions with LULUCF									18,012.18
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									26,198.76
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									18,012.18

Table A5.2-12: GHG emission in Croatia, 2000

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	12,706.13	4,011.80	2,303.14	49.40	NO	NO	12.72	NO	19,083.19
1. Energy	17,347.86	653.83	253.13						18,254.81
1.A. Fuel combustion	16,636.44	395.90	252.84						17,285.18
1.A.1. Energy industries	5,810.87	4.42	16.53						5,831.82
1.A.2. Manufacturing industries and construction	3,052.78	5.00	7.19						3,064.96
1.A.3. Transport	4,354.38	40.50	106.55						4,501.44
1.A.4. Other sectors	3,418.41	345.98	122.57						3,886.96
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	711.42	257.92	0.29						969.63
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	711.42	257.92	0.29						969.63
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,237.80	3.81	649.74	49.40	NO	NO	12.72	NO	2,953.48
2.A. Mineral industry	1,426.45	NO	NO						1,426.45
2.B. Chemical industry	704.40	3.27	617.10	NO	NO	NO	NO	NO	1,324.76
2.C. Metal industry	29.68	0.54	NO	NO	NO	NO		NO	30.22
2.D. Non-energy products from fuels and solvent use	77.28	NA	NA						77.28
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				49.40	NO	NO	NO	NO	49.40
2.G. Other product manufacture and use	NO	NO	32.65	NO	NO	NO	12.72	NO	45.36
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	60.87	1,798.12	1,234.21						3,093.20
3.A. Enteric fermentation		1,349.71							1,349.71
3.B. Manure management		448.41	169.57						617.97
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,064.64						1,064.64
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	60.87								60.87
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-6,946.55	108.54	108.59						-6,737.43
4.A. Forest land	-7,187.77	97.56	51.65						-7,038.56
4.B. Cropland	145.10	NO	7.09						152.18
4.C. Grassland	-32.63	10.98	16.62						-5.03
4.D. Wetlands	40.13	NO	5.56						45.69
4.E. Settlements	158.28	NO	19.67						177.96
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-69.66								-69.66
4.H. Other	NO	NO	NO						NO
5. Waste	6.15	1,447.50	65.48						1,519.13
5.A. Solid waste disposal		800.83							800.83
5.B. Biological treatment of solid waste		0.89	0.51						1.40
5.C. Incineration and open burning of waste	6.15	9.44	2.16						17.75
5.D. Waste water treatment and discharge		636.34	62.81						699.15
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	258.78	0.19	1.89						260.86
1.D.1.a. Aviation	201.16	0.04	1.49						202.69
1.D.1.b. Navigation	57.62	0.15	0.40						58.17
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	4,771.83								4,771.83
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	5,650.10								5,650.10
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									25,820.62
Total CO₂ equivalent emissions with LULUCF									19,083.19
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									25,820.62
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									19,083.19

Table A5.2-13: GHG emission in Croatia, 2001

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	12,713.69	4,004.73	2,226.82	60.44	NO	NO	12.81	NO	19,018.49
1. Energy	18,351.53	697.66	243.43						19,292.63
1.A. Fuel combustion	17,589.38	423.94	243.16						18,256.48
1.A.1. Energy industries	6,343.85	5.00	18.64						6,367.49
1.A.2. Manufacturing industries and construction	3,189.68	4.91	7.15						3,201.74
1.A.3. Transport	4,420.07	34.64	95.00						4,549.71
1.A.4. Other sectors	3,635.78	379.40	122.38						4,137.55
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	762.15	273.72	0.27						1,036.15
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	762.15	273.72	0.27						1,036.15
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,325.62	3.94	549.69	60.44	NO	NO	12.81	NO	2,952.50
2.A. Mineral industry	1,644.58	NO	NO						1,644.58
2.B. Chemical industry	595.81	3.92	517.91	NO	NO	NO	NO	NO	1,117.64
2.C. Metal industry	7.15	0.02	NO	NO	NO	NO		NO	7.18
2.D. Non-energy products from fuels and solvent use	78.09	NA	NA						78.09
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				60.44	NO	NO	NO	NO	60.44
2.G. Other product manufacture and use	NO	NO	31.77	NO	NO	NO	12.81	NO	44.58
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	92.09	1,828.72	1,305.92						3,226.74
3.A. Enteric fermentation		1,363.14							1,363.14
3.B. Manure management		465.58	169.36						634.94
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,136.56						1,136.56
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	92.09								92.09
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-8,062.25	21.28	59.08						-7,981.90
4.A. Forest land	-8,211.02	17.94	9.97						-8,183.11
4.B. Cropland	147.03	NO	7.44						154.47
4.C. Grassland	-26.55	3.33	11.64						-11.58
4.D. Wetlands	36.36	NO	5.10						41.45
4.E. Settlements	298.06	NO	24.93						322.99
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-306.12								-306.12
4.H. Other	NO	NO	NO						NO
5. Waste	6.68	1,453.13	68.71						1,528.52
5.A. Solid waste disposal		832.56							832.56
5.B. Biological treatment of solid waste		0.72	0.41						1.13
5.C. Incineration and open burning of waste	6.68	9.21	2.12						18.01
5.D. Waste water treatment and discharge		610.64	66.19						676.82
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: ⁽³⁾									
1.D.1. International bunkers	291.47	0.27	2.12						293.86
1.D.1.a. Aviation	201.16	0.04	1.49						202.69
1.D.1.b. Navigation	90.31	0.23	0.63						91.17
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,187.98								5,187.98
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	5,923.05								5,923.05
Indirect N₂O			NA,NO						
Indirect CO₂ ⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									27,000.39
Total CO₂ equivalent emissions with LULUCF									19,018.49
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									27,000.39
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									19,018.49

Table A5.2-14: GHG emission in Croatia, 2002

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	13,587.97	3,994.70	2,154.03	80.83	NO	NO	13.15	NO	19,830.69
1. Energy	19,539.19	687.03	209.26						20,435.48
1.A. Fuel combustion	18,762.83	408.03	208.99						19,379.84
1.A.1. Energy industries	7,225.52	5.48	22.16						7,253.16
1.A.2. Manufacturing industries and construction	3,084.91	4.87	7.11						3,096.89
1.A.3. Transport	4,729.32	33.53	64.59						4,827.43
1.A.4. Other sectors	3,723.08	364.14	115.14						4,202.36
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	776.36	279.00	0.27						1,055.63
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	776.36	279.00	0.27						1,055.63
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,291.80	3.67	534.85	80.83	NO	NO	13.15	NO	2,924.30
2.A. Mineral industry	1,645.41	NO	NO						1,645.41
2.B. Chemical industry	550.89	3.66	503.95	NO	NO	NO	NO	NO	1,058.50
2.C. Metal industry	4.72	0.01	NO	NO	NO	NO		NO	4.73
2.D. Non-energy products from fuels and solvent use	90.78	NA	NA						90.78
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				80.83	NO	NO	NO	NO	80.83
2.G. Other product manufacture and use	NO	NO	30.90	NO	NO	NO	13.15	NO	44.05
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	80.76	1,811.77	1,279.90						3,172.42
3.A. Enteric fermentation		1,332.32							1,332.32
3.B. Manure management		479.44	167.79						647.23
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,112.11						1,112.11
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	80.76								80.76
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-8,327.55	7.16	57.70						-8,262.68
4.A. Forest land	-8,510.92	6.29	3.88						-8,500.75
4.B. Cropland	148.96	NO	7.80						156.76
4.C. Grassland	-37.52	0.87	11.18						-25.46
4.D. Wetlands	33.09	NO	4.63						37.72
4.E. Settlements	341.18	NO	30.20						371.38
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-302.33								-302.33
4.H. Other	NO	NO	NO						NO
5. Waste	3.78	1,485.08	72.32						1,561.18
5.A. Solid waste disposal		867.32							867.32
5.B. Biological treatment of solid waste		0.96	0.55						1.51
5.C. Incineration and open burning of waste	3.78	9.02	2.03						14.83
5.D. Waste water treatment and discharge		607.77	69.74						677.51
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	262.60	0.23	1.92						264.74
1.D.1.a. Aviation	188.59	0.04	1.40						190.02
1.D.1.b. Navigation	74.01	0.19	0.52						74.72
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	4,975.57								4,975.57
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	6,210.05								6,210.05
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									28,093.37
Total CO₂ equivalent emissions with LULUCF									19,830.69
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									28,093.37
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									19,830.69

Table A5.2-15: GHG emission in Croatia, 2003

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	15,660.21	4,213.65	2,098.57	106.82	NO	NO	13.50	NO	22,092.75
1. Energy	20,829.42	743.66	221.90						21,794.97
1.A. Fuel combustion	20,100.62	463.50	221.64						20,785.75
1.A.1. Energy industries	7,871.16	6.53	23.03						7,900.71
1.A.2. Manufacturing industries and construction	3,150.05	5.55	7.97						3,163.56
1.A.3. Transport	5,126.76	32.50	66.37						5,225.63
1.A.4. Other sectors	3,952.65	418.92	124.27						4,495.84
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	728.80	280.16	0.26						1,009.22
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	728.80	280.16	0.26						1,009.22
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,324.18	3.49	506.57	106.82	NO	NO	13.50	NO	2,954.55
2.A. Mineral industry	1,652.12	NO	NO						1,652.12
2.B. Chemical industry	574.42	3.47	476.55	NO	NO	NO	NO	NO	1,054.44
2.C. Metal industry	6.62	0.02	NO	NO	NO	NO		NO	6.64
2.D. Non-energy products from fuels and solvent use	91.01	NA	NA						91.01
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				106.82	NO	NO	NO	NO	106.82
2.G. Other product manufacture and use	NO	NO	30.02	NO	NO	NO	13.50	NO	43.52
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	71.79	1,905.72	1,213.41						3,190.91
3.A. Enteric fermentation		1,390.19							1,390.19
3.B. Manure management		515.53	171.77						687.30
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,041.63						1,041.63
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	71.79								71.79
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-7,565.98	44.30	85.10						-7,436.58
4.A. Forest land	-7,887.63	40.26	21.68						-7,825.69
4.B. Cropland	150.90	NO	8.16						159.05
4.C. Grassland	-49.14	4.04	15.61						-29.50
4.D. Wetlands	29.82	NO	4.17						33.98
4.E. Settlements	380.90	NO	35.49						416.39
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-190.82								-190.82
4.H. Other	NO	NO	NO						NO
5. Waste	0.80	1,516.49	71.60						1,588.89
5.A. Solid waste disposal		905.42							905.42
5.B. Biological treatment of solid waste		0.69	0.39						1.08
5.C. Incineration and open burning of waste	0.80	8.78	1.93						11.51
5.D. Waste water treatment and discharge		601.60	69.28						670.88
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: ⁽³⁾									
1.D.1. International bunkers	251.70	0.21	1.83						253.74
1.D.1.a. Aviation	182.30	0.04	1.35						183.69
1.D.1.b. Navigation	69.39	0.18	0.48						70.05
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,755.73								5,755.73
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	6,515.16								6,515.16
Indirect N₂O			NA,NO						
Indirect CO₂ ⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									29,529.33
Total CO₂ equivalent emissions with LULUCF									22,092.75
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									29,529.33
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									22,092.75

Table A5.2-16: GHG emission in Croatia, 2004

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	15,016.75	4,275.36	2,291.25	127.86	NO	NO	13.95	NO	21,725.16
1. Energy	20,240.89	728.87	253.07						21,222.82
1.A. Fuel combustion	19,462.97	450.72	252.82						20,166.50
1.A.1. Energy industries	6,784.01	5.45	20.90						6,810.36
1.A.2. Manufacturing industries and construction	3,551.72	6.67	9.48						3,567.87
1.A.3. Transport	5,262.21	30.47	104.55						5,397.23
1.A.4. Other sectors	3,865.02	408.13	117.89						4,391.04
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	777.92	278.15	0.25						1,056.32
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	777.92	278.15	0.25						1,056.32
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,535.51	4.19	608.48	127.86	NO	NO	13.95	NO	3,289.99
2.A. Mineral industry	1,748.15	NO	NO						1,748.15
2.B. Chemical industry	665.57	4.19	579.33	NO	NO	NO	NO	NO	1,249.08
2.C. Metal industry	13.72	NA,NO	NO	NO	NO	NO		NO	13.72
2.D. Non-energy products from fuels and solvent use	108.07	NA	NA						108.07
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				127.86	NO	NO	NO	NO	127.86
2.G. Other product manufacture and use	NO	NO	29.15	NO	NO	NO	13.95	NO	43.10
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	75.94	1,980.02	1,288.72						3,344.68
3.A. Enteric fermentation		1,431.35							1,431.35
3.B. Manure management		548.67	173.65						722.32
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,115.07						1,115.07
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	NO								NO
3.H. Urea application	75.94								75.94
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,835.94	3.27	69.68						-7,763.00
4.A. Forest land	-8,203.16	2.19	1.82						-8,199.16
4.B. Cropland	154.67	NO	8.51						163.18
4.C. Grassland	-59.71	1.08	14.89						-43.74
4.D. Wetlands	26.55	NO	3.70						30.25
4.E. Settlements	426.02	NO	40.75						466.76
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-180.30								-180.30
4.H. Other	NO	NO	NO						NO
5. Waste	0.35	1,559.01	71.31						1,630.67
5.A. Solid waste disposal		940.79							940.79
5.B. Biological treatment of solid waste		0.81	0.46						1.28
5.C. Incineration and open burning of waste	0.35	8.81	1.93						11.08
5.D. Waste water treatment and discharge		608.60	68.92						677.52
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾								
1.D.1. International bunkers	284.43	0.23	2.07					286.73
1.D.1.a. Aviation	210.59	0.04	1.56					212.19
1.D.1.b. Navigation	73.83	0.19	0.51					74.54
1.D.2. Multilateral operations	C	C	C					C
1.D.3. CO₂ emissions from biomass	5,660.22							5,660.22
1.D.4. CO₂ captured	NO							NO
5.F.1. Long-term storage of C in waste disposal sites	6,837.62							6,837.62
Indirect N₂O			NA,NO					

Indirect CO₂⁽⁴⁾	NA,NO							
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Total CO₂ equivalent emissions without LULUCF	29,488.16
Total CO₂ equivalent emissions with LULUCF	21,725.16
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	29,488.16
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	21,725.16

Table A5.2-17: GHG emission in Croatia, 2005

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	15,213.39	4,276.36	2,260.61	186.49	NO	NO	14.70	NO	21,951.55
1. Energy	20,613.73	750.26	217.43						21,581.42
1.A. Fuel combustion	19,856.99	471.66	217.19						20,545.84
1.A.1. Energy industries	6,810.03	5.16	20.33						6,835.53
1.A.2. Manufacturing industries and construction	3,681.10	6.01	8.72						3,695.83
1.A.3. Transport	5,467.69	27.92	67.45						5,563.06
1.A.4. Other sectors	3,898.16	432.57	120.69						4,451.43
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	756.74	278.60	0.24						1,035.58
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	756.74	278.60	0.24						1,035.58
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,596.20	4.22	594.51	186.49	NO	NO	14.70	NO	3,396.12
2.A. Mineral industry	1,809.90	NO	NO						1,809.90
2.B. Chemical industry	663.60	4.22	566.23	NO	NO	NO	NO	NO	1,234.06
2.C. Metal industry	12.71	NA,NO	NO	NO	NO	NO		NO	12.71
2.D. Non-energy products from fuels and solvent use	109.99	NA	NA						109.99
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				186.49	NO	NO	NO	NO	186.49
2.G. Other product manufacture and use	NO	NO	28.28	NO	NO	NO	14.70	NO	42.98
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	85.46	1,980.23	1,296.14						3,361.83
3.A. Enteric fermentation		1,458.81							1,458.81
3.B. Manure management		521.42	160.19						681.61
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,135.95						1,135.95
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	14.49								14.49
3.H. Urea application	70.97								70.97
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-8,082.16	3.06	78.12						-8,000.98
4.A. Forest land	-8,313.88	2.42	2.35						-8,309.11
4.B. Cropland	156.00	NO	8.87						164.87
4.C. Grassland	-60.56	0.64	17.66						-42.26
4.D. Wetlands	23.28	NO	3.24						26.51
4.E. Settlements	461.72	NO	46.01						507.73
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-348.72								-348.72
4.H. Other	NO	NO	NO						NO
5. Waste	0.16	1,538.59	74.41						1,613.16
5.A. Solid waste disposal		923.06							923.06
5.B. Biological treatment of solid waste		1.47	0.84						2.31
5.C. Incineration and open burning of waste	0.16	8.76	1.91						10.83
5.D. Waste water treatment and discharge		605.29	71.66						676.95
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾								
1.D.1. International bunkers	337.55	0.26	2.47					340.27
1.D.1.a. Aviation	257.74	0.05	1.91					259.70
1.D.1.b. Navigation	79.82	0.21	0.56					80.58
1.D.2. Multilateral operations	C	C	C					C
1.D.3. CO₂ emissions from biomass	5,908.79							5,908.79
1.D.4. CO₂ captured	NO							NO
5.F.1. Long-term storage of C in waste disposal sites	7,179.65							7,179.65
Indirect N₂O			NA,NO					

Indirect CO₂⁽⁴⁾	NA,NO							
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Total CO₂ equivalent emissions without LULUCF	29,952.53
Total CO₂ equivalent emissions with LULUCF	21,951.55
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	29,952.53
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	21,951.55

Table A5.2-18: GHG emission in Croatia, 2006

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	15,586.25	4,406.26	2,281.99	241.85	NO	NO	14.57	NO	22,530.93
1. Energy	20,683.71	732.34	217.67						21,633.73
1.A. Fuel combustion	19,917.74	435.17	217.44						20,570.35
1.A.1. Energy industries	6,631.42	5.40	20.06						6,656.87
1.A.2. Manufacturing industries and construction	3,806.68	6.38	9.26						3,822.32
1.A.3. Transport	5,820.94	26.79	70.17						5,917.90
1.A.4. Other sectors	3,658.71	396.60	117.95						4,173.25
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	765.97	297.17	0.24						1,063.38
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	765.97	297.17	0.24						1,063.38
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,731.07	4.10	587.03	241.85	NO	NO	14.57	NO	3,578.63
2.A. Mineral industry	1,938.74	NO	NO						1,938.74
2.B. Chemical industry	657.88	4.10	559.63	NO	NO	NO	NO	NO	1,221.62
2.C. Metal industry	13.31	NA,NO	NO	NO	NO	NO		NO	13.31
2.D. Non-energy products from fuels and solvent use	121.14	NA	NA						121.14
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				241.85	NO	NO	NO	NO	241.85
2.G. Other product manufacture and use	NO	NO	27.40	NO	NO	NO	14.57	NO	41.97
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	80.67	2,042.96	1,312.15						3,435.77
3.A. Enteric fermentation		1,456.68							1,456.68
3.B. Manure management		586.27	165.86						752.14
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,146.28						1,146.28
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	17.48								17.48
3.H. Urea application	63.19								63.19
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,909.95	6.79	88.67						-7,814.49
4.A. Forest land	-8,179.60	6.12	4.67						-8,168.81
4.B. Cropland	157.78	NO	9.23						167.00
4.C. Grassland	-83.61	0.67	20.73						-62.21
4.D. Wetlands	20.01	NO	2.77						22.78
4.E. Settlements	498.44	NO	51.27						549.71
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-322.96								-322.96
4.H. Other	NO	NO	NO						NO
5. Waste	0.74	1,620.08	76.46						1,697.28
5.A. Solid waste disposal		999.78							999.78
5.B. Biological treatment of solid waste		1.14	0.65						1.79
5.C. Incineration and open burning of waste	0.74	8.99	1.97						11.70
5.D. Waste water treatment and discharge		610.17	73.84						684.01
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	325.65	0.21	2.39						328.25
1.D.1.a. Aviation	264.02	0.05	1.96						266.03
1.D.1.b. Navigation	61.63	0.16	0.43						62.21
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,497.41								5,497.41
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	7,585.00								7,585.00
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									30,345.42
Total CO₂ equivalent emissions with LULUCF									22,530.93
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									30,345.42
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									22,530.93

Table A5.2-19: GHG emission in Croatia, 2007

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	17,991.97	4,434.48	2,351.25	318.18	NO	NO	14.59	NO	25,110.47
1. Energy	21,909.53	728.78	222.68						22,860.99
1.A. Fuel combustion	21,181.93	420.22	222.45						21,824.60
1.A.1. Energy industries	7,815.15	6.24	24.11						7,845.50
1.A.2. Manufacturing industries and construction	3,797.32	6.43	9.22						3,812.98
1.A.3. Transport	6,242.17	25.95	73.06						6,341.18
1.A.4. Other sectors	3,327.29	381.60	116.06						3,824.94
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	727.60	308.56	0.23						1,036.39
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	727.60	308.56	0.23						1,036.39
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,802.25	3.82	644.01	318.18	NO	NO	14.59	NO	3,782.85
2.A. Mineral industry	1,966.71	NO	NO						1,966.71
2.B. Chemical industry	696.32	3.82	617.48	NO	NO	NO	NO	NO	1,317.62
2.C. Metal industry	13.69	NA,NO	NO	NO	NO	NO		NO	13.69
2.D. Non-energy products from fuels and solvent use	125.53	NA	NA						125.53
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				318.18	NO	NO	NO	NO	318.18
2.G. Other product manufacture and use	NO	NO	26.53	NO	NO	NO	14.59	NO	41.11
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	89.32	1,967.76	1,291.60						3,348.68
3.A. Enteric fermentation		1,400.89							1,400.89
3.B. Manure management		566.87	155.48						722.35
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,136.12						1,136.12
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	16.60								16.60
3.H. Urea application	72.72								72.72
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-6,809.79	35.58	114.70						-6,659.51
4.A. Forest land	-7,340.42	33.14	19.35						-7,287.93
4.B. Cropland	368.82	NO	11.46						380.28
4.C. Grassland	-101.08	2.43	25.01						-73.63
4.D. Wetlands	17.54	NO	2.35						19.89
4.E. Settlements	554.70	NO	56.52						611.22
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-309.35								-309.35
4.H. Other	NO	NO	NO						NO
5. Waste	0.65	1,698.55	78.26						1,777.46
5.A. Solid waste disposal		1,070.62							1,070.62
5.B. Biological treatment of solid waste		2.52	1.43						3.94
5.C. Incineration and open burning of waste	0.65	9.32	2.04						12.01
5.D. Waste water treatment and discharge		616.10	74.79						690.89
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	353.05	0.25	2.58						355.87
1.D.1.a. Aviation	276.60	0.05	2.05						278.70
1.D.1.b. Navigation	76.45	0.20	0.53						77.17
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,322.60								5,322.60
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	8,085.29								8,085.29
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									31,769.98
Total CO₂ equivalent emissions with LULUCF									25,110.47
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									31,769.98
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									25,110.47

Table A5.2-20: GHG emission in Croatia, 2008

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	16,534.31	4,404.59	2,613.48	388.68	NO	NO	13.39	NO	23,954.45
1. Energy	20,727.44	714.59	218.76						21,660.79
1.A. Fuel combustion	20,090.63	418.46	218.54						20,727.62
1.A.1. Energy industries	6,771.62	5.37	21.53						6,798.52
1.A.2. Manufacturing industries and construction	3,798.07	6.18	8.89						3,813.13
1.A.3. Transport	6,079.11	23.92	68.16						6,171.19
1.A.4. Other sectors	3,441.83	382.99	119.96						3,944.78
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	636.82	296.13	0.22						933.17
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	636.82	296.13	0.22						933.17
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,690.94	3.62	656.84	388.68	NO	NO	13.39	NO	3,753.47
2.A. Mineral industry	1,868.34	NO	NO						1,868.34
2.B. Chemical industry	676.64	3.62	631.19	NO	NO	NO	NO	NO	1,311.45
2.C. Metal industry	23.41	NA,NO	NO	NO	NO	NO		NO	23.41
2.D. Non-energy products from fuels and solvent use	122.55	NA	NA						122.55
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				388.68	NO	NO	NO	NO	388.68
2.G. Other product manufacture and use	NO	NO	25.65	NO	NO	NO	13.39	NO	39.04
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	96.60	1,870.77	1,548.59						3,515.96
3.A. Enteric fermentation		1,347.72							1,347.72
3.B. Manure management		523.05	143.47						666.52
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,405.12						1,405.12
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	20.78								20.78
3.H. Urea application	75.83								75.83
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-6,981.35	10.73	110.04						-6,860.58
4.A. Forest land	-7,522.05	9.68	7.32						-7,505.05
4.B. Cropland	389.41	NO	13.70						403.10
4.C. Grassland	-131.78	1.05	25.35						-105.37
4.D. Wetlands	14.53	NO	1.92						16.45
4.E. Settlements	593.88	NO	61.75						655.63
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-325.34								-325.34
4.H. Other	NO	NO	NO						NO
5. Waste	0.67	1,804.89	79.25						1,804.81
5.A. Solid waste disposal		1,184.30							1,184.30
5.B. Biological treatment of solid waste		2.45	1.39						3.85
5.C. Incineration and open burning of waste	0.67	9.54	2.09						12.30
5.D. Waste water treatment and discharge		608.59	75.77						684.36
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	384.96	0.23	2.82						388.01
1.D.1.a. Aviation	317.46	0.06	2.35						319.87
1.D.1.b. Navigation	67.50	0.17	0.46						68.14
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,298.65								5,298.65
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	8,618.88								8,618.88
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	30,815.03
Total CO₂ equivalent emissions with LULUCF	23,954.45
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	30,815.03
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	23,954.45

Table A5.2-21: GHG emission in Croatia, 2009

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	14,667.48	4,500.27	2,056.04	469.94	NO	NO	9.63	NO	21,703.36
1. Energy	19,593.01	719.86	212.55						20,525.42
1.A. Fuel combustion	19,019.15	432.61	212.34						19,664.10
1.A.1. Energy industries	6,365.42	5.34	18.68						6,389.44
1.A.2. Manufacturing industries and construction	3,108.28	5.86	8.20						3,122.34
1.A.3. Transport	6,091.06	22.69	66.59						6,180.33
1.A.4. Other sectors	3,454.39	398.72	118.88						3,971.99
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	573.86	287.25	0.21						861.32
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	573.86	287.25	0.21						861.32
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,082.18	3.26	551.63	469.94	NO	NO	9.63	NO	3,116.64
2.A. Mineral industry	1,455.41	NO	NO						1,455.41
2.B. Chemical industry	529.27	3.26	527.51	NO	NO	NO	NO	NO	1,060.04
2.C. Metal industry	4.84	NA,NO	NO	NO	NO	NO		NO	4.84
2.D. Non-energy products from fuels and solvent use	92.66	NA	NA						92.66
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				469.94	NO	NO	NO	NO	469.94
2.G. Other product manufacture and use	NO	NO	24.11	NO	NO	NO	9.63	NO	33.74
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	76.96	1,896.76	1,093.67						3,067.39
3.A. Enteric fermentation		1,333.59							1,333.59
3.B. Manure management		563.17	146.82						709.99
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	946.85						946.85
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	11.92								11.92
3.H. Urea application	65.04								65.04
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-7,084.83	5.71	117.84						-6,961.29
4.A. Forest land	-7,900.76	5.46	5.72						-7,889.58
4.B. Cropland	429.56	NO	15.94						445.50
4.C. Grassland	-129.26	0.25	27.68						-101.33
4.D. Wetlands	11.51	NO	1.49						13.00
4.E. Settlements	683.09	NO	67.00						750.09
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-178.97								-178.97
4.H. Other	NO	NO	NO						NO
5. Waste	0.16	1,874.68	80.36						1,955.20
5.A. Solid waste disposal		1,292.23							1,292.23
5.B. Biological treatment of solid waste		2.13	1.17						3.30
5.C. Incineration and open burning of waste	0.16	9.51	2.08						11.75
5.D. Waste water treatment and discharge		570.81	77.11						647.92
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	292.16	0.11	2.15						294.42
1.D.1.a. Aviation	270.31	0.05	2.00						272.37
1.D.1.b. Navigation	21.85	0.06	0.15						22.06
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,576.02								5,576.02
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	9,131.22								9,131.22
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									28,664.65
Total CO₂ equivalent emissions with LULUCF									21,703.36
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									28,664.65
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									21,703.36

Table A5.2-22: GHG emission in Croatia, 2010

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	13,946.39	4,563.74	2,285.61	563.88	NO	NO	10.13	NO	21,369.75
1. Energy	18,774.65	748.54	210.43						19,733.62
1.A. Fuel combustion	18,233.13	460.07	210.23						18,903.43
1.A.1. Energy industries	5,877.34	4.86	19.32						5,901.52
1.A.2. Manufacturing industries and construction	2,983.81	5.80	8.02						2,997.63
1.A.3. Transport	5,865.78	20.46	62.66						5,948.90
1.A.4. Other sectors	3,506.21	428.94	120.24						4,055.39
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	541.52	288.47	0.20						830.19
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	541.52	288.47	0.20						830.19
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,115.40	3.85	704.20	563.88	NO	NO	10.13	NO	3,396.66
2.A. Mineral industry	1,403.71	NO	NO						1,403.71
2.B. Chemical industry	615.36	3.05	680.28	NO	NO	NO	NO	NO	1,298.69
2.C. Metal industry	14.68	NA,NO	NO	NO	NO	NO		NO	14.68
2.D. Non-energy products from fuels and solvent use	81.64	NA	NA						81.64
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				563.88	NO	NO	NO	NO	563.88
2.G. Other product manufacture and use	NO	NO	23.91	NO	NO	NO	10.13	NO	34.05
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	88.04	1,884.16	1,162.85						3,135.04
3.A. Enteric fermentation		1,303.76							1,303.76
3.B. Manure management		580.40	141.44						721.84
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,021.41						1,021.41
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	21.46								21.46
3.H. Urea application	66.58								66.58
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-7,831.74	1.97	126.83						-6,902.94
4.A. Forest land	-7,757.91	1.84	4.52						-7,751.55
4.B. Cropland	439.81	NO	18.18						457.99
4.C. Grassland	-149.40	0.13	30.82						-118.44
4.D. Wetlands	8.49	NO	1.06						9.56
4.E. Settlements	676.41	NO	72.25						748.66
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-249.16								-249.16
4.H. Other	NO	NO	NO						NO
5. Waste	0.05	1,926.03	81.30						2,007.38
5.A. Solid waste disposal		1,315.45							1,315.45
5.B. Biological treatment of solid waste		2.41	1.26						3.67
5.C. Incineration and open burning of waste	0.05	9.65	2.11						11.80
5.D. Waste water treatment and discharge		598.52	77.93						676.45
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items: ⁽³⁾									
1.D.1. International bunkers	315.09	0.11	2.33						317.52
1.D.1.a. Aviation	295.46	0.06	2.19						297.70
1.D.1.b. Navigation	19.64	0.05	0.14						19.82
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,940.55								5,940.55
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	9,647.68								9,647.68
Indirect N₂O			NA,NO						

Indirect CO₂ ⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	28,272.70
Total CO₂ equivalent emissions with LULUCF	21,369.75
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	28,272.70
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	21,369.75

Table A5.2-23: GHG emission in Croatia, 2011

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	14,819.04	4,549.07	2,358.23	625.90	NO	NO	10.57	NO	22,362.81
1. Energy	18,565.66	713.33	198.31						19,477.31
1.A. Fuel combustion	18,006.77	447.33	198.13						18,652.23
1.A.1. Energy industries	6,247.86	5.62	20.45						6,273.94
1.A.2. Manufacturing industries and construction	2,750.09	5.09	7.05						2,762.23
1.A.3. Transport	5,726.93	18.81	51.85						5,797.59
1.A.4. Other sectors	3,281.90	417.81	118.78						3,818.48
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	558.89	266.01	0.18						825.07
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	558.89	266.01	0.18						825.07
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,943.77	1.96	693.97	625.90	NO	NO	10.57	NO	3,276.17
2.A. Mineral industry	1,255.57	NO	NO						1,255.57
2.B. Chemical industry	593.19	1.96	670.44	NO	NO	NO	NO	NO	1,265.59
2.C. Metal industry	16.64	NA,NO	NO	NO	NO	NO		NO	16.64
2.D. Non-energy products from fuels and solvent use	78.37	NA	NA						78.37
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				625.90	NO	NO	NO	NO	625.90
2.G. Other product manufacture and use	NO	NO	23.53	NO	NO	NO	10.57	NO	34.10
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	105.18	1,837.98	1,233.81						3,176.97
3.A. Enteric fermentation		1,277.73							1,277.73
3.B. Manure management		560.25	132.32						692.57
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	1,101.49						1,101.49
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	21.32								21.32
3.H. Urea application	83.86								83.86
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,795.62	20.86	150.18						-5,624.58
4.A. Forest land	-6,558.63	17.02	13.31						-6,528.31
4.B. Cropland	464.84	NO	20.05						484.89
4.C. Grassland	-160.97	3.84	37.36						-119.77
4.D. Wetlands	8.52	NO	1.07						9.58
4.E. Settlements	719.39	NO	78.40						797.79
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-268.76								-268.76
4.H. Other	NO	NO	NO						NO
5. Waste	0.05	1,974.94	81.96						2,056.95
5.A. Solid waste disposal		1,367.49							1,367.49
5.B. Biological treatment of solid waste		2.58	1.32						3.89
5.C. Incineration and open burning of waste	0.05	9.19	2.01						11.25
5.D. Waste water treatment and discharge		595.67	78.64						674.31
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	387.14	0.25	2.83						390.22
1.D.1.a. Aviation	311.17	0.06	2.31						313.54
1.D.1.b. Navigation	75.97	0.19	0.52						76.69
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,834.09								5,834.09
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	10,156.96								10,156.96
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	27,987.39
Total CO₂ equivalent emissions with LULUCF	22,362.81
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	27,987.39
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	22,362.81

Table A5.2-24: GHG emission in Croatia, 2012

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	13,649.66	4,527.55	2,179.83	699.22	NO	NO	11.30	NO	21,067.56
1. Energy	17,199.62	673.59	190.64						18,063.85
1.A. Fuel combustion	16,726.38	442.71	190.48						17,359.57
1.A.1. Energy industries	5,849.20	5.47	19.37						5,874.04
1.A.2. Manufacturing industries and construction	2,384.35	5.22	7.17						2,396.75
1.A.3. Transport	5,551.16	15.88	50.09						5,617.13
1.A.4. Other sectors	2,941.67	416.14	113.85						3,471.65
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	473.24	230.88	0.16						704.28
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	473.24	230.88	0.16						704.28
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,749.08	IE,NA,NE,NO	601.62	699.22	NO	NO	11.30	NO	3,061.22
2.A. Mineral industry	1,173.23	NO	NO						1,173.23
2.B. Chemical industry	502.01	IE,NE,NO	580.13	NO	NO	NO	NO	NO	1,082.13
2.C. Metal industry	1.43	NA,NO	NO	NO	NO	NO		NO	1.43
2.D. Non-energy products from fuels and solvent use	72.41	NA	NA						72.41
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				699.22	NO	NO	NO	NO	699.22
2.G. Other product manufacture and use	NO	NO	21.50	NO	NO	NO	11.30	NO	32.79
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	101.23	1,830.57	1,129.60						3,061.41
3.A. Enteric fermentation		1,283.43							1,283.43
3.B. Manure management		547.14	129.65						676.79
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	999.96						999.96
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	14.38								14.38
3.H. Urea application	86.85								86.85
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,400.36	43.55	173.26						-5,183.55
4.A. Forest land	-6,138.29	40.42	26.29						-6,071.58
4.B. Cropland	482.88	NO	21.93						504.81
4.C. Grassland	-190.72	3.13	39.44						-148.16
4.D. Wetlands	8.55	NO	1.07						9.61
4.E. Settlements	757.05	NO	84.53						841.58
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-319.83								-319.83
4.H. Other	NO	NO	NO						NO
5. Waste	0.08	1,979.84	84.71						2,064.63
5.A. Solid waste disposal		1,409.58							1,409.58
5.B. Biological treatment of solid waste		4.81	2.43						7.25
5.C. Incineration and open burning of waste	0.08	8.89	1.94						10.91
5.D. Waste water treatment and discharge		556.56	80.33						636.89
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	342.53	0.10	2.53						345.16
1.D.1.a. Aviation	330.03	0.06	2.45						332.54
1.D.1.b. Navigation	12.50	0.03	0.09						12.62
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,011.36								6,011.36
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	10,610.64								10,610.64
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	26,251.11
Total CO₂ equivalent emissions with LULUCF	21,067.56
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	26,251.11
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	21,067.56

Table A5.2-25: GHG emission in Croatia, 2013

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	12,096.84	4,375.89	1,639.47	764.81	NO	NO	7.40	NO	18,884.39
1. Energy	16,466.37	658.48	187.39						17,312.23
1.A. Fuel combustion	16,013.57	438.88	187.23						16,639.68
1.A.1. Energy industries	5,238.07	4.66	18.60						5,261.34
1.A.2. Manufacturing industries and construction	2,359.25	5.01	6.95						2,371.21
1.A.3. Transport	5,636.55	15.67	49.74						5,701.96
1.A.4. Other sectors	2,779.70	413.54	111.94						3,305.18
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	452.80	219.60	0.16						672.55
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	452.80	219.60	0.16						672.55
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,860.32	IE,NA,NE,NO	233.40	764.81	NO	NO	7.40	NO	2,865.92
2.A. Mineral industry	1,271.22	NO	NO						1,271.22
2.B. Chemical industry	509.33	IE,NE,NO	213.66	NO	NO	NO	NO	NO	722.99
2.C. Metal industry	13.93	NA,NO	NO	NO	NO	NO		NO	13.93
2.D. Non-energy products from fuels and solvent use	65.84	NA	NA						65.84
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				764.81	NO	NO	NO	NO	764.81
2.G. Other product manufacture and use	NO	NO	19.73	NO	NO	NO	7.40	NO	27.13
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	74.61	1,748.53	977.74						2,800.88
3.A. Enteric fermentation		1,230.76							1,230.76
3.B. Manure management		517.77	121.34						639.11
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	856.40						856.40
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	14.23								14.23
3.H. Urea application	60.39								60.39
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-6,304.51	2.16	154.60						-6,147.75
4.A. Forest land	-6,620.46	1.63	7.00						-6,611.83
4.B. Cropland	294.91	NO	21.45						316.35
4.C. Grassland	-219.29	0.53	40.06						-178.71
4.D. Wetlands	9.41	NO	1.11						10.52
4.E. Settlements	657.11	NO	84.98						742.09
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-426.18								-426.18
4.H. Other	NO	NO	NO						NO
5. Waste	0.04	1,966.72	86.35						2,053.11
5.A. Solid waste disposal		1,406.53							1,406.53
5.B. Biological treatment of solid waste		6.77	3.39						10.17
5.C. Incineration and open burning of waste	0.04	8.47	1.85						10.36
5.D. Waste water treatment and discharge		544.94	81.10						626.05
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: ⁽³⁾									
1.D.1. International bunkers	379.01	0.10	2.77						381.88
1.D.1.a. Aviation	366.52	0.07	2.68						369.27
1.D.1.b. Navigation	12.50	0.03	0.09						12.62
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,975.40								5,975.40
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	11,072.83								11,072.83
Indirect N₂O			NA,NO						
Indirect CO₂ ⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									25,832.15
Total CO₂ equivalent emissions with LULUCF									18,884.39
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									25,832.15
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									18,884.39

Table A5.2-26: GHG emission in Croatia, 2014

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	11,490.39	4,337.49	1,610.63	850.23	NO	NO	7.91	NO	18,296.65
1. Energy	15,596.95	591.92	176.66						16,365.53
1.A. Fuel combustion	15,155.79	386.90	176.50						15,719.19
1.A.1. Energy industries	4,743.91	3.62	15.96						4,763.49
1.A.2. Manufacturing industries and construction	2,300.57	4.28	5.99						2,310.84
1.A.3. Transport	5,580.73	14.64	48.94						5,644.31
1.A.4. Other sectors	2,530.59	364.36	105.61						3,000.56
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	441.16	205.02	0.15						646.33
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	441.16	205.02	0.15						646.33
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,983.47	IE,NA,NE,NO	254.43	850.23	NO	NO	7.91	NO	3,096.04
2.A. Mineral industry	1,354.11	NO	NO						1,354.11
2.B. Chemical industry	559.83	IE,NE,NO	236.72	NO	NO	NO	NO	NO	796.55
2.C. Metal industry	10.11	NA,NO	NO	NO	NO	NO		NO	10.11
2.D. Non-energy products from fuels and solvent use	59.42	NA	NA						59.42
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				850.23	NO	NO	NO	NO	850.23
2.G. Other product manufacture and use	NO	NO	17.71	NO	NO	NO	7.91	NO	25.62
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	69.47	1,731.88	934.83						2,736.18
3.A. Enteric fermentation		1,213.29							1,213.29
3.B. Manure management		518.59	123.46						642.05
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	811.37						811.37
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	19.99								19.99
3.H. Urea application	49.47								49.47
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-6,159.55	0.36	158.25						-6,000.94
4.A. Forest land	-6,338.44	0.24	7.49						-6,330.70
4.B. Cropland	287.18	0.09	21.00						308.27
4.C. Grassland	-233.84	0.03	43.15						-190.66
4.D. Wetlands	9.69	NO	1.15						10.84
4.E. Settlements	654.47	NO	85.45						739.92
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-538.61								-538.61
4.H. Other	NO	NO	NO						NO
5. Waste	0.04	2,013.34	86.46						2,099.84
5.A. Solid waste disposal		1,452.50							1,452.50
5.B. Biological treatment of solid waste		8.44	3.50						11.93
5.C. Incineration and open burning of waste	0.04	8.50	1.86						10.40
5.D. Waste water treatment and discharge		543.90	81.11						625.01
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾								
1.D.1. International bunkers	383.77	0.11	2.80					386.68
1.D.1.a. Aviation	368.10	0.07	2.69					370.87
1.D.1.b. Navigation	15.66	0.04	0.11					15.81
1.D.2. Multilateral operations	C	C	C					C
1.D.3. CO₂ emissions from biomass	5,245.05							5,245.05
1.D.4. CO₂ captured	NO							NO
5.F.1. Long-term storage of C in waste disposal sites	11,498.29							11,498.29
Indirect N₂O			NA,NO					

Indirect CO₂⁽⁴⁾	NA,NO							
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Total CO₂ equivalent emissions without LULUCF	24,297.59
Total CO₂ equivalent emissions with LULUCF	18,296.65
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,297.59
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	18,296.65

Table A5.2-27: GHG emission in Croatia, 2015

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	11,919.23	4,450.74	1,745.43	944.27	NO	NO	5.75	NO	19,065.41
1. Energy	15,777.74	657.39	186.01						16,621.13
1.A. Fuel combustion	15,528.20	440.29	185.83						16,154.33
1.A.1. Energy industries	4,718.82	4.63	17.44						4,740.89
1.A.2. Manufacturing industries and construction	2,201.79	3.71	5.28						2,210.78
1.A.3. Transport	5,887.78	14.15	50.43						5,952.36
1.A.4. Other sectors	2,719.81	417.80	112.68						3,250.30
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	249.54	217.10	0.17						466.80
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	249.54	217.10	0.17						466.80
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,946.77	IE,NA,NE,NO	294.77	944.27	NO	NO	5.75	NO	3,191.56
2.A. Mineral industry	1,306.35	NO	NO						1,306.35
2.B. Chemical industry	572.27	IE,NE,NO	276.87	NO	NO	NO	NO	NO	849.14
2.C. Metal industry	9.30	NA,NO	NO	NO	NO	NO		NO	9.30
2.D. Non-energy products from fuels and solvent use	58.84	NA	NA						58.84
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				944.27	NO	NO	NO	NO	944.27
2.G. Other product manufacture and use	NO	NO	17.90	NO	NO	NO	5.75	NO	23.65
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	69.34	1,714.43	1,003.43						2,787.20
3.A. Enteric fermentation		1,193.79							1,193.79
3.B. Manure management		520.64	121.10						641.74
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	882.33						882.33
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	12.09								12.09
3.H. Urea application	57.25								57.25
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,874.66	15.64	170.18						-5,688.85
4.A. Forest land	-5,857.92	11.00	14.12						-5,832.80
4.B. Cropland	337.00	2.89	21.99						361.88
4.C. Grassland	-269.86	1.75	46.97						-221.14
4.D. Wetlands	9.98	NO	1.19						11.17
4.E. Settlements	670.28	NO	85.90						756.18
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-764.15								-764.15
4.H. Other	NO	NO	NO						NO
5. Waste	0.05	2,063.28	91.05						2,154.37
5.A. Solid waste disposal		1,497.55							1,497.55
5.B. Biological treatment of solid waste		13.85	5.56						19.41
5.C. Incineration and open burning of waste	0.05	8.25	1.80						10.10
5.D. Waste water treatment and discharge		543.62	83.69						627.31
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾								
1.D.1. International bunkers	365.05	0.10	2.67					367.81
1.D.1.a. Aviation	354.08	0.07	2.59					356.74
1.D.1.b. Navigation	10.97	0.03	0.08					11.07
1.D.2. Multilateral operations	C	C	C					C
1.D.3. CO₂ emissions from biomass	6,006.75							6,006.75
1.D.4. CO₂ captured	NO							NO
5.F.1. Long-term storage of C in waste disposal sites	11,934.67							11,934.67
Indirect N₂O			NA,NO					

Indirect CO₂⁽⁴⁾	NA,NO							
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Total CO₂ equivalent emissions without LULUCF	24,754.26
Total CO₂ equivalent emissions with LULUCF	19,065.41
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,754.26
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	19,065.41

Table A5.2-27: GHG emission in Croatia, 2016

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	12,204.55	4,418.88	1,515.85	1,079.83	NO	NO	6.80	NO	19,225.92
1. Energy	16,190.57	647.66	188.45						17,026.68
1.A. Fuel combustion	15,953.85	428.91	188.26						16,571.02
1.A.1. Energy industries	4,846.79	6.10	20.48						4,873.38
1.A.2. Manufacturing industries and construction	2,210.60	3.22	4.63						2,218.45
1.A.3. Transport	6,106.38	13.68	52.53						6,172.60
1.A.4. Other sectors	2,790.08	405.91	110.62						3,306.60
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	236.72	218.75	0.18						455.66
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	236.72	218.75	0.18						455.66
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,812.49	IE,NA,NE,NO	114.55	1,079.83	NO	NO	6.80	NO	3,013.67
2.A. Mineral industry	1,201.30	NO	NO						1,201.30
2.B. Chemical industry	547.86	IE,NE,NO	97.25	NO	NO	NO	NO	NO	645.11
2.C. Metal industry	1.05	NA,NO	NO	NO	NO	NO		NO	1.05
2.D. Non-energy products from fuels and solvent use	62.27	NA	NA						62.27
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,079.83	NO	NO	NO	NO	1,079.83
2.G. Other product manufacture and use	NO	NO	17.30	NO	NO	NO	6.80	NO	24.10
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	76.17	1,699.71	955.23						2,731.11
3.A. Enteric fermentation		1,195.55							1,195.55
3.B. Manure management		504.15	121.16						625.31
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	834.08						834.08
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	11.20								11.20
3.H. Urea application	64.96								64.96
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,874.73	9.99	167.22						-5,697.52
4.A. Forest land	-5,737.18	8.31	12.87						-5,716.00
4.B. Cropland	282.51	0.06	20.02						302.59
4.C. Grassland	-308.22	1.62	46.73						-259.87
4.D. Wetlands	10.27	NO	1.23						11.50
4.E. Settlements	657.97	NO	86.36						744.34
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-780.07								-780.07
4.H. Other	NO	NO	NO						NO
5. Waste	0.05	2,061.53	90.40						2,151.98
5.A. Solid waste disposal		1,494.92							1,494.92
5.B. Biological treatment of solid waste		11.76	3.24						15.00
5.C. Incineration and open burning of waste	0.05	7.63	1.67						9.34
5.D. Waste water treatment and discharge		547.23	85.49						632.72
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾								
1.D.1. International bunkers	388.96	0.11	2.84					391.91
1.D.1.a. Aviation	375.75	0.07	2.75					378.57
1.D.1.b. Navigation	13.21	0.03	0.09					13.34
1.D.2. Multilateral operations	C	C	C					C
1.D.3. CO₂ emissions from biomass	5,970.35							5,970.35
1.D.4. CO₂ captured	NO							NO
5.F.1. Long-term storage of C in waste disposal sites	12,347.26							12,347.26
Indirect N₂O			NA,NO					

Indirect CO₂⁽⁴⁾	NA,NO							
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Total CO₂ equivalent emissions without LULUCF	24,923.44
Total CO₂ equivalent emissions with LULUCF	19,225.92
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,923.44
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	19,225.92

Table A5.2-27: GHG emission in Croatia, 2017

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	13,545.57	4,449.75	1,661.39	1,225.33	NO	NO	7.23	NO	20,889.28
1. Energy	16,574.03	636.75	189.37						17,400.16
1.A. Fuel combustion	16,262.44	419.66	189.19						16,871.28
1.A.1. Energy industries	4,464.77	7.74	19.16						4,491.67
1.A.2. Manufacturing industries and construction	2,405.83	3.92	5.55						2,415.29
1.A.3. Transport	6,570.29	13.41	55.31						6,639.01
1.A.4. Other sectors	2,821.56	394.59	109.17						3,325.31
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	311.59	217.10	0.18						528.88
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	311.59	217.10	0.18						528.88
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,057.97	IE,NA,NE,NO	105.24	1,225.33	NO	NO	7.23	NO	3,395.78
2.A. Mineral industry	1,425.61	NO	NO						1,425.61
2.B. Chemical industry	566.79	IE,NE,NO	87.68	NO	NO	NO	NO	NO	654.47
2.C. Metal industry	1.87	NA,NO	NO	NO	NO	NO		NO	1.87
2.D. Non-energy products from fuels and solvent use	63.70	NA	NA						63.70
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,225.33	NO	NO	NO	NO	1,225.33
2.G. Other product manufacture and use	NO	NO	17.56	NO	NO	NO	7.23	NO	24.80
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	81.13	1,679.40	1,069.18						2,829.79
3.A. Enteric fermentation		1,192.32							1,192.32
3.B. Manure management		487.16	119.85						607.01
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	949.33						949.33
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	10.92								10.92
3.H. Urea application	70.21								70.21
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,167.55	77.54	206.80						-4,883.21
4.A. Forest land	-4,796.28	68.56	44.92						-4,682.80
4.B. Cropland	281.07	0.54	19.79						301.40
4.C. Grassland	-295.00	8.45	53.98						-232.57
4.D. Wetlands	10.56	NO	1.27						11.83
4.E. Settlements	661.45	NO	86.83						748.28
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-1,029.35								-1,029.35
4.H. Other	NO	NO	NO						NO
5. Waste	NO	2,055.98	90.79						2,146.76
5.A. Solid waste disposal		1,519.01							1,519.01
5.B. Biological treatment of solid waste		11.50	3.66						15.16
5.C. Incineration and open burning of waste	NO	6.87	1.50						8.37
5.D. Waste water treatment and discharge		518.60	85.63						604.23
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items: ⁽³⁾									
1.D.1. International bunkers	469.17	0.14	3.42						472.73
1.D.1.a. Aviation	449.06	0.09	3.28						452.43
1.D.1.b. Navigation	20.11	0.05	0.14						20.31
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	5,906.57								5,906.57
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	12,746.57								12,746.57
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
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Total CO ₂ equivalent emissions without LULUCF	25,772.49
Total CO ₂ equivalent emissions with LULUCF	20,889.28
Total CO ₂ equivalent emissions, including indirect CO ₂ , without LULUCF	25,772.49
Total CO ₂ equivalent emissions, including indirect CO ₂ , with LULUCF	20,889.28

Table A5.2-27: GHG emission in Croatia, 2018

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	12,038.38	4,179.92	1,578.72	1,352.41	NO	NO	6.46	NO	19,155.89
1. Energy	15,671.07	601.43	187.80						16,460.30
1.A. Fuel combustion	15,386.44	402.19	187.63						15,976.26
1.A.1. Energy industries	3,907.81	8.78	19.76						3,936.35
1.A.2. Manufacturing industries and construction	2,390.76	4.16	5.85						2,400.78
1.A.3. Transport	6,340.78	12.49	53.59						6,406.86
1.A.4. Other sectors	2,747.08	376.75	108.44						3,232.27
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	284.64	199.24	0.17						484.05
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	284.64	199.24	0.17						484.05
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,951.20	IE,NA,NE,NO	60.88	1,352.41	NO	NO	6.46	NO	3,370.95
2.A. Mineral industry	1,358.42	NO	NO						1,358.42
2.B. Chemical industry	513.06	IE,NE,NO	44.56	NO	NO	NO	NO	NO	557.62
2.C. Metal industry	8.99	NA,NO	NO	NO	NO	NO		NO	8.99
2.D. Non-energy products from fuels and solvent use	70.73	NA	NA						70.73
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,352.41	NO	NO	NO	NO	1,352.41
2.G. Other product manufacture and use	NO	NO	16.32	NO	NO	NO	6.46	NO	22.78
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	72.24	1,571.91	1,072.54						2,716.69
3.A. Enteric fermentation		1,118.35							1,118.35
3.B. Manure management		453.56	111.49						565.05
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	961.04						961.04
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	4.62								4.62
3.H. Urea application	67.62								67.62
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,656.13	1.46	164.57						-5,490.10
4.A. Forest land	-5,526.27	0.94	9.72						-5,515.60
4.B. Cropland	271.79	0.01	19.02						290.82
4.C. Grassland	-315.53	0.50	47.21						-267.82
4.D. Wetlands	10.84	NO	1.31						12.16
4.E. Settlements	664.69	NO	87.31						751.99
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-761.66								-761.66
4.H. Other	NO	NO	NO						NO
5. Waste	NO	2,005.12	92.93						2,098.06
5.A. Solid waste disposal		1,486.74							1,486.74
5.B. Biological treatment of solid waste		11.49	4.21						15.70
5.C. Incineration and open burning of waste	NO	7.15	1.56						8.71
5.D. Waste water treatment and discharge		499.75	87.16						586.91
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:⁽³⁾									
1.D.1. International bunkers	624.92	0.28	4.55						629.75
1.D.1.a. Aviation	559.65	0.11	4.09						563.85
1.D.1.b. Navigation	65.27	0.17	0.46						65.90
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,057.52								6,057.52
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	13,121.20								13,121.20
Indirect N₂O			NA,NO						
Indirect CO₂⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									24,645.99
Total CO₂ equivalent emissions with LULUCF									19,155.89
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									24,645.99
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									19,155.89

Table A5.2-27: GHG emission in Croatia, 2019

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	11,928.54	4,105.97	1,582.96	1,466.75	NO	NO	8.09	NO	19,092.31
1. Energy	15,738.60	580.02	191.98						16,510.60
1.A. Fuel combustion	15,451.66	393.29	191.82						16,036.78
1.A.1. Energy industries	3,878.50	11.02	22.70						3,912.23
1.A.2. Manufacturing industries and construction	2,397.37	4.47	6.18						2,408.02
1.A.3. Transport	6,516.87	11.81	56.22						6,584.90
1.A.4. Other sectors	2,658.92	365.99	106.72						3,131.63
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	286.94	186.73	0.16						473.83
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	286.94	186.73	0.16						473.83
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	2,006.16	IE,NA,NE,NO	60.74	1,466.75	NO	NO	8.09	NO	3,541.75
2.A. Mineral industry	1,324.94	NO	NO						1,324.94
2.B. Chemical industry	594.60	IE,NE,NO	44.55	NO	NO	NO	NO	NO	639.15
2.C. Metal industry	4.91	NA,NO	NO	NO	NO	NO		NO	4.91
2.D. Non-energy products from fuels and solvent use	81.71	NA	NA						81.71
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,466.75	NO	NO	NO	NO	1,466.75
2.G. Other product manufacture and use	NO	NO	16.19	NO	NO	NO	8.09	NO	24.28
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	75.66	1,561.23	1,069.92						2,706.80
3.A. Enteric fermentation		1,119.03							1,119.03
3.B. Manure management		442.20	112.55						554.75
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	957.37						957.37
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	2.07								2.07
3.H. Urea application	73.59								73.59
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-5,891.89	3.11	165.34						-5,723.43
4.A. Forest land	-5,771.13	2.58	10.61						-5,757.95
4.B. Cropland	268.95	0.04	18.55						287.55
4.C. Grassland	-317.32	0.49	47.06						-269.77
4.D. Wetlands	11.13	NO	1.35						12.49
4.E. Settlements	668.65	NO	87.77						756.42
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-752.16								-752.16
4.H. Other	NO	NO	NO						NO
5. Waste	NO	1,961.61	94.98						2,056.59
5.A. Solid waste disposal		1,438.64							1,438.64
5.B. Biological treatment of solid waste		12.68	4.48						17.16
5.C. Incineration and open burning of waste	NO	6.57	1.44						8.01
5.D. Waste water treatment and discharge		503.72	89.06						592.78
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items: ⁽³⁾									
1.D.1. International bunkers	683.77	0.32	4.98						689.08
1.D.1.a. Aviation	605.86	0.12	4.43						610.41
1.D.1.b. Navigation	77.91	0.20	0.55						78.67
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,228.14								6,228.14
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	13,467.66								13,467.66
Indirect N₂O			NA,NO						

Indirect CO₂ ⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	24,815.74
Total CO₂ equivalent emissions with LULUCF	19,092.31
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,815.74
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	19,092.31

Table A5.2-27: GHG emission in Croatia, 2020

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	10,992.80	4,029.69	1,637.01	1,572.23	NO	NO	9.35	NO	18,241.09
1. Energy	14,801.24	570.14	190.46						15,561.84
1.A. Fuel combustion	14,513.05	397.68	190.32						15,101.06
1.A.1. Energy industries	3,661.13	11.84	23.07						3,696.05
1.A.2. Manufacturing industries and construction	2,392.56	5.08	6.91						2,404.55
1.A.3. Transport	5,732.11	9.63	50.31						5,792.05
1.A.4. Other sectors	2,727.25	371.13	110.03						3,208.41
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	288.19	172.46	0.14						460.78
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	288.19	172.46	0.14						460.78
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,973.69	IE,NA,NE,NO	75.60	1,572.23	NO	NO	9.35	NO	3,630.88
2.A. Mineral industry	1,359.34	NO	NO						1,359.34
2.B. Chemical industry	535.32	IE,NE,NO	57.87	NO	NO	NO	NO	NO	593.19
2.C. Metal industry	4.93	NA,NO	NO	NO	NO	NO		NO	4.93
2.D. Non-energy products from fuels and solvent use	74.10	NA	NA						74.10
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,572.23	NO	NO	NO	NO	1,572.23
2.G. Other product manufacture and use	NO	NO	17.73	NO	NO	NO	9.35	NO	27.08
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	95.18	1,514.65	1,090.89						2,700.72
3.A. Enteric fermentation		1,091.14							1,091.14
3.B. Manure management		423.50	111.26						534.76
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	979.63						979.63
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	6.89								6.89
3.H. Urea application	88.29								88.29
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry ⁽¹⁾	-5,877.30	36.43	183.85						-5,657.02
4.A. Forest land	-5,878.21	32.49	26.28						-5,819.44
4.B. Cropland	265.32	0.01	18.05						283.39
4.C. Grassland	-317.91	3.93	49.88						-264.10
4.D. Wetlands	11.42	NO	1.40						12.81
4.E. Settlements	671.62	NO	88.24						759.86
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-629.54								-629.54
4.H. Other	NO	NO	NO						NO
5. Waste	NO	1,908.47	96.20						2,004.67
5.A. Solid waste disposal		1,432.70							1,432.70
5.B. Biological treatment of solid waste		16.87	6.36						23.24
5.C. Incineration and open burning of waste	NO	6.58	1.44						8.01
5.D. Waste water treatment and discharge		452.32	88.40						540.72
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items: ⁽³⁾									
1.D.1. International bunkers	227.53	0.20	1.65						229.38
1.D.1.a. Aviation	163.82	0.03	1.20						165.05
1.D.1.b. Navigation	63.71	0.17	0.45						64.33
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,383.96								6,383.96
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	13,773.30								13,773.30
Indirect N₂O			NA,NO						

Indirect CO₂ ⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	23,898.10
Total CO₂ equivalent emissions with LULUCF	18,241.09
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	23,898.10
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	18,241.09

Table A5.2-28: GHG emission in Croatia, 2021

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	11,473.56	3,880.36	1,605.31	1,697.01	NO	NO	9.63	NO	18,665.88
1. Energy	15,486.40	596.34	200.09						16,282.83
1.A. Fuel combustion	15,202.48	431.03	199.95						15,833.46
1.A.1. Energy industries	3,730.98	13.06	25.32						3,769.36
1.A.2. Manufacturing industries and construction	2,418.06	5.20	7.10						2,430.36
1.A.3. Transport	6,194.87	10.40	54.08						6,259.35
1.A.4. Other sectors	2,858.57	402.37	113.46						3,374.39
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	283.92	165.31	0.14						449.37
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	283.92	165.31	0.14						449.37
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,824.31	IE,NA,NE,NO	53.14	1,697.01	NO	NO	9.63	NO	3,584.09
2.A. Mineral industry	1,372.26	NO	NO						1,372.26
2.B. Chemical industry	365.49	IE,NE,NO	36.28	NO	NO	NO	NO	NO	401.77
2.C. Metal industry	14.26	NA,NO	NO	NO	NO	NO		NO	14.26
2.D. Non-energy products from fuels and solvent use	72.30	NA	NA						72.30
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,697.01	NO	NO	NO	NO	1,697.01
2.G. Other product manufacture and use	NO	NO	16.87	NO	NO	NO	9.63	NO	26.49
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	92.26	1,501.01	1,094.03						2,687.29
3.A. Enteric fermentation		1,079.31							1,079.31
3.B. Manure management		421.70	106.13						527.83
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	987.90						987.90
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	18.70								18.70
3.H. Urea application	73.57								73.57
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,929.41	6.53	160.20						-5,762.68
4.A. Forest land	-5,867.76	4.75	11.78						-5,851.23
4.B. Cropland	261.94	0.00	17.56						279.51
4.C. Grassland	-308.68	1.78	46.84						-260.06
4.D. Wetlands	11.93	NO	1.47						13.40
4.E. Settlements	629.44	NO	82.55						711.99
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-656.28								-656.28
4.H. Other	NO	NO	NO						NO
5. Waste	NO	1,776.49	97.86						1,874.35
5.A. Solid waste disposal		1,305.64							1,305.64
5.B. Biological treatment of solid waste		21.74	7.37						29.11
5.C. Incineration and open burning of waste	NO	6.06	1.32						7.38
5.D. Waste water treatment and discharge		443.05	89.16						532.22
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	372.76	0.25	2.71						375.73
1.D.1.a. Aviation	298.31	0.06	2.18						300.55
1.D.1.b. Navigation	74.45	0.20	0.53						75.18
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	7,049.25								7,049.25
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	14,068.28								14,068.28
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
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Total CO₂ equivalent emissions without LULUCF	24,428.55
Total CO₂ equivalent emissions with LULUCF	18,665.88
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,428.55
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	18,665.88

Table A5.2-28: GHG emission in Croatia, 2023

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions)⁽¹⁾	12,511.57	3,835.21	1,487.92	1,812.05	NO	NO	10.00	NO	19,656.76
1. Energy	16,121.65	548.51	201.77						16,871.92
1.A. Fuel combustion	15,765.56	393.25	201.64						16,360.44
1.A.1. Energy industries	4,062.71	14.50	29.03						4,106.24
1.A.2. Manufacturing industries and construction	2,313.06	4.86	6.71						2,324.63
1.A.3. Transport	6,667.33	8.65	55.16						6,731.15
1.A.4. Other sectors	2,722.45	365.23	110.74						3,198.42
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	356.09	155.26	0.13						511.48
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	356.09	155.26	0.13						511.48
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,415.64	IE,NA,NE,NO	29.16	1,812.05	NO	NO	10.00	NO	3,266.84
2.A. Mineral industry	1,255.47	NO	NO						1,255.47
2.B. Chemical industry	83.90	IE,NE,NO	12.22	NO	NO	NO	NO	NO	96.12
2.C. Metal industry	13.39	NA,NO	NO	NO	NO	NO		NO	13.39
2.D. Non-energy products from fuels and solvent use	62.87	NA	NA						62.87
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,812.05	NO	NO	NO	NO	1,812.05
2.G. Other product manufacture and use	NO	NO	16.94	NO	NO	NO	10.00	NO	26.94
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	47.88	1,411.25	988.03						2,447.16
3.A. Enteric fermentation		1,020.85							1,020.85
3.B. Manure management		390.39	100.21						490.61
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	887.82						887.82
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	5.87								5.87
3.H. Urea application	42.01								42.01
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other	NA	NA	NA						NA
4. Land use, land-use change and forestry⁽¹⁾	-5,073.59	37.15	169.93						-4,866.52
4.A. Forest land	-5,239.89	31.72	25.90						-5,182.27
4.B. Cropland	261.16	0.27	17.23						278.66
4.C. Grassland	-301.05	5.16	48.42						-247.47
4.D. Wetlands	12.45	NO	1.54						13.99
4.E. Settlements	586.99	NO	76.83						663.83
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-393.25								-393.25
4.H. Other	NO	NO	NO						NO
5. Waste	NO	1,838.31	99.04						1,937.35
5.A. Solid waste disposal		1,382.58							1,382.58
5.B. Biological treatment of solid waste		30.14	8.89						39.03
5.C. Incineration and open burning of waste	NO	5.94	1.30						7.23
5.D. Waste water treatment and discharge		419.66	88.86						508.51
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:⁽³⁾									
1.D.1. International bunkers	623.87	0.26	4.54						628.68
1.D.1.a. Aviation	564.44	0.11	4.13						568.67
1.D.1.b. Navigation	59.44	0.15	0.42						60.01
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,532.67								6,532.67
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	14,369.02								14,369.02
Indirect N₂O			NA,NO						

Indirect CO₂⁽⁴⁾	NA,NO								
--	-------	--	--	--	--	--	--	--	--

Total CO₂ equivalent emissions without LULUCF	24,523.28
Total CO₂ equivalent emissions with LULUCF	19,656.76
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF	24,523.28
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF	19,656.76

Table A5.2-29: GHG emission in Croatia, 2023

SUMMARY 2 SUMMARY REPORT FOR CO₂ EQUIVALENT EMISSIONS

(Sheet 1 of 1)

2023

HRV-CRT-2025-V0.1

Croatia

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GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO ₂ ⁽¹⁾	CH ₄	N ₂ O	HFCs	PFCs	Unspecified mix of HFCs and PFCs	SF ₆	NF ₃	Total
	CO ₂ equivalents (kt) ⁽²⁾								
Total (net emissions) ⁽¹⁾	12,797.46	3,687.13	1,469.18	1,928.97	NO	NO	10.47	NO	19,893.21
1. Energy	16,896.91	532.64	214.87						17,644.42
1.A. Fuel combustion	16,592.84	384.19	214.74						17,191.77
1.A.1. Energy industries	4,054.35	14.42	28.61						4,097.38
1.A.2. Manufacturing industries and construction	2,435.00	6.65	9.03						2,450.68
1.A.3. Transport	7,504.54	9.63	67.74						7,581.91
1.A.4. Other sectors	2,598.95	353.48	109.36						3,061.78
1.A.5. Other	IE,NO	IE,NO	IE,NO						IE,NO
1.B. Fugitive emissions from fuels	304.07	148.45	0.13						452.65
1.B.1. Solid fuels	NO	NO	NO						NO
1.B.2. Oil and natural gas and other emissions from energy production	304.07	148.45	0.13						452.65
1.C. CO ₂ transport and storage	NO								NO
2. Industrial processes and product use	1,542.64	IE,NA,NE,NO	34.90	1,928.97	NO	NO	10.47	NO	3,516.97
2.A. Mineral industry	1,259.30	NO	NO						1,259.30
2.B. Chemical industry	201.91	IE,NE,NO	17.51	NO	NO	NO	NO	NO	219.42
2.C. Metal industry	17.90	NA,NO	NO	NO	NO	NO		NO	17.90
2.D. Non-energy products from fuels and solvent use	63.52	NA	NA						63.52
2.E. Electronic Industry			NO	NO	NO	NO	NO	NO	NO
2.F. Product uses as ODS substitutes				1,928.97	NO	NO	NO	NO	1,928.97
2.G. Other product manufacture and use	NO	NO	17.38	NO	NO	NO	10.47	NO	27.86
2.H. Other	NA	NA	NA	NO	NO	NO		NO	NA,NO
3. Agriculture	28.05	1,339.33	975.80						2,343.18
3.A. Enteric fermentation		968.74							968.74
3.B. Manure management		370.59	96.24						466.83
3.C. Rice cultivation		NO							NO
3.D. Agricultural soils		NE	879.56						879.56
3.E. Prescribed burning of savannahs		NA	NA						NA
3.F. Field burning of agricultural residues		NA,NO	NA,NO						NA,NO
3.G. Liming	6.38								6.38
3.H. Urea application	21.67								21.67
3.I. Other carbon-containing fertilizers	NA								NA
3.J. Other									
4. Land use, land-use change and forestry ⁽¹⁾	-5,670.14	1.56	142.85						-5,525.74
4.A. Forest land	-5,805.85	0.84	9.85						-5,795.17
4.B. Cropland	255.34	0.00	16.59						271.93
4.C. Grassland	-287.16	0.72	43.68						-242.75
4.D. Wetlands	12.96	NO	1.61						14.58
4.E. Settlements	545.99	NO	71.12						617.11
4.F. Other land	NA,NO	NA,NO	NA,NO						NA,NO
4.G. Harvested wood products	-391.43								-391.43
4.H. Other	NO	NO	NO						NO
5. Waste	NO	1,813.61	100.77						1,914.38
5.A. Solid waste disposal		1,364.33							1,364.33
5.B. Biological treatment of solid waste		34.24	10.30						44.54
5.C. Incineration and open burning of waste	NO	5.92	1.29						7.21
5.D. Waste water treatment and discharge		409.12	89.18						498.30
5.E. Other	NO	NO	NO						NO
6. Other (as specified in summary 1)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items: ⁽³⁾									
1.D.1. International bunkers	669.60	0.31	4.94						674.85
1.D.1.a. Aviation	596.25	0.12	4.42						600.79
1.D.1.b. Navigation	73.35	0.19	0.52						74.06
1.D.2. Multilateral operations	C	C	C						C
1.D.3. CO₂ emissions from biomass	6,438.50								6,438.50
1.D.4. CO₂ captured	NO								NO
5.F.1. Long-term storage of C in waste disposal sites	14,644.77								14,644.77
Indirect N₂O			NA,NO						
Indirect CO₂ ⁽⁴⁾	NA,NO								
Total CO₂ equivalent emissions without LULUCF									25,418.95
Total CO₂ equivalent emissions with LULUCF									19,893.21
Total CO₂ equivalent emissions, including indirect CO₂, without LULUCF									25,418.95
Total CO₂ equivalent emissions, including indirect CO₂, with LULUCF									19,893.21

Annex 5-3: CO₂ emission factors, oxidation factors and national net calorific values

Table 5.3-1: National net calorific values, CO₂ emission factors and oxidation factors for 2023 (needed for monitoring and reporting on CO₂ emission)

Gorivo		DOV		CO ₂ Emisijski faktor (t CO ₂ /TJ)	Oksidacijski faktor (OF)
		Jedinica	2023		
Motorni benzin	Motor Gasoline	GJ/t	44.5900	69.30	1
Aviobenzin	Aviation Gasoline	GJ/t	44.5900	70.00	1
Kerozin (Mlazno gorivo)	Jet Kerosene	GJ/t	43.9600	71.50	1
Dizel i ekstra lako loživo ulje (plinsko ulje)	Gas/Diesel Oil	GJ/t	42.7100	74.10	1
Loživo ulje i srednje loživo ulje	Residual Fuel Oil	GJ/t	40.1900	77.40	1
Ukapljeni naftni plin	Liquefied Petroleum Gases	GJ/t	46.8900	63.10	1
Maziva	Lubricants	GJ/t	33.5000	73.30	1
Naftni koks	Petroleum Coke	GJ/t	31.0000	97.50	1
Petrolej	Petroleum	GJ/t	43.9600	73.30	1
Antracit	Anthracite	GJ/t	29.3100	98.30	1
Kameni ugljen- Industrija	Other bituminous coal Industry	GJ/t	25.9170	94.60	1
Kameni ugljen- Termoelektrane	Other bituminous coal Thermal power plant	GJ/t	24.4700	93.104	1
Ugljen za proizvodnju koksa (koksni ugljen)	Coking coal	GJ/t	28.2000	94.60	1
Mrki ugljen (smeđi ugljen) Industrija	Sub bituminous coal Industry	GJ/t	15.7000	96.10	1
Lignit	Lignite	GJ/t	11.5000	101.00	1
Briketi kamenog ugljena	Brown coal briquettes	GJ/t	20.7000	97.50	1
Koks	Coke oven coke	GJ/t	29.3100	107.00	1
Prirodni plin	Natural Gas	GJ/10 ³ m ³	37.0000	56.10	1
Gradski plin	Gas Works Gas	GJ/t	38.7000	44.40	1
Koksni plin	Coke Oven Gas	GJ/t	38.7000	44.40	1
Rafinerijski plin	Refinery Gas	GJ/t	42.6000	57.60	1

Annex 5-4: Reporting on consistency of the reported data on air pollutants, for 2023

SO_x

EMISSION CATEGORIES	Emissions for pollutant X reported in greenhouse gas (GHG inventory) (in kt) ⁽³⁾	Emissions for pollutant X reported under Directive 2016/2284 (NEC), submission version X (in kt) ⁽³⁾	Absolute difference in kt ^{(1) (3)}	Explanations for differences
National total (excluding LULUCF)	5	6	0.0	
1. Energy	5	5	0.0	
A. Fuel combustion (sectoral approach)	4	4	0.0	
1. Energy industries	0.9469	1	0.0	
2. Manufacturing industries and construction	2	2	0.0	
3. Transport	0	0	0.0	
4. Other sectors	1	1	0.0	
5. Other	NO		NO	
B. Fugitive emissions from fuels	2	2	0.0	
1. Solid fuels	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	2	2	0.0	
2. Industrial processes and product use	0	0	-0.1	
A. Mineral industry	NA	0	NO	
B. Chemical industry	NE,NO	0	NO	
C. Metal industry	0	0	0.0	
D. Non-energy products from fuels and solvent use	NA,NO	0	NO	
G. Other product manufacture and use	NO	0	NO	
H. Other	NA,NE	0	NO	
3. Agriculture	0	0	0.0	
B. Manure management	0	0	0.0	
D. Agricultural soils	0	0	0.0	
F. Field burning of agricultural residues	NO	NO	NO	
J. Other	0	NO	NO	
5. Waste	0	0	0.0	
A. Solid waste disposal	0	0	0.0	
B. Biological treatment of solid waste	0	0	0.0	
C. Incineration and open burning of waste	0	0	0.0	
D. Wastewater treatment and discharge	0	0	0.0	
E. Other	NO	NO	NO	
6. Other	NA	NA	NO	

NO_x

EMISSION CATEGORIES	Emissions for pollutant X reported in greenhouse gas (GHG inventory) (in kt) ⁽³⁾	Emissions for pollutant X reported under Directive 2016/2284 (NEC), submission version X (in kt) ⁽³⁾	Absolute difference in kt ^{(1) (3)}	Explanations for differences
National total (excluding LULUCF)	43	42	0.6	
1. Energy	43	42	0.7	
A. Fuel combustion (sectoral approach)	43	42	0.7	
1. Energy industries	5	5	0.0	
2. Manufacturing industries and construction	6	6	0.0	
3. Transport	25	25	-0.2	Difference is due to differences in methodology in Aviation sector
4. Other sectors	6.9688	6.0522	0.9	Error occurred. Will be corrected in next submission
5. Other	NO	NO	NO	
B. Fugitive emissions from fuels	0	0	0.0	
1. Solid fuels	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	0	0	0.0	
2. Industrial processes and product use	0	0	-0.1	
A. Mineral industry	NA	0	NO	
B. Chemical industry	0	0	0.1	
C. Metal industry	0	0	0.0	
D. Non-energy products from fuels and solvent use	NA,NO	0	NO	
G. Other product manufacture and use	NO	0	NO	
H. Other	NA,NE	0	NO	
3. Agriculture	3	5	-1.3	Difference is due to differences in methodology
B. Manure management	0	0	-0.1	Difference is due to differences in methodology
D. Agricultural soils	3	5	-1.2	Difference is due to differences in methodology
F. Field burning of agricultural residues	NO	NO	NO	
J. Other	0	NO	NO	
5. Waste	0	0	0.0	
A. Solid waste disposal	NA,NO	0	NO	
B. Biological treatment of solid waste	NE	0	NO	
C. Incineration and open burning of waste	0	0	0.0	
D. Wastewater treatment and discharge	NA,NO	0	NO	
E. Other	NO	NO	NO	
6. Other	NA	NA	NO	

CO

EMISSION CATEGORIES	Emissions for pollutant X reported in greenhouse gas (GHG inventory) (in kt) ⁽³⁾	Emissions for pollutant X reported under Directive 2016/2284 (NEC), submission version X (in kt) ⁽³⁾	Absolute difference in kt ^{(1) (3)}	Explanations for differences
National total (excluding LULUCF)	207	207	-0.2	
1. Energy	204	204	0.3	
A. Fuel combustion (sectoral approach)	190	190	0.3	
1. Energy industries	1.8490	2	0.0	
2. Manufacturing industries and construction	12	12	0.0	
3. Transport	23	23	-0.4	Difference is due to differences in methodology in Aviation sector
4. Other sectors	154	154	0.6	Error occurred. Will be corrected in next submission
5. Other	NO		NO	
B. Fugitive emissions from fuels	14	14	0.0	
1. Solid fuels	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	14	14	0.0	
2. Industrial processes and product use	0	1	-0.5	Difference is due to differences in methodology
A. Mineral industry	NA	0	NO	
B. Chemical industry	0	0	0.0	
C. Metal industry	0	0	0.0	
D. Non-energy products from fuels and solvent use	0	0	0.0	
G. Other product manufacture and use	NO	0	NO	
H. Other	NA,NE	0	NO	
3. Agriculture	0	0	0.0	
B. Manure management	0	0	0.0	
D. Agricultural soils	NO	0	NO	
F. Field burning of agricultural residues	NO	NO	NO	
J. Other	0	NO	NO	
5. Waste	2	2	0.0	
A. Solid waste disposal	NE,NO	0	NO	
B. Biological treatment of solid waste	NE	0	NO	
C. Incineration and open burning of waste	2	2	0.0	
D. Wastewater treatment and discharge	NA,NO	0	NO	
E. Other	NO	NO	NO	
6. Other	NA	NA	NO	

NMVOC

EMISSION CATEGORIES	Emissions for pollutant X reported in greenhouse gas (GHG inventory) (in kt) ⁽³⁾	Emissions for pollutant X reported under Directive 2016/2284 (NEC), submission version X (in kt) ⁽³⁾	Absolute difference in kt ^{(1) (3)}	Explanations for differences
National total (excluding LULUCF)	44	46	-1.5	
1. Energy	26	27	-0.8	
A. Fuel combustion (sectoral approach)	24	24	-0.8	
1. Energy industries	0.5168	1	0.0	
2. Manufacturing industries and construction	2	2	0.0	
3. Transport	3	4	-1.2	Difference is due to differences in methodology in Aviation sector
4. Other sectors	18	18	0.4	
5. Other	NO		NO	
B. Fugitive emissions from fuels	2	2	0.0	
1. Solid fuels	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	2	2	0.0	
2. Industrial processes and product use	18	18	-0.7	Difference is due to differences in methodology
A. Mineral industry	NA	0	NO	
B. Chemical industry	0	0	0.0	
C. Metal industry	0	0	0.0	
D. Non-energy products from fuels and solvent use	14	14	0.0	
G. Other product manufacture and use	NO	1	NO	
H. Other	3	3	0.0	
3. Agriculture	8	8	0.0	
B. Manure management	7	7	0.0	
D. Agricultural soils	2	2	0.0	
F. Field burning of agricultural residues	NO	NO	NO	
J. Other	0	NO	NO	
5. Waste	1	1	0.0	
A. Solid waste disposal	1	1	0.0	
B. Biological treatment of solid waste	NE	0	NO	
C. Incineration and open burning of waste	0	0	0.0	
D. Wastewater treatment and discharge	0	0	0.0	
E. Other	NO	NO	NO	
6. Other	NA	NA	NO	

Annex 5-5: Reporting on consistency of reported emissions with data from the ETS

	Total emissions (CO ₂ eq)			
	Greenhouse gas inventory emissions [kt CO ₂ eq] ⁽³⁾	Verified emissions under Directive 2003/87/EC [kt CO ₂ eq] (3)	Ratio in % (Verified emissions/inventory emissions ⁽³⁾)	Comment ⁽²⁾
Greenhouse gas emissions (for GHG inventory: total GHG emissions, including indirect CO₂ emissions if reported, without LULUCF, and excluding emissions from domestic aviation; for Directive 2003/87/EC: GHG emissions from stationary installations under Article 2(1) of Directive 2003/87/EC)	25,388.79	6,567.05	25.87%	
CO₂ emissions (for GHG inventory: total CO₂ emissions, including indirect CO₂ emissions if reported, without LULUCF, and excluding CO₂ emissions from domestic aviation; for Directive 2003/87/EC: CO₂ emissions from stationary installations under Article 2(1) of Directive 2003/87/EC)	18,437.43	6,549.54	35.52%	
	CO ₂ emissions			
	Greenhouse gas inventory emissions [kt] ⁽³⁾	Verified emissions under Directive 2003/87/EC [kt] (3)	Ratio in % (Verified emissions/inventory emissions ⁽³⁾)	Comment ⁽²⁾
1.A Fuel combustion activities, total		NA	NA	
1.A Fuel combustion activities, stationary combustion		5,119.10		
1.A.1 Energy industries	4,097.38	3,762.99	91.84%	
1.A.1.a Public electricity and heat production	3,064.40	2,967.10	96.82%	
1.A.1.b Petroleum refining	718.42	678.32	94.42%	
1.A.1.c Manufacture of solid fuels and other energy industries	314.57	117.56	37.37%	
Iron and steel (for GHG inventory combined CRT categories 1.A.2.a + 2.C.1 + 1.A.1.c and other relevant CRT categories that include emissions from iron and steel (e.g. 1A1a, 1B1) ⁽⁴⁾	397.96	150.66	37.86%	
1.A.2 Manufacturing industries and construction	2,450.68	1,356.12	55.34%	
1.A.2.a Iron and steel	65.49	15.20	23.21%	
1.A.2.b Non-ferrous metals	29.57	15.15	51.24%	
1.A.2.c Chemicals	115.23	NO	NO	
1.A.2.d Pulp, paper and print	114.20	104.37	91.39%	
1.A.2.e Food processing, beverages and tobacco	304.57	80.26	26.35%	
1.A.2.f Non-metallic minerals	1,369.16	1,083.08	79.11%	
1.A.2.g Other	452.47	58.06	12.83%	
1.A.3 Transport	NO	NO	NO	
1.A.3.e Other transportation (pipeline transport)	NO	NO	NO	
1.A.4 Other sectors	NO	NO	NO	
1.A.4.a Commercial/institutional	NO	NO	NO	
1.A.4.b Agriculture/Forestry/Fisheries	NO	NO	NO	
1.B Fugitive emissions from Fuels	NO	NO	NO	
1.C CO₂ Transport and storage	NO	NO	NO	
1.C.1 Transport of CO ₂	NO	NO	NO	
1.C.2 Injection and storage	NO	NO	NO	
1.C.3 Other	NO	NO	NO	
2.A Mineral products	1,259.30	1,259.30	100.00%	
2.A.1 Cement production	1,117.78	1,117.78	100.00%	
2.A.2 Lime production	96.83	96.83	100.00%	
2.A.3 Glass production	31.28	31.28	100.00%	
2.A.4 Other process uses of carbonates	13.42	13.42	100.00%	
2.B Chemical industry	201.91	153.23	75.89%	
2.B.1 Ammonia production	201.91	153.23	75.89%	
2.B.3 Adipic acid production (CO ₂)	NO	NO	NO	
2.B.4 Caprolactam, glyoxal and glyoxylic acid production	NO	NO	NO	
2.B.5 Carbide production	NO	NO	NO	
2.B.6 Titanium dioxide production	NO	NO	NO	
2.B.7 Soda ash production	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	NO	NO	NO	
2.C Metal production	17.90	17.90	99.99%	
2.C.1 Iron and steel production	17.90	17.90	99.99%	
2.C.2 Ferroalloys production	NO	NO	NO	
2.C.3 Aluminium production	NO	NO	NO	
2.C.4 Magnesium production	NO	NO	NO	
2.C.5 Lead production	NO	NO	NO	
2.C.6 Zinc production	NO	NO	NO	
2.C.7 Other metal production	NO	NO	NO	
	N ₂ O emissions			
	Greenhouse gas inventory emissions [kt CO ₂ eq] ⁽³⁾	Verified emissions under Directive 2003/87/EC [kt CO ₂ eq] (3)	Ratio in % (Verified emissions/inventory emissions ⁽³⁾)	Comment ⁽²⁾
2.B.2 Nitric acid production	17.51	17.51	100.00%	
2.B.3 Adipic acid production	NO	NO	NO	
2.B.4 Caprolactam, glyoxal and glyoxylic acid production	NO	NO	NO	
	PFC emissions			
	Greenhouse gas inventory emissions [kt CO ₂ eq] ⁽³⁾	Verified emissions under Directive 2003/87/EC [kt CO ₂ eq] (3)	Ratio in % (Verified emissions/inventory emissions ⁽³⁾)	Comment ⁽²⁾
2.C.3 Aluminium production	NO	NO	NO	

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