ANNEXES TO THE NATIONAL INVENTORY REPORT

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Content

Annexes to the national inventory report 3

Annex 1: Key categories 3

1.1. Description of methodology used for identifying key categories, if different from the Intergovernmental Panel on Climate Change (IPCC) tier 1 approach 4

1.1.1. Level assessment 4

1.1.2. Trend Assessment 4

1.2. Information on the level of disaggregation 7

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 8

Annex 2: Assessment of uncertainty 46

Annex 2: Assessment of uncertainty 47

2.1. Description of methodology used for identifying uncertainties 47

2.2. Estimation of Uncertainty by Monte Carlo Simulation (Approach 2) 47

2.2.1. Overview of the method 47

2.2.2. Uncertainty distributions and correlations for activity data and emission factors 48

Annex 3: Detailed methodological descriptions for individual source or sink categories 63

3.1. Energy sector 64

3.2. LULUCF sector - List of implemented and planned projects 89

3.3. QA/QC checks conducted by EEA 90

Annex 4: The national energy balance for the most recent inventory year 92

Annex 5: Any additional information 106

Annex 5-1: Archiving, inventory data record sheet 107

5.1.1. Inventory data record sheet 107

Annex 5-2: GHG emission trend 108

Annex 5-3: CO_2 emission factors, oxidation factors and national net calorific values 140

Annex 5-4: Reporting on consistency of the reported data on air pollutants, for 2020. 141

Annex 5-6: Reporting on consistency of reported emissions with data from the ETS 145

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_2O
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_2O
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4

Source Categories Assessed in Key Source Category Analysis	Direct GHG
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O
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_2O
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_2O
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_2O
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_2O
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O
1.A.3.a Domestic Aviation	CO_2
1.A.3.a Domestic Aviation	CH_4
1.A.3.a Domestic Aviation	N_2O
1.A.3.b Road Transportation	CO_2
1.A.3.b Road Transportation	CH_4
1.A.3.b Road Transportation	N_2O
1.A.3.c Railways	CO_2
1.A.3.c Railways	CH_4
1.A.3.c Railways	N_2O
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_2O
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_2O
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_2O
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_2O

Source Categories Assessed in Key Source Category Analysis	Direct GHG
1.A.4 Other Sectors - Biomass	CH_4
1.A.4 Other Sectors - Biomass	N_2O
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_2O
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_2O
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_2O
2.B.2 Nitric Acid Production	N_2O
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.3 Fire Protection	F-gases
2.F.4 Aerosols	F-gases
2.G Other Product Manufacture and Use	N_2O
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_2O
3.D.1 Direct N2O Emissions From Managed Soils	N_2O

Source Categories Assessed in Key Source Category Analysis	Direct GHG
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O
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 N2O emissions from N mineralization/immobilization	N_2O
4(V) Biomass Burning	CO_2
4(V) Biomass Burning	CH_4
4(V) Biomass Burning	N_2O
WASTE	
5.A Solid Waste Disposal	CH_4
5.B Biological Treatment of Soild Waste	CH_4
5.B Biological Treatment of Soild Waste	N_2O
5.C Incineration and Open Burning of Waste	CO_2
5.C Incineration and Open Burning of Waste	N_2O
5.D Wastewater Treatment and Discharge	CH_4
5.D Wastewater Treatment and Discharge	N_2O

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-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	0.146	15%
1.A.3.b Road Transportation	CO_2	3,505.880	0.112	26%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	0.078	34%
3.A Enteric Fermentation	CH_4	2,121.150	0.068	40%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	0.067	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	1,240.239	0.039	67%
2.A.1 Cement Production	CO_2	1,093.483	0.035	70%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	0.034	74%
2.B.2 Nitric Acid Production	N_2O	754.265	0.024	76%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.024	79%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	0.019	80%
5.D Wastewater Treatment and Discharge	CH_4	588.877	0.019	82%
2.B.1 Ammonia Production	CO_2	558.672	0.018	84%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.017	86%
3.B Manure Management	CH_4	427.105	0.014	87%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	0.014	88%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	0.011	90%
3.B Manure Management	N_2O	329.052	0.010	91%
5.A Solid Waste Disposal	CH_4	327.966	0.010	92%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.010	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	0.007	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	176.171	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.A.3.c Railways	CO_2	140.079	0.004	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	0.004	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	0.004	97%

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
2.C.3 Aluminium Production	CO_2	118.797	0.004	98%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.003	98%
5.D Wastewater Treatment and Discharge	N_2O	66.884	0.002	98%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.002	98%
1.A.3.b Road Transportation	N_2O	52.684	0.002	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.002	99%
3.H Urea Application	CO_2	50.020	0.002	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.3.b Road Transportation	CH_4	41.406	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.001	100%
5.C Incineration and Open Burning of Waste	CH_4	17.143	0.001	100%
1.A.3.c Railways	N_2O	13.248	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.000	100%

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	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	0.317	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	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_2O	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_2O	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	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 Soild Waste	CH_4	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	0.000	100%
TOTAL		**31,416.285**		

Table A1.3-2: Key categories analysis – Level Assessment - Tier 1 (Excluding LULUCF) – 2020

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.233	23%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.094	33%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.070	40%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.069	47%
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.051	52%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.051	57%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.045	61%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.042	66%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.042	70%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.041	74%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.036	77%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.031	80%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.023	83%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.019	85%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.018	86%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.018	88%
3.B Manure Management	CH_4	427.105	366.085	0.015	90%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.014	91%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.011	92%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.011	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.010	94%
3.B Manure Management	N_2O	329.052	142.004	0.006	95%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.005	95%
2.A.2 Lime Production	CO_2	156.820	103.671	0.004	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.004	96%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.004	97%
3.H Urea Application	CO_2	50.020	88.290	0.004	97%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.004	97%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.003	98%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.003	98%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.002	98%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.002	99%
1.A.3.c Railways	CO_2	140.079	42.092	0.002	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.002	99%
2.A.3 Glass Production	CO_2	43.216	25.625	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.001	99%

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.001	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.000	99%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.000	100%
1.A.3.b Road Transportation	CH_4	41.406	8.885	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.000	100%
3.G Liming	CO_2	0.000	6.887	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	100%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.000	100%
1.A.3.c Railways	N_2O	13.248	4.841	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	1.223	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	100%

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.044	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	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	59.644	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_2O	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	5.447	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	3.899	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	1,240.239	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	0.000	100%
TOTAL		**31,416.285**	**23,756.352**		

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-CO2)**	**Level Assessment**	**Cumulative Total (%)**
4.A.1 Forest Land Remaining Forest Land	CO_2	6,404.258	0.164	16%
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	2,121.150	0.054	49%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	0.054	54%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	0.048	59%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	0.040	63%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	0.039	67%
2.C.3 Aluminium Production	PFCs	1,240.239	0.032	70%
2.A.1 Cement Production	CO_2	1,093.483	0.028	73%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	0.028	76%
2.B.2 Nitric Acid Production	N_2O	754.265	0.019	78%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.019	80%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	0.015	81%
5.D Wastewater Treatment and Discharge	CH_4	588.877	0.015	83%
2.B.1 Ammonia Production	CO_2	558.672	0.014	84%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.013	86%
4.B.1 Cropland Remaining Cropland	CO_2	433.008	0.011	87%
3.B Manure Management	CH_4	427.105	0.011	88%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	0.011	89%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	0.009	90%
3.B Manure Management	N_2O	329.052	0.008	91%
5.A Solid Waste Disposal	CH_4	327.966	0.008	91%
4.G Harvested Wood Products	CO_2	317.852	0.008	92%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.008	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	0.006	94%
2.B.8 Petrochemical and Carbon Black Production	CO_2	192.426	0.005	94%
4.E.2 Land Converted to Settlements	CO_2	186.622	0.005	95%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	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.A.3.c Railways	CO_2	140.079	0.004	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	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	98%

Tier 1 Analysis - Level Assessment Including LULUCF				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.002	98%
4.D.2 Land Converted to Wetlands	CO_2	77.232	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	66.884	0.002	98%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.002	98%
1.A.3.b Road Transportation	N_2O	52.684	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.001	99%
3.H Urea Application	CO_2	50.020	0.001	99%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	47.233	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.3.b Road Transportation	CH_4	41.406	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	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	17.143	0.000	100%
4(V) Biomass Burning	CO_2	14.979	0.000	100%
1.A.3.c Railways	N_2O	13.248	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	0.000	100%
4.C.2 Land Converted to Grassland	CO_2	9.952	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	100%

Tier 1 Analysis - Level Assessment Including LULUCF				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	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	0.317	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	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_2O	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_2O	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	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 Soild Waste	CH_4	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	0.000	100%
TOTAL		**38,966.315**		

Table A1.3-4: Key categories analysis – Level Assessment - Tier 1 (Including LULUCF) – 2020

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
4.A.1 Forest Land Remaining Forest Land	CO_2	6,404.258	0.164	0.182	18%
1.A.3.b Road Transportation	CO_2	3,505.880	0.090	0.170	35%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	0.048	0.069	42%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.019	0.051	47%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	0.050	52%
5.A Solid Waste Disposal	CH_4	327.966	0.008	0.037	56%
2.A.1 Cement Production	CO_2	1,093.483	0.028	0.037	60%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	0.063	0.032	63%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	0.040	0.030	66%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	0.015	0.030	69%
3.A Enteric Fermentation	CH_4	2,121.150	0.054	0.030	72%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	0.028	0.026	75%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	0.054	0.022	77%
4.E.2 Land Converted to Settlements	CO_2	186.622	0.005	0.019	79%
4.G Harvested Wood Products	CO_2	317.852	0.008	0.018	80%
2.B.1 Ammonia Production	CO_2	558.672	0.014	0.016	82%
5.D Wastewater Treatment and Discharge	CH_4	588.877	0.015	0.014	83%
4.B.1 Cropland Remaining Cropland	CO_2	433.008	0.011	0.014	85%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	0.118	0.013	86%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	0.039	0.013	87%
4(V) Biomass Burning	CO_2	14.979	0.000	0.012	89%
3.B Manure Management	CH_4	427.105	0.011	0.011	90%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.008	0.010	91%
4.C.2 Land Converted to Grassland	CO_2	9.952	0.000	0.010	92%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	0.009	0.008	93%
4.A.2 Land Converted to Forest Land	CO_2	28.890	0.001	0.008	93%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	0.011	0.008	94%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	0.000	0.007	95%
3.B Manure Management	N_2O	329.052	0.008	0.004	95%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	0.003	0.004	96%
4.B.2 Land Converted to Cropland	CO_2	25.846	0.001	0.004	96%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	47.233	0.001	0.004	96%
2.A.2 Lime Production	CO_2	156.820	0.004	0.003	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	0.004	0.003	97%
5.D Wastewater Treatment and Discharge	N_2O	66.884	0.002	0.003	97%
3.H Urea Application	CO_2	50.020	0.001	0.003	98%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	0.005	0.003	98%

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.002	0.002	98%
2.B.2 Nitric Acid Production	N_2O	754.265	0.019	0.002	98%
1.A.3.b Road Transportation	N_2O	52.684	0.001	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	0.006	0.002	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.001	0.002	99%
1.A.3.c Railways	CO_2	140.079	0.004	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.004	0.001	99%
4(V) Biomass Burning	CH_4	1.230	0.000	0.001	99%
2.A.3 Glass Production	CO_2	43.216	0.001	0.001	99%
4(V) Biomass Burning	N_2O	0.858	0.000	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	0.001	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	0.000	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	0.000	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	0.000	0.001	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	0.000	0.000	100%
4.D.2 Land Converted to Wetlands	CO_2	77.232	0.002	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	0.000	0.000	100%
1.A.3.b Road Transportation	CH_4	41.406	0.001	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.013	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	0.000	0.000	100%
3.G Liming	CO_2	0.000	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CH_4	17.143	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	0.001	0.000	100%
1.A.3.c Railways	N_2O	13.248	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	0.000	0.000	100%

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.001	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.000	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	59.644	0.002	0.000	100%
2.B.1 Ammonia Production	CH_4	0.000	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.000	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO_2	192.426	0.005	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	0.000	100%
2.C.2 Ferroalloys Production	CO_2	173.798	0.004	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	100%
2.C.3 Aluminium Production	CO_2	118.797	0.003	0.000	100%
2.C.3 Aluminium Production	PFCs	1,240.239	0.032	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	0.000	100%
TOTAL		**38,966.315**	**1.000**		

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-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.169	0.166	17%
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.161	0.159	32%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.092	0.090	41%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.061	0.060	47%
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.054	0.053	53%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.052	0.051	58%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.048	0.047	63%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.045	0.045	67%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.044	0.043	71%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.041	0.040	75%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.035	0.034	79%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.030	0.029	82%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.028	0.028	85%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.022	0.021	87%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.021	0.021	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.013	0.013	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.011	0.011	91%
2.B.8 Petrochemical and Carbon Black Production	CO_2	192.426	0.000	0.008	0.008	92%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.007	0.007	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.006	0.006	93%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.006	0.006	94%
3.B Manure Management	N_2O	329.052	142.004	0.006	0.006	95%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0.005	0.005	95%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.005	0.005	96%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.005	0.005	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.004	0.004	96%
1.A.3.c Railways	CO_2	140.079	42.092	0.004	0.003	97%
3.H Urea Application	CO_2	50.020	88.290	0.003	0.003	97%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.003	0.003	97%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	0.003	0.002	98%
3.B Manure Management	CH_4	427.105	366.085	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.002	0.002	98%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.002	0.002	98%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.002	0.002	98%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.001	0.001	98%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.001	0.001	99%
1.A.3.b Road Transportation	CH_4	41.406	8.885	0.001	0.001	99%

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.001	0.001	99%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.001	0.001	99%
2.A.2 Lime Production	CO_2	156.820	103.671	0.001	0.001	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.001	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.001	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.001	0.001	99%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.001	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.001	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.000	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.000	0.000	99%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.000	0.000	99%
2.A.3 Glass Production	CO_2	43.216	25.625	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.000	0.000	100%
3.G Liming	CO_2	0.000	6.887	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	4.841	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	0.000	0.000	100%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.000	0.000	100%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	0.000	0.000	100%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	1.223	0.000	0.000	100%

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	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.B.2.c. Venting and flaring	CH_4	0.590	0.044	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	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_2O	0.000	0.000	0.000	0.000	100%
TOTAL		**31,416.285**	**23,756.352**			

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-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.125	0.156	16%
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.096	0.120	28%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.060	0.076	35%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.038	0.048	40%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.038	0.048	45%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.037	0.047	49%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.036	0.046	54%
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.035	0.043	58%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.032	0.040	62%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.029	0.037	66%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.024	0.030	69%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.021	0.026	72%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,404.258	5,921.852	0.021	0.026	74%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.018	0.022	76%
4.E.2 Land Converted to Settlements	CO_2	186.622	622.009	0.017	0.021	79%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.016	0.020	81%
4(V) Biomass Burning	CO_2	14.979	387.504	0.014	0.017	82%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.012	0.015	84%
4.G Harvested Wood Products	CO_2	317.852	572.682	0.011	0.014	85%
4.C.2 Land Converted to Grassland	CO_2	9.952	313.427	0.011	0.014	87%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.011	0.014	88%
4.A.2 Land Converted to Forest Land	CO_2	28.890	266.145	0.009	0.011	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.009	0.011	90%
2.B.8 Petrochemical and Carbon Black Production	CO_2	192.426	0.000	0.006	0.007	91%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.005	0.007	92%
3.B Manure Management	N_2O	329.052	142.004	0.005	0.006	92%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.005	0.006	93%
4.B.2 Land Converted to Cropland	CO_2	25.846	127.032	0.004	0.005	93%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.004	0.005	94%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0.004	0.005	94%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.003	0.004	95%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	47.233	121.055	0.003	0.004	95%
4.B.1 Cropland Remaining Cropland	CO_2	433.008	441.797	0.003	0.004	95%
1.A.3.c Railways	CO_2	140.079	42.092	0.003	0.003	96%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.002	0.003	96%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.002	0.003	96%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.002	0.003	97%

Tier 1 Analysis - Trend Assessment Including LULUCF						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.002	0.002	97%
4.D.2 Land Converted to Wetlands	CO_2	77.232	11.418	0.002	0.002	97%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	0.002	0.002	97%
3.H Urea Application	CO_2	50.020	88.290	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.001	0.002	98%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.001	0.001	98%
4(V) Biomass Burning	CH_4	1.230	32.531	0.001	0.001	98%
2.A.2 Lime Production	CO_2	156.820	103.671	0.001	0.001	98%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.001	0.001	98%
1.A.3.b Road Transportation	CH_4	41.406	8.885	0.001	0.001	99%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.001	0.001	99%
4(V) Biomass Burning	N_2O	0.858	22.957	0.001	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.001	0.001	99%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.001	0.001	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.001	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.000	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.000	0.001	99%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.000	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.000	0.000	99%
2.A.3 Glass Production	CO_2	43.216	25.625	0.000	0.000	99%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.000	0.000	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.000	0.000	99%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.000	0.000	100%
3.B Manure Management	CH_4	427.105	366.085	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.000	0.000	100%
3.G Liming	CO_2	0.000	6.887	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	4.841	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	0.000	100%

Tier 1 Analysis - Trend Assessment Including LULUCF						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	1.223	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.044	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_2O	0.559	0.882	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	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_2O	0.000	0.000	0.000	0.000	100%
TOTAL		**38,966.315**	**32,598.830**			

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-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
2.C.3 Aluminium Production	PFCs	1,240.239	0.152	15%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	0.139	29%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	0.112	40%
5.C Incineration and Open Burning of Waste	CH_4	17.143	0.090	49%
3.A Enteric Fermentation	CH_4	2,121.150	0.054	55%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	0.043	59%
2.A.1 Cement Production	CO_2	1,093.483	0.033	62%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	0.033	66%
5.A Solid Waste Disposal	CH_4	327.966	0.025	68%
1.A.3.b Road Transportation	CO_2	3,505.880	0.025	71%
5.D Wastewater Treatment and Discharge	CH_4	588.877	0.023	73%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	0.021	75%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.019	77%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	0.018	79%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.016	80%
2.B.2 Nitric Acid Production	N_2O	754.265	0.015	82%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	0.015	84%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	0.014	85%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.012	86%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	0.011	87%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	0.011	88%
1.A.3.b Road Transportation	N_2O	52.684	0.011	89%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	0.011	91%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.011	92%
3.B Manure Management	N_2O	329.052	0.011	93%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	0.008	93%
3.B Manure Management	CH_4	427.105	0.007	94%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.007	95%
5.D Wastewater Treatment and Discharge	N_2O	66.884	0.005	95%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.005	96%
2.C.2 Ferroalloys Production	CO_2	173.798	0.005	96%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	0.004	97%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.004	97%
1.A.3.c Railways	N_2O	13.248	0.003	98%
1.A.3.b Road Transportation	CH_4	41.406	0.002	98%
2.B.8 Petrochemical and Carbon Black Production	CO_2	192.426	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.002	98%

Tier 2 Analysis - Level Assessment - Excluding LULUCF				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	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_2O	6.806	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_2O	5.737	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	0.001	99%
1.A.3.c Railways	CO_2	140.079	0.001	99%
3.H Urea Application	CO_2	50.020	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	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 - Biomass	N_2O	4.291	0.001	99%
2.G Other Product Manufacture and Use	N_2O	36.714	0.001	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	0.001	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.001	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.001	100%
2.A.2 Lime Production	CO_2	156.820	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.000	100%
2.A.3 Glass Production	CO_2	43.216	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	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	0.703	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	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	0.317	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.000	100%

Tier 2 Analysis - Level Assessment - Excluding LULUCF				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.A.3.c Railways	CH_4	0.174	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	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_2O	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_2O	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	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 Soild Waste	CH_4	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	0.000	100%
TOTAL		**31,416.285**		

Table A1.3-8: Key categories analysis – Level Assessment - Tier 2 (Excluding LULUCF) – 2020

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.168	17%
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.142	31%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.132	44%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.095	54%
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.059	60%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.046	64%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.038	68%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.025	70%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.024	73%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.024	75%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.023	77%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.022	80%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.021	82%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.018	84%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.017	85%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.016	87%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.011	88%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.011	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.011	90%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.011	91%
3.B Manure Management	CH_4	427.105	366.085	0.008	92%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.008	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.007	93%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.005	94%
3.B Manure Management	N_2O	329.052	142.004	0.005	95%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.005	95%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.005	96%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.005	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.005	96%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.004	97%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.003	97%
3.H Urea Application	CO_2	50.020	88.290	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.003	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.002	98%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.002	98%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.002	98%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.002	98%

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.A.3.c Railways	N_2O	13.248	4.841	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.001	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.001	99%
3.G Liming	CO_2	0.000	6.887	0.001	99%
1.A.3.b Road Transportation	CH_4	41.406	8.885	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	100%
1.A.3.c Railways	CO_2	140.079	42.092	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	100%
2.A.2 Lime Production	CO_2	156.820	103.671	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	100%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.000	100%
2.A.3 Glass Production	CO_2	43.216	25.625	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	1.223	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	100%

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.044	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	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	59.644	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_2O	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	5.447	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	3.899	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	1,240.239	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	0.000	100%
TOTAL		**31,416.285**	**23,756.352**		

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	6,404.258	0.378	38%
2.C.3 Aluminium Production	PFCs	1,240.239	0.081	46%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	0.074	53%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	0.060	59%
5.C Incineration and Open Burning of Waste	CH_4	17.143	0.048	64%
4.B.1 Cropland Remaining Cropland	CO_2	433.008	0.034	67%
3.A Enteric Fermentation	CH_4	2,121.150	0.029	70%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	0.023	73%
4.E.2 Land Converted to Settlements	CO_2	186.622	0.021	75%
2.A.1 Cement Production	CO_2	1,093.483	0.018	76%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	0.018	78%
4.D.2 Land Converted to Wetlands	CO_2	77.232	0.015	80%
5.A Solid Waste Disposal	CH_4	327.966	0.013	81%
1.A.3.b Road Transportation	CO_2	3,505.880	0.013	82%
5.D Wastewater Treatment and Discharge	CH_4	588.877	0.012	84%
4.G Harvested Wood Products	CO_2	317.852	0.012	85%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	0.011	86%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.010	87%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	0.010	88%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.009	89%
2.B.2 Nitric Acid Production	N_2O	754.265	0.008	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	0.008	90%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	0.007	91%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.007	92%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	0.006	92%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	0.006	93%
1.A.3.b Road Transportation	N_2O	52.684	0.006	93%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	0.006	94%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.006	95%
3.B Manure Management	N_2O	329.052	0.006	95%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	0.004	96%
3.B Manure Management	CH_4	427.105	0.004	96%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.004	96%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	47.233	0.003	97%
5.D Wastewater Treatment and Discharge	N_2O	66.884	0.003	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	98%

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 (%)**
2.C.2 Ferroalloys Production	CO_2	173.798	0.003	98%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	0.002	98%
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.3.c Railways	N_2O	13.248	0.001	99%
1.A.3.b Road Transportation	CH_4	41.406	0.001	99%
2.B.8 Petrochemical and Carbon Black Production	CO_2	192.426	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.001	99%
4.C.2 Land Converted to Grassland	CO_2	9.952	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	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_2O	6.806	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_2O	5.737	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	0.001	99%
1.A.3.c Railways	CO_2	140.079	0.001	99%
3.H Urea Application	CO_2	50.020	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	0.001	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	0.001	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	100%
2.G Other Product Manufacture and Use	N_2O	36.714	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.000	100%
4(V) Biomass Burning	CO_2	14.979	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.000	100%
2.A.2 Lime Production	CO_2	156.820	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	6.331	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.000	100%
2.A.3 Glass Production	CO_2	43.216	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.000	100%

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 (%)**
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.447	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	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	0.703	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	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	0.317	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	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_2O	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_2O	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	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 Soild Waste	CH_4	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	0.000	100%
TOTAL		**38,966.315**		

Table A1.3-10: Key categories analysis – Level Assessment - Tier 2 (Including LULUCF) – 2020

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
4.A.1 Forest Land Remaining Forest Land	CO_2	6,404.258	5,921.852	0.420	42%
4.E.2 Land Converted to Settlements	CO_2	186.622	622.009	0.064	48%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.060	54%
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.051	60%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.047	64%
4.B.1 Cropland Remaining Cropland	CO_2	433.008	441.797	0.034	68%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.034	71%
4.C.2 Land Converted to Grassland	CO_2	9.952	313.427	0.030	74%
4.G Harvested Wood Products	CO_2	317.852	572.682	0.027	77%
4.B.2 Land Converted to Cropland	CO_2	25.846	127.032	0.024	79%
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.021	81%
4.A.2 Land Converted to Forest Land	CO_2	28.890	266.145	0.020	83%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.016	84.84%
4(V) Biomass Burning	CO_2	14.979	387.504	0.014	86%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.013	88%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.009	88%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.009	89%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.008	90%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.008	91%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.008	92%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.007	92%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.006	93%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.006	94%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.006	94%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	47.233	121.055	0.006	95%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.004	95%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.004	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.004	96%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.004	96%
3.B Manure Management	CH_4	427.105	366.085	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.003	97%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.003	97%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.002	97%
3.B Manure Management	N_2O	329.052	142.004	0.002	98%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.002	98%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.002	98%

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
4(V) Biomass Burning	CH_4	1.230	32.531	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.002	98%
4.D.2 Land Converted to Wetlands	CO_2	77.232	11.418	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.001	99%
4(V) Biomass Burning	N_2O	0.858	22.957	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.001	99%
3.H Urea Application	CO_2	50.020	88.290	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.001	99%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.001	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.001	99%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.001	99%
1.A.3.c Railways	N_2O	13.248	4.841	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.001	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.000	100%
3.G Liming	CO_2	0.000	6.887	0.000	100%
1.A.3.b Road Transportation	CH_4	41.406	8.885	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 - Solid Fuels	N_2O	6.806	1.951	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	100%
1.A.3.c Railways	CO_2	140.079	42.092	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	100%
2.A.2 Lime Production	CO_2	156.820	103.671	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	100%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.000	100%

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
2.A.3 Glass Production	CO_2	43.216	25.625	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	1.223	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.044	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	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	59.644	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_2O	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	5.447	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	3.899	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	1,240.239	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	0.000	100%
TOTAL		**38,966.315**	**32,598.830**		

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-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.054	0.224	22%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.092	0.188	41%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.000	0.109	52%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.169	0.066	59%
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.161	0.061	65%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.006	0.030	68%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.035	0.029	71%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.061	0.023	73%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.004	0.021	75%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.048	0.018	77%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.045	0.017	79%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.044	0.016	80%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.041	0.016	82%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.005	0.013	83%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.002	0.013	84%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.030	0.011	86%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.005	0.010	87%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.001	0.009	87%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.002	0.009	88%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.001	0.008	89%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.022	0.008	90%
3.B Manure Management	N_2O	329.052	142.004	0.006	0.008	91%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.001	0.007	92%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.003	0.006	92%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.013	0.005	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.011	0.004	93%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.028	0.004	94%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	0.004	94%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.001	0.004	94%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.000	0.004	95%
1.A.3.b Road Transportation	CH_4	41.406	8.885	0.001	0.003	95%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.001	0.003	95%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.021	0.003	96%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.001	0.003	96%
1.A.3.c Railways	N_2O	13.248	4.841	0.000	0.003	96%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.000	0.003	97%

Tier 2 Analysis - Trend Assessment Excluding LULUCF						
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
3.H Urea Application	CO_2	50.020	88.290	0.003	0.003	97%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.000	0.003	97%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.000	0.003	97%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.000	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	0.000	0.002	98%
3.B Manure Management	CH_4	427.105	366.085	0.002	0.002	98%
3.G Liming	CO_2	0.000	6.887	0.000	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.000	0.002	98%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.000	0.002	99%
1.A.3.c Railways	CO_2	140.079	42.092	0.004	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.000	0.001	99%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	0.001	99%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.006	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.000	0.001	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	0.001	99%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.001	0.001	100%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.002	0.001	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.001	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	1.223	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.000	0.000	100%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	0.000	100%
2.A.2 Lime Production	CO_2	156.820	103.671	0.001	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.044	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	0.000	100%

Tier 2 Analysis - Trend Assessment Excluding LULUCF						
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.001	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	0.000	100%
2.A.3 Glass Production	CO_2	43.216	25.625	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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_2O	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	5.447	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	3.899	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	1,240.239	0.000	0.052	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	0.000	0.000	100%
TOTAL		**31,416.285**	**23,756.352**			

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-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
4.E.2 Land Converted to Settlements	CO_2	186.622	622.009	0.017	0.121	12%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,404.258	5,921.852	0.021	0.101	22%
5.A Solid Waste Disposal	CH_4	327.966	1,220.173	0.035	0.099	32%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	1,644.012	0.060	0.085	41%
4.C.2 Land Converted to Grassland	CO_2	9.952	313.427	0.011	0.072	48%
5.C Incineration and Open Burning of Waste	CH_4	17.143	5.872	0.000	0.059	54%
4.B.2 Land Converted to Cropland	CO_2	25.846	127.032	0.004	0.051	59%
4.A.2 Land Converted to Forest Land	CO_2	28.890	266.145	0.009	0.045	63%
4.G Harvested Wood Products	CO_2	317.852	572.682	0.011	0.037	67%
4(V) Biomass Burning	CO_2	14.979	387.504	0.014	0.034	70%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,590.624	436.972	0.125	0.033	74%
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	0.096	0.025	76%
3.A Enteric Fermentation	CH_4	2,121.150	975.457	0.029	0.017	78%
4.D.2 Land Converted to Wetlands	CO_2	77.232	11.418	0.002	0.016	79%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.427	52.651	0.005	0.016	81%
4.B.1 Cropland Remaining Cropland	CO_2	433.008	441.797	0.003	0.016	83%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	424.729	251.207	0.004	0.014	84%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	349.801	267.708	0.001	0.011	85%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	0.038	0.010	86%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	0.037	0.010	87%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,075.891	845.884	0.002	0.010	88%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	47.233	121.055	0.003	0.010	89%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	0.036	0.009	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	0.032	0.008	91%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	0.024	0.006	91%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977	0.003	0.005	92%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	0.018	0.005	92%
3.B Manure Management	N_2O	329.052	142.004	0.005	0.005	93%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	0.016	0.004	93%
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	0.002	0.004	94%
4(V) Biomass Burning	CH_4	1.230	32.531	0.001	0.004	94%
5.D Wastewater Treatment and Discharge	N_2O	66.884	90.267	0.001	0.004	94%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	176.171	87.156	0.002	0.003	95%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	11.478	0.000	0.003	95%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	0.012	0.003	95%
1.A.3.b Road Transportation	N_2O	52.684	55.074	0.000	0.003	96%
4(V) Biomass Burning	N_2O	0.858	22.957	0.001	0.003	96%

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	138.453	100.914	0.001	0.003	96%
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	0.000	0.003	97%
2.G Other Product Manufacture and Use	N_2O	36.714	19.939	0.000	0.002	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	233.133	0.009	0.002	97%
5.D Wastewater Treatment and Discharge	CH_4	588.877	446.946	0.002	0.002	97%
2.B.2 Nitric Acid Production	N_2O	754.265	65.080	0.021	0.002	97%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	0.000	0.002	98%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	0.001	0.002	98%
1.A.3.b Road Transportation	CH_4	41.406	8.885	0.001	0.002	98%
1.A.3.c Railways	N_2O	13.248	4.841	0.000	0.002	98%
5.B Biological Treatment of Soild Waste	CH_4	0.000	14.858	0.001	0.002	98%
2.F.2 Foam blowing agents	Aggregate F-gases	0.000	19.596	0.001	0.001	98%
3.H Urea Application	CO_2	50.020	88.290	0.002	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	0.000	0.001	99%
2.A.1 Cement Production	CO_2	1,093.483	1,212.949	0.011	0.001	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	7.014	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	0.000	0.001	99%
3.G Liming	CO_2	0.000	6.887	0.000	0.001	99%
1.A.3.c Railways	CO_2	140.079	42.092	0.003	0.001	99%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	0.000	0.001	99%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	1.943	0.000	0.001	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	0.000	0.001	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	7.243	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	4.723	1.615	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	6.200	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO_2	43.808	4.928	0.001	0.000	100%
2.B.1 Ammonia Production	CO_2	558.672	535.320	0.002	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	0.000	0.000	100%
3.B Manure Management	CH_4	427.105	366.085	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	0.001	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	10.376	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	0.000	0.000	100%

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2020) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	0.000	0.000	100%
2.A.2 Lime Production	CO_2	156.820	103.671	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	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 - Other Fossil Fuels	CH_4	0.000	1.223	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.044	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.015	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.145	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	0.000	0.000	100%
2.A.3 Glass Production	CO_2	43.216	25.625	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	9.146	17.099	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.726	8.763	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.047	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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_2O	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	5.447	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	3.899	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	1,240.239	0.000	0.038	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	0.000	0.000	100%
TOTAL		**38,966.315**	**32,598.830**			

Table A1.3-13: Source Analysis Summary (Croatian Inventory NIR 2022, 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	
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_2O	Yes	L2e		
1.A.4 Other Sectors - Biomass	CH_4	Yes	L1e, L2e	L1i	
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_2O	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		
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	Yes	L1e, L2e	L1i, L2i	
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.B.1 Ammonia Production	CO_2	Yes	L1e	L1i	
2.B.2 Nitric Acid Production	N_2O	Yes	L1e, L2e	L1i	
2.B.8 Petrochemical and Carbon Black Production	CO_2	Yes	L1e	L1i	
2.C.3 Aluminium Production	PFCs	Yes	L1e, L2e	L1i, L2i	
2.D Non-energy Products from Fuels and Solvent Use	CO_2	Yes	L1e		
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_2O	Yes	L1e	L1i	
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	Yes	L1e, L2e	L1i, L2i	
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	Yes	L1e, L2e	L1i, L2i	
4. Land use, land use change and forestry					
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	Yes		L2i	
4.A.1 Forest Land Remaining Forest Land	CO_2	Yes		L1i, L2i	
4.B.1 Cropland Remaining Cropland	CO_2	Yes		L1i, L2i	
4.B.2 Land Converted to Cropland	CO_2	Yes		L2i	
4.C.2 Land Converted to Grassland	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, L2i	
5.D Wastewater Treatment and Discharge	CH_4	Yes	L1e, L2e	L1i, 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 NIR 2022, year t=2020)

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, year = 2020)							
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 L2i	T1i T2i	
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 L2e	T1e T2e	L1i	T1i	
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 T2e	L1i	T1i T2i	
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	
1.A.3.b Road Transportation	CO_2	Yes	L1e L2e	T1e T2e	L1i L2i	T1i T2i	
1.A.3.b Road Transportation	N_2O	Yes	L2e	T2e			
1.A.4 Other Sectors - Biomass	CH_4	Yes	L1e L2e	T2e	L1i L2i		
1.A.4 Other Sectors - Biomass	N_2O	Yes	L2e	T2e			
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 L2e	T1e T2e	L1i	T1i T2i	
1.A.4 Other Sectors - Liquid Fuels	N_2O	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		T2e		T1i T2i	
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				
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	Yes	L1e L2e	T2e	L1i L2i	T1i 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		
2.B.2 Nitric Acid Production	N_2O	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.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		L1i		
3.B Manure Management	N_2O	Yes	L1e	T1e T2e		T1i	
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	Yes	L1e L2e	T2e	L1i L2i	T2i	
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	Yes	L1e L2e		L1i L2i	T2i	
4. Land use land use change and forestry							
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	Yes				T2i	
4(V) Biomass Burning	CO_2	Yes			L1i L2i	T1i T2i	
4.A.1 Forest Land Remaining Forest Land	CO_2	Yes			L1i L2i		
4.A.2 Land Converted to Forest Land	CO_2	Yes			L1i L2i	T1i T2i	
4.B.1 Cropland Remaining Cropland	CO_2	Yes			L1i L2i	T1i T2i	
4.B.2 Land Converted to Cropland	CO_2	Yes			L2i	T1i 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		L1i L2i		
5.D Wastewater Treatment and Discharge	N_2O	Yes	L2e	T2e			

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 paramaters 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

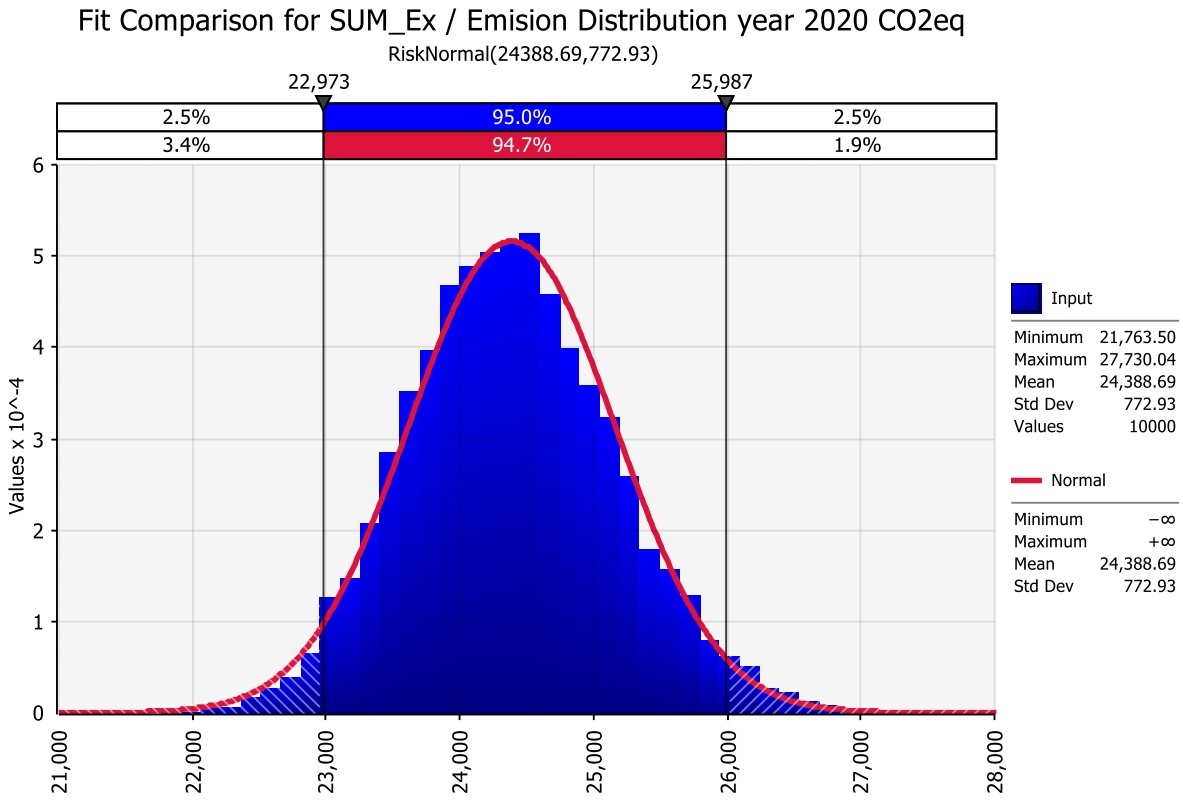
If for activity data or emission factor uncertainty default value from IPCC guidance was used, average value from range of given uncertainty was set.

2.2.3. Uncertainty excluding LULUCF sector

2.2.3.1. Uncertainty in the emissions excluding LULUCF

The estimations of CO_2-eq emissions were 23,756.35 kt CO_2-eq for the year 2020 and 31,416.28 kt CO_2-eq for the year 1990 without removals from LULUCF.

Figure A2.2-1: Distribution of the total CO_2 emissions for year 2020 excluding LULUCF



Monte Carlo analysis shows that with a certainty of 95% total emissions of all categories for the year 2020 (24,388,69 kt CO_2eq) according to simulation varies between 22,973.34 kt CO_2-eq (2.5 percentile) and 25,986.76 kt CO_2eq (97.5 percentile). Figure A2.2-1 shows the distribution of total CO_2 emission for year 2020 with a corresponding probability density function (red line) that best matches the simulation results.

Monte Carlo analysis shows that with a certainty of 95% total simulated emissions of all categories excluding LULUCF for the year 1990 (32,311.65 kt CO_2-eq) varies between 30,445.91 kt CO_2eq (2.5 percentile) and 34,383.13 kt CO_2eq (97.5 percentile).

Figure A2.2-2: Distribution of total CO_2 emission for year 1990 excluding LULUCF

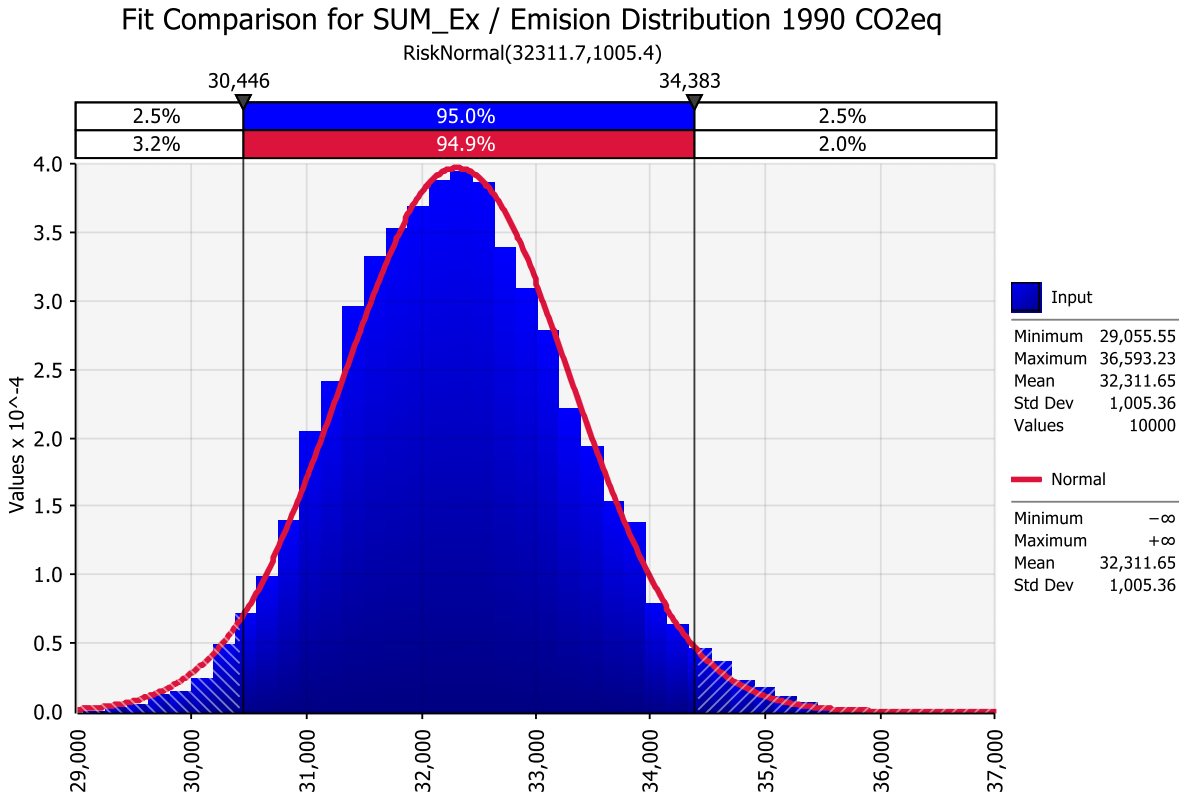


Figure A2.2-2 shows the distribution of total CO_2 emission for year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

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 forumula:

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

The Inventory trend excluding LULUCF is -24.52%, simulated trend is -24.45 % and the 95% probability range of the trend is -30.81% (2.5 percentile) to -17.62% (97.5 percentile).

Figure A2.2-3: Distribution of trend for year 2020 with the respect to year 1990

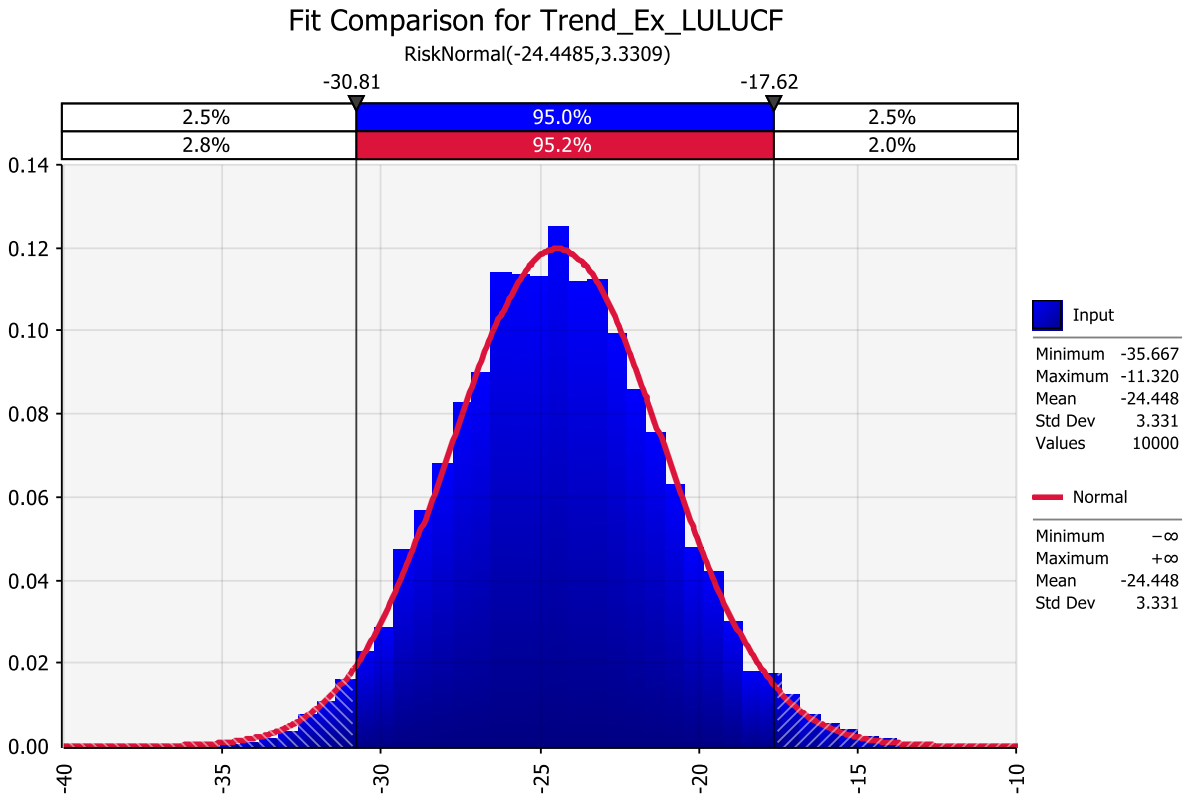


Figure A2.2-3: shows the distribution of trend for year 2020 respect to year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

2.2.4. Uncertainty including LULUCF sector

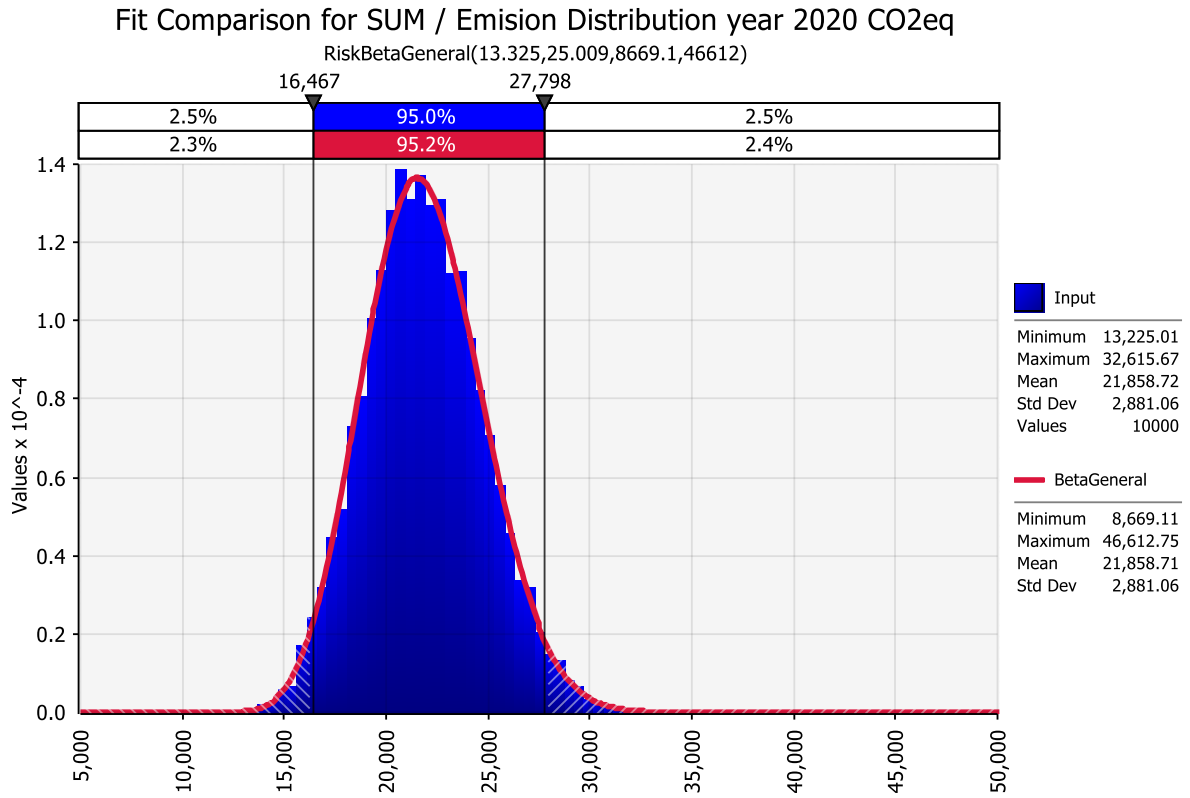
2.2.4.1. Uncertainty in the emissions including LULUCF

The estimations of CO_2eq emissions were 18,450.62 kt CO2-eq for the year 2020 and 25,444.41 kt CO_2eq for the year 1990 with removals from LULUCF included.

Monte Carlo analysis shows that with a certainty of 95% total emissions of categories for the year 2020 (21,858.72 kt CO_2eq) according to simulation varies between 16,466.54 kt CO_2eq (2.5 percentile) and 27,797.59 kt CO_2eq (97.5 percentile).

Figure A2.2-4 shows the distribution of total CO_2 emission including LULUCF for year 2020 with a corresponding probability density function (red line) that best matches the simulation results.

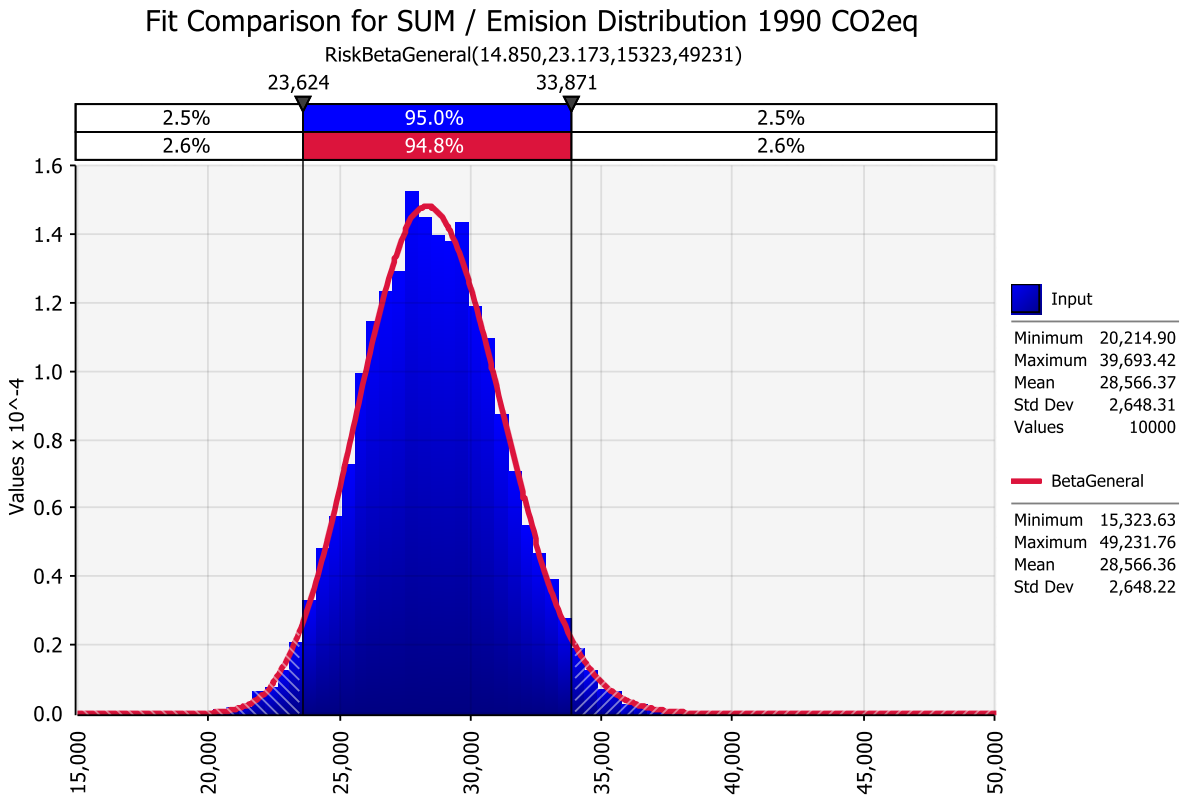
Figure A2.2-4: Distribution of total CO_2 emission for year 2020 including LULUCF



Monte Carlo analysis shows that with a certainty of 95% total simulated emissions of all categories including LULUCF for the year 1990 (28,566.37 kt CO_2eq) varies between 23,623.85 kt CO_2-eq (2.5 percentile) and 33,871.08 kt CO_2eq (97.5 percentile).

Figure A2.2-5 shows the distribution of total CO_2 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 CO_2 emission for year 1990 including LULUCF



2.2.4.2. Uncertainty in the trend including LULUCF

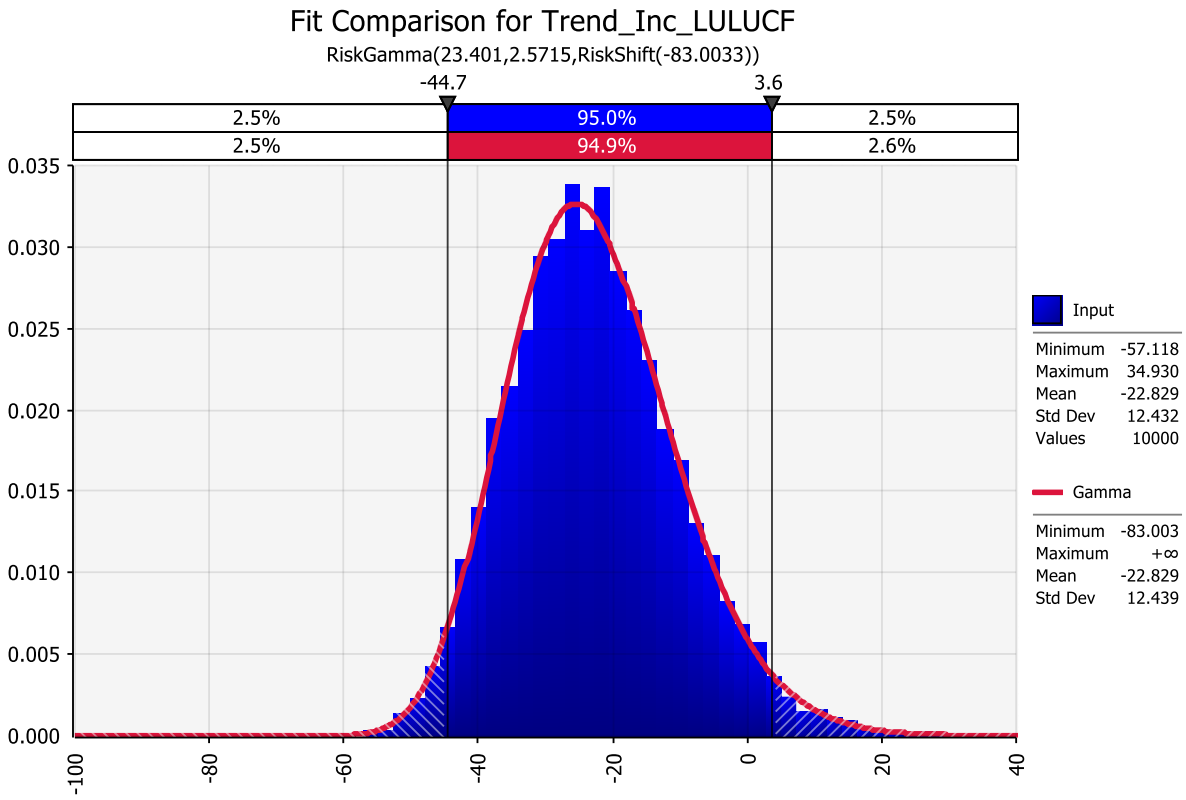
The trend in the inventory is estimated for each category and for the total summary emission (all categories included) with the following forumula:

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

The Inventory trend including LULUCF is -27.49%, simulated trend is -22.83% and the 95% probability range of the trend is -44.66% (2.5 percentile) to 3.59% (97.5 percentile), so the uncertainty introduced in trend varies from -17.17% to 31.05% with respect to the base year emissions.

Figure A2.2-6: shows the distribution of trend for year 2020 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 2020 with the respect to year 1990 including LULUCF


Fit Comparison for Trend_Inc_LULUCF
RiskGamma(23.401,2.5715,RiskShift(-83.0033))
-44.7
3.6
2.5%
95.0%
2.5%
2.5%
94.9%
2.6%
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
-100
-80
-60
-40
-20
0
20
40
Input
Minimum -57.118
Maximum 34.930
Mean -22.829
Std Dev 12.432
Values 10000
Gamma
Minimum -83.003
Maximum +∞
Mean -22.829
Std Dev 12.439

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=2020 (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	436.972	-5	5	-5	5	-6.99	7.31	0.000029	-90.48	-0.91	1.00	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.696	0.221	-5	5	-50	50	-50.12	50.59	0.000000	-94.02	-3.31	7.41	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.815	0.642	-5	5	-200	200	-91.74	209.69	0.000000	-92.71	-6.81	109.99	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	595.119	986.664	-5	5	-5	5	-7.09	7.23	0.000154	65.79	-15.89	17.54	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.267	-5	5	-50	50	-49.77	50.40	0.000000	67.43	-92.63	201.57	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	4.774	-5	5	-200	200	-91.63	208.63	0.000002	67.43	-156.62	2479.05	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,880.045	2,235.681	-5	5	-5	5	-6.98	7.03	0.000775	18.92	-11.12	12.70	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.573	2.844	-5	5	-50	50	-49.75	49.89	0.000000	80.75	-99.00	220.68	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.737	9.051	-5	5	-200	200	-91.67	209.48	0.000006	57.76	-147.56	2364.91	
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4		7.243	-5	5	-50	50	-50.40	50.50	0.000000				2
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O		11.478	-5	5	-200	200	-91.67	208.24	0.000010				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,096.390	731.578	-5	5	-5	5	-6.99	7.08	0.000083	-65.10	-3.31	3.59	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.029	0.654	-5	5	-50	50	-50.15	50.69	0.000000	-67.78	-17.66	39.31	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.815	1.550	-5	5	-200	200	-91.64	208.52	0.000000	-67.80	-30.07	494.88	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,536.292	424.375	-5	5	-5	5	-7.11	7.10	0.000028	-72.38	-2.64	2.84	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	3.807	1.091	-5	5	-50	50	-49.87	50.21	0.000000	-71.33	-15.68	33.59	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	6.806	1.951	-5	5	-200	200	-91.75	208.29	0.000000	-71.33	-26.98	454.72	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,575.900	992.659	-5	5	-5	5	-6.99	7.20	0.000152	-37.01	-5.96	6.67	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.703	0.442	-5	5	-50	50	-50.10	50.18	0.000000	-37.06	-34.80	78.99	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.838	0.527	-5	5	-200	200	-91.71	208.45	0.000000	-37.06	-58.82	912.84	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2		233.133	-5	5	-5	5	-6.92	7.20	0.000008				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4		1.223	-5	5	-50	50	-50.13	50.05	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O		1.943	-5	5	-200	200	-91.63	207.53	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.112	-5	5	-50	50	-49.95	51.06	0.000000	-58.81	-22.73	50.39	

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.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.768	-5	5	-200	200	-91.69	208.01	0.000000	-58.81	-38.44	580.42	
1.A.3.a Domestic Aviation	CO_2	6.601	16.650	-5	5	-5	5	-6.96	7.19	0.000000	152.23	-24.16	26.93	
1.A.3.a Domestic Aviation	CH_4	0.001	0.003	-5	5	-50	50	-50.13	50.51	0.000000	152.26	-138.50	309.37	
1.A.3.a Domestic Aviation	N_2O	0.055	0.139	-5	5	-200	200	-91.79	208.99	0.000000	152.26	-236.77	3792.34	
1.A.3.b Road Transportation	CO_2	3,505.880	5,546.026	-5	5	-5	5	-7.14	6.99	0.004776	58.19	-15.17	16.80	
1.A.3.b Road Transportation	CH_4	41.406	8.885	-5	5	-50	50	-50.02	50.32	0.000001	-78.54	-11.63	25.95	
1.A.3.b Road Transportation	N_2O	52.684	55.074	-5	5	-200	200	-91.66	208.41	0.000236	4.54	-97.96	1502.09	
1.A.3.c Railways	CO_2	140.079	42.092	-5	5	-5	5	-7.05	7.19	0.000000	-69.95	-2.84	3.16	
1.A.3.c Railways	CH_4	0.174	0.047	-5	5	-50	50	-50.15	50.36	0.000000	-72.95	-14.97	31.87	
1.A.3.c Railways	N_2O	13.248	4.841	-5	5	-200	200	-91.61	206.85	0.000002	-63.46	-34.22	578.94	
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.498	127.344	-5	5	-5	5	-7.01	7.25	0.000003	-5.32	-8.93	9.94	
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.301	-5	5	-50	50	-50.10	50.60	0.000000	-5.14	-51.80	115.50	
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.080	1.025	-5	5	-200	200	-91.77	208.96	0.000000	-5.13	-89.28	1428.17	
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.506	1,059.414	-5	5	-5	5	-6.96	7.01	0.000173	-56.77	-4.08	4.46	
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.151	-5	5	-50	50	-49.94	50.70	0.000000	-66.03	-18.58	41.47	
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	71.175	-5	5	-200	200	-91.68	208.01	0.000394	-19.26	-75.40	1220.67	
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	7.875	-5	5	-5	5	-7.05	7.12	0.000000	-98.50	-0.14	0.16	
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.596	-5	5	-50	50	-50.28	50.38	0.000000	-98.21	-0.98	2.15	
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.036	-5	5	-200	200	-91.73	206.74	0.000000	-98.50	-1.40	22.84	
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,659.958	-5	5	-5	5	-6.91	7.13	0.000425	123.10	-20.89	23.04	
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.699	-5	5	-50	50	-50.33	50.20	0.000000	121.48	-122.00	268.50	
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.882	-5	5	-200	200	-91.67	208.28	0.000000	57.69	-147.32	2292.47	
1.A.4 Other Sectors - Biomass	CH_4	316.275	324.925	-5	5	-50	50	-50.05	50.46	0.000829	2.73	-57.68	125.27	
1.A.4 Other Sectors - Biomass	N_2O	50.267	51.643	-5	5	-200	200	-91.61	207.65	0.000207	2.74	-96.32	1560.28	
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644												2
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	36.977											
1. Exploration	CO_2	28.536	6.687	-5	5	-50	50	-49.81	50.21	0.000000	-76.57	-12.90	27.68	
2. Production(7)	CO_2	129.245	30.286	-5	5	-50	50	-49.90	50.07	0.000007	-76.57	-12.93	28.87	

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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)	(-) %	(+) %	
3. Transport	CO_2	0.005	0.004	-5	5	-50	50	-50.03	50.17	0.000000	-20.17	-43.50	96.34	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**CH_4**	**220.427**	**52.651**											
1. Exploration	CH_4	15.205	3.563	-5	5	-100	100	-84.25	101.17	0.000000	-76.57	-20.10	145.58	
2. Production(7)	CH_4	199.531	46.756	-5	5	-100	100	-84.40	100.42	0.000060	-76.57	-20.01	143.10	
3. Transport	CH_4	1.343	1.072	-5	5	-100	100	-84.18	101.50	0.000000	-20.17	-68.45	453.30	
4. Refining/storage	CH_4	4.348	1.260	-5	5	-100	100	-84.37	101.04	0.000000	-71.02	-24.84	170.11	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**N_2O**	**0.064**	**0.015**	-5	5	-10	1000	-81.59	1112.10	0.000000	-76.57	-22.50	550.46	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	**CO_2**	**424.729**	**251.207**											
2. Production(7)	CO_2	418.423	248.463	-5	5	-100	100	-84.23	101.04	0.001695	-40.62	-50.77	362.98	
3. Processing	CO_2	6.276	2.688	-5	5	-100	100	-84.20	100.53	0.000000	-57.17	-36.78	260.59	
4. Transmission and storage	CO_2	0.011	0.012	-5	5	-100	100	-84.32	101.70	0.000000	13.18	-96.39	657.37	
5. Distribution	CO_2	0.019	0.043	-5	5	-20	500	-88.93	546.91	0.000000	124.36	-213.93	4508.53	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	**CH_4**	**138.453**	**100.914**											
2. Production(7)	CH_4	66.445	28.458	-5	5	-100	100	-84.32	102.28	0.000022	-57.17	-36.84	248.60	
3. Processing	CH_4	29.338	12.565	-5	5	-100	100	-84.12	100.92	0.000004	-57.17	-36.66	254.67	
4. Transmission and storage	CH_4	32.239	36.488	-5	5	-100	100	-84.36	101.53	0.000037	13.18	-97.19	672.61	
5. Distribution	CH_4	10.431	23.403	-5	5	-20	500	-88.77	543.46	0.000196	124.36	-214.62	4652.14	
1.B.2.c. Venting and flaring	**CO_2**	**0.002**	**0.000**											
1. Venting - Oil	CO_2	0.002	0.000	-5	5	-100	100	-84.37	100.69	0.000000	-92.46	-6.46	44.05	
1.B.2.c. Venting and flaring	**CH_4**	**0.590**	**0.044**											
1. Venting - Oil	CH_4	0.590	0.044	-5	5	-100	100	-84.33	101.15	0.000000	-92.46	-6.47	43.69	
1.B.2.c. Venting and flaring	**N_2O**	**0.630**	**0.145**											
2. Flaring - Oil	N_2O	0.598	0.140	-5	5	-100	100	-84.30	101.76	0.000000	-76.57	-19.91	130.83	
2. Flaring - Gas	N_2O	0.032	0.005	-5	5	-100	100	-84.25	100.67	0.000000	-83.34	-14.19	95.26	
2.A.1 Cement Production	**CO_2**	**1,093.483**	**1,212.949**	-2	2	-2	2	-2.84	2.85	0.000037	10.93	-25.83	47.68	
2.A.2 Lime Production	**CO_2**	**156.820**	**103.671**	-2	2	-2	2	-2.87	2.84	0.000000	-33.89	-2.57	2.71	
2.A.3 Glass Production	**CO_2**	**43.216**	**25.625**	-2	2	-2	2	-2.79	2.86	0.000000	-40.70	-2.30	2.45	
2.A.4 Other Process Uses of Carbonates	**CO_2**	**9.146**	**17.099**											

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		Gg CO_2 equivalent	Gg CO_2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
2.A.4.a Ceramics	CO_2	9.146	4.599	-2	2	-3	3	-3.56	3.67	0.000000	-49.71	-2.51	2.63	
2.A.4.d Other	CO_2		12.500	-2	2	-3	3	-3.60	3.62	0.000000				
2.B.1 Ammonia Production	**CO_2**	**558.672**	**535.320**	-2	2	-2	2	-2.83	2.81	0.000007	-4.18	-3.80	3.95	5
2.B.2 Nitric Acid Production	**N_2O**	**754.265**	**65.080**	-2	2	-2	2	-2.81	2.82	0.000000	-91.37	-1.47	2.17	
2.B.8 Petrochemical and Carbon Black Production	**CO_2**	**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	**CH_4**	**5.447**												
2.B.8.b Ethylene	CH_4	5.447												
2.C.1 Iron and Steel Production	**CO_2**	**43.808**	**4.928**											
2.C.1.a Steel	CO_2	19.505	4.350	-5	5	-5	5	-7.00	7.14	0.000000	-77.70	-3.16	4.01	
2.C.2 Ferroalloys Production	CO_2	173.798												
2.C.2 Ferroalloys Production	CH_4	3.899												
2.C.2 Ferroalloys Production	**CO_2**	**173.798**												2
2.C.2 Ferroalloys Production	**CH_4**	**3.899**												2
2.C.3 Aluminium Production	**CO_2**	**118.797**												
2.C.3.a CO2 Emissions	CO_2	118.797												2
2.C.3 Aluminium Production	**PFCs**	**1,240.239**												
2.C.3.b By-Product Emission\CF4	PFCs	877.908												2
2.C.3.b By-Product Emission\C2F6	PFCs	362.330												2
2.D Non-energy Products from Fuels and Solvent Use	**CO_2**	**176.171**	**87.156**											
2.D Non-energy Products from Fuels and Solvent Use\2.D.1 Lubricant Use	CO_2	31.217	16.976	-5	5	-50	50	-50.30	50.66	0.000002	-45.62	-30.17	67.03	
2.D Non-energy Products from Fuels and Solvent Use\2. Paraffin wax use	CO_2	10.374	2.751	-5	5	-50	50	-50.23	50.87	0.000000	-73.48	-14.48	33.00	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Solvent use	CO_2	134.555	61.070	NA	NA	-50	50	-40.78	58.47	0.000029	-54.61	-22.78	45.02	4
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Road paving with asphalt	CO_2	0.015	0.058	-10	10	-50	50	-50.52	51.11	0.000000	293.85	-220.04	489.98	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Other\Urea based CC	CO_2		6.294	-5	5	-5	5	-6.93	7.09	0.000000				
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Asphalt roofing	CO_2	0.009	0.007	-10	10	-50	50	-50.54	51.79	0.000000	-22.30	-43.34	96.61	

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		Gg CO_2 equivalent	Gg CO_2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
2.F.1 Refrigeration and Air conditioning	**Aggregate F-gases**		**1,644.012**											
2.F.1.a Commercial Refrigeration\HFC-143a	HFC-143a	-	138.258	-50	50	-50	50	-53.57	124.68	0.000470				2
2.F.1.a Commercial Refrigeration\HFC-125	HFC-125	-	91.601	-50	50	-50	50	-53.16	122.97	0.000206				2
2.F.1.a Commercial Refrigeration\HFC-134a	HFC-134a	-	79.371	-50	50	-50	50	-36.34	204.53	0.000288				2
2.F.1.b Domestic Refrigeration\HFC-134a	HFC-134a	-	10.992	-30	30	-25	25	122.01	396.71	0.000007				2
2.F.1.c Industrial Refrigeration\HFC-23	HFC-23	-	0.064	-50	50	-50	50	-62.84	80.67	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-134a	HFC-134a	-	2.582	-50	50	-50	50	-71.19	39.14	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-125	HFC-125	-	30.745	-50	50	-50	50	-70.77	40.66	0.000009				2
2.F.1.c Industrial Refrigeration\HFC-143a	HFC-143a	-	40.761	-50	50	-50	50	-71.60	37.65	0.000016				2
2.F.1.c Industrial Refrigeration\HFC-32	HFC-32	-	0.351	-50	50	-50	50	-79.38	-1.62	0.000000				2
2.F.1.c Industrial Refrigeration\C2F6	PFC-116	-	-	-50	50	-50	50	#VALUE!	#VALUE!	0.000118				2
2.F.1.d Transport Refrigeration\HFC-134a	HFC-134a	-	8.839	-25	25	-25	25	-36.38	30.61	0.000000				2
2.F.1.d Transport Refrigeration\HFC-125	HFC-125	-	19.662	-25	25	-25	25	-33.10	37.68	0.000001				2
2.F.1.d Transport Refrigeration\HFC-143a	HFC-143a	-	29.676	-25	25	-25	25	-32.97	37.44	0.000003				2
2.F.1.e Mobile Air-Conditioning\HFC-134a	HFC-134a	-	368.954	-25	25	-25	25	-51.50	-0.23	0.000281				2
2.F.1.f Stationary Air-Conditioning\HFC-32	HFC-32	-	164.230	-50	50	-50	50	-62.48	81.41	0.000436				2
2.F.1.f Stationary Air-Conditioning\HFC-125	HFC-125	-	608.307	-50	50	-50	50	-63.58	79.27	0.005822				2
2.F.1.f Stationary Air-Conditioning\HFC-134a	HFC-134a	-	49.620	-50	50	-50	50	-71.13	36.85	0.000023				2
2.F.2 Foam blowing agents	**Aggregate F-gases**	**-**	**19.596**											
2.F.2 Foam blowing agents\Cosed cells\HFC-134a	HFC-134a	-	18.041	-50	50	-25	25	-52.94	60.29	0.000003				2
2.F.2 Foam blowing agents\Cosed cells\HFC-227ea	HFC-227ea	-	0.587	-50	50	-25	25	-52.63	59.74	0.000000				2
2.F.2 Foam blowing agents\Cosed cells\HFC-365mfc	HFC-365mfc	-	0.968	-50	50	-25	25	0.00	0.00	0.000000				2
2.F.3 Fire Protection	**Aggregate F-gases**		**6.200**											
2.F.3 Fire Protection\HFC-125	HFC-125	-	1.059	-25	25	-10	10	-26.37	27.27	0.000000				2
2.F.3 Fire Protection\HFC-227ea	HFC-227ea	-	2.449	-25	25	-10	10	-26.57	27.54	0.000000				2
2.F.3 Fire Protection\HFC-236fa	HFC-236fa	-	2.692	-25	25	-10	10	18.40	105.22	0.000000				2

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		Gg CO_2 equivalent	Gg CO_2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
2.F.4 Aerosols	**Aggregate F-gases**		**10.376**											
2.F.4 Aerosols\2.F.4.a Metered Dose Inhalers\HFC-134a	HFC-134a	-	10.144	-10	10	0	0	-10.01	9.99	0.000000				2
2.F.4 Aerosols\2.F.4.a Metered Dose Inhalers\HFC-227ea	HFC-227ea	-	0.233	-10	10	0	0	-10.01	10.00	0.000000				2
2.G Other Product Manufacture and Use	**N_2O**	**36.714**	**19.939**											
2.G.3 N2O from Product Uses\2.G.3.a Medical Applications	N_2O	36.118	19.909	-20	20	-10	10	-21.72	23.02	0.000001	-44.88	-15.22	21.56	
2.G.3 N2O from Product Uses\2.G.3.b Other\Propellant for pressure and aerosol products	N_2O	0.596	0.030	-50	50	-10	10	33088.91	101574.68	0.000003	-95.00	1464.74	7370.49	2
2.G Other Product Manufacture and Use	**Aggregate F-gases**	**10.726**	**8.763**											
2.G.1 Electrical Equipment\SF6	SF_6	10.726	8.763	-25	25	-30	30	-91.18	-80.22	0.000000	-18.30	-1.67	170.90	
3.A Enteric Fermentation	**CH_4**	**2,121.150**	**975.457**											
Mature dairy cattle	CH_4	1,353.450	306.284	-30	30	-20	20	-34.06	38.30	0.000381	-77.37	-9.20	16.14	
Other mature cattle	CH_4	64.266	87.536	-10	10	-20	20	-21.71	22.92	0.000012	36.21	-37.40	51.46	
Growing cattle	CH_4	450.021	386.771	-10	10	-20	20	-21.63	22.61	0.000231	-14.05	-23.72	32.92	
Sheep	CH_4	150.200	132.398	-10	10	-20	20	-21.54	23.02	0.000027	-11.85	-24.38	33.03	
Market swine	CH_4	50.288	34.513	-10	10	-20	20	-90.44	-84.95	0.000000	-31.37	-62.53	-57.08	
Breeding swine	CH_4	8.700	4.226	-10	10	-20	20	538.44	904.29	0.000002	-51.42	238.65	494.89	
Goats	CH_4	21.500	10.782	-10	10	-20	20	-21.72	22.87	0.000000	-49.85	-13.96	18.95	
Horses	CH_4	17.550	11.608	-30	30	-20	20	-33.59	38.41	0.000001	-33.86	-26.86	46.08	
Mules and Asses	CH_4	4.250	1.169	-30	30	-20	20	-33.65	37.52	0.000000	-72.49	-11.09	18.86	
Rabbits	CH_4	0.926	0.169	-30	30	-20	20	-33.87	39.00	0.000000	-81.79	-7.43	12.72	
3.B Manure Management	**CH_4**	**427.105**	**366.085**											
Mature dairy cattle	CH_4	160.320	103.466	-30	30	-20	20	-34.49	38.71	0.000044	-35.46	-26.08	44.98	
Other mature cattle	CH_4	7.652	14.471	-10	10	-20	20	-21.76	22.86	0.000000	89.12	-51.68	71.50	
Growing cattle	CH_4	55.644	66.400	-10	10	-20	20	-21.95	23.06	0.000007	19.33	-33.49	45.32	
Sheep	CH_4	4.013	3.630	-10	10	-20	20	-21.79	23.30	0.000000	-9.55	-25.05	33.75	
Market swine	CH_4	29.919	23.765	-10	10	-20	20	-21.77	22.99	0.000001	-20.57	-21.79	30.25	
Breeding swine	CH_4	137.244	140.863	-10	10	-20	20	-22.16	22.92	0.000031	2.64	-28.69	39.57	
Goats	CH_4	0.585	0.299	-10	10	-20	20	-21.79	23.11	0.000000	-48.88	-14.04	19.28	

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		Gg CO_2 equivalent	Gg CO_2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
Horses	CH_4	1.981	1.310	-30	30	-20	20	-34.16	38.71	0.000000	-33.86	-26.59	46.01	
Mules and Asses	CH_4	0.355	0.098	-30	30	-20	20	-34.36	38.50	0.000000	-72.49	-11.28	18.97	
Poultry	CH_4	28.468	11.616	-10	10	-20	20	-21.73	22.96	0.000000	-59.20	-11.09	15.26	
Rabbits	CH_4	0.926	0.169	-30	30	-20	20	-34.07	38.83	0.000000	-81.79	-7.37	12.52	
3.B Manure Management	**N_2O**	**329.052**	**142.004**											
Mature dairy cattle	N_2O	74.123	9.248	-30	30	-50	100	-85.00	113.16	0.000003	-87.52	-10.71	77.71	
Other mature cattle	N_2O	5.047	3.845	-10	10	-50	100	-84.10	101.55	0.000000	-23.81	-65.12	442.37	
Growing cattle	N_2O	20.149	10.059	-10	10	-50	100	-84.45	101.76	0.000003	-50.08	-42.60	293.80	
Sheep	N_2O	3.969	4.198	-10	10	-50	100	-84.35	102.02	0.000000	5.78	-90.32	637.54	
Market swine	N_2O	9.563	1.253	-10	10	-50	100	-84.07	102.03	0.000000	-86.90	-11.24	75.17	
Breeding swine	N_2O	14.028	1.460	-10	10	-50	100	-84.32	102.31	0.000000	-89.59	-8.93	60.11	
Goats	N_2O	0.217	0.182	-10	10	-50	100	-84.37	101.59	0.000000	-16.42	-71.55	495.44	
Horses	N_2O	0.980	0.648	-30	30	-50	100	-85.13	111.74	0.000000	-33.86	-57.07	404.02	
Mules and Asses	N_2O	0.049	0.014	-30	30	-50	100	-84.84	110.81	0.000000	-72.49	-23.59	165.37	
Poultry	N_2O	22.856	14.335	-10	10	-50	100	-84.41	101.08	0.000006	-37.28	-53.52	365.99	
Rabbits	N_2O	8.782	8.782	-30	30	-50	100	-84.64	111.76	0.000002	0.00	-86.44	615.56	
Indirect N2O emission	*N_2O*	*169.289*	*87.980*											
Total N volatilised as NH3 and NOx	N_2O	169.289	87.980	-10	10	-30	30	-32.57	29.10	0.000023	-48.03	-19.24	30.11	
3.D.1 Direct N2O Emissions From Managed Soils	**N_2O**	**1,075.891**	**845.884**											
Inorganic N fertilizers	N_2O	503.002	463.432	-20	20	-70	200	-91.80	212.71	0.017254	-7.87	-86.24	1315.89	
Organic N fertilizers	N_2O	238.484	118.692	-10	10	-30	30	-30.91	32.23	0.000044	-50.23	-35.05	542.16	
Urine and dung deposited by grazing animals	N_2O	136.971	57.865	-10	10	-50	150	-90.69	155.09	0.000170	-57.75	-38.83	483.52	
Crop residues	N_2O	187.207	186.200	-20	20	-70	200	-91.76	216.38	0.002809	-0.54	-92.83	1497.29	
Mineralization/immobilization associated with loss/gain of soil organic matter	N_2O	0.167	9.634	-20	20	-30	30	-34.11	38.38	0.000000	5667.49	-4111.87	65402.51	
Cultivation of organic soils	N_2O	10.061	10.061	-10	10	-500	500	-88.94	550.10	0.000036	0.00	-95.40	2198.19	
3.D.2 Indirect N2O Emissions From Managed Soils	**N_2O**	**349.801**	**267.708**											
Atmospheric deposition	N_2O	118.143	80.710	-20	20	-250	250	-91.87	267.64	0.000749	-31.68	-64.59	1197.86	
Nitrogen leaching and run-off	N_2O	231.658	186.998	-20	20	-400	400	-90.05	441.72	0.008666	-19.28	-76.96	1697.92	

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)	(-) %	(+) %	
3.G Liming	**CO_2**		**6.887**	-50	50	-50	50	-82.02	-14.47	0.000000				
3.H Urea Application	**CO_2**	**50.020**	**88.290**	-20	20	-50	0	-20.00	19.98	0.000010	76.51	-44.22	58.83	
4.A.1 Forest Land Remaining Forest Land	**CO_2**	**-6,404.258**	**-5,921.852**					-46.73	132.91	0.896200	-7.53			1, 3
4.A.2 Land Converted to Forest Land	**CO_2**	**-28.890**	**-266.145**					-29.57	137.50	0.000642	821.24			1, 3
4.B.1 Cropland Remaining Cropland	**CO_2**	**433.008**	**441.797**					-145.11	103.47	0.009014	2.03			1, 3
4.B.2 Land Converted to Cropland	**CO_2**	**25.846**	**127.032**					-356.82	240.00	0.004206	391.49			1, 3
4.C.1 Grassland Remaining Grassland	**CO_2**	**2.069**	**2.069**					-208.09	-191.92	0.000000	0.00			1, 3
4.C.2 Land Converted to Grassland	**CO_2**	**-9.952**	**-313.427**					-176.73	104.55	0.006148	3049.41			1, 3
4.D.2 Land Converted to Wetlands	**CO_2**	**77.232**	**11.418**					-61.88	230.53	0.000009	-85.22			1, 3
4.E.2 Land Converted to Settlements	**CO_2**	**186.622**	**622.009**					-10.98	193.35	0.010302	233.30			1, 3
4.G Harvested Wood Products	**CO_2**	**-317.852**	**-572.682**					-20.76	88.93	0.001185	80.17			1, 3
4(III).Direct N2O emissions from N mineralization/immobilization	**N_2O**	**47.233**	**121.055**					-88.07	-12.35	0.000065	156.29			1, 3
4(V) Biomass Burning	**CO_2**	**14.979**	**387.504**					-67.24	-34.10	0.000133	2487.06			1, 3
4(V) Biomass Burning	**CH_4**	**1.230**	**32.531**					-95.33	-66.80	0.000001	2543.87			1, 3
4(V) Biomass Burning	**N_2O**	**0.858**	**22.957**					-96.25	-47.72	0.000001	2575.73			1, 3
5.A Solid Waste Disposal	**CH_4**	**327.966**	**1,220.173**											
5.A.1 Managed Waste Disposal Sites\5.A.1.a Anaerobic	CH_4	16.236	1,162.309	-50	50	-50	50	-62.35	81.91	0.021908	7058.88	-4861.31	15169.58	
5.A.2 Unmanaged Waste Disposal Sites	CH_4	311.730	57.864	-50	50	-50	50	-62.67	81.86	0.000055	-81.44	-12.67	38.64	
5.B Biological Treatment of Soild Waste	**CH_4**		**14.858**											
5.B Biological Treatment of Soild Waste\5.B.1 Composting	CH_4		9.807	-5	5	-100	100	-84.25	100.98	0.000003				2
5.B Biological Treatment of Soild Waste\5.B.2 Anaerobic Digestion at Biogas Facilities	CH_4		5.052	-5	5	-100	100	-84.50	100.73	0.000001				2
5.B Biological Treatment of Soild Waste	**N_2O**		**7.014**											
5.B Biological Treatment of Soild Waste\5.B.1 Composting	N_2O		7.014	-5	5	-110	110	-86.49	111.40	0.000002				2
5.C Incineration and Open Burning of Waste	**CO_2**	**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												2
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

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)	(-) %	(+) %	
5.C Incineration and Open Burning of Waste	**N_2O**	**4.723**	**1.615**											
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Industrial Solid Wastes	N_2O	0.007												2
5.C.2 Open Burning of Waste\5.C.2.1 Biogenic\5.C.2.1.b Other\Agricultural residues	N_2O	4.716	1.615	-50	50	-100	100	-86.31	133.03	0.000000	-65.75	-29.98	253.59	
5.C Incineration and Open Burning of Waste	**CH_4**	**17.143**	**5.872**											
5.C.2 Open Burning of Waste\5.C.2.1 Biogenic\5.C.2.1.b Other\Agricultural residues	CH_4	17.143	5.872	-50	50	-100	100	212.71	5183.85	0.000689	-65.75	-29.63	238.61	
5.D Wastewater Treatment and Discharge	**CH_4**	**588.877**	**446.946**											
5.D.1 Domestic wastewater	CH_4	492.336	333.580	-30	30	-30	30	-39.39	45.61	0.000640	-32.25	-31.83	58.33	
5.D.2 Industrial wastewater	CH_4	96.541	113.366	-30	30	-30	30	-39.54	44.86	0.000073	17.43	-54.27	99.60	
5.D Wastewater Treatment and Discharge	**N_2O**	**66.884**	**90.267**											
5.D.1 Domestic wastewater	N_2O	66.884	90.267	-50	50	-50	50	-62.63	79.49	0.000130	34.96	-91.16	281.33	
TOTAL	**CO2eq**	**25,444.410**	**18,450.618**					**-10.75**	**50.66**	**1.0000**	**-27.49**	**-17.17**	**31.09**	

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 emissions

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fuel consumption	**UNIT**														
Hard coal	1000 t	253.70	569.80	887.50	915.60	957.10	855.50	932.60	919.00	872.90	973.90	526.90	492.10	579.80	434.60
Fuel oil	1000 t	570.40	283.40	284.00	15.10	58.50	60.10	18.90	1.60	10.60	0.00	0.00	0.00	0.00	0.00
Light heating oil	1000 t	0.30	0.20	3.00	0.90	0.90	1.20	0.90	1.00	2.10	1.10	1.20	0.90	0.80	1.10
Natural gas	1000000 m3	201.70	155.80	36.30	24.00	27.00	14.00	2.70	0.60	52.50	66.10	5.30	0.50	0.50	5.60
Coke oven gas	1000000 m3	24.50													
Biogas	PJ			0.11	0.02	0.00	0.01	0.17	0.39	0.25	0.26	0.31	0.31	0.35	0.37
Other biomass	PJ				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net calorific values															
NCV for hard coal	MJ/kg	25.14	25.58	25.10	24.13	24.25	24.35	24.96	24.64	25.00	24.95	24.85	25.00	24.28	24.57200
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	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	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.60	34.60	34.80	34.70	34.64	34.64	34.77
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	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for other biomass															

EMISSION FACTORS		1990	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EF CO2 t/TJ	t/TJ														
EF CO2 -Hard coal	t/TJ	93.31	93.31	93.31	93.31	93.31	93.31	93.74	93.96	92.69	93.39	92.76	92.70	92.75	92.39
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	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	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	55.28	55.28	55.28	55.28	55.28	55.28	55.00	55.10	55.56	55.43	55.32	55.41	55.49	55.34
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 - Biogass	t/TJ	54.60	54.60	54.60	54.60	54.60	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	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	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	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	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
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 - Biogas	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 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	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	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	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	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	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	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	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	4.00	4.00	4.00	4.00	4.00

Table A3-2: 1A1aii - activity data NCV and emission factors

ACTIVITY DATA		1990	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fuel consumption	**UNIT**														
Hard coal	1000 t														
Fuel oil	1000 t	118.00	108.60	162.00	108.30	90.90	49.60	27.40	26.80	35.80	0.00	34.10	0.00	0.00	0.00
Light heating oil	1000 t	0.00	0.90	1.50	0.10	0.00	0.60	0.00	0.00	0.00	0.00	0.50	0.00	0.20	0.00
Natural gas	1000000 m3	315.50	363.40	479.00	649.90	652.10	673.90	580.40	352.10	343.70	407.90	745.60	583.00	636.10	783.50
Coke oven gas	1000000 m3														
Biogas	PJ				0.14	0.17	0.34	0.41	0.48	1.07	1.50	2.22	2.64	2.94	2.97
Other biomass	TJ				1.90	803.20	1003.50	1146.10	1190.30	2189.00	3730.20	4244.80	7004.10	8984.20	9524.20
Net calorific values															
NCV for hard coal	MJ/kg	25.14	25.58	25.10	24.13	24.25	24.35	24.96	24.64	25.00	24.95	24.85	25.00	24.28	24.57
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	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	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.60	34.60	34.80	34.70	34.64	34.64	34.77
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	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	1.00	1.00	1.00	1.00	1.00

EMISSION FACTORS		1990	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
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	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	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	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	55.26	55.26	55.26	55.26	55.26	55.26	55.26	55.16	55.25	55.32	55.33	55.43	55.43	55.34
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 - Biogass	t/TJ	54.60	54.60	54.60	54.60	54.60	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	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	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	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	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	3.67	2.73	2.87	3.67	3.58	3.51	3.24	2.25	2.42	2.81	3.55	2.61	3.56	3.70
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 - Biogas	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 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	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	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	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	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	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	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	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	4.00	4.00	4.00	4.00	4.00

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

ACTIVITY DATA		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fuel consumption	**UNIT**															
Hard coal	1000 t					0.00	0.00	0.00	0.00							
Fuel oil	1000 t	0.00	35.60	37.00	39.00	23.20	23.50	13.70	4.50	2.90	3.70	3.70	2.60	2.50	1.90	1.20
Light heating oil	1000 t	0.00	6.00	4.40	6.70	4.90	5.30	3.10	3.70	3.10	3.90	3.70	4.20	2.90	2.30	1.90
Natural gas	1000000 m3	0.00	36.20	53.00	71.30	86.50	76.00	76.60	85.90	71.60	72.40	71.00	54.80	53.80	51.80	53.00
Coke oven gas	1000000 m3															
Biogas	PJ					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0000	0.0000
Other biomass	PJ					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0028	0.0214
Gas works gas	1000000 m3				1.46											
Liqufied petroleum gas	1000 t	0.00	1.50													
Net calorific values																
NCV for hard coal	MJ/kg	25.14	27.63	25.58	25.10	24.13	24.25	24.35	24.96							24.57
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	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	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	34.00	34.00	34.00	34.00	34.60	34.60	34.80	34.70	34.64	34.64	34.77
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	1000.00	1000.00
NCV for other biomass	TJ/PJ					1000.00	1000.00	1000.00	1000.00	1000.00	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	46.89													

EMISSION FACTORS		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
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	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	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	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	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	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	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	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	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	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	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	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	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	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	1.00
EF CH4 - Biogass	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	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	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	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	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	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	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	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	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	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	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	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	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	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	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Fuel consumption												
Fuel oil (1000 t)	1000 t	355.04	300.70	239.40	254.00	244.30	134.10	131.60	114.10	102.00	70.30	23.00
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	40.19	40.19
LPG I Gas/diesel oil (1000 t)	1000 t	0.79	35.00	2.20	9.50	0.00	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	46.89	46.89
Petroleum coke (1000 t)	1000 t	53.69	42.60	63.00	70.70	55.90	31.30	35.60	37.90	24.00	19.70	21.70
NCV for petroleum coke (MJ	MJ/kg	29.31	29.31	29.31	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Refinery gas (1000 t)	1000 t	405.94	224.20	262.40	241.10	161.50	208.10	155.30	184.70	187.00	129.20	114.20
NCV for refinery gas (MJ/kg)	MJ/kg	48.57	48.57	48.57	48.57	48.57	42.60	42.60	42.60	42.60	42.60	42.60
Natural gas (1000000 m3)	1000 t	7.31	7.10	0.20	1.20	27.10	183.30	199.80	214.10	237.50	200.50	211.10
NCV for natural gas (MJ/m3	MJ/kg	34.00	34.00	34.00	34.00	34.00	34.60	34.80	34.70	34.64	34.64	34.77
Total fuel cunsumption (TJ)	TJ	**35844.4**	**26105.7**	**24322.7**	**24596.4**	**20316.8**	**21567.0**	**19961.4**	**21058.1**	**21036.6**	**15885.3**	**13801.9**
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	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	63.10	63.10
EF CO2 - petroleum coke (t/T	t/TJ	107.00	107.00	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	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	56.10	56.10
CO2 Emission (Gg)	Gg	**2,424.74**	**1,813.32**	**1,683.27**	**1,729.54**	**1,448.87**	**1,387.39**	**1,298.59**	**1,350.64**	**1,317.29**	**990.69**	**835.52**
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	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	1.00	1.00
EF CH4 - petroleum coke (kg	kg/TJ	1.00	1.00	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	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	1.00	1.00
CH4 Emission (Mg)	Mg	**64.38**	**50.28**	**43.57**	**45.01**	**39.95**	**32.35**	**30.54**	**30.23**	**29.24**	**21.54**	**15.65**
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	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	0.10	0.10
EF N2O - petroleum coke (kg	kg/TJ	1.50	1.50	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	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	0.10	0.10
N2O Emission (Mg)	Mg	**12.92**	**10.40**	**9.83**	**10.63**	**9.37**	**6.21**	**6.19**	**6.04**	**5.19**	**3.86**	**2.78**

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

Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
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 cunsumption (TJ)	**1,923.53**	**4.27**	**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
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
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
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
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**
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
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
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
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
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**
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
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
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
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
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**

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

Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
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	102.90	112.20	105.60	125.90	103.60
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.60	34.80	34.70	34.64	34.64	34.77
Other Kerosene prod (petrolej) (1000 t)											
NCV for petroleum (MJ/m3)											
Total fuel cunsumption (TJ)	**14,657.46**	**7,839.70**	**5,943.13**	**6,201.91**	**8,217.80**	**4,196.98**	**3,580.92**	**3,893.34**	**3,657.98**	**4,361.18**	**3,602.17**
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
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	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	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
CO2 Emission (Gg)	**826.75**	**440.35**	**339.20**	**352.16**	**461.02**	**235.45**	**200.89**	**218.42**	**205.21**	**244.66**	**202.08**
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
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
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
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
CH4 Emission (Mg)	**14.72**	**7.90**	**6.55**	**6.67**	**8.22**	**4.20**	**3.58**	**3.89**	**3.66**	**4.36**	**3.60**
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	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
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
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
N2O Emission (Mg)	**1.48**	**0.80**	**0.75**	**0.74**	**0.82**	**0.42**	**0.36**	**0.39**	**0.37**	**0.44**	**0.36**

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

Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
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	0.40								
NCV for light heating oil (MJ/kg)		42.71	42.71								
Natural gas (1000000 m3)		1.10	0.50								
NCV for natural gas (MJ/m3)		34.00	34.00								
Other Kerosene prod (petrolej) (1000 t)											
NCV for petroleum (MJ/m3)											
Biogas						26.54	26.93	27.50	19.40	20.71	19.79082
NCV for biogas (TJ/TJ)						1.00	1.00	1.00	1.00	1.00	1.00
Total fuel cunsumption (TJ)	**0.00**	**54.48**	**34.08**	**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
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	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	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
EF CO2 - other kp (t/TJ)	71.15	71.15	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	54.60	54.60
CO2 Emission (Gg)	**0.00**	**3.36**	**2.22**	**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
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
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
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
EF CH4 - other kp (kg/TJ)	3.00	3.00	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	1.00	1.00
CH4 Emission (Mg)	**0.00**	**0.09**	**0.07**	**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
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
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
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
EF N2O - biogas (kg/TJ)	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)	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Table A3-8: 1A2a-g – fuel consumption

1A2a Iron and Steal

Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	7.474	0	0	0	0.6	0.9	0.1	0	3.1	1.6	0.9
Coking coal (kameni ugljen)	10^3 t	0	0	0	1	0	1.8	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	18.248	0.9	0	0	0	0	0	0	0	0	0
Lignite	10^3 t	9.349	1.5	0	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	119.957	53.1	25.2	22.9	35	17.5	13	13.8	18.1	16.3	13.5
Wood	10^3 m^3	0	0	0		0.8	0.5	0.4	0.3	0.4	0.2	0.2
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	3.2	3.1	2.2	1.8
Briketi ugljena	10^3 t	0	0	0								0
Coke oven coke	10^3 t	179.937	16.4	11.8	4.3	3.7	0.6	0.3	0.3	1	0.3	0.3
Liquified petroleum gas	10^3 t	3.554	1.5	2.1	4.2	1.4	0.8	0.8	1.1	0.9	0.7	0.7
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0	0.1
Petroleum	10^3 t						0	0	0	0	0	0
Diesel	10^4 t	0	0	0	0	0	0	0	0	0	0	0.2
Gas/Diesel oil	10^3 t	12.907	4	4	2.7	0.9	0.6	0.5	0.7	0.7	0.6	0.6
Residual fuel oil	10^3 t	42.516	6.1	1.5	2.7	1.2	1.1	1	0.9	0.4	0	0
Petroleum coke	10^3 t	8.602	0	0	0	0.7	0.3	0.1	0.3	0.3	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	418.079	0	0								0
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^3 m^3	0	1.62	0	0.031	0	0	0	0	0	0	0

1A2b Non-Ferrous metals

Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	0	0	0	0.1	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	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	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	0	0	5	1	0.4	2.6	2.6	9.4	12	12.5	11.7
Wood	10^3 m^3	0	0	0		0.6	0.2	0.4	0.4	0.3	0.3	0.3
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	0	0	0	0
Briketi ugljena	10^3 t	0	0	0								0
Coke oven coke	10^3 t	0	0	0	0	0	0	0.2	0	0	0	0
Liquified petroleum gas	10^3 t	1.534	0.5	1.1	2.1	3.1	0.8	0.5	0.6	0.8	0.7	0.7
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0	0
Petroleum	10^3 t						0.2	0	0	0	0	0
Diesel	10^3 t	0	0	0	0	0	0	0	0	0	0	0.2
Gas/Diesel oil	10^3 t	2.818	2.2	1	0.2	0.1	0.9	1.1	0.2	0.1	0.2	0.2
Residual fuel oil	10^3 t	1.077	0.7	0.3	4	1.2	0	0	0	0	0	0
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0	0.3	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^6 m^3	0	0	0	0	0	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2c Chemicals

Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	0	0	0	0.2	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	1.2	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	43.77	21.9	1.2	0	0	0	0	0	0	0	0
Lignite	10^3 t	27.507	25.3	0.6	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	181.214	152.2	186.5	183.1	227.6	146.9	145.8	166.2	138.5	147	169.1
Wood	10^3 m^3	0	0	0		0.1	0	0	0	0	0	0
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	0	0	0.2	0.2
Briketi ugljena	10^3 t	0	0	0								0
Coke oven coke	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	0.724	8.8	6.9	0	0.1	0	0	0	0	0	0
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0	0
Petroleum	10^3 t						2.4	3.5	2.6	2.9	1.6	1.5
Diesel	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	3.868	2.3	2	0.5	0.4	0.5	0.2	0.2	0.4	0.4	0.4
Residual fuel oil	10^3 t	89.079	89.3	102.8	73	3.6	0	0	0	0	0	0.1
Petroleum coke	10^3 t	0	0	0	0.7	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^9 m^3	0	0	0	0	0	0	0	0	0	0	0

1A2d Pulp, paper and print

Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	0	0	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	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	42.51	0	0	0	0	0	0	0	0	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	92.536	74.4	75	69.2	68.8	27.6	45.6	46.6	46.4	55.5	57.9
Wood	10^3 m^3	0	0	0		13.2	0.1	0	3.1	0	0	0
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	81.9	0	1.4	169.4	151.8	20	1.2	22.4	97.5	79.3	192.2
Briketi ugljena	10^3 t	0	0	0								0
Coke oven coke	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	0	0	0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0	0
Petroleum	10^3 t						0	0	0	0	0	0
Diesel	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	0.405	1.2	0.9	1.6	0.1	0	0	0	0	0	0
Residual fuel oil	10^3 t	18.364	12.2	2.4	11.9	9.5	5.2	5.2	1.8	0.7	0.7	0.7
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^6 m^3	0	0	0	0.031	0	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2e Food Processing, Beverages and Tobacco

Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	0	0	0	0	0.7	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0.426	0	0	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	89.92	65.4	23.9	47.7	39.9	34	39.8	37.8	28.1	22.8	11.9
Lignite	10^3 t	35.745	29	11.2	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	92.34	100.7	101.6	173	166.6	114.7	120.9	114.3	113.2	121.4	112.1
Wood	10^3 m^3	0	0	0		0.5	13.5	10.9	2.7	2.4	2.1	1.5
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	149.4	219.4	253.7	290.6
Briketi ugljena	10^3 t	0.16	0	0								0
Coke oven coke	10^3 t	6.841	4.4	2.3	9.6	6.4	4	4.5	4.7	3.5	2.4	3.6
Liquified petroleum gas	10^3 t	1.09	0.8	0.8	1.6	1.3	1.4	1.2	1.2	1.1	0.9	1
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0	0
Petroleum	10^3 t						0	0	0	0	0	0
Diesel	10^3 t	0	0	0	0	0	0	0	0	0	0	0.3
Gas/Diesel oil	10^3 t	36.196	18.3	15.2	13.3	10	8.7	7.1	6.5	6.3	6.4	5.3
Residual fuel oil	10^3 t	72.165	53.1	40.3	32.4	22.9	9.1	11.4	8.3	9.2	8.9	7.7
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^6 m^3	6.1	0	0	0.1099	0	0	0	0	0	0	0

1A2f Non-Metalic Minerals

Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	0	0	0	0.1	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	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	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	121.384	66.7	52.6	73.4	56.4	41.8	47.8	53.4	51.3	50.5	45.7
Wood	10^3 m^3	0	0	0		0	0	0	0	0	0	0
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	0.7	0.9	0.6	0.3
Briketi ugljena	10^3 t	0	0	0								0
Coke oven coke	10^3 t	6.804	6.8	7.2	7.7	0.1	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	6.567	3.1	3	2.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0	0
Petroleum	10^3 t						0	0	0	0	0	0
Diesel	10^3 t	0	0	0	0.1	0	0	0	0	0	0	0.1
Gas/Diesel oil	10^3 t	1.627	0.4	0.4	2.7	0	0	0	0	0	0	0
Residual fuel oil	10^3 t	6.093	5.3	2.3	3.8	2.2	0	0	0	0	0	0
Petroleum coke	10^3 t	0	0	0	0	0	0	5.4	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^6 m^3	0	1.01	3.3	0.923	0	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2g v Construction												
Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	99.727	5	0	0	0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	40.732	40.9	53.2	168.3	193.4	74.7	46.3	57.2	53.4	76.9	119.8
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	18.129	5.7	3	5	1.1	2.7	2.7	1.9	1	1.1	0
Lignite	10^3 t	0.065	0.1	2.5	0	0	0	0	0.1	0.1	0	0
Natural gas	10^6 m^3	137.217	111.6	178.9	124.4	76.4	40.7	38.4	52	56.8	58	53.4
Wood	10^3 m^3	0	0	0		0.3	0.9	2.3	1.9	9.7	4.6	6.6
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	0	0	57.8	0	370.6	289	31.9	70.5	67.8	72.5	138.5
Briketi ugljena	10^3 t	2.829	0	0								0
Coke oven coke	10^3 t	3.64	2.6	16.1	0	17.3	20.6	24.2	26.6	26.2	28.7	26.3
Liquified petroleum gas	10^3 t	0	0.1	3.3	4.6	3.2	1.6	1.4	1.4	1.3	1.2	0.5
Motor Gasoline	10^3 t	0	0	0		0	0	0	0	0	0.1	0.1
Petroleum	10^3 t						0	0	0	0	0	0
Diesel	10^3 t	0	0	0	15	14.3	11.1	10.4	11.5	12.3	13.1	6.9
Gas/Diesel oil	10^3 t	17.142	12	34	7	4.3	2.7	2.8	3.4	3	2.7	4
Residual fuel oil	10^3 t	127.115	73.3	135	53.1	7.3	3.9	3	3.1	2.8	3	2.1
Petroleum coke	10^3 t	0	0	0	171.6	115.3	167.2	169.8	202	195.3	142.5	100.7
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	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^6 m^3	0	0	0	0	0	0	0	0	0	0	0
Industrial waste-non ren.	TJ					319.1	390	413.4	482.7	817.7	1128.9	1630.3

1A2g viii Other industry (analiza industrije+Opća potrošnja-Građevinarstvo)												
Fuel consumption	Unit	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Anthracite	10^3 t	0	0	0	0	0	0	0	0.3	0	0	0
Coking coal (kameni ugljen)	10^3 t	0.794	1	0	0	0	0	0	0	0.3	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	48.369	1.9	0.1	4.2	0	0	0	0	0	0	0
Lignite	10^3 t	0.431	0.4	0.1	0.2	0	0	0	0	0	0	0
Natural gas	10^6 m^3	79.309	74.2	55	65.3	54.4	44.2	42.5	47.4	48.6	47.7	45.5
Wood	10^3 m^3	0	0	0		39.4	27.4	31.7	33.8	35.5	32.8	21.9
Biogas	TJ	0	0	0		0	0	0	0	0	0	0
Wood waste	TJ	3518.1	2450	2224.4	2087.5	1456.677	579	371.5	715.3	590.7	579	584.9
Briketi ugljena	10^3 t	0.311	0	0								0
Coke oven coke	10^3 t	2.549	1.2	0.3	1	0.1	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	3.317	2.2	3.2	8	6.8	5.7	5.5	6.4	6.4	6	2.9
Motor Gasoline	10^3 t	0	0	0	6.9	5.1	4	4.1	3.8	3.2	3.6	0.1
Petroleum	10^3 t						0	0	0	0	0	0
Diesel	10^3 t	0	0	0	110.6	102.2	79.2	76.9	76.2	83.9	89.1	1.9
Gas/Diesel oil	10^3 t	17.87	7.1	7.6	23	12.2	8.7	8.3	9.8	9.4	10	4.4
Residual fuel oil	10^3 t	59.519	29.7	19.4	17.7	8.4	3.8	3.5	2.4	3	3.1	1.8
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t	0	0	0		0	0	0	0	0	0	0
Visokopećni plin	10^6 m^3	0	0	0								
Koksni plin	10^3 m^3	0	0	0								
Gas works gas	10^6 m^3	0	7.21	3.5	2.456	0	0	0	0	0	0	0

1A2g vii Off-road vehicles and other machinery												
Fuel consumption	Jedinica	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Motor gasoline	10^3 t	0.2	8.5	7.6	6.9	5.1	4	4.1	3.8	3.2	3.7	0.3
Diesel	10^3 t	137.1	43.6	66.1	125.7	116.5	90.3	87.3	87.7	96.2	102.2	9.6

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

Net Calorific Value		1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Antracit	MJ/kg	29.29	29.31	29.31	29.31	29.31	29.31	29.31	29.31	29.31	29.31	29.31
Kameni ugljen	MJ/kg	25.14	28.12	26.15	25.1	24.77332	26.7	27.39	27.28	26	29.00	27
Mrki ugljen	MJ/kg	16.74	17.8	17.8	18.5	17.6	17	17	19.6	19	19.00	18.43
Lignit	MJ/kg	10.9	12	12	12.1		0		11.8	11.85		
Prirodni plin	MJ/m3	34	34	34	34.0	34.0	34.6	34.8	34.7	34.6	34.6	34.77
Ogrjevno drvo	MJ/m3	9	9	9	9	9	9	9.0	9.0	9.0	9.0	9
Bio plin	TJ/TJ	1	1	1	1.0	1.0	1	1.0	1.0	1.0	1.0	1.0
Industrijski otpaci (drvni)	TJ/TJ	1	1	1	1.0	1.0	1	1.0	1.0	1.0	1.0	1.0
Briketi ugljena	MJ/kg	16.74										
Koks	MJ/kg	29.31	29.31	29.31	29.3	29.3	29.31	29.3	29.3	29.3	29.3	29.31
Ukapljeni plin	MJ/kg	46.89	46.89	46.89	46.9	46.9	46.89	46.9	46.9	46.9	46.9	46.89
Motorni benzin	MJ/kg	44.59	44.59	44.59	44.6	44.6	44.59	44.6	44.6	36.7	36.7	44.59
Petroleum	MJ/kg	43.94	43.96	43.96			43.96	44.0	44.0	44.0	44.0	43.96
Dizelsko gorivo	MJ/kg	42.71	42.71	42.71	42.7	42.7	42.71	42.7	42.7	42.7	42.7	42.71
Ekstralako l. ulje	MJ/kg	42.71	42.71	42.71	42.7	42.7	42.71	42.7	42.7	42.7	42.7	42.71
Loživo ulje	MJ/kg	40.19	40.19	40.19	40.2	40.2	40.19	40.2	40.2	40.2	40.2	40.19
Naftni koks	MJ/kg	29.31	29.31	31	31.0	31.0	31	31.0	31.0	31.0	31.0	31
Rafinerijski plin	MJ/kg						0					42.6
Ostali derivati nafte	MJ/kg						0					40.19
Visokopećni plin	MJ/m3											
Koksni plin	MJ/m3	17.91										
Gradski plin	MJ/m3	15.82	15.8	15.8	21.47		0					

Table A3-9: 1A2a-g –emission factors

Fuel type	EF CO2, t/TJ	EF CH4, kg/TJ	EF N2O, 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 derivates	0	3	0.6
Gas works gas	44.4	1	0.1
Other fosil fuels	143	30	4

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

Domestic aviation		1990	1995	2000	2010	2015	2016	2017	2018	2019	2020
Fuel consumption											
Aviation gasoline	1000 t	0.00	0.00	0.00	1.00	0.30	0.40	0.40	0.40	0.40	0.40
NCV for gasoline	MJ/kg	44.59	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	9.50	9.60	9.70	9.80	4.90
NCV for jet kerosene	MJ/kg	44.00	43.96	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 cunsumption	TJ	**92.46**	**321.10**	**356.14**	**440.23**	**431.00**	**435.46**	**439.85**	**444.25**	**448.64**	**233.24**
Emissions											
EF CO2 - aviation gasoline	t/TJ	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00
EF CO2 - jet kerosene	t/TJ	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50
EF CO2 - motor gasoline	t/TJ	69.30	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**	**31.11**	**31.42**	**31.74**	**32.05**	**16.65**
EF CH4 - gasoline	kg/TJ	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
EF CH4 - jet kerosene	kg/TJ	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
EF CH4 - motor gasoline	kg/TJ	0.50	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**	**0.22**	**0.22**	**0.22**	**0.22**	**0.12**
EF N2O - gasoline	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N2O - jet kerosene	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N2O - motor gasoline	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	**0.18**	**0.64**	**0.71**	**0.88**	**0.86**	**0.87**	**0.88**	**0.89**	**0.90**	**0.47**

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

1A3bi	CARS			1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
	FUEL CONSUMPTION													
	Gasoline	TJ		31889.08	23733.85	32292.86	29259.62	26732.34	21817.61	21912.91	21042.77	20405.68	19339.61	16082.50
	Diesel oil	TJ		1638.19	6048.80	8880.71	19728.46	25322.92	32003.51	34626.09	35647.53	34605.96	35811.50	33384.62
	LPG	TJ		#DIV/0!	642.39	459.52	1036.27	2752.44	3141.63	3315.12	3315.12	3301.06	3094.74	2475.79
	CNG	TJ						2.34	3.62	8.47	9.46	10.60	14.67	12.84
	Biodiesel	TJ						59.130177	598.4200945	739.4358402	12.99218188	701.000401	1627.32236	1702.05292
	NCV													
	Gasoline	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	Diesel oil	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	LPG	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	CNG	MJ/106m3		1	1	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	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	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	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	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	70.8	70.8

1A3bii	LIGHT DUTY TRUCKS			1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
	FUEL CONSUMPTION													
	Gasoline	TJ		1394.4738	761.32596	1040.8302	666.77447	421.99073	228.3064714	228.6538839	232.4753599	268.316384	331.408244	221.492924
	Diesel oil	TJ		3357.0545	3364.9755	5345.5403	9130.0068	7984.733	5372.147924	5295.983611	7152.701045	6726.23294	7182.19546	6774.61926
	LPG	TJ		0	0	0	0	0	0	0	0	0	0	0
	CNG	TJ												
	Biodiesel	TJ						23.550799	131.6868794	148.7907168	3.436199293	138.562794	321.66363	336.435199
	NCV													
	Gasoline	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	Diesel oil	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	LPG	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	CNG	MJ/106m3		1	1	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	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	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	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	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	70.8	70.8

Table A3-12: 1A3b – fuel consumption, NCV and emission factors (cont.)

HEAVY DUTY TRUCKS+BUSSES			1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
FUEL CONSUMPTION													
Gasoline	TJ		149.5810	59.3951	54.2238	53.9165	26.2786	30.4085	24.8395	20.0935	10.8392	17.4228	9.8617
Diesel oil	TJ		10645.1605	8114.4038	9597.3914	11955.2053	13673.2825	14636.2389	14729.3275	18902.3708	17812.0771	19511.6797	16234.2970
LPG	TJ		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
CNG	TJ						86.0566	134.7824	143.7671	167.5088	166.0631	151.6003	115.8095
Biodiesel	TJ						31.7089	290.0421	311.7669	6.8146	281.7630	654.0926	684.1301
NCV													
Gasoline	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
Diesel oil	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
LPG	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
CNG	MJ/106m3		1	1	1	1	1	1	1	1	1	1	1
Biodiesel	MJ/kg		0	0	0	1	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	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	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	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	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	70.8	70.8

1A3biv	MOTORCYCLES			1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
	FUEL CONSUMPTION													
	Gasoline	TJ		432.971	322.187	687.760	942.854	1205.384	1110.474	1105.119	1088.841	1070.622	1054.824	902.343
	Diesel oil	TJ		0.000	0.000	0.000	0.000	0.063	0.344	0.317	0.538	0.542	0.709	0.745
	LPG	TJ												
	CNG	TJ												
	Biodiesel	TJ						0.0001431	0.006221066	0.006529847	0.000189743	9.03383809	20.9714098	21.9344675
	NCV													
	Gasoline	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	Diesel oil	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	LPG	MJ/kg		1	1	1	1	1	1	1	1	1	1	1
	CNG	MJ/106m3		1	1	1	1	1	1	1	1	1	1	1
	Biodiesel	MJ/kg		0	0	0	1	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	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	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	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	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	70.8	70.8

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

Rail transport															
		1990	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
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	26.40	24.80	23.40	21.20	17.50	18.30	17.60	14.70	14.30	13.30
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	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 cunsumption (TJ)	TJ	**1,819.97**	**1,166.17**	**1,302.66**	**1,217.24**	**1,127.54**	**1,059.21**	**999.41**	**905.45**	**747.43**	**781.59**	**751.70**	**627.84**	**610.75**	**568.04**
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	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	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	77.40	77.40	77.40	77.40	77.40
EF CO2 - light heating oil (t/T	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 - brown coal (t/TJ)	t/TJ	96.10	96.10	96.10	96.10	96.10	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	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	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**	**83.55**	**78.49**	**74.06**	**67.09**	**55.38**	**57.92**	**55.70**	**46.52**	**45.26**	**42.09**
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	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	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	3.00	3.00	3.00	3.00	3.00
EF CH4 - light heating oil (kg/	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 - brown coal (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	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	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	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**	**3.74**	**3.52**	**3.32**	**3.01**	**2.48**	**2.59**	**2.50**	**2.08**	**2.03**	**1.89**
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	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	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	0.60	0.60	0.60	0.60	0.60
EF N2O - light heating oil (kg/	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 - brown coal (kg/TJ)	kg/TJ	1.50	1.50	1.50	1.50	1.50	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	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	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**	**32.25**	**30.29**	**28.58**	**25.90**	**21.38**	**22.35**	**21.50**	**17.96**	**17.47**	**16.25**

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

National navigation												
National navigation		**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Fuel consumption												
Gasoline (1000 t)		0.10	0.60	0.30								
NCV for gasoline (MJ/kg)		44.59	44.59	44.59								
Diesel (1000 t)		38.70	23.20	25.70	31.80	34.80	41.20	41.80	44.30	47.20	49.10	40.20
NCV for diesel (MJ/kg)		42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)		2.10	6.20	1.40		2.00						
NCV for fuel oil (MJ/kg)		40.19	40.19	40.19		40.19						
Light heating oil (1000 t)		1.60	1.50									
NCV for light heating oil (MJ/kg)		42.71	42.71									
Total fuel cunsumption (TJ)		**1,810.07**	**1,330.87**	**1,167.29**	**1,358.18**	**1,566.69**	**1,759.65**	**1,785.28**	**1,892.05**	**2,015.91**	**2,097.06**	**1,716.94**
Emissions												
EF CO2 - gasoline (t/TJ)		69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - diesel (t/TJ)		74.10	74.10	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	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	74.10	74.10
CO2 Emission (Gg)		**134.38**	**99.31**	**86.62**	**100.64**	**116.36**	**130.39**	**132.29**	**140.20**	**149.38**	**155.39**	**127.23**
EF CH4 - gasoline (kg/TJ)		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
EF CH4 - diesel (kg/TJ)		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
EF CH4 - fuel oil (kg/TJ)		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
EF CH4 - light heating oil (kg/TJ)		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
CH4 Emission (Mg)		**12.67**	**9.32**	**8.17**	**9.51**	**10.97**	**12.32**	**12.50**	**13.24**	**14.11**	**14.68**	**12.02**
EF N2O - gasoline (kg/TJ)		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N2O - diesel (kg/TJ)		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N2O - fuel oil (kg/TJ)		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF N2O - light heating oil (kg/TJ)		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
N2O Emission (Mg)		**3.48**	**2.53**	**2.33**	**2.72**	**3.13**	**3.52**	**3.57**	**3.78**	**4.03**	**4.19**	**3.43**

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

Commercial/Institutional	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Fuel consumption											
Petroleum (1000 t)	3.80	0.20									
NCV for jet kerosene (MJ/kg)	43.94										
Light heating oil (1000 t)	90.30	106.30	120.50	131.60	73.80	44.60	44.30	43.50	37.20	26.80	25.60
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	42.71	42.71
Fuel oil (1000 t)	67.60	2.50	3.90	6.60	8.00	2.70	1.50	0.80	0.00	0.20	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	40.19	40.19
LPG (1000 t)	4.30	13.80	13.90	20.10	12.90	12.30	12.60	12.10	11.70	12.20	10.00
NCV for LPG (MJ/kg)	46.89	46.89	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	12.70	9.50	0.20	2.20		0.10	0.10	0.00	0.00	0.00
NCV for brown coal (MJ/kg)	16.74	17.30	17.80	18.50	17.60	16.89	17.00	19.60	19.00	19.00	18.43
Lignite (1000 t)	40.00	1.60	1.20	0.60	0.30	0.10	0.00	0.20	0.10	0.00	0.00
NCV for lignite (MJ/kg)	10.90	10.10	12.00	12.10	11.60	10.50	10.50	11.80	11.85	11.85	11.20
Briquettes (1000 t)	2.90										
NCV for briquettes (MJ/kg)	16.74										
Gas work gas (1000000 m3)	4.90	1.43	1.50	3.43	2.84	0.39					
NCV for gas work gas (MJ/m3)	15.82	15.91	19.49	21.47	18.72	17.10					
Natural gas (1000000 m3)	124.30	132.60	98.20	151.20	192.70	204.80	217.90	231.30	244.30	252.40	235.90
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.60	34.80	34.70	34.64	34.64	34.77
Gasoline (1000 t)		0.33									
NCV for gasoline (MJ/kg)		44.60									
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) + charcoal	0.00	0.00	0.00	0.00	129.80	213.50	176.90	346.60	422.80	517.70	558.30
Bio gass (TJ)					102.26	116.59	119.11	118.13	114.74	137.07	120.39
Total fuel cunsumption (TJ)	**12,190.9**	**10,069.4**	**9,506.6**	**12,053.9**	**10,957.7**	**10,014.1**	**10,423.8**	**10,952.6**	**11,138.7**	**11,122.6**	**10,443.2**
Commercial/Institutional											
Emissions											
EF CO2 - petroleum (t/TJ)	73.30	73.30	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	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	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	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	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	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	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	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	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	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	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	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	54.60	54.60
CO2 Emission (Gg)	**854.65**	**661.70**	**640.93**	**789.25**	**690.73**	**614.15**	**634.03**	**671.92**	**680.84**	**677.49**	**639.86**

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

EF CH4 - petroleum (kg/TJ)	10.00	10.00	10.00	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	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	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	5.00	5.00
EF CH4 - anthracite (kg/TJ)											
EF CH4 - brown coal (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - lignite (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - briquettes (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
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	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	5.00	5.00
EF CH4 - gasoline (kg/TJ)											
EF CH4 - sub bit coal(kg/TJ)											
EF CH4 - petroleum coke (t/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - anthracite (t/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 -solid biomass wood (kg/TJ)	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
EF CH4 - landfill gas (t/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CH4 Emission (Mg)	**99.38**	**74.66**	**74.97**	**89.75**	**110.66**	**123.12**	**114.07**	**166.48**	**188.37**	**214.10**	**222.38**
EF N2O - petroleum (kg/TJ)	0.60	0.60	0.60	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	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	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	0.10	0.10
EF N2O - anthracite (kg/TJ)											
EF N2O - brown coal (kg/TJ)	1.50	1.50	1.50	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	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	1.50	1.50	1.50
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	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	0.10	0.10
EF N2O - gasoline (kg/TJ)											
EF N2O - sub bit coal(kg/TJ)											
EF N2O - petroleum coke (t/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - anthracite (t/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - solid biomass wood (kg/TJ)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
EF N2O - landfill gas (t/TJ)	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)	**5.87**	**3.66**	**3.86**	**4.16**	**3.40**	**2.84**	**2.71**	**3.40**	**3.56**	**3.71**	**3.77**

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

Residential	1990	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Fuel consumption													
Fuel consumption - mobile													
Gasoline (1000 t)	4.00	12.10	8.20	8.20	7.70	7.40	7.50	7.50	7.40	7.40	7.60	7.70	7.60
NCV for gasoline (MJ/kg)	44.59	44.59	44.59	44.59	44.59	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	1.00	0.90	0.80	0.20						
NCV for petroleum (MJ/kg)		43.96	43.96	43.96	43.96	43.96	43.96	43.96					
Light heating oil (1000 t)	215.90	231.50	138.80	122.00	94.50	83.50	68.30	84.50	84.00	83.40	70.60	50.80	58.20
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	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	48.70	8.10	10.40	11.90	12.30	7.10	5.10	4.30	2.40	1.30	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	40.19	40.19	40.19	40.19
LPG (1000 t)	97.90	51.90	72.20	74.40	56.90	54.20	47.40	47.60	48.80	46.50	42.40	43.50	40.90
NCV for LPG (MJ/kg)	46.89	46.89	46.89	46.89	46.89	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	2.30	4.10	2.60	2.00	1.20	3.20	1.90	1.30	1.70	1.70
NCV for brown coal (MJ/kg)	16.74	17.80	17.60	17.10	17.80	18.00	16.89	17.00	17.00	19.60	19.00	19.00	18.43
Lignite (1000 t)	207.30	15.00	9.40	9.00	4.80	11.50	7.40	7.00	4.10	7.00	5.00	5.10	4.30
NCV for lignite (MJ/kg)	10.90	12.00	11.60	11.60	10.70	10.50	10.50	10.50	10.50	11.80	11.85	11.85	11.20
Hard coal (1000 t)					0.20								
NCV for hard coal (MJ/kg)					26.46								
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	4.98	3.75		1.06	0.19					
NCV for gas work gas (MJ/m3)	15.82	19.49	17.20	17.20	17.10		17.10	17.10					
Natural gas (1000000 m3)	230.00	496.60	732.90	670.20	630.20	601.30	524.10	540.00	560.50	578.10	564.70	554.90	584.80
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.00	34.60	34.60	34.80	34.70	34.64	34.64	34.77
Solid Biomass-Wood (TJ)	42,170.0	39,690.0	49,539.0	48,344.0	48,329.0	48,003.0	42,254.0	48,622.7	47,220.8	45,674.2	43,542.9	42,198.7	42,763.0
Charcoal (TJ)	0.00	0.00	154.00	139.26	83.74	139.00	139.89						
Total fuel cunsumption (TJ)	**70,745.6**	**70,417.3**	**85,088.7**	**81,086.5**	**77,614.7**	**75,512.0**	**66,345.2**	**73,752.1**	**73,125.9**	**71,978.7**	**68,530.4**	**66,065.9**	**67,918.4**
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**	**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	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	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	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	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	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	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	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	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	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	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	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	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	112.00	112.00	112.00	112.00	112.00
CO2 Emission (Gg)	**6,751.88**	**6,393.72**	**7,703.87**	**7,398.41**	**7,172.20**	**7,027.67**	**6,173.41**	**6,948.26**	**6,833.12**	**6,681.24**	**6,354.92**	**6,127.07**	**6,266.73**

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**	**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	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	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	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	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	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	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	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	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	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	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	5.00	5.00	5.00	5.00
EF CH4 -solid biomass wood (kg/T	300.00	300.00	300.00	300.00	300.00	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	200.00	200.00	200.00	200.00	200.00
CH4 Emission (Mg)	**14,155.3**	**12,230.9**	**15,167.1**	**14,767.0**	**14,724.3**	**14,636.1**	**12,874.1**	**14,760.7**	**14,344.6**	**13,888.9**	**13,229.3**	**12,818.9**	**12,992.2**
EF N2O - gasoline (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**
EF N2O - petroleum (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
EF N2O - diesel (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
EF N2O - fuel 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
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
EF N2O - brown coal (kg/TJ)	1.50	1.50	1.50	1.50	1.50	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	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	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	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	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	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	0.10	0.10	0.10	0.10	0.10
EF N2O - solid biomass wood (kg/	4.00	4.00	4.00	4.00	4.00	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	1.00	1.00	1.00	1.00	1.00
N2O Emission (Mg)	**183.95**	**168.07**	**205.70**	**200.15**	**199.05**	**197.23**	**173.47**	**199.20**	**193.62**	**187.47**	**178.46**	**172.57**	**175.09**

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

Agriculture/forestry/fishing	1990	2000	2005	2010	2015	2016	2017	2018	2019	2020
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	180.90	180.90	185.90	185.30	193.40
NCV for diesel (MJ/kg)	42.71	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	7,726.2	7,726.2	7,939.8	7,914.2	8,260.1
Fuel oil (1000 t)	12.30	13.40	4.70	4.40	2.10	1.20	0.80	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	40.19
LPG (1000 t)	4.40	2.60	2.70	2.70	2.50	2.50	2.50	2.60	2.60	2.70
NCV for LPG (MJ/kg)	46.89	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	27.80	24.00	23.50	26.70	30.30
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.60	34.80	34.70	34.64	34.64	34.77
Fuel consumption - stationary (TJ)	1,550.7	1,153.5	1,104.3	1,058.2	942.1	1,132.9	982.2	936.0	1,046.8	1,180.1
Total fuel cunsumption (TJ)	**11,489.4**	**11,301.4**	**9,535.3**	**9,604.5**	**8,740.9**	**8,859.1**	**8,708.4**	**8,875.7**	**8,961.0**	**9,440.2**
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	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	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	74.10
CO2 emission (Gg) - mobile	**736.45**	**751.96**	**624.73**	**633.28**	**577.89**	**572.51**	**572.51**	**588.34**	**586.44**	**612.07**
EF CO2 - fuel oil (t/TJ)	77.40	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	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	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	56.10
CO2 emission (Gg) - stationary	**98.97**	**77.03**	**66.86**	**64.02**	**55.47**	**65.40**	**56.61**	**53.36**	**59.58**	**67.09**
Total CO2 emission (Gg)	**835.42**	**828.99**	**691.59**	**697.30**	**633.36**	**637.92**	**629.12**	**641.70**	**646.02**	**679.17**
EF CH4 - gasoline (kg/TJ)	140.00	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	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	4.15
CH4 emission (Mg) - mobile	**41.84**	**42.11**	**34.99**	**35.47**	**32.37**	**32.06**	**32.06**	**32.95**	**32.84**	**34.28**
EF CH4 - fuel oil (kg/TJ)	10.00	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	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	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	5.00
CH4 emission (Mg) - stationary	**10.22**	**8.46**	**6.47**	**6.18**	**5.13**	**5.91**	**5.07**	**4.68**	**5.23**	**5.90**
Total CH4 emission (Mg)	**52.07**	**50.57**	**41.45**	**41.64**	**37.50**	**37.97**	**37.14**	**37.63**	**38.08**	**40.18**
EF N2O - gasoline (kg/TJ)	0.40	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	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	28.60
N2O emission (Mg) - mobile	**284.12**	**290.23**	**241.13**	**244.42**	**223.05**	**220.97**	**220.97**	**227.08**	**226.35**	**236.24**
EF N2O - fuel 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 - 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 work gas (kg/TJ)	0.10	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	0.10
N2O emission (Mg) - stationary	**0.40**	**0.38**	**0.20**	**0.19**	**0.14**	**0.14**	**0.11**	**0.09**	**0.10**	**0.12**
Total N2O emission (Mg)	**284.53**	**290.61**	**241.33**	**244.62**	**223.18**	**221.11**	**221.08**	**227.17**	**226.45**	**236.36**

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

		STEP 1				
		A	B	C	D	E
		Amount of Coal Produced	Emission Factor	Methane Emissions	Conversion Factors	Methane 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=(CxD)
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												
CH4, 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	1995	2000	2005	2010	2015	2016	2017	2018.000	2019	2020
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	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.279	820.58	734.65
Well Testing	10^3 m^3 total oil production		1.B.2.a.ii	3135.12	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.279	820.58	734.65
Well Servicing	10^3 m^3 total oil production		1.B.2.a.ii	3135.12	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.279	820.58	734.65
EMISSION FACTOR														
CO2														
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	0.000	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	0.009	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	0.000	1.90E-06	1.90E-06
CH4														
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	0.000	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	0.000	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	0.000	1.10E-04	1.10E-04
N2O														
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	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	0.000	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	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	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.279	820.58	734.65
Conventional oil	10^3 m^3 total oil production	Venting	1.B.2.a.i	3135.12	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.279	820.58	734.65
Conventional oil	10^3 m^3 total oil production	Flaring	1.B.2.a.ii	3135.12	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.279	820.58	734.65
EMISSION FACTOR														
CO2														
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	0.000	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	0.000	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	0.041	4.10E-02	4.10E-02
CH4														
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	0.002	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	0.001	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	0.000	2.50E-05	2.50E-05
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	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	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	0.000	6.40E-07	6.40E-07
3. Transport	**Unit**	**Emission source**	**IPCC Code**											
ACTIVITY DATA														
Pipelines	10^3 m^3 total oil transported by pipelines	All	1.B.2.a.iii.3	9948.84	3593.02	5552.33	8244.19	7454.65	7217.44	8019.77	9008.14	9943.023	6945.35	7941.86
Tanker Trucks and Rail	10^3 m^3 total oil transported by tanker...	Venting	1.B.2.a.i	943.49	255.18	275.30	273.51	124.13	50.01066	95.35354	57.04444	68.201	63.944648	54.994852
Natural gas liquids transport-LPG	10^3 m^3 LPG	All	1.B.2.a.iii.3											
EMISSION FACTOR														
CO2														
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	0.000	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	0.000	2.30E-06	2.30E-06
CH4														
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	0.000	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	0.000	2.50E-05	2.50E-05
N2O														
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	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	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	6321.5116	6120.6977	5803.6047	3769.186	3328.372	3748.953	4050.349	4174.535	3016.977	2311.511628
EMISSION FACTOR														
CO2														
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	ND	ND
CH4														
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	0.000	2.18E-05	2.18E-05
N2O														
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	ND	ND

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

1. B. 2. b. Natural Gas				1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
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	1966.40	1638.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
Well Testing	10^6 m^3 total natural gas production		1.B.2.a.ii	1982.30	1966.40	1638.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
Well Servicing	10^6 m^3 total natural gas production		1.B.2.a.ii	1982.30	1966.40	1638.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
EMISSION FACTOR														
CO2														
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	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	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	IE	IE
CH4														
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	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	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	IE	IE
N2O														
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	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	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	ND	ND
2. Production	Unit	Emission source	IPCC Code											
ACTIVITY DATA														
Gas production	10^6 m^3 gas produced	Fugitives	1.B.2.b.iii.2	1982.30	1966.40	1658.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
Gas production	10^6 m^3 gas produced	Flaring	1.B.2.b.ii	1982.30	1966.40	1658.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
EMISSION FACTOR														
CO2														
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	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	1.20E-03	1.20E-03
CH4														
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	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	7.60E-07	7.60E-07
N2O														
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	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	2.10E-08	2.10E-08
3. Processing	Unit	Emission source	IPCC Code											
ACTIVITY DATA														
Default weighted total	10^6 m^3 gas produced	Fugitives	1.B.2.b.iii.3	1982.30	1966.40	1658.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
Default weighted total	10^6 m^3 gas produced	Flaring	1.B.2.b.ii	1982.30	1966.40	1658.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
Default weighted total	10^6 m^3 gas produced	Raw CO2 venting	1.B.2.b.i	1982.30	1966.40	1658.50	2283.40	2727.20	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
EMISSION FACTOR														
CO2														
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	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	3.00E-03	3.00E-03
CH4														
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	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	2.00E-06	2.00E-06
Default weighted total	Gg/10^6 m^3 gas produced	Raw CO2 venting	1.B.2.b.i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
N2O														
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	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	3.30E-08	3.30E-08
Default weighted total	Gg/10^6 m^3 gas produced	Raw CO2 venting	1.B.2.b.i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4. Transmission and st	Unit	Emission source	IPCC Code											
ACTIVITY DATA														
Transmission	10^6 m^3 marketable gas	Fugitives	1.B.2.b.iii.4	2686.6	2367.9	2704.8	2909.9	3241.5	2519.2	2611.4	3008.3	2770.5	2908	3040.7
Transmission	10^6 m^3 marketable gas	Venting	1.B.2.b.i	2686.6	2367.9	2704.8	2909.9	3241.5	2519.2	2611.4	3008.3	2770.5	2908	3040.7
Storage	10^6 m^3 marketable gas	All	1.B.2.b.iii.4	2686.6	2367.9	2704.8	2909.9	3241.5	2519.2	2611.4	3008.3	2770.5	2908	3040.7
EMISSION FACTOR														
CO2														
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	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	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	1.10E-07	1.10E-07
CH4														
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	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	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	2.50E-05	2.50E-05
N2O														
Transmission	Gg/10^6 m^3 marketable gas	Fugitives	1.B.2.b.iii.4	NA	NA	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	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	ND	ND
5. Distribution of Natu	Unit	Emission 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	529.4	609.3	862.2	944.6	766.2	806.2	833.4	832.5	833.4	851
EMISSION FACTOR														
CO2														
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	5.10E-05	5.10E-05
CH4														
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	1.10E-03	1.10E-03
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	ND	ND	ND

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

1. B. 2. a. Oil				1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
2. Production	Unit	mission sourc	IPCC Code											
ACTIVITY DATA														
Conventional oil	10^9 m^3 total oil production	Flaring	1.B.2.a.ii	3135.12	1744.53	1411.51	1100.00	837.67	779.30	857.09	865.70	851.28	820.58	734.65
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	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	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	6.40E-07	6.40E-07
3. Transport	Unit	mission sourc	IPCC Code									2018	2019	2020
ACTIVITY DATA														
Pipelines	10^3 m^3 total oil transported by pipelines	All	1.B.2.a.iii.3	9948.84	3593.02	5552.33	8244.19	7454.65	7217.44	8019.77	9008.14	9943.02	6945.35	7941.86
Tanker Trucks and Rail Cars	10^3 m^3 total oil transported by tanker…	Venting	1.B.2.a.i	943.49	255.18	275.30	273.51	124.13	50.01	95.35	57.04	68.20	63.94	54.99
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	2.30E-06	2.30E-06
CH4														
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	2.50E-05	2.50E-05
N2O														
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	NA	NA

1. B. 2. c. 2 ii Venting anf Flaring - Gas				1990	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2. Production	Unit	ssion sou	IPCC Code													
ACTIVITY DATA																
Gas production	10^6 m^3 gas produced	Flaring	1.B.2.b.ii	1982.30	1658.50	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
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	2.10E-08	2.10E-08	2.10E-08	2.10E-08	2.10E-08
3. Processing	Unit	ssion sou	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	2471.40	2013.10	1856.10	1747.00	1780.50	1647.20	1483.50	1230.10	1028.90	849.00
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	3.30E-08	3.30E-08	3.30E-08	3.30E-08	3.30E-08
4. Transmission and storage	Unit	ssion sou	IPCC Code													
ACTIVITY DATA																
Transmission	10^6 m^3 marketable gas	Fugitives	1.B.2.b.iii.4	2686.6	2704.8	3241.5	3165	2971.7	2809.9	2443.6	2519.2	2611.4	3008.3	2770.5	2908	3040.7
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	NA	NA	NA	NA	NA
5. Distribution of Natural Gas	Unit	ssion sou	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	865.2	812.9	788.3	705.6	766.2	806.2	833.4	832.5	833.4	851
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	ND	ND	ND	ND	ND

3.2. LULUCF sector - List of implemented and planned projects

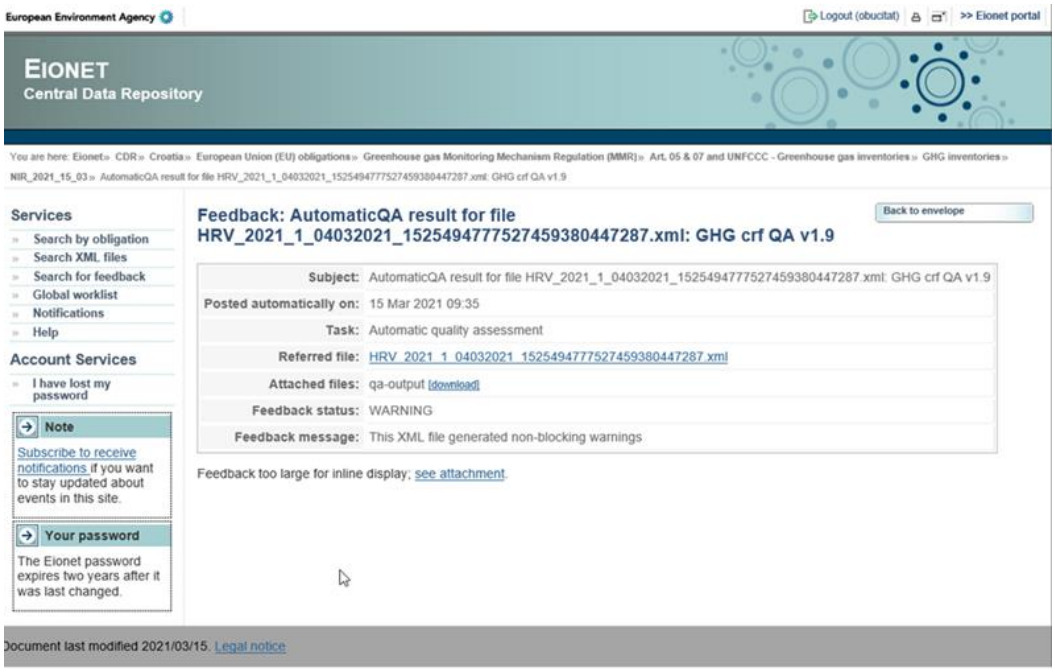
Table A3.2-1: Implemented and planned projects in LUULCF sector

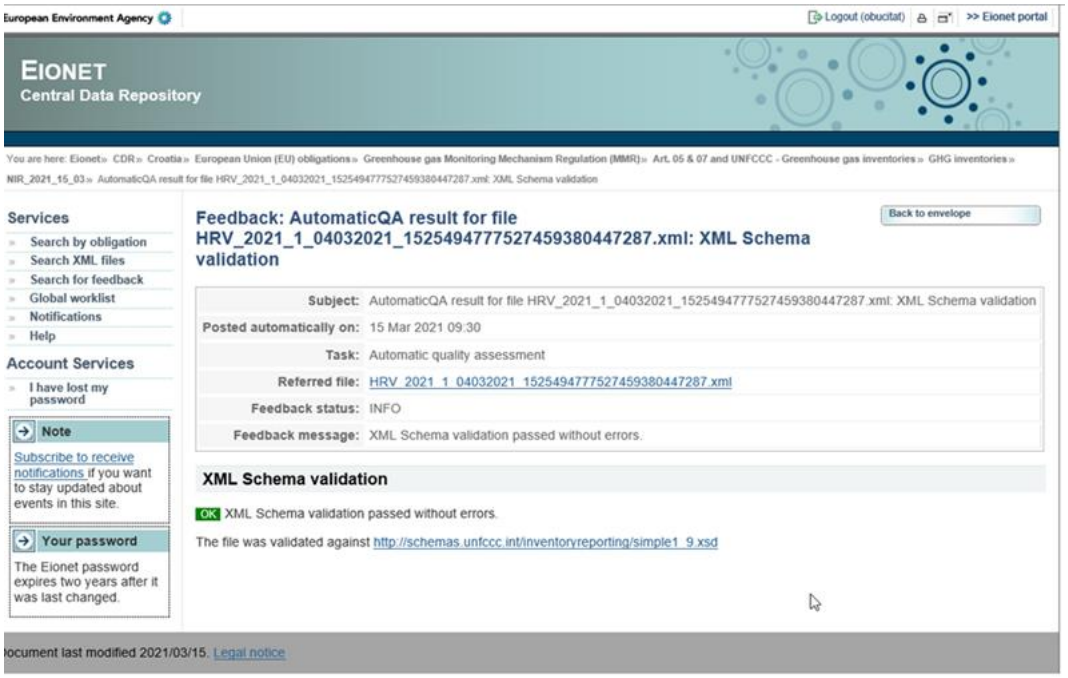
Project	Status	Main objectives
Improving Croatian reporting in Land use, Land use change and Forestry (LULUCF) sector in the First commitment period of the Kyoto Protocol (abbreviated **LULUCF 1**)	Implemented (2014-2015)	The objective of the project was to comply with requirements set in the Saturday 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.
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)

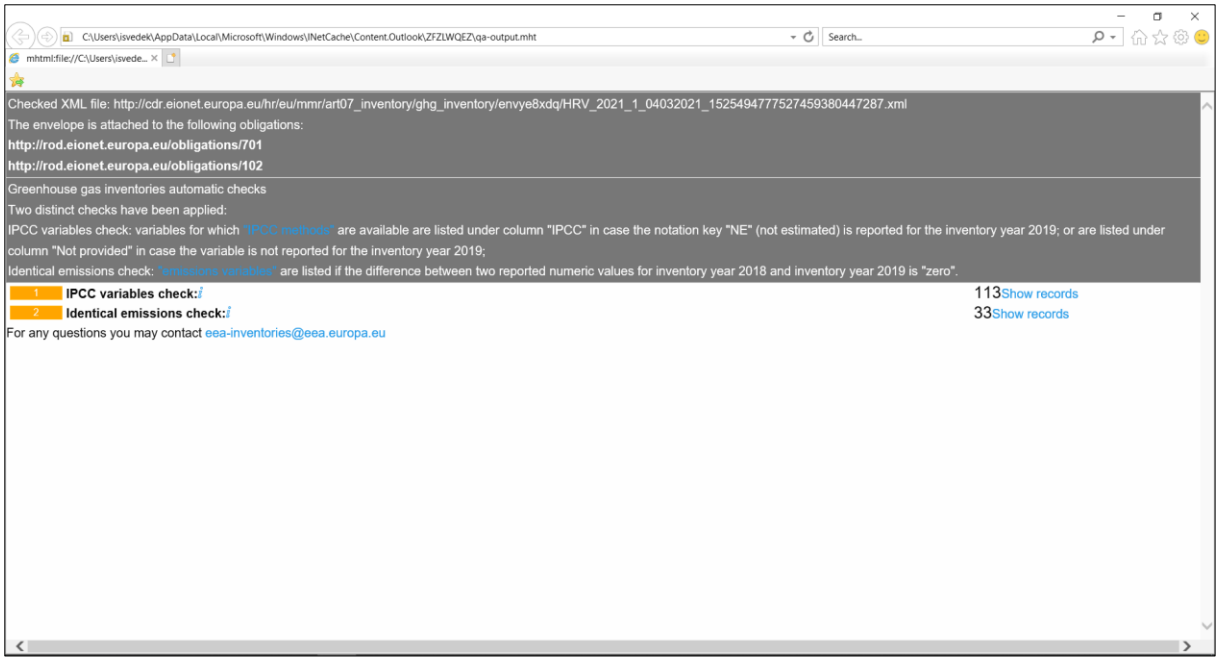
Project	Status	Main objectives
Application of the IPCC Tier 2 method for the estimation of the greenhouse gases emissions from forest fires	Implemented (2019-2020)	The assessment of the biomass structure on the burnt areas in order to develop national specific values of the M_B and C_f factors for the 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	Ongoing	The aim of the project is a development of harmonized land monitoring data 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.
HWP project	Planned	The aim of the project is to defined 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.
LULUCF 3	Implemented (2020-2021)	The aim of the project is 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.
Tier 3 application for CSC in dead wood in deforested areas	Planned	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.
LULUCF projections project	Ongoing	The aim of the project is to define the basic settings and preconditions on national level for the preparation of projections of emissions / removals in the LULUCF sector (period up to 2030, 2050) and related activities.
CSC in DW pool in Forest land remaining Forest land category	Planned	Through this project CSC 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	Ongoing	Through the project practices decreasing emissions/increasing removals will be defined

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.






C:\Users\isvedek\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\ZFZLWQEZ\qa-output.mht
Search...
mhtml:file://C:\Users\isvede...
Checked XML file: http://cdr.eionet.europa.eu/hr/eu/mmr/art07_inventory/ghg_inventory/envye8xdq/HRV_2021_1_04032021_152549477752745938044728 7.xml
The envelope is attached to the following obligations:
http://rod.eionet.europa.eu/obligations/701
http://rod.eionet.europa.eu/obligations/102
Greenhouse gas inventories automatic checks
Two distinct checks have been applied:
IPCC variables check: variables for which "IPCC methodos" are available are listed under column "IPCC" in case the notation key "NE" (not estimated) is reported for the inventory year 2019; or are listed under column "Not provided" in case the variable is not reported for the inventory year 2019;
Identical emissions check: "emissions variables" are listed if the difference between two reported numeric values for inventory year 2018 and inventory year 2019 is "zero".
1 IPCC variables check:
113 Show records
2 Identical emissions check:
33 Show records
For any questions you may contact eea-inventories@eea.europa.eu

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

Table A4-1: National Energy balance for 2020, natural units

ENERGY BALANCE 2020 *natural units*	Anthracite	Hard coal	Brown coal	Lignite	Crude oil	Natural gas
	103 t	103 t	103 t	103 t	103 t	106 m3
Production					631.8	849.0
Import	0.9	594.9	13.6	4.3	1943.8	2143.7
Export		3.2			555.4	52.5
Import-processing						
Export-processing						
Stock change		-37.3			5.8	100.5
Bunkers						
Energy supplied	**0.9**	**554.4**	**13.6**	**4.3**	**2026.0**	**3040.7**
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 rafineries						
– in gas production						
Industrial heating plants						
Petroleum refineries						
NGL-plant						
Coke plant						
Gas works						
Total production						
Transformation sector						
hydro power plants						
– small HPP						
Wind power plants						
Solar power plants						
Geothermal power plants						
thermal power plants		434.6				5.6
public cogeneration plants						783.5
public heating plants						53.0
industrial cogeneration plants			11.9			346.1
– in rafineries						82.6
– in gas production						49.0
Industrial heating plants						79.1
Petroleum refineries					1987.9	78.6
NGL-plant					38.1	10.5
Coke plant						
Gas works						
Total transformation sector		**434.6**	**11.9**		**2026.0**	**1356.4**
Energy sector own use						
Oil and gas extraction						12.5
Coal production						
Electric energy supply industry						
hydro power plants						
thermal power plants						
public cogeneration plants						
industrial cogeneration plants						
Wind power						
Petroleum refineries						35.1
NGL-plant						42.1
Gas works						
Total energy sector own use						**89.7**
Losses						**34.1**
Final energy demand	**0.9**	**119.8**	**1.7**	**4.3**	**0.0**	**1560.5**
Non energy use						**475.7**
Energy sector						
Petrochemical industry						475.7
Other industry						
Construction						
Transport						
Agriculture						
Energy consumption	**0.9**	**119.8**	**1.7**	**4.3**	**0.0**	**1084.8**
Industry	**0.9**	**119.8**				**230.1**
Iron and steel	0.9					13.0
Non-ferrous metals						11.7
Non-metallic minerals						45.5
Chemical						17.0
Construction materials		119.8				53.4
Pulp and paper						9.3
Food production						41.5
Not elsewhere specified						38.7
Transport						**3.7**
Rail						
Road						0.1
Air						
– international						
– domestic						
Sea and River						
Public transport						3.6
Not elsewhere specified						
Other sectors			**1.7**	**4.3**		**851.0**
Households			1.7	4.3		584.8
Services						235.9
Agriculture						30.3
Construction						

Table A4-1: National Energy balance for 2020, natural units, cont.

ENERGY BALANCE 2020 *natural units*	Hydro energy	Fuel wood	Wind energy	Solar energy	Geothermal energy	Landfill gas	Biofuels	Other biomass
	TJ	103 m3	TJ	TJ	TJ	103 m3	103 t	TJ
Production	51621.3	4934.4	15287.2	1532.8	2327.9	193989.3	0.2	19909.4
Import		72.6					58.9	1756.1
Export		538.2						5770.0
Import-processing								
Export-processing								
Stock change							-1.6	-153.2
Bunkers								
Energy supplied	**51621.3**	**4468.8**	**15287.2**	**1532.8**	**2327.9**	**193989.3**	**57.5**	**15742.3**
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 rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total production								
Transformation sector								
hydro power plants	51621.3							
– small HPP	906.2							
Wind power plants			15287.2					
Solar power plants				848.5				
Geothermal power plants					2148.5			
thermal power plants						21447.9		
public cogeneration plants						165649.4		9524.2
public heating plants								2.7
industrial cogeneration plants						6892.0		
– in rafineries								
– in gas production								
Industrial heating plants								264.6
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total transformation sector	**51621.3**		**15287.2**	**848.5**	**2148.5**	**193989.3**		**9791.5**
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		**4468.8**		**684.3**	**179.4**		**57.5**	**5950.8**
Non energy use								
Energy sector								
Petrochemical industry								
Other industry								
Construction								
Transport								
Agriculture								
Energy consumption		**4468.8**		**684.3**	**179.4**		**57.5**	**5950.8**
Industry		**30.5**						**2574.2**
Iron and steel		0.2						9.5
Non-ferrous metals		0.3						
Non-metallic minerals								0.3
Chemical								0.2
Construction materials		6.6						1761.1
Pulp and paper								185.0
Food production		1.5						189.4
Not elsewhere specified		21.9						428.7
Transport							**57.5**	
Rail								
Road							57.5	
Air								
– international								
– domestic								
Sea and River								
Public transport								
Not elsewhere specified								
Other sectors		**4438.3**		**684.3**	**179.4**			**3376.6**
Households		4426.2		479.0				2927.2
Services		12.1		205.3	120.1			449.4
Agriculture					59.3			
Construction								

Table A4-1: National Energy balance for 2020, natural units, cont.

ENERGY BALANCE 2020 *natural units*	Coke oven coke	Liquefied petroleum	Unleaded motor	Standard motor	Petroleum	Jet fuel	Diesel oil	Light heating oil	Low sulphur fuel	Standard fuel oil
	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t
Production		184.1	625.9			58.3	1068.8	121.4	225.1	42.2
Import	30.6	66.3	127.4	0.4	1.5	0.1	1443.3	26.9	5.9	
Export	1.5	137.4	357.4			2.3	812.0	32.4	218.9	20.0
Import-processing										
Export-processing										
Stock change	1.1	1.9	1.6			0.2	-26.7	1.3	1.7	4.6
Bunkers							16.2		4.0	
Energy supplied	**30.2**	**114.9**	**397.5**	**0.4**	**1.5**	**56.3**	**1657.2**	**117.2**	**9.8**	**26.8**
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 rafineries										
– in gas production										
Industrial heating plants										
Petroleum refineries		150.5	625.9			58.3	1068.8	121.4	225.1	42.2
NGL-plant		33.6								
Coke plant										
Gas works										
Total production		**184.1**	**625.9**			**58.3**	**1068.8**	**121.4**	**225.1**	**42.2**
Transformation sector										
hydro power plants										
– small HPP										
Wind power plants										
Solar power plants										
Geothermal power plants										
thermal power plants								1.1		
public cogeneration plants										
public heating plants								1.9		1.2
industrial cogeneration plants									4.2	15.1
– in rafineries									4.2	15.1
– in gas production										
Industrial heating plants									2.7	7.1
Petroleum refineries										
NGL-plant										
Coke plant										
Gas works										
Total transformation sector								**3.0**	**6.9**	**23.4**
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										0.8
NGL-plant										
Gas works										
Total energy sector own use										**0.8**
Losses										
Final energy demand	**30.2**	**114.9**	**397.5**	**0.4**	**1.5**	**56.3**	**1657.2**	**114.2**	**2.9**	**2.6**
Non energy use										
Energy sector										
Petrochemical industry										
Other industry										
Construction										
Transport										
Agriculture										
Energy consumption	**30.2**	**114.9**	**397.5**	**0.4**	**1.5**	**56.3**	**1657.2**	**114.2**	**2.9**	**2.6**
Industry	**30.2**	**6.1**	**0.3**		**1.5**		**9.6**	**14.9**	**2.9**	**2.6**
Iron and steel	0.3	0.7	0.1				0.2	0.6		
Non-ferrous metals		0.7					0.2	0.2		
Non-metallic minerals		0.2					0.1			
Chemical					1.5			0.4	0.1	
Construction materials	26.3	0.5	0.1				6.9	4.0	1.7	0.2
Pulp and paper		0.1								
Food production	3.6	1.0					0.3	5.3	1.1	2.4
Not elsewhere specified		2.9	0.1				1.9	4.4		
Transport		**52.8**	**386.1**	**0.4**		**56.3**	**1373.9**			
Rail							13.3			
Road		52.8	386.1				1301.2			
Air				0.4		56.3				
– international						51.4				
– domestic				0.4		4.9				
Sea and River							40.2			
Public transport							19.2			
Not elsewhere specified										
Other sectors		**56.0**	**11.1**				**273.7**	**99.3**		
Households		40.9						58.2		
Services		10.0						25.6		
Agriculture		2.7	7.6				182.9	10.5		
Construction		2.4	3.5				90.8	5.0		

Table A4-1: National Energy balance for 2020, natural units, cont.

ENERGY BALANCE 2020 *natural units*	Naphta	White spirit	Bitumen	Other oils	Lubricants	Petroleum coke	Etan	Other derivates
	103 t	103 t	103 t	103 t	103 t	103 t	103 t	103 t
Production	53.6			9.6		21.7		85.6
Import		3.4	121.5	34.1	5.8	83.8		
Export	59.0	0.1	1.0	8.5	0.2	5.2		118.9
Import-processing								
Export-processing								
Stock change	5.4		0.1	-0.3		22.1		37.5
Bunkers								
Energy supplied	**0.0**	**3.3**	**120.6**	**34.9**	**5.6**	**122.4**		**4.2**
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 rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries	36.3			9.6		21.7		85.6
NGL-plant	17.3							
Coke plant								
Gas works								
Total production	**53.6**			**9.6**		**21.7**		**85.6**
Transformation sector								
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 rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total transformation sector								
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						21.7		
NGL-plant								
Gas works								
Total energy sector own use						**21.7**		
Losses								
Final energy demand	**0.0**	**3.3**	**120.6**	**34.9**	**5.6**	**100.7**		**4.2**
Non energy use		**3.3**	**120.6**	**34.7**	**5.6**			**4.2**
Energy sector				2.2				
Petrochemical industry								4.2
Other industry		3.3	17.6	8.5	5.6			
Construction			103.0	1.3				
Transport				21.5				
Agriculture				1.2				
Energy consumption	**0.0**			**0.2**		**100.7**		**0.0**
Industry						**100.7**		
Iron and steel								
Non-ferrous metals								
Non-metallic minerals								
Chemical								
Construction materials						100.7		
Pulp and paper								
Food production								
Not elsewhere specified								
Transport				**0.2**				
Rail								
Road				0.1				
Air								
– international								
– domestic								
Sea and River				0.1				
Public transport								
Not elsewhere specified								
Other sectors								
Households								
Services								
Agriculture								
Construction								

Table A4-1: National Energy balance for 2020, natural units, cont.

ENERGY BALANCE 2020 *natural units*	Refinery gas	Refinery semiproducts	Aditives	Gas works gas	Electricity	Steam and hot water	Industrial waste, non
	103 t	103 t	103 t	103 m3	GWh	TJ	TJ
Production	114.2				13385.3	26905.3	1630.3
Import		504.2	41.4		7090.6		
Export					2451.3		
Import-processing							
Export-processing							
Stock change		29.1	-0.8				
Bunkers							
Energy supplied	**114.2**	**533.3**	**40.6**		**18024.6**	**26905.3**	**1630.3**
Production							
hydro power plants					5810.4		
– small HPP					102.0		
Wind power plants					1720.7		
Solar power plants					95.5		
Geothermal power plants					93.7		
thermal power plants					1270.8		
public cogeneration plants					3995.0	12181.7	
public heating plants						1669.6	
industrial cogeneration plants					399.2	9612.8	
– in rafineries					80.4	3400.0	
– in gas production					127.5	585.0	
Industrial heating plants						2829.0	
Petroleum refineries	114.2						
NGL-plant							
Coke plant							
Gas works							
Total production	**114.2**				**13385.3**	**26293.1**	
Transformation sector							
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	20.0						
– in rafineries	20.0						
– in gas production							
Industrial heating plants							
Petroleum refineries		533.3	40.6				
NGL-plant							
Coke plant							
Gas works							
Total transformation sector	**20.0**	**533.3**	**40.6**				
Energy sector own use							
Oil and gas extraction					133.9	392.0	
Coal production						318.7	
Electric energy supply industry					56.0		
hydro power plants					274.2		
thermal power plants					118.6		
public cogeneration plants					283.3	1245.1	
industrial cogeneration plants							
Wind power					25.5		
Petroleum refineries	94.2				191.1	3958.2	
NGL-plant					48.0	193.0	
Gas works							
Total energy sector own use	**94.2**				**1130.6**	**6107.0**	
Losses					**1725.0**	**1671.9**	
Final energy demand					**15169.0**	**19126.4**	**1630.3**
Non energy use							
Energy sector							
Petrochemical industry							
Other industry							
Construction							
Transport							
Agriculture							
Energy consumption					**15169.0**	**19126.4**	**1630.3**
Industry					**3502.6**	**10933.3**	**1630.3**
Iron and steel					291.7	116.9	7.7
Non-ferrous metals					99.9		
Non-metallic minerals					142.0	6.5	
Chemical					342.7	4413.3	
Construction materials					608.7	5.5	1622.6
Pulp and paper					233.0	1223.8	
Food production					647.4	2508.0	
Not elsewhere specified					1137.2	2659.3	
Transport					**313.1**		
Rail					171.9		
Road					2.8		
Air					28.9		
– international							
– domestic					28.9		
Sea and River					22.2		
Public transport					51.8		
Not elsewhere specified					35.5		
Other sectors					**11353.3**	**8193.1**	
Households					6076.9	5383.4	
Services					5043.8	2490.5	
Agriculture					151.1	319.2	
Construction					81.5		

Table A4-2: National Energy balance for 2020, energy units

PJ	Anthracite	Hard coal	Brown coal	Lignite	Crude oil	Natural gas
Production					26.978	29.890
Import	0.026	14.930	0.251	0.048	83.000	74.536
Export		0.080			23.716	1.825
Import-processing						
Export-processing						
Stock change		-0.936			0.248	3.494
Bunkers						
Energy supplied	**0.026**	**13.914**	**0.251**	**0.048**	**86.510**	**106.095**
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 rafineries						
– in gas production						
Industrial heating plants						
Petroleum refineries						
NGL-plant						
Coke plant						
Gas works						
Total production						
Gross production	**0.026**	**13.914**	**0.251**	**0.048**	**86.510**	**106.095**
Transformation sector						
hydro power plants						
– small HPP						
Wind power plants						
Solar power plants						
Geothermal power plants						
thermal power plants		10.679				0.195
public cogeneration plants						27.242
public heating plants						1.843
industrial cogeneration plants			0.219			12.034
– in rafineries						2.872
– in gas production						1.704
Industrial heating plants						2.750
Petroleum refineries					84.883	2.733
NGL-plant					1.627	0.735
Coke plant						
Total transformation sector		**10.679**	**0.219**		**86.510**	**47.532**
Energy sector own use						
Oil and gas extraction						0.435
Coal production						
Electric energy supply industry						
hydro power plants						
thermal power plants						
public cogeneration plants						
industrial cogeneration plants						
Industrial heating plants						
Petroleum refineries						1.220
NGL-plant						1.464
Total energy sector own use						**3.119**
Losses						**1.186**
Final energy demand	**0.026**	**3.235**	**0.031**	**0.048**		**54.259**
Non energy use						**16.540**
Energy sector						
Petrochemical industry						16.540
Other industry						
Construction						
Agriculture						
Energy consumption	**0.026**	**3.235**	**0.031**	**0.048**		**37.718**
Industry	**0.026**	**3.235**				**8.001**
Iron and steel	0.026					0.452
Non-ferrous metals						0.407
Non-metallic minerals						1.582
Chemical						0.591
Construction materials		3.235				1.857
Pulp and paper						0.323
Not elsewhere specified						1.346
Transport						**0.129**
Rail						
Road						0.003
Air						
– international						
– domestic						
Sea and River						
Not elsewhere specified						
Other sectors			**0.031**	**0.048**		**29.589**
Households			0.031	0.048		20.333
Services						8.202
Agriculture						1.054
Construction						

Table A4-2: National Energy balance for 2020, energy units, cont.

PJ	Hydro energy	Fuel wood	Wind energy	Solar energy	Geothermal energy	Landfill gas	Biofuels	Other biomass
Production	51.621	44.410	15.287	1.533	2.328	3.481	0.007	19.909
Import		0.653					2.167	1.756
Export		4.844						5.770
Import-processing								
Export-processing								
Stock change							-0.059	-0.153
Bunkers								
Energy supplied	**51.621**	**40.219**	**15.287**	**1.533**	**2.328**	**3.481**	**2.115**	**15.742**
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 rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total production								
Gross production	**51.621**	**40.219**	**15.287**	**1.533**	**2.328**	**3.481**	**2.115**	**15.742**
Transformation sector								
hydro power plants	51.621							
– small HPP	0.906							
Wind power plants			15.287					
Solar power plants				0.848				
Geothermal power plants					2.149			
thermal power plants						0.369		
public cogeneration plants						2.971		9.524
public heating plants								0.003
industrial cogeneration plants						0.140		
– in rafineries								
– in gas production								
Industrial heating plants								0.265
Petroleum refineries								
NGL-plant								
Coke plant								
Total transformation sector	**51.621**		**15.287**	**0.848**	**2.149**	**3.481**		**9.792**
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								
Industrial heating plants								
Petroleum refineries								
NGL-plant								
Total energy sector own use								
Losses								
Final energy demand		**40.219**		**0.684**	**0.179**		**2.115**	**5.951**
Non energy use								
Energy sector								
Petrochemical industry								
Other industry								
Construction								
Agriculture								
Energy consumption		**40.219**		**0.684**	**0.179**		**2.115**	**5.951**
Industry		**0.275**						**2.574**
Iron and steel		0.002						0.010
Non-ferrous metals		0.003						
Non-metallic minerals								0.000
Chemical								0.000
Construction materials		0.059						1.761
Pulp and paper								0.185
Not elsewhere specified		0.197						0.429
Transport							**2.115**	
Rail								
Road							2.115	
Air								
– international								
– domestic								
Sea and River								
Not elsewhere specified								
Other sectors		**39.945**		**0.684**	**0.179**			**3.377**
Households		39.836		0.479				2.927
Services		0.109		0.205	0.120			0.449
Agriculture					0.059			
Construction								

Table A4-2: National Energy balance for 2020, energy units, cont.

PJ	Coke oven coke	Liquefied petroleum gases	Unleaded motor gasoline	Standard motor gasoline	Petroleum	Jet fuel	Diesel oil	Light heating oil	Low sulphur fuel oil	Standard fuel oil
Production	195.444									
Import	177.368	0.897	3.109	5.681	0.018	0.066	0.004	61.643	1.149	0.237
Export	36.235	0.044	6.443	15.936			0.101	34.681	1.384	8.798
Import-processing										
Export-processing										
Stock change	2.594	0.032	0.089	0.071			0.009	-1.140	0.056	0.068
Bunkers								0.692		0.161
Energy supplied	**339.171**	**0.885**	**-3.245**	**-10.184**	**0.018**	**0.066**	**-0.088**	**25.131**	**-0.179**	**-8.653**
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 rafineries										
– in gas production										
Industrial heating plants										
Petroleum refineries			7.057	27.909			2.563	45.648	5.185	9.047
NGL-plant			1.576							
Coke plant										
Gas works										
Total production			**8.632**	**27.909**			**2.563**	**45.648**	**5.185**	**9.047**
Gross production	**339.171**	**0.885**	**5.388**	**17.725**	**0.018**	**0.066**	**2.475**	**70.779**	**5.006**	**0.394**
Transformation sector										
hydro power plants	51.621									
– small HPP	0.906									
Wind power plants	15.287									
Solar power plants	0.848									
Geothermal power plants	2.149									
thermal power plants	11.243								0.047	
public cogeneration plants	39.737									
public heating plants	1.846								0.081	
industrial cogeneration plants	12.393									0.169
– in rafineries	2.872									0.169
– in gas production	1.704									
Industrial heating plants	3.015									0.109
Petroleum refineries	87.616									
NGL-plant	2.362									
Coke plant										
Total transformation sector	**228.118**								**0.128**	**0.277**
Energy sector own use										
Oil and gas extraction	0.435									
Coal production										
Electric energy supply industry										
hydro power plants										
thermal power plants										
public cogeneration plants										
industrial cogeneration plants										
Industrial heating plants										
Petroleum refineries	1.220									
NGL-plant	1.464									
Total energy sector own use	**3.119**									
Losses	**1.186**									
Final energy demand	**106.748**	**0.885**	**5.388**	**17.725**	**0.018**	**0.066**	**2.475**	**70.779**	**4.877**	**0.117**
Non energy use	**16.540**									
Energy sector										
Petrochemical industry	16.540									
Other industry										
Construction										
Agriculture										
Energy consumption	**90.208**	**0.885**	**5.388**	**17.725**	**0.018**	**0.066**	**2.475**	**70.779**	**4.877**	**0.117**
Industry	**14.110**	**0.885**	**0.286**	**0.013**		**0.066**		**0.410**	**0.636**	**0.117**
Iron and steel	0.490	0.009	0.033	0.004				0.009	0.026	
Non-ferrous metals	0.410		0.033					0.009	0.009	
Non-metallic minerals	1.582		0.009					0.004		
Chemical	0.591					0.066			0.017	0.004
Construction materials	6.912	0.771	0.023	0.004				0.295	0.171	0.068
Pulp and paper	0.508		0.005							
Not elsewhere specified	1.971		0.136	0.004				0.081	0.188	
Transport	**2.244**		**2.476**	**17.216**	**0.018**		**2.475**	**58.679**		
Rail								0.568		
Road	2.119		2.476	17.216				55.574		
Air					0.018		2.475			
– international							2.260			
– domestic					0.018		0.215			
Sea and River								1.717		
Not elsewhere specified										
Other sectors	**73.854**		**2.626**	**0.495**				**11.690**	**4.241**	
Households	63.655		1.918						2.486	
Services	9.086		0.469						1.093	
Agriculture	1.113		0.127	0.339				7.812	0.448	
Construction			0.113	0.156				3.878	0.214	

Table A4-2: National Energy balance for 2020, energy units, cont.

PJ	Naphta	White spirit	Bitumen	Lubricants	Paraffin and wax	Petroleum coke	Etan	Other derivates
Production								
Import			0.114	4.070	1.142	0.194	2.598	
Export	0.804	2.631	0.003	0.034	0.285	0.007	0.161	
Import-processing								
Export-processing								
Stock change	0.185	0.241		0.003	-0.010		0.685	
Bunkers								
Energy supplied	**-0.619**	**-2.390**	**0.111**	**4.040**	**0.848**	**0.188**	**3.122**	
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 rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries	1.696	1.619			0.322		0.673	
NGL-plant		0.771						
Coke plant								
Gas works								
Total production	**1.696**	**2.390**			**0.322**		**0.673**	
Gross production	**1.077**		**0.111**	**4.040**	**1.169**	**0.188**	**3.794**	
Transformation sector								
hydro power plants								
– small HPP								
Wind power plants								
Solar power plants								
Geothermal power plants								
thermal power plants								
public cogeneration plants								
public heating plants	0.048							
industrial cogeneration plants	0.607							
– in rafineries	0.607							
– in gas production								
Industrial heating plants	0.285							
Petroleum refineries								
NGL-plant								
Coke plant								
Total transformation sector	**0.940**							
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								
Industrial heating plants								
Petroleum refineries	0.032						0.673	
NGL-plant								
Total energy sector own use	**0.032**						**0.673**	
Losses								
Final energy demand	**0.104**		**0.111**	**4.040**	**1.169**	**0.188**	**3.122**	
Non energy use			**0.111**	**4.040**	**1.162**	**0.188**		
Energy sector					0.074			
Petrochemical industry								
Other industry			0.111	0.590	0.285	0.188		
Construction				3.451	0.044			
Agriculture					0.040			
Energy consumption	**0.104**				**0.007**		**3.122**	
Industry	**0.104**						**3.122**	
Iron and steel								
Non-ferrous metals								
Non-metallic minerals								
Chemical								
Construction materials	0.008						3.122	
Pulp and paper								
Not elsewhere specified								
Transport					**0.007**			
Rail								
Road					0.003			
Air								
– international								
– domestic								
Sea and River					0.003			
Not elsewhere specified								
Other sectors								
Households								
Services								
Agriculture								
Construction								

Table A4-2: National Energy balance for 2020, energy units, cont.

PJ	Refinery gas	Refinery semiproducts	Aditives	Gas works gas	Electricity	Steam and hot water	Industrial waste, non renewable
Production							0.612
Import			21.529	1.768		25.526	
Export	4.779					8.825	
Import-processing							
Export-processing							
Stock change	1.507		1.243	-0.034			
Bunkers							
Energy supplied	**-3.271**		**22.772**	**1.734**		**16.701**	**0.612**
Production							
hydro power plants						20.917	
– small HPP						0.367	
Wind power plants						6.195	
Solar power plants						0.344	
Geothermal power plants						0.337	
thermal power plants						4.575	
public cogeneration plants						14.382	12.182
public heating plants							1.670
industrial cogeneration plants						1.437	9.613
– in rafineries						0.289	3.400
– in gas production						0.459	0.585
Industrial heating plants							2.829
Petroleum refineries	3.440	4.865					
NGL-plant							
Coke plant							
Gas works							
Total production	**3.440**	**4.865**				**48.187**	**26.293**
Gross production	**0.169**	**4.865**	**22.772**	**1.734**		**64.889**	**26.905**
Transformation sector							
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		0.852					
– in rafineries		0.852					
– in gas production							
Industrial heating plants							
Petroleum refineries			22.772	1.734			
NGL-plant							
Coke plant							
Total transformation sector		**0.852**	**22.772**	**1.734**			
Energy sector own use							
Oil and gas extraction						0.482	0.392
Coal production							0.319
Electric energy supply industry						0.202	
hydro power plants						0.987	
thermal power plants						0.427	
public cogeneration plants						1.020	1.245
industrial cogeneration plants							
Industrial heating plants						0.092	
Petroleum refineries		4.013				0.688	3.958
NGL-plant						0.173	0.193
Total energy sector own use		**4.013**				**4.070**	**6.107**
Losses						**6.210**	**1.672**
Final energy demand	**0.169**	**0.000**	**0.000**	**0.000**		**54.608**	**19.126**
Non energy use	**0.169**						
Energy sector							
Petrochemical industry	0.169						
Other industry							
Construction							
Agriculture							
Energy consumption	**0.000**	**0.000**	**0.000**	**0.000**		**54.608**	**19.126**
Industry						**12.609**	**10.933**
Iron and steel						1.050	0.117
Non-ferrous metals						0.360	
Non-metallic minerals						0.511	0.007
Chemical						1.234	4.413
Construction materials						2.191	0.006
Pulp and paper						0.839	1.224
Not elsewhere specified						4.094	2.659
Transport						**1.127**	
Rail						0.619	
Road						0.010	
Air						0.104	
– international							
– domestic						0.104	
Sea and River						0.080	
Not elsewhere specified						0.128	
Other sectors						**40.872**	**8.193**
Households						21.877	5.383
Services						18.158	2.491
Agriculture						0.544	0.319
Construction						0.293	

Table A4-3 Industry analisys balance for 2020, energy units, cont.

1. STANDARD ENERGY BALANCE

		Industrial cogenerations					Own use (production of oil and gas)	Own use (refineries)	Own use (biogas production)	Industry									Commercial sector
ENERGY CONSUMPTION		Rafineries	Production of oil and gas	Other sectors	Total	Industrial heating plants				Total	Iron and Steal	Non-Ferrous metals	Non-Metalic Minerals	Chemicals	Construction	Paper	Food	Other	
Anthracite	10^3 t				0.0					0.9	0.9	0	0	0	0	0	0	0	0.0
Coking coal (kameni ugljen)	10^3 t				0.0					119.8	0.0	0	0	0	119.8	0	0	0	0.0
Sub-Bituminous Coal (Mrki u	10^3 t			11.9	11.9					0.0	0.0	0.0	0.0	0.0	0.0	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	82.6	49.0	214.5	346.1	79.1	54.6	35.1		230.1	13.0	11.7	45.5	17.0	53.4	9.3	41.5	38.7	235.9
Wood	10^3 m^3				0.0					30.5	0.2	0.3	0.0	0.0	6.6	0.0	1.5	21.9	12.1
Biogas	TJ			140.2	140.2				0.0	0.0									0.0
Wood waste	TJ				0.0					0.0									205.3
Briketi ugljena	TJ				0.0					0.0									120.1
Coke oven coke	TJ			0.0	0.0	264.6				943.9	1.8	0.0	0.3	0.2	138.5	185.0	189.4	428.7	449.4
Liquified petroleum gas	TJ				0.0					1630.3	7.7				1622.6				0.0
Motor Gasoline	10^3 t				0.0					30.2	0.3	0.0	0.0	0.0	26.3	0.0	3.6	0.0	0.0
Petroleum	10^3 t	0			0.0	0.0		0.0		6.1	0.7	0.7	0.2	0.0	0.5	0.1	1.0	2.9	10.0
Diesel	10^3 t				0.0					0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Gas/Diesel oil	10^3 t				0.0					1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Residual fuel oil	10^3 t				0.0					9.6	0.2	0.2	0.1	0.0	6.9	0.0	0.3	1.9	0.0
Petroleum coke	10^3 t				0.0	0.0				14.9	0.6	0.2	0.0	0.4	4.0	0.0	5.3	4.4	25.6
Refinery gas	10^3 t	19.3		0.0	19.3	9.8		0.8		5.5	0.0	0.0	0.0	0.1	1.9	0.0	3.5	0.0	0.0
Other oil derivates	10^3 t	0			0.0			21.7		100.7	0.0	0.0	0.0	0.0	100.7	0.0	0.0	0.0	0.0
Visokopećni plin	10^3 t	20.0			20.0	0.0		94.2		0.0									0.0
Koksni plin	10^3 t				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		181.9	191.1	0.0	3502.6	291.7	99.9	142.0	342.7	608.7	233.0	647.4	1137.2	5043.8
Steam and hot water	TJ				0.0		585.0	3958.2	318.7	10933.3	116.9	0.0	6.5	4413.3	5.5	1223.8	2508.0	2659.3	2490.5

3. ENERGY BALANCE WITHOUT IND. COGENERATIONS AND IND. HEAT PL

		Industrial cogenerations					Own use (production of oil and gas)	Own use (refineries)	Own use (biogas production)	Industry									Commercial sector
ENERGY CONSUMPTION		Rafineries	Production of oil and gas	Other sectors	Total	Industrial heating plants				Total	Iron and Steal	Non-Ferrous metals	Non-Metalic Minerals	Chemicals	Construction	Paper	Food	Other	
Anthracite					0.0					0.9	0.9	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					119.8	0.0	0.0	0.0	0.0	119.8	0.0	0.0	0.0	0.0
Sub-Bituminous Coal (Mrki u	10^3 t				0.0					11.9	0.0	0.0	0.0	0.0	0.0	0.0	11.9	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		103.6	132.5		508.9	13.5	11.7	45.7	169.1	53.4	57.9	112.1	45.5	235.9
Wood	10^3 m^3				0.0					30.5	0.2	0.3	0.0	0.0	6.6	0.0	1.5	21.9	12.1
Biogas	TJ				0.0				19.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.4
Wood waste	TJ				0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.3
Briketi ugljena	TJ				0.0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	120.1
Coke oven coke	TJ				0.0					1208.5	1.8	0.0	0.3	0.2	138.5	192.2	290.6	584.9	449.4
Liquified petroleum gas	TJ				0.0					1630.3	7.7	0.0	0.0	0.0	1622.6	0.0	0.0	0.0	0.0
Motor Gasoline	10^3 t				0.0					30.2	0.3	0.0	0.0	0.0	26.3	0.0	3.6	0.0	0.0
Petroleum	10^3 t				0.0			0.0		6.1	0.7	0.7	0.2	0.0	0.5	0.1	1.0	2.9	10.0
Diesel	10^3 t				0.0					0.3	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Gas/Diesel oil	10^3 t				0.0					1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Residual fuel oil	10^3 t				0.0					9.6	0.2	0.2	0.1	0.0	6.9	0.0	0.3	1.9	0.0
Petroleum coke	10^3 t				0.0			0.0		14.9	0.6	0.2	0.0	0.4	4.0	0.0	5.3	4.4	25.6
Refinery gas	10^3 t				0.0			23.0		12.4	0.0	0.0	0.0	0.1	2.1	0.7	7.7	1.8	0.0
Other oil derivates	10^3 t				0.0			21.7		100.7	0.0	0.0	0.0	0.0	100.7	0.0	0.0	0.0	0.0
Visokopećni plin	10^3 t				0.0			114.2		0.0	0.0	0.0	0.0	0.0	0.0	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		54.4	110.7	0.0	3327.7	291.7	99.9	142.0	241.5	608.7	184.0	622.7	1137.2	5027.4
Steam and hot water	TJ				0.0			34.5	302.5	3023.1	102.8	0.0	0.0	449.5	0.0	0.0	190.5	2280.3	2483.8

Annex 5: Any additional information

Annex 5-1: Archiving, inventory data record sheet

5.1.1. Inventory data record sheet

Year: 2020

MODULE: ENERGY	
SUBMODULE: CO_2 from Fuel Combustion by Source Categories	
WORKSHEET: 1_1A1A_PUBLIC_ELE_HEAT_1990-2019	**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 2020; Annual Energy Report: ''Energy in Croatia 2020'' 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 emision calculation – country specific EF from verified reports are used Tier 2 method for 1A1aii (natural gas) for CO_2 emision 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_2O		HFC,PFC,SF_6	Total	Share
Base year	Gg	Gg	Gg CO_2eq	Gg	Gg CO_2eq	Gg CO_2eq	Gg CO_2eq	%
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	
CO_2 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 CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1990
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	16958.59	4326.16	2908.69	NO	1240.24	10.73	NO	NO	25444.41
1. Energy	20362.90	833.35	243.27						21439.51
A. Fuel combustion (sectoral approach)	19780.38	414.23	242.57						20437.19
1. Energy industries	7065.79	5.43	17.40						7088.62
2. Manufacturing industries and construction	5208.58	9.24	16.75						5234.57
3. Transport	3787.06	41.90	67.07						3896.02
4. Other sectors	3718.95	357.67	141.35						4217.97
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	582.52	419.11	0.69						1002.32
1. Solid fuels	NO	59.64	NO,NA						59.64
2. Oil and natural gas	582.52	359.47	0.69						942.68
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2566.34	9.35	790.98	NO	1240.24	10.73	NO	NO	4617.63
A. Mineral industry	1302.67								1302.67
B. Chemical industry	751.10	5.45	754.27	NO	NO	NO	NO	NO	1510.81
C. Metal industry	336.40	3.90	NO	NO	1240.24	NO	NO	NO	1580.54
D. Non-energy products from fuels and solvent use	176.17	NA	NA						176.17
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
G. Other product manufacture and use	NO	NO	36.71	NO	NO	10.73	NO	NO	47.44
H. Other	NA	NA	NA						NA
3. Agriculture	50.02	2548.26	1754.74						4353.02
A. Enteric fermentation		2121.15							2121.15
B. Manure management		427.11	329.05						756.16
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1425.69						1425.69
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	50.02								50.02
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-6021.20	1.23	48.09						-5971.87
A. Forest land	-6418.17	1.12	0.74						-6416.31
B. Cropland	458.85	NO	3.95						462.81
C. Grassland	-7.88	0.11	0.12						-7.66
D. Wetlands	77.23	NO	11.11						88.34
E. Settlements	186.62	NO	32.17						218.79
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-317.85								-317.85
H. Other	NO	NO	NO						NO
5. Waste	0.54	933.99	71.61						1006.13
A. Solid waste disposal	NA,NO	327.97							327.97
B. Biological treatment of solid waste		NO,IE	NO,IE						NO,IE
C. Incineration and open burning of waste	0.54	17.14	4.72						22.40
D. Waste water treatment and discharge		588.88	66.88						655.76
E. Other	NO	NO	NO						NO
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	643.85	0.43	5.29						649.57
Aviation	496.62	0.09	4.14						500.84
Navigation	147.23	0.34	1.15						148.72
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5237.84								5237.84
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	194.62								194.62
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									31416.28
Total CO_2 equivalent emissions with land use, land-use change and forestry									25444.41
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1991
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	9786.23	4171.55	2750.69	NO	850.75	10.61	NO	NO	17569.83
1. Energy	15017.89	784.08	207.97						16009.94
A. Fuel combustion (sectoral approach)	14440.98	442.74	207.46						15091.18
1. Energy industries	4742.10	3.98	11.99						4758.07
2. Manufacturing industries and construction	3769.57	6.88	12.20						3788.65
3. Transport	2866.99	31.74	52.72						2951.45
4. Other sectors	3062.32	400.14	130.55						3593.01
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	576.92	341.34	0.50						918.76
1. Solid fuels	NO	53.15	NO,NA						53.15
2. Oil and natural gas	576.92	288.19	0.50						865.61
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1918.14	8.74	699.50	NO	850.75	10.61	NO	NO	3487.73
A. Mineral industry	863.03								863.03
B. Chemical industry	665.95	5.02	662.78	NO	NO	NO	NO	NO	1333.74
C. Metal industry	270.10	3.73	NO	NO	850.75	NO	NO	NO	1124.58
D. Non-energy products from fuels and solvent use	119.06	NA	NA						119.06
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
G. Other product manufacture and use	NO	NO	36.71	NO	NO	10.61	NO	NO	47.32
H. Other	NA	NA	NA						NA
3. Agriculture	50.95	2428.07	1727.18						4206.20
A. Enteric fermentation		1992.20							1992.20
B. Manure management		435.87	313.75						749.63
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1413.42						1413.42
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	50.95								50.95
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7201.28	3.18	48.32						-7149.77
A. Forest land	-8067.93	3.00	1.98						-8062.95
B. Cropland	455.98	NO	4.36						460.34
C. Grassland	3.98	0.18	0.19						4.35
D. Wetlands	67.51	NO	10.63						78.14
E. Settlements	162.95	NO	31.17						194.12
F. Other land	NO	NO	NO						NO
G. Harvested wood products	176.24								176.24
H. Other	NO	NO	NO						NO
5. Waste	0.54	947.47	67.73						1015.73
A. Solid waste disposal	NA,NO	346.76							346.76
B. Biological treatment of solid waste		NO,IE	NO,IE						NO,IE
C. Incineration and open burning of waste	0.54	16.20	4.46						21.20
D. Waste water treatment and discharge		584.52	63.27						647.78
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	94.29	0.02	0.79						95.10
Aviation	94.29	0.02	0.79						95.10
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6091.91								6091.91
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	203.06								203.06
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24719.60
Total CO_2 equivalent emissions with land use, land-use change and forestry									17569.83
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1992
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	9052.52	3713.68	2768.21	NO	NO	10.69	NO	NO	15545.11
1. Energy	14347.02	819.38	186.72						15353.13
A. Fuel combustion (sectoral approach)	13759.23	377.44	186.27						14322.94
1. Energy industries	5342.75	4.51	15.27						5362.52
2. Manufacturing industries and construction	3079.37	5.43	9.59						3094.39
3. Transport	2776.79	28.16	45.29						2850.24
4. Other sectors	2560.33	339.34	116.12						3015.79
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	587.79	441.94	0.46						1030.18
1. Solid fuels	NO	41.30	NO,NA						41.30
2. Oil and natural gas	587.79	400.64	0.46						988.89
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1959.52	7.57	901.94	NO	NO	10.69	NO	NO	2879.73
A. Mineral industry	933.89								933.89
B. Chemical industry	832.68	5.12	865.22	NO	NO	NO	NO	NO	1703.03
C. Metal industry	121.11	2.45	NO	NO	NO	NO	NO	NO	123.56
D. Non-energy products from fuels and solvent use	71.85	NA	NA						71.85
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
G. Other product manufacture and use	NO	NO	36.71	NO	NO	10.69	NO	NO	47.41
H. Other	NA	NA	NA						NA
3. Agriculture	65.51	1913.34	1556.78						3535.63
A. Enteric fermentation		1562.96							1562.96
B. Manure management		350.38	245.46						595.84
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1311.32						1311.32
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	65.51								65.51
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7320.07	15.15	55.70						-7249.22
A. Forest land	-8249.57	13.64	9.00						-8226.93
B. Cropland	456.04	NO	4.76						460.80
C. Grassland	-0.24	1.51	1.64						2.91
D. Wetlands	64.47	NO	10.14						74.61
E. Settlements	156.40	NO	30.17						186.57
F. Other land	NO	NO	NO						NO
G. Harvested wood products	252.83								252.83
H. Other	NO	NO	NO						NO
5. Waste	0.54	958.23	67.07						1025.83
A. Solid waste disposal	NA,NO	364.58							364.58
B. Biological treatment of solid waste		NO,IE	NO,IE						NO,IE
C. Incineration and open burning of waste	0.54	12.42	3.42						16.38
D. Waste water treatment and discharge		581.23	63.64						644.87
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	72.29	0.01	0.60						72.91
Aviation	72.29	0.01	0.60						72.91
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5308.28								5308.28
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	211.54								211.54
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22794.32
Total CO_2 equivalent emissions with land use, land-use change and forestry									15545.11
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1993
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	9285.39	3643.60	2381.46	NO	NO	10.81	NO	NO	15321.25
1. Energy	15117.22	718.71	195.14						16031.06
A. Fuel combustion (sectoral approach)	14330.95	394.33	194.68						14919.97
1. Energy industries	5940.22	4.89	17.15						5962.26
2. Manufacturing industries and construction	2917.23	5.13	9.03						2931.39
3. Transport	2925.16	28.09	48.05						3001.30
4. Other sectors	2548.34	356.21	120.46						3025.01
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	786.27	324.37	0.46						1111.10
1. Solid fuels	NO	39.52	NO,NA						39.52
2. Oil and natural gas	786.27	284.85	0.46						1071.58
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1639.29	6.25	688.93	NO	NO	10.81	NO	NO	2345.27
A. Mineral industry	797.34								797.34
B. Chemical industry	715.96	5.15	652.21	NO	NO	NO	NO	NO	1373.32
C. Metal industry	57.46	1.10	NO	NO	NO	NO	NO	NO	58.56
D. Non-energy products from fuels and solvent use	68.52	NA	NA						68.52
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
G. Other product manufacture and use	NO	NO	36.71	NO	NO	10.81	NO	NO	47.52
H. Other	NA	NA	NA						NA
3. Agriculture	52.14	1911.58	1362.90						3326.63
A. Enteric fermentation		1540.48							1540.48
B. Manure management		371.10	243.74						614.84
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1119.17						1119.17
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	52.14								52.14
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7523.79	34.39	67.34						-7422.06
A. Forest land	-8248.83	32.81	21.64						-8194.38
B. Cropland	450.65	NO	5.16						455.81
C. Grassland	-3.30	1.58	1.72						0.00
D. Wetlands	61.43	NO	9.65						71.08
E. Settlements	149.85	NO	29.17						179.02
F. Other land	NO	NO	NO						NO
G. Harvested wood products	66.40								66.40
H. Other	NO	NO	NO						NO
5. Waste	0.54	972.67	67.15						1040.35
A. Solid waste disposal	NA,NO	381.84							381.84
B. Biological treatment of solid waste		NO,IE	NO,IE						NO,IE
C. Incineration and open burning of waste	0.54	11.94	3.29						15.76
D. Waste water treatment and discharge		578.89	63.86						642.75
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	182.30	0.03	1.52						183.85
Aviation	182.30	0.03	1.52						183.85
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5583.98								5583.98
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	220.08								220.08
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22743.31
Total CO_2 equivalent emissions with land use, land-use change and forestry									15321.25
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1994
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[(1)]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[(1)]	8300.47	3433.63	2403.86	NO	NO	11.60	NO	NO	14149.55
1. Energy	14179.93	654.42	189.91						15024.26
A. Fuel combustion (sectoral approach)	13474.85	360.84	189.50						14025.19
1. Energy industries	4658.42	3.29	12.07						4673.79
2. Manufacturing industries and construction	3077.51	4.76	8.47						3090.74
3. Transport	3102.93	30.57	50.43						3183.94
4. Other sectors	2635.99	322.22	118.52						3076.73
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	705.07	293.58	0.42						999.07
1. Solid fuels	NO	35.44	NO,NA						35.44
2. Oil and natural gas	705.07	258.14	0.42						963.63
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1825.99	6.53	742.97	NO	NO	11.60	NO	NO	2587.09
A. Mineral industry	957.92								957.92
B. Chemical industry	715.58	4.90	706.26	NO	NO	NO	NO	NO	1426.74
C. Metal industry	81.17	1.63	NO	NO	NO	NO	NO	NO	82.80
D. Non-energy products from fuels and solvent use	71.31	NA	NA						71.31
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				NO	NO	NO	NO	NO	NO
G. Other product manufacture and use	NO	NO	36.71	NO	NO	11.60	NO	NO	48.31
H. Other	NA	NA	NA						NA
3. Agriculture	47.57	1768.71	1350.33						3166.61
A. Enteric fermentation		1392.68							1392.68
B. Manure management		376.03	230.65						606.68
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1119.68						1119.68
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	47.57								47.57
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[(1)]	-7753.55	11.51	50.83						-7691.22
A. Forest land	-8354.93	10.68	7.04						-8337.20
B. Cropland	453.16	NO	5.56						458.72
C. Grassland	-7.89	0.82	0.90						-6.17
D. Wetlands	58.39	NO	9.17						67.55
E. Settlements	143.22	NO	28.16						171.38
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-45.49								-45.49
H. Other	NO	NO	NO						NO
5. Waste	0.54	992.47	69.80						1062.81
A. Solid waste disposal	NA,NO	399.87							399.87
B. Biological treatment of solid waste		0.46	0.33						0.79
C. Incineration and open burning of waste	0.54	11.22	3.09						14.85
D. Waste water treatment and discharge		580.93	66.38						647.31
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[(2)]									
International bunkers	403.81	0.37	3.29						407.47
Aviation	264.02	0.05	2.20						266.27
Navigation	139.78	0.32	1.09						141.20
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	4999.29								4999.29
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	228.77								228.77
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									21840.77
Total CO_2 equivalent emissions with land use, land-use change and forestry									14149.55
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1995
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	8585.15	3380.64	2321.96	21.85	NO	12.08	NO	NO	14321.69
1. Energy	15121.53	670.44	180.42						15972.40
A. Fuel combustion (sectoral approach)	14285.75	380.65	180.02						14846.42
1. Energy industries	5261.60	4.06	12.37						5278.03
2. Manufacturing industries and construction	2874.38	4.69	8.36						2887.43
3. Transport	3292.91	31.89	45.29						3370.09
4. Other sectors	2856.86	340.01	114.00						3310.87
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	835.78	289.79	0.40						1125.98
1. Solid fuels	NO	28.23	NO,NA						28.23
2. Oil and natural gas	835.78	261.57	0.40						1097.75
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1649.30	5.85	714.59	21.85	NO	12.08	NO	NO	2403.66
A. Mineral industry	741.72								741.72
B. Chemical industry	756.00	5.07	677.87	NO	NO	NO	NO	NO	1438.94
C. Metal industry	40.32	0.78	NO	NO	NO	NO	NO	NO	41.10
D. Non-energy products from fuels and solvent use	111.27	NA	NA						111.27
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				21.85	NO	NO	NO	NO	21.85
G. Other product manufacture and use	NO	NO	36.71	NO	NO	12.08	NO	NO	48.79
H. Other	NA	NA	NA						NA
3. Agriculture	46.29	1691.46	1304.60						3042.35
A. Enteric fermentation		1330.03							1330.03
B. Manure management		361.43	215.90						577.33
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1088.70						1088.70
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	46.29								46.29
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-8232.51	7.54	47.00						-8177.96
A. Forest land	-8810.32	7.03	4.63						-8798.65
B. Cropland	452.75	NO	5.96						458.71
C. Grassland	-11.98	0.52	0.56						-10.90
D. Wetlands	55.34	NO	8.68						64.02
E. Settlements	136.79	NO	27.16						163.95
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-55.09								-55.09
H. Other	NO	NO	NO						NO
5. Waste	0.54	1005.35	75.35						1081.23
A. Solid waste disposal	NA,NO	419.50							419.50
B. Biological treatment of solid waste		0.49	0.35						0.84
C. Incineration and open burning of waste	0.54	10.70	2.95						14.19
D. Waste water treatment and discharge		574.65	72.05						646.70
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	348.25	0.28	2.85						351.38
Aviation	245.16	0.04	2.04						247.25
Navigation	103.08	0.24	0.81						104.13
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5288.54								5288.54
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	237.66								237.66
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22499.65
Total CO_2 equivalent emissions with land use, land-use change and forestry									14321.69
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1996
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	9446.41	3351.06	2326.10	25.18	NO	12.51	NO	NO	15161.26
1. Energy	15640.05	702.69	230.78						16573.52
A. Fuel combustion (sectoral approach)	14829.75	423.63	230.39						15483.77
1. Energy industries	5085.53	4.08	12.94						5102.55
2. Manufacturing industries and construction	2866.98	4.60	8.19						2879.77
3. Transport	3620.22	34.50	73.49						3728.21
4. Other sectors	3257.02	380.45	135.78						3773.25
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	810.30	279.06	0.39						1089.75
1. Solid fuels	NO	22.77	NO,NA						22.77
2. Oil and natural gas	810.30	256.30	0.39						1066.99
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1651.84	5.18	668.45	25.18	NO	12.51	NO	NO	2363.16
A. Mineral industry	827.96								827.96
B. Chemical industry	701.63	4.86	631.73	NO	NO	NO	NO	NO	1338.22
C. Metal industry	19.17	0.32	NO	NO	NO	NO	NO	NO	19.49
D. Non-energy products from fuels and solvent use	103.08	NA	NA						103.08
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				25.18	NO	NO	NO	NO	25.18
G. Other product manufacture and use	NO	NO	36.71	NO	NO	12.51	NO	NO	49.22
H. Other	NA	NA	NA						NA
3. Agriculture	52.44	1608.30	1302.60						2963.35
A. Enteric fermentation		1245.87							1245.87
B. Manure management		362.44	203.95						566.39
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1098.65						1098.65
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	52.44								52.44
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7898.46	16.53	52.22						-7829.71
A. Forest land	-8503.07	15.14	9.99						-8477.94
B. Cropland	449.98	NO	6.36						456.35
C. Grassland	-15.71	1.39	1.51						-12.81
D. Wetlands	52.30	NO	8.20						60.50
E. Settlements	130.30	NO	26.17						156.47
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-12.27								-12.27
H. Other	NO	NO	NO						NO
5. Waste	0.54	1018.36	72.05						1090.94
A. Solid waste disposal	NA,NO	442.77							442.77
B. Biological treatment of solid waste		0.52	0.37						0.88
C. Incineration and open burning of waste	0.54	10.64	2.93						14.11
D. Waste water treatment and discharge		564.43	68.75						633.18
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	339.28	0.31	2.77						342.36
Aviation	223.16	0.04	1.86						225.06
Navigation	116.12	0.27	0.91						117.30
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5877.64								5877.64
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	246.64								246.64
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22990.97
Total CO_2 equivalent emissions with land use, land-use change and forestry									15161.26
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1997
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	11265.33	3326.30	2520.27	29.69	NO	12.15	NO	NO	17153.73
1. Energy	16674.29	669.93	228.66						17572.87
A. Fuel combustion (sectoral approach)	15911.94	396.69	228.26						16536.89
1. Energy industries	5557.16	4.46	15.10						5576.72
2. Manufacturing industries and construction	3080.25	5.20	9.17						3094.62
3. Transport	3966.11	36.61	85.39						4088.11
4. Other sectors	3308.41	350.42	118.60						3777.43
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	762.35	273.24	0.39						1035.98
1. Solid fuels	NO	16.65	NO,NA						16.65
2. Oil and natural gas	762.35	256.58	0.39						1019.33
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1814.12	5.51	701.78	29.69	NO	12.15	NO	NO	2563.24
A. Mineral industry	950.81								950.81
B. Chemical industry	743.07	4.77	665.06	NO	NO	NO	NO	NO	1412.90
C. Metal industry	40.82	0.74	NO	NO	NO	NO	NO	NO	41.56
D. Non-energy products from fuels and solvent use	79.41	NA	NA						79.41
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				29.69	NO	NO	NO	NO	29.69
G. Other product manufacture and use	NO	NO	36.71	NO	NO	12.15	NO	NO	48.86
H. Other	NA	NA	NA						NA
3. Agriculture	68.39	1587.46	1465.46						3121.31
A. Enteric fermentation		1219.73							1219.73
B. Manure management		367.74	199.91						567.65
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1265.55						1265.55
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	68.39								68.39
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7293.29	17.63	51.83						-7223.82
A. Forest land	-8017.25	16.28	10.73						-7990.25
B. Cropland	452.91	NO	6.76						459.68
C. Grassland	-20.57	1.35	1.47						-17.74
D. Wetlands	49.26	NO	7.71						56.97
E. Settlements	122.40	NO	25.16						147.55
F. Other land	NO	NO	NO						NO
G. Harvested wood products	119.97								119.97
H. Other	NO	NO	NO						NO
5. Waste	1.82	1045.77	72.54						1120.14
A. Solid waste disposal	NA,NO	468.13							468.13
B. Biological treatment of solid waste		0.54	0.39						0.93
C. Incineration and open burning of waste	1.82	10.24	2.85						14.91
D. Waste water treatment and discharge		566.86	69.30						636.17
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	310.14	0.21	2.55						312.90
Aviation	235.74	0.04	1.97						237.74
Navigation	74.41	0.17	0.58						75.16
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5526.07								5526.07
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	255.77								255.77
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24377.56
Total CO_2 equivalent emissions with land use, land-use change and forestry									17153.73
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1998
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	11866.09	3330.10	2187.10	35.89	NO	13.00	NO	NO	17432.20
1. Energy	17247.97	657.91	211.66						18117.53
A. Fuel combustion (sectoral approach)	16570.51	400.36	211.29						17182.17
1. Energy industries	6238.88	5.20	16.84						6260.92
2. Manufacturing industries and construction	3065.07	5.00	8.93						3078.99
3. Transport	4098.78	37.46	60.42						4196.66
4. Other sectors	3167.79	352.70	125.11						3645.59
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	677.45	257.54	0.37						935.36
1. Solid fuels	NO	17.44	NO,NA						17.44
2. Oil and natural gas	677.45	240.10	0.37						917.92
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1717.51	4.89	537.40	35.89	NO	13.00	NO	NO	2308.69
A. Mineral industry	1016.67								1016.67
B. Chemical industry	592.72	4.51	500.68	NO	NO	NO	NO	NO	1097.92
C. Metal industry	29.65	0.38	NO	NO	NO	NO	NO	NO	30.03
D. Non-energy products from fuels and solvent use	78.46	NA	NA						78.46
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				35.89	NO	NO	NO	NO	35.89
G. Other product manufacture and use	NO	NO	36.71	NO	NO	13.00	NO	NO	49.72
H. Other	NA	NA	NA						NA
3. Agriculture	44.25	1557.76	1296.86						2898.87
A. Enteric fermentation		1185.49							1185.49
B. Manure management		372.27	193.35						565.63
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1103.51						1103.51
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	44.25								44.25
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7147.33	45.11	70.55						-7031.67
A. Forest land	-7745.57	39.83	26.26						-7679.48
B. Cropland	454.62	NO	7.16						461.79
C. Grassland	-24.06	5.29	5.75						-13.02
D. Wetlands	46.21	NO	7.22						53.44
E. Settlements	117.78	NO	24.15						141.93
F. Other land	NO	NO	NO						NO
G. Harvested wood products	3.68								3.68
H. Other	NO	NO	NO						NO
5. Waste	3.70	1064.44	70.64						1138.77
A. Solid waste disposal	NA,NO	496.59							496.59
B. Biological treatment of solid waste		0.57	0.41						0.98
C. Incineration and open burning of waste	3.70	10.12	2.85						16.67
D. Waste water treatment and discharge		557.15	67.38						624.53
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	336.44	0.23	2.77						339.44
Aviation	254.59	0.04	2.12						256.76
Navigation	81.85	0.19	0.64						82.68
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5535.75								5535.75
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	265.00								265.00
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24463.87
Total CO_2 equivalent emissions with land use, land-use change and forestry									17432.20
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 1999
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	12150.16	3344.21	2389.92	43.62	NO	12.95	NO	NO	17940.86
1. Energy	17896.52	634.39	270.02						18800.93
A. Fuel combustion (sectoral approach)	17234.65	395.08	269.68						17899.42
1. Energy industries	6459.12	5.47	17.41						6482.00
2. Manufacturing industries and construction	2867.36	4.18	7.52						2879.06
3. Transport	4329.18	38.11	109.53						4476.81
4. Other sectors	3578.99	347.33	135.23						4061.55
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	661.86	239.31	0.34						901.52
1. Solid fuels	NO	5.25	NO,NA						5.25
2. Oil and natural gas	661.86	234.06	0.34						896.26
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2073.36	4.95	626.93	43.62	NO	12.95	NO	NO	2761.80
A. Mineral industry	1270.90								1270.90
B. Chemical industry	701.41	4.52	590.21	NO	NO	NO	NO	NO	1296.14
C. Metal industry	27.67	0.42	NO	NO	NO	NO	NO	NO	28.10
D. Non-energy products from fuels and solvent use	73.38	NA	NA						73.38
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				43.62	NO	NO	NO	NO	43.62
G. Other product manufacture and use	NO	NO	36.71	NO	NO	12.95	NO	NO	49.66
H. Other	NA	NA	NA						NA
3. Agriculture	50.49	1600.60	1375.30						3026.38
A. Enteric fermentation		1190.78							1190.78
B. Manure management		409.81	200.90						610.71
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1174.40						1174.40
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	50.49								50.49
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7874.58	5.91	42.06						-7826.62
A. Forest land	-8397.00	4.26	2.81						-8389.94
B. Cropland	453.54	NO	7.57						461.10
C. Grassland	-27.56	1.65	1.80						-24.11
D. Wetlands	43.17	NO	6.74						49.91
E. Settlements	111.54	NO	23.14						134.68
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-58.26								-58.26
H. Other	NO	NO	NO						NO
5. Waste	4.38	1098.36	75.61						1178.36
A. Solid waste disposal	NA,NO	526.11							526.11
B. Biological treatment of solid waste		0.60	0.43						1.02
C. Incineration and open burning of waste	4.38	9.32	2.64						16.34
D. Waste water treatment and discharge		562.34	72.54						634.88
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	311.54	0.20	2.57						314.30
Aviation	245.16	0.04	2.04						247.25
Navigation	66.37	0.15	0.53						67.05
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5328.01								5328.01
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	274.55								274.55
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25767.47
Total CO_2 equivalent emissions with land use, land-use change and forestry									17940.86
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2000
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	13077.79	3391.16	2571.99	52.89	NO	12.34	NO	NO	19106.17
1. Energy	17356.75	584.39	275.99						18217.13
A. Fuel combustion (sectoral approach)	16645.33	354.10	275.67						17275.10
1. Energy industries	5810.87	3.95	18.59						5833.41
2. Manufacturing industries and construction	3061.67	4.47	8.11						3074.25
3. Transport	4354.38	36.77	111.14						4502.29
4. Other sectors	3418.41	308.91	137.84						3865.16
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	711.42	230.29	0.32						942.03
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	711.42	230.29	0.32						942.03
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2238.72	3.40	730.66	52.89	NO	12.34	NO	NO	3038.00
A. Mineral industry	1428.93								1428.93
B. Chemical industry	704.40	2.92	693.94	NO	NO	NO	NO	NO	1401.26
C. Metal industry	29.68	0.48	NO	NO	NO	NO	NO	NO	30.17
D. Non-energy products from fuels and solvent use	75.71	NA	NA						75.71
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				52.89	NO	NO	NO	NO	52.89
G. Other product manufacture and use	NO	NO	36.71	NO	NO	12.34	NO	NO	49.05
H. Other	NA	NA	NA						NA
3. Agriculture	60.87	1569.36	1388.07						3018.30
A. Enteric fermentation		1168.97							1168.97
B. Manure management		400.39	191.86						592.25
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1196.21						1196.21
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	60.87								60.87
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-6584.69	96.91	104.45						-6383.34
A. Forest land	-7086.52	87.11	57.44						-6941.97
B. Cropland	456.41	NO	7.97						464.38
C. Grassland	-32.63	9.80	10.67						-12.16
D. Wetlands	40.13	NO	6.25						46.38
E. Settlements	107.58	NO	22.12						129.71
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-69.66								-69.66
H. Other	NO	NO	NO						NO
5. Waste	6.15	1137.10	72.82						1216.07
A. Solid waste disposal	NA,NO	559.98							559.98
B. Biological treatment of solid waste		0.68	0.48						1.16
C. Incineration and open burning of waste	6.15	8.43	2.43						17.01
D. Waste water treatment and discharge		568.02	69.91						637.93
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	258.78	0.17	2.13						261.08
Aviation	201.16	0.04	1.68						202.87
Navigation	57.62	0.13	0.45						58.21
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	4771.83								4771.83
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	284.87								284.87
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25489.51
Total CO_2 equivalent emissions with land use, land-use change and forestry									19106.17
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2001
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	13061.63	3385.00	2489.67	64.80	NO	12.42	NO	NO	19013.52
1. Energy	18358.84	623.39	267.33						19249.55
A. Fuel combustion (sectoral approach)	17596.69	378.99	267.02						18242.70
1. Energy industries	6343.85	4.46	20.96						6369.27
2. Manufacturing industries and construction	3196.99	4.39	8.06						3209.43
3. Transport	4420.07	31.40	100.39						4551.85
4. Other sectors	3635.78	338.75	137.61						4112.14
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	762.15	244.40	0.31						1006.85
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	762.15	244.40	0.31						1006.85
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2327.69	3.52	618.14	64.80	NO	12.42	NO	NO	3026.57
A. Mineral industry	1647.58								1647.58
B. Chemical industry	595.81	3.50	582.41	NO	NO	NO	NO	NO	1181.71
C. Metal industry	7.15	0.02	NO	NO	NO	NO	NO	NO	7.17
D. Non-energy products from fuels and solvent use	77.15	NA	NA						77.15
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				64.80	NO	NO	NO	NO	64.80
G. Other product manufacture and use	NO	NO	35.73	NO	NO	12.42	NO	NO	48.15
H. Other	NA	NA	NA						NA
3. Agriculture	92.09	1591.40	1470.97						3154.46
A. Enteric fermentation		1178.20							1178.20
B. Manure management		413.21	192.76						605.97
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1278.21						1278.21
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	92.09								92.09
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7723.67	19.00	55.94						-7648.74
A. Forest land	-8108.89	16.02	10.56						-8082.31
B. Cropland	423.67	NO	8.37						432.04
C. Grassland	-26.55	2.98	3.24						-20.34
D. Wetlands	36.36	NO	5.73						42.09
E. Settlements	257.87	NO	28.04						285.90
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-306.12								-306.12
H. Other	NO	NO	NO						NO
5. Waste	6.68	1147.69	77.30						1231.68
A. Solid waste disposal	NA,NO	593.61							593.61
B. Biological treatment of solid waste		0.54	0.39						0.93
C. Incineration and open burning of waste	6.68	8.22	2.38						17.29
D. Waste water treatment and discharge		545.32	74.53						619.85
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	291.47	0.24	2.39						294.10
Aviation	201.16	0.04	1.68						202.87
Navigation	90.31	0.21	0.71						91.23
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5187.98								5187.98
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	295.61								295.61
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									26662.26
Total CO_2 equivalent emissions with land use, land-use change and forestry									19013.52
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2002
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	13898.28	3380.50	2401.14	86.16	NO	12.75	NO	NO	19778.84
1. Energy	19511.40	613.97	227.59						20352.96
A. Fuel combustion (sectoral approach)	18735.04	364.86	227.28						19327.19
1. Energy industries	7225.52	4.90	24.91						7255.33
2. Manufacturing industries and construction	3057.13	4.32	7.93						3069.38
3. Transport	4729.32	30.51	64.96						4824.79
4. Other sectors	3723.08	325.12	129.48						4177.68
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	776.36	249.11	0.31						1025.77
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	776.36	249.11	0.31						1025.77
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2293.52	3.27	601.45	86.16	NO	12.75	NO	NO	2997.16
A. Mineral industry	1647.57								1647.57
B. Chemical industry	550.89	3.27	566.71	NO	NO	NO	NO	NO	1120.86
C. Metal industry	4.72	0.01	NO	NO	NO	NO	NO	NO	4.73
D. Non-energy products from fuels and solvent use	90.34	NA	NA						90.34
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				86.16	NO	NO	NO	NO	86.16
G. Other product manufacture and use	NO	NO	34.75	NO	NO	12.75	NO	NO	47.50
H. Other	NA	NA	NA						NA
3. Agriculture	80.76	1573.02	1438.32						3092.10
A. Enteric fermentation		1149.05							1149.05
B. Manure management		423.98	189.46						613.44
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1248.86						1248.86
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	80.76								80.76
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7991.18	6.39	52.49						-7932.29
A. Forest land	-8406.55	5.62	3.70						-8397.23
B. Cropland	420.91	NO	8.77						429.68
C. Grassland	-37.52	0.78	0.85						-35.89
D. Wetlands	33.09	NO	5.21						38.30
E. Settlements	301.23	NO	33.96						335.19
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-302.33								-302.33
H. Other	NO	NO	NO						NO
5. Waste	3.78	1183.84	81.29						1268.91
A. Solid waste disposal	NA,NO	632.29							632.29
B. Biological treatment of solid waste		0.73	0.52						1.25
C. Incineration and open burning of waste	3.78	8.06	2.28						14.12
D. Waste water treatment and discharge		542.77	78.48						621.26
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	262.60	0.20	2.15						264.95
Aviation	188.59	0.03	1.57						190.19
Navigation	74.01	0.17	0.58						74.76
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	4975.57								4975.57
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	306.73								306.73
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									27711.13
Total CO_2 equivalent emissions with land use, land-use change and forestry									19778.84
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2003
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	15978.47	3581.48	2338.44	114.12	NO	13.09	NO	NO	22025.60
1. Energy	20816.14	664.52	242.23						21722.89
A. Fuel combustion (sectoral approach)	20087.34	414.37	241.94						20743.65
1. Energy industries	7871.16	5.83	25.89						7902.88
2. Manufacturing industries and construction	3136.78	4.94	8.93						3150.65
3. Transport	5126.76	29.57	67.37						5223.70
4. Other sectors	3952.65	374.04	139.74						4466.43
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	728.80	250.14	0.29						979.24
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	728.80	250.14	0.29						979.24
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2326.52	3.12	569.66	114.12	NO	13.09	NO	NO	3026.50
A. Mineral industry	1654.26								1654.26
B. Chemical industry	574.42	3.09	535.89	NO	NO	NO	NO	NO	1113.41
C. Metal industry	6.62	0.02	NO	NO	NO	NO	NO	NO	6.64
D. Non-energy products from fuels and solvent use	91.23	NA	NA						91.23
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				114.12	NO	NO	NO	NO	114.12
G. Other product manufacture and use	NO	NO	33.76	NO	NO	13.09	NO	NO	46.86
H. Other	NA	NA	NA						NA
3. Agriculture	71.79	1652.98	1364.68						3089.45
A. Enteric fermentation		1198.59							1198.59
B. Manure management		454.38	194.58						648.96
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1170.10						1170.10
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	71.79								71.79
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7236.79	39.55	81.39						-7115.85
A. Forest land	-7785.59	35.95	23.70						-7725.94
B. Cropland	417.74	NO	9.17						426.91
C. Grassland	-49.14	3.60	3.92						-41.62
D. Wetlands	29.82	NO	4.69						34.50
E. Settlements	341.20	NO	39.90						381.11
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-190.82								-190.82
H. Other	NO	NO	NO						NO
5. Waste	0.80	1221.32	80.49						1302.61
A. Solid waste disposal	NA,NO	675.69							675.69
B. Biological treatment of solid waste		0.52	0.37						0.89
C. Incineration and open burning of waste	0.80	7.84	2.17						10.81
D. Waste water treatment and discharge		537.27	77.94						615.21
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	251.70	0.19	2.06						253.95
Aviation	182.30	0.03	1.52						183.85
Navigation	69.39	0.16	0.54						70.09
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5755.73								5755.73
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	318.20								318.20
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									29141.45
Total CO_2 equivalent emissions with land use, land-use change and forestry									22025.60
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2004
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	15377.62	3638.01	2559.51	136.90	NO	13.54	NO	NO	21725.59
1. Energy	20272.16	651.33	277.68						21201.17
A. Fuel combustion (sectoral approach)	19494.24	402.98	277.39						20174.62
1. Energy industries	6784.01	4.86	23.51						6812.38
2. Manufacturing industries and construction	3583.00	5.99	10.74						3599.72
3. Transport	5262.21	27.73	110.58						5400.53
4. Other sectors	3865.02	364.40	132.57						4361.99
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	777.92	248.35	0.28						1026.55
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	777.92	248.35	0.28						1026.55
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2539.44	3.74	684.25	136.90	NO	13.54	NO	NO	3377.87
A. Mineral industry	1751.18								1751.18
B. Chemical industry	665.57	3.74	651.47	NO	NO	NO	NO	NO	1320.78
C. Metal industry	13.72	NA,NO	NO	NO	NO	NO	NO	NO	13.72
D. Non-energy products from fuels and solvent use	108.97	NA	NA						108.97
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				136.90	NO	NO	NO	NO	136.90
G. Other product manufacture and use	NO	NO	32.78	NO	NO	13.54	NO	NO	46.32
H. Other	NA	NA	NA						NA
3. Agriculture	75.94	1710.09	1455.47						3241.50
A. Enteric fermentation		1228.58							1228.58
B. Manure management		481.52	200.29						681.81
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1255.18						1255.18
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	NO								NO
H. Urea application	75.94								75.94
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7510.27	2.92	61.90						-7445.46
A. Forest land	-8102.61	1.95	1.29						-8099.37
B. Cropland	419.93	NO	9.57						429.50
C. Grassland	-59.71	0.97	1.05						-57.69
D. Wetlands	26.55	NO	4.16						30.71
E. Settlements	385.87	NO	45.82						431.69
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-180.30								-180.30
H. Other	NO	NO	NO						NO
5. Waste	0.35	1269.93	80.22						1350.50
A. Solid waste disposal	NA,NO	717.97							717.97
B. Biological treatment of solid waste		0.62	0.44						1.06
C. Incineration and open burning of waste	0.35	7.86	2.17						10.38
D. Waste water treatment and discharge		543.47	77.61						621.09
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	284.43	0.21	2.33						286.96
Aviation	210.59	0.04	1.76						212.38
Navigation	73.83	0.17	0.58						74.58
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5660.22								5660.22
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	329.99								329.99
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									29171.05
Total CO_2 equivalent emissions with land use, land-use change and forestry									21725.59
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2005
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	15573.07	3660.81	2527.78	186.71	NO	14.26	NO	NO	21962.64
1. Energy	20656.65	670.45	237.39						21564.49
A. Fuel combustion (sectoral approach)	19899.91	421.70	237.12						20558.73
1. Energy industries	6810.03	4.61	22.86						6837.50
2. Manufacturing industries and construction	3724.02	5.41	9.91						3739.34
3. Transport	5467.69	25.45	68.63						5561.77
4. Other sectors	3898.16	386.23	135.72						4420.11
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	756.74	248.75	0.27						1005.76
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	756.74	248.75	0.27						1005.76
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2601.65	3.77	668.54	186.71	NO	14.26	NO	NO	3474.93
A. Mineral industry	1813.79								1813.79
B. Chemical industry	663.60	3.77	636.74	NO	NO	NO	NO	NO	1304.11
C. Metal industry	12.71	NA,NO	NO	NO	NO	NO	NO	NO	12.71
D. Non-energy products from fuels and solvent use	111.55	NA	NA						111.55
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				186.71	NO	NO	NO	NO	186.71
G. Other product manufacture and use	NO	NO	31.80	NO	NO	14.26	NO	NO	46.06
H. Other	NA	NA	NA						NA
3. Agriculture	85.46	1720.70	1470.88						3277.04
A. Enteric fermentation		1271.09							1271.09
B. Manure management		449.61	189.20						638.80
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1281.68						1281.68
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	14.49								14.49
H. Urea application	70.97								70.97
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7770.85	2.74	67.40						-7700.71
A. Forest land	-8211.77	2.16	1.43						-8208.18
B. Cropland	405.39	NO	9.97						415.36
C. Grassland	-60.56	0.57	0.62						-59.36
D. Wetlands	23.28	NO	3.64						26.92
E. Settlements	421.53	NO	51.74						473.27
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-348.72								-348.72
H. Other	NO	NO	NO						NO
5. Waste	0.16	1263.16	83.58						1346.90
A. Solid waste disposal	NA,NO	713.70							713.70
B. Biological treatment of solid waste		1.12	0.80						1.91
C. Incineration and open burning of waste	0.16	7.82	2.15						10.13
D. Waste water treatment and discharge		540.53	80.63						621.15
E. Other	NO	NO	NO						NO
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	337.55	0.23	2.77						340.55
Aviation	257.74	0.05	2.15						259.93
Navigation	79.82	0.18	0.62						80.62
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5908.79								5908.79
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	342.08								342.08
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									29663.35
Total CO_2 equivalent emissions with land use, land-use change and forestry									21962.64
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2006
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	15951.87	3768.90	2545.92	246.71	NO	14.13	NO	NO	22527.55
1. Energy	20732.16	654.31	238.75						21625.22
A. Fuel combustion (sectoral approach)	19966.19	388.98	238.48						20593.65
1. Energy industries	6631.42	4.82	22.56						6658.79
2. Manufacturing industries and construction	3855.12	5.75	10.53						3871.40
3. Transport	5820.94	24.31	72.76						5918.01
4. Other sectors	3658.71	354.11	132.63						4145.45
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	765.97	265.33	0.27						1031.57
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	765.97	265.33	0.27						1031.57
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2736.38	3.66	660.14	246.71	NO	14.13	NO	NO	3661.03
A. Mineral industry	1941.92								1941.92
B. Chemical industry	657.88	3.66	629.32	NO	NO	NO	NO	NO	1290.87
C. Metal industry	13.31	NA,NO	NO	NO	NO	NO	NO	NO	13.31
D. Non-energy products from fuels and solvent use	123.26	NA	NA						123.26
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				246.71	NO	NO	NO	NO	246.71
G. Other product manufacture and use	NO	NO	30.81	NO	NO	14.13	NO	NO	44.95
H. Other	NA	NA	NA						NA
3. Agriculture	80.67	1763.13	1485.72						3329.52
A. Enteric fermentation		1252.01							1252.01
B. Manure management		511.13	194.90						706.03
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1290.82						1290.82
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	17.48								17.48
H. Urea application	63.19								63.19
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7598.07	6.06	75.40						-7516.62
A. Forest land	-8077.94	5.46	3.60						-8068.88
B. Cropland	408.16	NO	10.38						418.54
C. Grassland	-83.61	0.60	0.65						-82.37
D. Wetlands	20.01	NO	3.12						23.13
E. Settlements	458.28	NO	57.65						515.93
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-322.96								-322.96
H. Other	NO	NO	NO						NO
5. Waste	0.74	1341.74	85.92						1428.40
A. Solid waste disposal	NA,NO	787.97							787.97
B. Biological treatment of solid waste		0.86	0.62						1.48
C. Incineration and open burning of waste	0.74	8.02	2.22						10.99
D. Waste water treatment and discharge		544.88	83.08						627.96
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	325.65	0.19	2.68						328.52
Aviation	264.02	0.05	2.20						266.27
Navigation	61.63	0.14	0.48						62.25
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5497.41								5497.41
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	354.51								354.51
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									30044.17
Total CO_2 equivalent emissions with land use, land-use change and forestry									22527.55
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2007
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	18106.84	3798.76	2623.39	328.97	NO	14.15	NO	NO	24872.10
1. Energy	21965.25	651.04	245.01						22861.30
A. Fuel combustion (sectoral approach)	21237.66	375.55	244.74						21857.94
1. Energy industries	7815.15	5.57	27.11						7847.84
2. Manufacturing industries and construction	3853.05	5.80	10.51						3869.36
3. Transport	6242.17	23.46	76.62						6342.25
4. Other sectors	3327.29	340.71	130.51						3798.51
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	727.60	275.50	0.26						1003.36
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	727.60	275.50	0.26						1003.36
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2807.63	3.41	724.21	328.97	NO	14.15	NO	NO	3878.37
A. Mineral industry	1969.85								1969.85
B. Chemical industry	696.32	3.41	694.38	NO	NO	NO	NO	NO	1394.11
C. Metal industry	13.69	NA,NO	NO	NO	NO	NO	NO	NO	13.69
D. Non-energy products from fuels and solvent use	127.77	NA	NA						127.77
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				328.97	NO	NO	NO	NO	328.97
G. Other product manufacture and use	NO	NO	29.83	NO	NO	14.15	NO	NO	43.98
H. Other	NA	NA	NA						NA
3. Agriculture	89.32	1697.42	1465.60						3252.34
A. Enteric fermentation		1204.31							1204.31
B. Manure management		493.11	185.29						678.40
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1280.31						1280.31
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	16.60								16.60
H. Urea application	72.72								72.72
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-6756.02	31.76	100.96						-6623.30
A. Forest land	-7244.84	29.59	19.51						-7195.74
B. Cropland	366.86	NO	12.89						379.74
C. Grassland	-101.08	2.17	2.37						-96.54
D. Wetlands	17.54	NO	2.64						20.18
E. Settlements	514.85	NO	63.56						578.41
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-309.35								-309.35
H. Other	NO	NO	NO						NO
5. Waste	0.65	1415.12	87.61						1503.39
A. Solid waste disposal	NA,NO	854.97							854.97
B. Biological treatment of solid waste		1.65	1.18						2.83
C. Incineration and open burning of waste	0.65	8.32	2.30						11.27
D. Waste water treatment and discharge		550.18	84.14						634.32
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	353.05	0.22	2.90						356.17
Aviation	276.60	0.05	2.31						278.95
Navigation	76.45	0.17	0.59						77.22
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5322.60								5322.60
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	367.63								367.63
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									31495.40
Total CO_2 equivalent emissions with land use, land-use change and forestry									24872.10
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2008
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	16674.53	3752.69	2920.59	405.24	NO	12.99	NO	NO	23766.03
1. Energy	20802.16	638.31	241.05						21681.52
A. Fuel combustion (sectoral approach)	20165.34	373.91	240.81						20780.05
1. Energy industries	6771.62	4.79	24.21						6800.63
2. Manufacturing industries and construction	3872.78	5.59	10.17						3888.55
3. Transport	6079.11	21.57	71.52						6172.20
4. Other sectors	3441.83	341.95	134.90						3918.68
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	636.82	264.40	0.25						901.47
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	636.82	264.40	0.25						901.47
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2695.57	3.23	738.63	405.24	NO	12.99	NO	NO	3855.66
A. Mineral industry	1868.94								1868.94
B. Chemical industry	676.64	3.23	709.79	NO	NO	NO	NO	NO	1389.66
C. Metal industry	23.41	NA,NO	NO	NO	NO	NO	NO	NO	23.41
D. Non-energy products from fuels and solvent use	126.57	NA	NA						126.57
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				405.24	NO	NO	NO	NO	405.24
G. Other product manufacture and use	NO	NO	28.85	NO	NO	12.99	NO	NO	41.84
H. Other	NA	NA	NA						NA
3. Agriculture	96.60	1610.80	1757.26						3464.66
A. Enteric fermentation		1155.97							1155.97
B. Manure management		454.83	172.82						627.65
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1584.44						1584.44
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	20.78								20.78
H. Urea application	75.83								75.83
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-6920.46	9.58	93.72						-6817.16
A. Forest land	-7428.39	8.64	5.70						-7414.05
B. Cropland	396.87	NO	15.39						412.27
C. Grassland	-131.78	0.94	1.02						-129.81
D. Wetlands	14.53	NO	2.16						16.68
E. Settlements	553.64	NO	69.44						623.09
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-325.34								-325.34
H. Other	NO	NO	NO						NO
5. Waste	0.67	1490.77	89.92						1581.36
A. Solid waste disposal	NA,NO	935.44							935.44
B. Biological treatment of solid waste		3.31	2.36						5.67
C. Incineration and open burning of waste	0.67	8.52	2.35						11.53
D. Waste water treatment and discharge		543.51	85.21						628.71
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	384.96	0.21	3.17						388.33
Aviation	317.46	0.06	2.65						320.16
Navigation	67.50	0.15	0.52						68.17
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5298.65								5298.65
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	381.18								381.18
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									30583.20
Total CO_2 equivalent emissions with land use, land-use change and forestry									23766.03
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2009
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	14769.72	3822.94	2287.60	493.00	NO	9.34	NO	NO	21382.60
1. Energy	19642.09	642.91	234.82						20519.83
A. Fuel combustion (sectoral approach)	19068.23	386.44	234.59						19689.26
1. Energy industries	6365.42	4.77	21.01						6391.20
2. Manufacturing industries and construction	3157.36	5.28	9.34						3171.98
3. Transport	6091.06	20.39	70.57						6182.01
4. Other sectors	3454.39	356.00	133.68						3944.07
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	573.86	256.47	0.23						830.57
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	573.86	256.47	0.23						830.57
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2085.24	2.91	620.32	493.00	NO	9.34	NO	NO	3210.81
A. Mineral industry	1454.55								1454.55
B. Chemical industry	529.27	2.91	593.20	NO	NO	NO	NO	NO	1125.38
C. Metal industry	4.84	NA,NO	NO	NO	NO	NO	NO	NO	4.84
D. Non-energy products from fuels and solvent use	96.57	NA	NA						96.57
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				493.00	NO	NO	NO	NO	493.00
G. Other product manufacture and use	NO	NO	27.12	NO	NO	9.34	NO	NO	36.46
H. Other	NA	NA	NA						NA
3. Agriculture	76.96	1633.18	1241.86						2952.00
A. Enteric fermentation		1146.02							1146.02
B. Manure management		487.16	174.81						661.97
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1067.06						1067.06
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	11.92								11.92
H. Urea application	65.04								65.04
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-7034.73	5.10	98.38						-6931.25
A. Forest land	-7803.02	4.87	3.21						-7794.93
B. Cropland	422.21	NO	17.90						440.12
C. Grassland	-129.26	0.22	0.24						-128.80
D. Wetlands	11.51	NO	1.68						13.19
E. Settlements	642.79	NO	75.35						718.14
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-178.97								-178.97
H. Other	NO	NO	NO						NO
5. Waste	0.16	1538.84	92.21						1631.22
A. Solid waste disposal	NA,NO	1016.16							1016.16
B. Biological treatment of solid waste		4.55	3.21						7.77
C. Incineration and open burning of waste	0.16	8.49	2.34						10.99
D. Waste water treatment and discharge		509.64	86.67						596.30
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	292.16	0.10	2.42						294.68
Aviation	270.31	0.05	2.25						272.61
Navigation	21.85	0.05	0.17						22.07
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5576.02								5576.02
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	395.03								395.03
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									28313.86
Total CO_2 equivalent emissions with land use, land-use change and forestry									21382.60
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2010
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	14038.51	3881.13	2536.57	593.30	NO	9.83	NO	NO	21059.34
1. Energy	18806.64	668.04	233.65						19708.33
A. Fuel combustion (sectoral approach)	18265.12	410.87	233.43						18909.42
1. Energy industries	5877.34	4.34	21.72						5903.40
2. Manufacturing industries and construction	3015.80	5.21	9.09						3030.11
3. Transport	5865.78	18.33	67.41						5951.51
4. Other sectors	3506.21	382.98	135.21						4024.40
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	541.52	257.16	0.22						798.91
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	541.52	257.16	0.22						798.91
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2121.55	2.72	791.89	593.30	NO	9.83	NO	NO	3519.29
A. Mineral industry	1401.83								1401.83
B. Chemical industry	615.36	2.72	765.00	NO	NO	NO	NO	NO	1383.07
C. Metal industry	14.68	NA,NO	NO	NO	NO	NO	NO	NO	14.68
D. Non-energy products from fuels and solvent use	89.69	NA	NA						89.69
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				593.30	NO	NO	NO	NO	593.30
G. Other product manufacture and use	NO	NO	26.89	NO	NO	9.83	NO	NO	36.72
H. Other	NA	NA	NA						NA
3. Agriculture	88.04	1621.48	1319.24						3028.76
A. Enteric fermentation		1134.14							1134.14
B. Manure management		487.33	168.49						655.82
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1150.76						1150.76
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	21.46								21.46
H. Urea application	66.58								66.58
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-6977.77	1.76	104.06						-6871.95
A. Forest land	-7661.28	1.64	1.08						-7658.55
B. Cropland	437.24	NO	20.41						457.65
C. Grassland	-149.40	0.12	0.13						-149.15
D. Wetlands	8.49	NO	1.19						9.69
E. Settlements	636.33	NO	81.24						717.57
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-249.16								-249.16
H. Other	NO	NO	NO						NO
5. Waste	0.05	1587.14	87.72						1674.91
A. Solid waste disposal	NA,NO	1040.40							1040.40
B. Biological treatment of solid waste		3.72	2.54						6.27
C. Incineration and open burning of waste	0.05	8.61	2.37						11.03
D. Waste water treatment and discharge		534.40	82.81						617.21
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	315.09	0.10	2.61						317.80
Aviation	295.46	0.05	2.46						297.97
Navigation	19.64	0.04	0.15						19.83
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5940.55								5940.55
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	406.14								406.14
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									27931.29
Total CO_2 equivalent emissions with land use, land-use change and forestry									21059.34
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2011
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	14896.73	3850.62	2618.35	660.80	NO	10.26	NO	NO	22036.76
1. Energy	18595.12	636.56	221.36						19453.04
A. Fuel combustion (sectoral approach)	18036.24	399.44	221.16						18656.83
1. Energy industries	6247.86	5.02	23.00						6275.88
2. Manufacturing industries and construction	2779.55	4.57	8.00						2792.12
3. Transport	5726.93	16.80	56.59						5800.32
4. Other sectors	3281.90	373.05	133.57						3788.51
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	558.89	237.12	0.20						796.21
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	558.89	237.12	0.20						796.21
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1949.26	1.75	780.39	660.80	NO	10.26	NO	NO	3402.46
A. Mineral industry	1255.01								1255.01
B. Chemical industry	593.19	1.75	753.93	NO	NO	NO	NO	NO	1348.87
C. Metal industry	16.64	NA,NO	NO	NO	NO	NO	NO	NO	16.64
D. Non-energy products from fuels and solvent use	84.43	NA	NA						84.43
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				660.80	NO	NO	NO	NO	660.80
G. Other product manufacture and use	NO	NO	26.46	NO	NO	10.26	NO	NO	36.72
H. Other	NA	NA	NA						NA
3. Agriculture	105.18	1574.97	1402.06						3082.21
A. Enteric fermentation		1106.27							1106.27
B. Manure management		468.70	159.97						628.67
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1242.10						1242.10
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	21.32								21.32
H. Urea application	83.86								83.86
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5752.88	18.63	125.63						-5608.62
A. Forest land	-6473.79	15.20	10.02						-6448.57
B. Cropland	462.50	NO	22.52						485.02
C. Grassland	-160.97	3.43	3.74						-153.80
D. Wetlands	8.52	NO	1.20						9.72
E. Settlements	679.61	NO	88.16						767.77
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-268.76								-268.76
H. Other	NO	NO	NO						NO
5. Waste	0.05	1618.71	88.91						1707.67
A. Solid waste disposal	NA,NO	1074.29							1074.29
B. Biological treatment of solid waste		4.36	2.95						7.31
C. Incineration and open burning of waste	0.05	8.21	2.26						10.52
D. Waste water treatment and discharge		531.86	83.70						615.56
E. Other	NO	NO	NO						NO
6. Other *(as specified in summary 1.A)*	NO	NO	NO	NO	NO	NO	NO	NO	NO
Memo items:[2]									
International bunkers	387.14	0.23	3.18						390.55
Aviation	311.17	0.05	2.59						313.82
Navigation	75.97	0.17	0.59						76.73
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5834.09								5834.09
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	418.97								418.97
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									27645.38
Total CO_2 equivalent emissions with land use, land-use change and forestry									22036.76
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2012
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	13728.11	3824.28	2410.89	737.88	NO	10.96	NO	NO	20712.13
1. Energy	17224.34	600.46	210.39						18035.18
A. Fuel combustion (sectoral approach)	16751.09	394.70	210.21						17356.00
1. Energy industries	5849.20	4.88	21.78						5875.87
2. Manufacturing industries and construction	2409.07	4.69	8.12						2421.88
3. Transport	5551.16	13.58	52.28						5617.01
4. Other sectors	2941.67	371.55	128.03						3441.25
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	473.24	205.76	0.18						679.18
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	473.24	205.76	0.18						679.18
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1761.75	NO,NE,IE,NA	676.54	737.88	NO	10.96	NO	NO	3187.13
A. Mineral industry	1179.39								1179.39
B. Chemical industry	502.01	NO,NE,IE	652.37	NO	NO	NO	NO	NO	1154.37
C. Metal industry	1.43	NA,NO	NO	NO	NO	NO	NO	NO	1.43
D. Non-energy products from fuels and solvent use	78.92	NA	NA						78.92
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				737.88	NO	NO	NO	NO	737.88
G. Other product manufacture and use	NO	NO	24.17	NO	NO	10.96	NO	NO	35.13
H. Other	NA	NA	NA						NA
3. Agriculture	101.23	1571.95	1285.92						2959.11
A. Enteric fermentation		1113.63							1113.63
B. Manure management		458.32	157.85						616.17
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1128.08						1128.08
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	14.38								14.38
H. Urea application	86.85								86.85
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5359.29	38.88	147.73						-5172.69
A. Forest land	-6055.76	36.09	23.80						-5995.87
B. Cropland	481.36	NO	24.63						505.99
C. Grassland	-190.72	2.79	3.04						-184.89
D. Wetlands	8.55	NO	1.20						9.75
E. Settlements	717.11	NO	95.06						812.17
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-319.83								-319.83
H. Other	NO	NO	NO						NO
5. Waste	0.08	1612.99	90.32						1703.39
A. Solid waste disposal	NA,NO	1103.67							1103.67
B. Biological treatment of solid waste		4.43	2.83						7.26
C. Incineration and open burning of waste	0.08	7.94	2.18						10.20
D. Waste water treatment and discharge		496.96	85.30						582.26
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	342.53	0.09	2.85						345.46
Aviation	330.03	0.06	2.75						332.84
Navigation	12.50	0.03	0.10						12.62
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6011.36								6011.36
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	434.33								434.33
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25884.81
Total CO_2 equivalent emissions with land use, land-use change and forestry									20712.13
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2013
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	12439.79	3688.08	1801.00	807.76	NO	7.18	NO	NO	18743.81
1. Energy	16492.03	587.01	207.67						17286.72
A. Fuel combustion (sectoral approach)	16039.24	391.29	207.49						16638.03
1. Energy industries	5238.07	4.16	20.92						5263.15
2. Manufacturing industries and construction	2384.92	4.50	7.87						2397.29
3. Transport	5636.55	13.40	52.82						5702.77
4. Other sectors	2779.70	369.23	125.88						3274.81
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	452.80	195.72	0.18						648.69
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	452.80	195.72	0.18						648.69
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1865.50	NO,NE,IE,NA	262.46	807.76	NO	7.18	NO	NO	2942.90
A. Mineral industry	1271.22								1271.22
B. Chemical industry	509.33	NO,NE,IE	240.27	NO	NO	NO	NO	NO	749.60
C. Metal industry	13.93	NA,NO	NO	NO	NO	NO	NO	NO	13.93
D. Non-energy products from fuels and solvent use	71.02	NA	NA						71.02
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				807.76	NO	NO	NO	NO	807.76
G. Other product manufacture and use	NO	NO	22.19	NO	NO	7.18	NO	NO	29.37
H. Other	NA	NA	NA						NA
3. Agriculture	74.61	1501.44	1117.37						2693.42
A. Enteric fermentation		1067.35							1067.35
B. Manure management		434.08	149.83						583.91
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	967.54						967.54
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	14.23								14.23
H. Urea application	60.39								60.39
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5992.41	1.93	122.37						-5868.11
A. Forest land	-6537.15	1.46	0.96						-6534.73
B. Cropland	573.49	NO	24.08						597.58
C. Grassland	-219.28	0.47	0.51						-218.29
D. Wetlands	9.41	NO	1.25						10.65
E. Settlements	607.30	NO	95.57						702.87
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-426.18								-426.18
H. Other	NO	NO	NO						NO
5. Waste	0.04	1597.70	91.13						1688.88
A. Solid waste disposal	NA,NO	1098.44							1098.44
B. Biological treatment of solid waste		5.13	3.15						8.28
C. Incineration and open burning of waste	0.04	7.56	2.08						9.68
D. Waste water treatment and discharge		486.57	85.90						572.47
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	379.01	0.09	3.11						382.22
Aviation	366.52	0.06	3.01						369.59
Navigation	12.50	0.03	0.10						12.62
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5975.40								5975.40
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	450.11								450.11
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24611.92
Total CO_2 equivalent emissions with land use, land-use change and forestry									18743.81
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2014
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	11819.77	3650.18	1759.96	898.05	NO	7.67	NO	NO	18135.63
1. Energy	15620.71	527.66	195.58						16343.96
A. Fuel combustion (sectoral approach)	15179.55	344.92	195.41						15719.87
1. Energy industries	4743.91	3.23	17.95						4765.09
2. Manufacturing industries and construction	2324.33	3.84	6.79						2334.97
3. Transport	5580.73	12.52	51.91						5645.16
4. Other sectors	2530.59	325.33	118.76						2974.67
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	441.16	182.74	0.17						624.08
1. Solid fuels	NO	NO	NA,NO						NO,NA
2. Oil and natural gas	441.16	182.74	0.17						624.08
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1991.34	NO,NE,IE,NA	286.11	898.05	NO	7.67	NO	NO	3183.18
A. Mineral industry	1354.11								1354.11
B. Chemical industry	559.83	NO,NE,IE	266.19	NO	NO	NO	NO	NO	826.03
C. Metal industry	10.11	NA,NO	NO	NO	NO	NO	NO	NO	10.11
D. Non-energy products from fuels and solvent use	67.29	NA	NA						67.29
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				898.05	NO	NO	NO	NO	898.05
G. Other product manufacture and use	NO	NO	19.92	NO	NO	7.67	NO	NO	27.59
H. Other	NA	NA	NA						NA
3. Agriculture	69.47	1482.63	1065.81						2617.91
A. Enteric fermentation		1049.14							1049.14
B. Manure management		433.49	150.70						584.18
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	915.11						915.11
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	19.99								19.99
H. Urea application	49.47								49.47
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5861.79	0.32	121.14						-5740.33
A. Forest land	-6258.40	0.22	0.14						-6258.04
B. Cropland	554.58	0.08	23.59						578.24
C. Grassland	-233.89	0.03	0.03						-233.84
D. Wetlands	9.69	NO	1.29						10.99
E. Settlements	604.83	NO	96.09						700.92
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-538.61								-538.61
H. Other	NO	NO	NO						NO
5. Waste	0.04	1639.56	91.31						1730.92
A. Solid waste disposal	NA,NO	1140.94							1140.94
B. Biological treatment of solid waste		5.40	3.23						8.63
C. Incineration and open burning of waste	0.04	7.59	2.09						9.72
D. Waste water treatment and discharge		485.64	86.00						571.63
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	383.77	0.10	3.15						387.01
Aviation	368.10	0.06	3.03						371.19
Navigation	15.66	0.04	0.12						15.82
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5245.05								5245.05
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	464.39								464.39
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									23875.96
Total CO_2 equivalent emissions with land use, land-use change and forestry									18135.63
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2015
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	12250.94	3758.40	1908.55	996.63	NO	5.58	NO	NO	18920.09
1. Energy	15798.65	586.10	206.44						16591.19
A. Fuel combustion (sectoral approach)	15549.11	392.57	206.25						16147.93
1. Energy industries	4718.82	4.13	19.62						4742.57
2. Manufacturing industries and construction	2222.70	3.33	5.98						2232.02
3. Transport	5887.78	12.07	53.93						5953.78
4. Other sectors	2719.81	373.03	126.72						3219.56
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	249.53	193.53	0.19						443.26
1. Solid fuels	NO	NO	NA,NO						NO,NA
2. Oil and natural gas	249.53	193.53	0.19						443.26
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1956.67	NO,NE,IE,NA	331.47	996.63	NO	5.58	NO	NO	3290.35
A. Mineral industry	1306.35								1306.35
B. Chemical industry	572.27	NO,NE,IE	311.35	NO	NO	NO	NO	NO	883.62
C. Metal industry	9.30	NA,NO	NO	NO	NO	NO	NO	NO	9.30
D. Non-energy products from fuels and solvent use	68.74	NA	NA						68.74
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				996.63	NO	NO	NO	NO	996.63
G. Other product manufacture and use	NO	NO	20.13	NO	NO	5.58	NO	NO	25.70
H. Other	NA	NA	NA						NA
3. Agriculture	69.34	1473.78	1146.73						2689.85
A. Enteric fermentation		1039.13							1039.13
B. Manure management		434.65	149.66						584.31
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	997.08						997.08
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	12.09								12.09
H. Urea application	57.25								57.25
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5573.77	13.96	130.81						-5428.99
A. Forest land	-5782.96	9.82	6.48						-5766.66
B. Cropland	612.77	2.58	24.69						640.04
C. Grassland	-269.89	1.57	1.70						-266.62
D. Wetlands	9.98	NO	1.34						11.32
E. Settlements	620.47	NO	96.60						717.07
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-764.15								-764.15
H. Other	NO	NO	NO						NO
5. Waste	0.05	1684.56	93.08						1777.69
A. Solid waste disposal	NA,NO	1186.57							1186.57
B. Biological treatment of solid waste		5.25	2.73						7.98
C. Incineration and open burning of waste	0.05	7.37	2.03						9.44
D. Waste water treatment and discharge		485.38	88.33						573.70
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	365.05	0.09	3.00						368.13
Aviation	354.08	0.06	2.91						357.05
Navigation	10.97	0.03	0.09						11.08
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6006.75								6006.75
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	481.32								481.32
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24349.08
Total CO_2 equivalent emissions with land use, land-use change and forestry									18920.09
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2016
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	12561.82	3817.63	1673.10	1139.26	NO	6.60	NO	NO	19198.41
1. Energy	16208.64	577.77	212.17						16998.58
A. Fuel combustion (sectoral approach)	15971.92	382.78	211.97						16566.66
1. Energy industries	4846.79	5.45	23.03						4875.27
2. Manufacturing industries and construction	2228.67	2.89	5.25						2236.81
3. Transport	6106.38	12.02	59.29						6177.69
4. Other sectors	2790.08	362.42	124.40						3276.89
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	236.72	194.99	0.21						431.92
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	236.72	194.99	0.21						431.92
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1824.16	NO,NE,IE,NA	128.81	1139.26	NO	6.60	NO	NO	3098.83
A. Mineral industry	1201.30								1201.30
B. Chemical industry	547.86	NO,NE,IE	109.36	NO	NO	NO	NO	NO	657.22
C. Metal industry	1.05	NO,NA	NO	NO	NO	NO	NO	NO	1.05
D. Non-energy products from fuels and solvent use	73.94	NA	NA						73.94
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				1139.26	NO	NO	NO	NO	1139.26
G. Other product manufacture and use	NO	NO	19.45	NO	NO	6.60	NO	NO	26.05
H. Other	NA	NA	NA						NA
3. Agriculture	76.17	1516.75	1109.52						2702.44
A. Enteric fermentation		1091.03							1091.03
B. Manure management		425.72	156.72						582.44
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	952.80						952.80
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	11.20								11.20
H. Urea application	64.96								64.96
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5547.20	8.92	127.44						-5410.84
A. Forest land	-5665.01	7.42	4.89						-5652.69
B. Cropland	587.41	0.05	22.48						609.94
C. Grassland	-308.16	1.44	1.57						-305.15
D. Wetlands	10.27	NO	1.39						11.65
E. Settlements	608.36	NO	97.12						705.48
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-780.07								-780.07
H. Other	NO	NO	NO						NO
5. Waste	0.05	1714.19	95.15						1809.39
A. Solid waste disposal	NO,NA	1211.21							1211.21
B. Biological treatment of solid waste		7.59	3.56						11.15
C. Incineration and open burning of waste	0.05	6.81	1.87						8.73
D. Waste water treatment and discharge		488.58	89.72						578.30
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	388.96	0.10	3.19						392.25
Aviation	375.75	0.06	3.09						378.91
Navigation	13.21	0.03	0.10						13.35
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5970.35								5970.35
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	495.68								495.68
Indirect N_2O			NO,NA						
Indirect CO_2 [3]	NO,NA								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24609.24
Total CO_2 equivalent emissions with land use, land-use change and forestry									19198.41
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2017
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	13627.54	3838.34	1835.49	1293.31	NO	7.02	NO	NO	20601.70
1. Energy	16597.78	567.87	214.61						17380.27
A. Fuel combustion (sectoral approach)	16286.19	374.42	214.41						16875.01
1. Energy industries	4464.77	6.91	21.55						4493.22
2. Manufacturing industries and construction	2429.58	3.52	6.29						2439.39
3. Transport	6570.29	11.67	63.80						6645.76
4. Other sectors	2821.56	352.31	122.76						3296.63
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	311.59	193.45	0.21						505.25
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	311.59	193.45	0.21						505.25
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2065.09	NO,NE,IE,NA	118.35	1293.31	NO	7.02	NO	NO	3483.77
A. Mineral industry	1425.61								1425.61
B. Chemical industry	566.79	NO,NE,IE	98.60	NO	NO	NO	NO	NO	665.39
C. Metal industry	1.87	NO,NA	NO	NO	NO	NO	NO	NO	1.87
D. Non-energy products from fuels and solvent use	70.82	NA	NA						70.82
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				1293.31	NO	NO	NO	NO	1293.31
G. Other product manufacture and use	NO	NO	19.75	NO	NO	7.02	NO	NO	26.77
H. Other	NA	NA	NA						NA
3. Agriculture	81.13	1469.71	1238.38						2789.22
A. Enteric fermentation		1052.18							1052.18
B. Manure management		417.53	155.36						572.88
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1083.02						1083.02
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	10.92								10.92
H. Urea application	70.21								70.21
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5116.45	69.23	169.87						-4877.35
A. Forest land	-4725.77	61.21	40.36						-4624.19
B. Cropland	571.26	0.48	22.22						593.96
C. Grassland	-294.94	7.54	8.21						-279.19
D. Wetlands	10.56	NO	1.43						11.99
E. Settlements	611.87	NO	97.65						709.51
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-1289.42								-1289.42
H. Other	NO	NO	NO						NO
5. Waste	NO,NA	1731.52	94.27						1825.80
A. Solid waste disposal	NO,NA	1254.71							1254.71
B. Biological treatment of solid waste		7.64	3.08						10.72
C. Incineration and open burning of waste	NO	6.13	1.69						7.82
D. Waste water treatment and discharge		463.03	89.51						552.54
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	469.17	0.12	3.85						473.14
Aviation	449.06	0.08	3.69						452.82
Navigation	20.11	0.05	0.16						20.32
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5906.57								5906.57
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	508.48								508.48
Indirect N_2O			NO,NA						
Indirect CO_2 [3]	NO,NA								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25479.05
Total CO_2 equivalent emissions with land use, land-use change and forestry									20601.70
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2018
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	12377.67	3627.00	1737.64	1428.50	NO	6.27	NO	NO	19177.08
1. Energy	15691.36	535.98	209.98						16437.31
A. Fuel combustion (sectoral approach)	15406.72	358.43	209.79						15974.95
1. Energy industries	3907.81	7.84	22.22						3937.87
2. Manufacturing industries and construction	2411.05	3.74	6.63						2421.41
3. Transport	6340.78	10.47	59.00						6410.25
4. Other sectors	2747.08	336.38	121.94						3205.41
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	284.63	177.54	0.19						462.37
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	284.63	177.54	0.19						462.37
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1960.55	NO,NE,IE,NA	68.46	1428.50	NO	6.27	NO	NO	3463.78
A. Mineral industry	1358.42								1358.42
B. Chemical industry	513.06	NO,NE,IE	50.11	NO	NO	NO	NO	NO	563.17
C. Metal industry	8.99	NO,NA	NO	NO	NO	NO	NO	NO	8.99
D. Non-energy products from fuels and solvent use	80.09	NA	NA						80.09
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				1428.50	NO	NO	NO	NO	1428.50
G. Other product manufacture and use	NO	NO	18.35	NO	NO	6.27	NO	NO	24.62
H. Other	NA	NA	NA						NA
3. Agriculture	72.24	1381.32	1243.06						2696.62
A. Enteric fermentation		988.79							988.79
B. Manure management		392.53	146.12						538.64
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1096.94						1096.94
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	4.62								4.62
H. Urea application	67.62								67.62
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5346.48	1.30	122.05						-5223.12
A. Forest land	-5456.25	0.84	0.56						-5454.85
B. Cropland	581.54	0.01	21.35						602.90
C. Grassland	-321.61	0.45	0.49						-320.67
D. Wetlands	10.84	NO	1.48						12.32
E. Settlements	615.10	NO	98.18						713.28
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-776.10								-776.10
H. Other	NO	NO	NO						NO
5. Waste	NO,NA	1708.40	94.09						1802.49
A. Solid waste disposal	NO,NA	1246.74							1246.74
B. Biological treatment of solid waste		9.08	3.71						12.79
C. Incineration and open burning of waste	NO	6.38	1.76						8.14
D. Waste water treatment and discharge		446.20	88.62						534.83
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	624.92	0.25	5.12						630.29
Aviation	559.65	0.10	4.60						564.35
Navigation	65.27	0.15	0.52						65.94
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6057.52								6057.52
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	521.07								521.07
Indirect N_2O			NO,NA						
Indirect CO_2 [3]	NO,NA								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24400.20
Total CO_2 equivalent emissions with land use, land-use change and forestry									19177.08
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2019
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	12378.13	3589.16	1742.62	1551.03	NO	7.85	NO	NO	19268.79
1. Energy	15764.28	516.84	215.03						16496.14
A. Fuel combustion (sectoral approach)	15477.34	350.48	214.85						16042.67
1. Energy industries	3880.44	9.84	25.53						3915.81
2. Manufacturing industries and construction	2421.11	4.01	7.00						2432.12
3. Transport	6516.87	9.85	62.31						6589.02
4. Other sectors	2658.92	326.78	120.01						3105.71
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	286.94	166.36	0.18						453.47
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	286.94	166.36	0.18						453.47
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2017.51	NO,NE,IE,NA	68.30	1551.03	NO	7.85	NO	NO	3644.69
A. Mineral industry	1324.94								1324.94
B. Chemical industry	594.60	NO,NE,IE	50.10	NO	NO	NO	NO	NO	644.70
C. Metal industry	4.91	NO,NA	NO	NO	NO	NO	NO	NO	4.91
D. Non-energy products from fuels and solvent use	93.05	NA	NA						93.05
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				1551.03	NO	NO	NO	NO	1551.03
G. Other product manufacture and use	NO	NO	18.20	NO	NO	7.85	NO	NO	26.05
H. Other	NA	NA	NA						NA
3. Agriculture	75.66	1380.89	1240.24						2696.79
A. Enteric fermentation		994.69							994.69
B. Manure management		386.19	147.16						533.35
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1093.08						1093.08
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	2.07								2.07
H. Urea application	73.59								73.59
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5479.32	2.78	123.04						-5353.50
A. Forest land	-5698.65	2.30	1.52						-5694.83
B. Cropland	575.86	0.04	20.83						596.72
C. Grassland	-314.92	0.43	0.47						-314.01
D. Wetlands	11.13	NO	1.52						12.65
E. Settlements	619.02	NO	98.70						717.71
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-671.76								-671.76
H. Other	NO	NO	NO						NO
5. Waste	NO,NA	1688.67	96.01						1784.68
A. Solid waste disposal	NO,NA	1222.18							1222.18
B. Biological treatment of solid waste		11.24	4.64						15.88
C. Incineration and open burning of waste	NO	5.87	1.61						7.48
D. Waste water treatment and discharge		449.37	89.76						539.13
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	683.77	0.29	5.60						689.66
Aviation	605.86	0.10	4.98						610.95
Navigation	77.91	0.18	0.62						78.72
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6228.14								6228.14
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	536.49								536.49
Indirect N_2O			NO,NA						
Indirect CO_2 [3]	NO,NA								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24622.30
Total CO_2 equivalent emissions with land use, land-use change and forestry									19268.79
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

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

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS
(Sheet 1 of 1)

Inventory 2020
Submission 2022 v2
CROATIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	HFCs	PFCs	SF_6	Unspecified mix of HFCs and PFCs	NF_3	Total
	CO_2 equivalent (kt)								
Total (net emissions)[1]	11388.25	3571.24	1802.18	1680.18	NO	8.76	NO	NO	18450.62
1. Energy	14788.60	509.31	218.66						15516.58
A. Fuel combustion (sectoral approach)	14500.42	355.70	218.50						15074.62
1. Energy industries	3659.32	10.57	25.95						3695.84
2. Manufacturing industries and construction	2381.74	4.52	7.74						2394.01
3. Transport	5732.11	9.24	61.08						5802.43
4. Other sectors	2727.25	331.37	123.73						3182.35
5. Other	NO,IE	NO,IE	NO,IE						NO,IE
B. Fugitive emissions from fuels	288.18	153.61	0.16						441.95
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	288.18	153.61	0.16						441.95
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1986.75	NO,NE,IE,NA	85.02	1680.18	NO	8.76	NO	NO	3760.71
A. Mineral industry	1359.34								1359.34
B. Chemical industry	535.32	NO,NE,IE	65.08	NO	NO	NO	NO	NO	600.40
C. Metal industry	4.93	NO,NA	NO	NO	NO	NO	NO	NO	4.93
D. Non-energy products from fuels and solvent use	87.16	NA	NA						87.16
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				1680.18	NO	NO	NO	NO	1680.18
G. Other product manufacture and use	NO	NO	19.94	NO	NO	8.76	NO	NO	28.70
H. Other	NA	NA	NA						NA
3. Agriculture	95.18	1341.54	1255.60						2692.31
A. Enteric fermentation		975.46							975.46
B. Manure management		366.08	142.00						508.09
C. Rice cultivation		NO							NO
D. Agricultural soils		NE	1113.59						1113.59
E. Prescribed burning of savannas		NO	NO						NO
F. Field burning of agricultural residues		NO	NO						NO
G. Liming	6.89								6.89
H. Urea application	88.29								88.29
I. Other carbon-containing fertilizers	NA								NA
J. Other	NO	NO	NO						NO
4. Land use, land-use change and forestry[1]	-5482.28	32.53	144.01						-5305.73
A. Forest land	-5800.65	29.01	19.13						-5752.52
B. Cropland	568.99	0.01	20.26						589.26
C. Grassland	-311.36	3.51	3.82						-304.02
D. Wetlands	11.42	NO	1.57						12.99
E. Settlements	622.01	NO	99.23						721.24
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-572.68								-572.68
H. Other	NO	NO	NO						NO
5. Waste	NO,NA	1687.85	98.90						1786.75
A. Solid waste disposal	NO,NA	1220.17							1220.17
B. Biological treatment of solid waste		14.86	7.01						21.87
C. Incineration and open burning of waste	NO	5.87	1.62						7.49
D. Waste water treatment and discharge		446.95	90.27						537.21
E. Other	NO	NO	NO						NO
6. Other ***(as specified in summary 1.A)***	NO	NO	NO	NO	NO	NO	NO	NO	NO

Memo items:[2]									
International bunkers	227.53	0.18	1.85						229.56
Aviation	163.82	0.03	1.35						165.19
Navigation	63.71	0.15	0.51						64.37
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6383.96								6383.96
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	551.48								551.48
Indirect N_2O			NO,NA						
Indirect CO_2 [3]	NO,NA								
Total CO_2 equivalent emissions without land use, land-use change and forestry									23756.35
Total CO_2 equivalent emissions with land use, land-use change and forestry									18450.62
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									NA
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									NA

Annex 5-3: CO_2 emission factors, oxidation factors and national net calorific values

Table 5.3-1: National net calorific values, CO_2 emission factors and oxidation factors for 2020 (needed for monitoring and reporting on CO_2 emission)

Gorivo		DOV		CO_2 Emisijski faktor (t CO_2/TJ)	Oksidacijski faktor (OF)
		Jedinica	2020		
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	27,0000	94,60	1
Kameni ugljen-*Termoelektrane*	Other bituminous coal *Thermal power plant*	GJ/t	24,5720	94,60	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	18,4300	96,10	1
Lignit	Lignite	GJ/t	11,2000	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/10^3m^3	34,7700	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

*Proračuna emisije CO_2 _ (Emisija = Potrošnja goriva*DOV*EF (CO_2)*OF)

Napomene:

- podcrtane vrijednosti za DOV su preuzete iz 2006 IPCC Vodiča jer u 2020. godini u Nacionalnoj energetskoj bilanci nisu specificirane

Annex 5-4: Reporting on consistency of the reported data on air pollutants, for 2020.

Pollutant:	CO								
EMISSION CATEGORIES	Pollutant	Emissions in greenhouse gas (GHG) inventory (in kt)	Emissions reported under Directive 2001/81/EC (NEC) (in kt)	Absolute difference in kt (1)	Relative difference in % (2)	Emissions reported in the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) inventory (in kt)	Absolute difference in kt (1) 2	Relative difference in % (2) 3	Explanations for differences
Total (Net Emissions)		214.24	217.18	-2.94	-1%	214.24	0.00	0%	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy	CO	214.16	214.27	-0.11	0.00	214.16	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sector	CO	197.70	197.80	-0.11	0.00	197.70	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	CO	1.52	1.52	0.00	0.00	1.52	0.00	0.00	
2. Manufacturing industr	CO	11.16	11.16	0.00	0.00	11.16	0.00	0.00	
3. Transport	CO	23.74	23.85	-0.11	0.00	23.74	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	CO	161.27	161.27	0.00	0.00	161.27	0.00	0.00	
5. Other	CO	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from	CO	16.47	16.47	0.00	0.00	16.47	0.00	0.00	
1. Solid fuels	CO	NO	NO	NO	NO	NO	NO	NO	
and other emissions from energy production	CO	16.47	16.47	0.00	0.00	16.47	0.00	0.00	
2. Industrial processes and	CO	0.08	0.08	0.00	0.00	0.08	0.00	0.00	
A. Mineral industry	CO	NO,NA	NA	NO	NO	NO,NA	NO	NO	
B. Chemical industry	CO	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	
C. Metal industry	CO	0.08	0.08	0.00	0.00	0.08	0.00	0.00	
D. Non-energy products fro	CO	0.00	NO	NO	NO	0.00	0.00	0.00	
G. Other product manufact	CO	NO	NO	NO	NO	NO	NO	NO	
H. Other	CO	NE,NA	NE,NA	NO	NO	NE,NA	NO	NO	
3. Agriculture	CO	NO	NO	NO	NO	NO	NO	NO	
B. Manure management	CO	NO	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	CO	NO	NO	NO	NO	NO	NO	NO	
F. Field burning of agricult	CO	NO	NO	NO	NO	NO	NO	NO	
J. Other	CO	NO	NO	NO	NO	NO	NO	NO	
5. Waste	CO	NO,NE,IE,NA	2.21	NO	NO	NO,NE,IE,NA	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
A. Solid waste disposal	CO	NO,NE	NO	NO	NO	NO,NE	NO	NO	
B. Biological treatment of s	CO	NE,IE	NO	NO	NO	NE,IE	NO	NO	
C. Incineration and open b	CO	NO	2.20606	NO	NO	NO	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
D. Wastewater treatment a	CO	NO,NA	NO	NO	NO	NO,NA	NO	NO	
E. Other	CO	NO	NO	NO	NO	NO	NO	NO	
6. Other	CO	NO	NO	NO	NO	NO	NO	NO	

Pollutant:	SO2								
EMISSION CATEGORIES	Pollutant	Emissions in greenhouse gas (GHG) inventory (in kt)	Emissions reported under Directive 2001/81/EC (NEC) (in kt)	Absolute difference in kt (1)	Relative difference in % (2)	Emissions reported in the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) inventory (in kt)	Absolute difference in kt (1) 2	Relative difference in % (2) 3	Explanations for differences
Total (Net Emissions)		NO	6.13	NO	NO	NO	0.00	NO	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy	SO2	5.87	5.87	0.00	0.00	5.87	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	SO2	3.94	3.94	0.00	0.00	3.94	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	SO2	1.20	1.20	0.00	0.00	1.20	0.00	0.00	
2. Manufacturing industries and construction	SO2	1.93	1.93	0.00	0.00	1.93	0.00	0.00	
3. Transport	SO2	0.00	0.00	0.00	-0.19	0.00	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	SO2	0.80	0.80	0.00	0.00	0.80	0.00	0.00	
5. Other	SO2	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	SO2	1.93	1.93	0.00	0.00	1.93	0.00	0.00	
1. Solid fuels	SO2	NO	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	SO2	1.93	1.93	0.00	0.00	1.93	0.00	0.00	
2. Industrial processes and product use	SO2	NO		NO	NO	NO		NO	
A. Mineral industry	SO2			NO	NO		NO	NO	
B. Chemical industry	SO2	NO	0.24	NO	NO	NO	NO	NO	Production of sulfuric acid-activity do not exist in NIR-methodological difference between NIR and IIR
C. Metal industry	SO2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
D. Non-energy products from fuels and solvent use	SO2		NO	NO	NO		NO	NO	
G. Other product manufacture and use	SO2	NO	NO	NO	NO	NO	NO	NO	
H. Other	SO2		NE,NA	NO	NO		NO	NO	
3. Agriculture	SO2	NO	NO	NO	NO	NO	NO	NO	
B. Manure management	SO2	NO	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	SO2	NO	NO	NO	NO	NO	NO	NO	
F. Field burning of agricultural residues	SO2	NO	NO	NO	NO	NO	NO	NO	
J. Other	SO2	NO	NO	NO	NO	NO	NO	NO	
5. Waste	SO2	NO	0.01	NO	NO	NO	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
A. Solid waste disposal	SO2	NO	NO	NO	NO	NO	NO	NO	
B. Biological treatment of solid waste	SO2	NO	NO	NO	NO	NO	NO	NO	
C. Incineration and open burning of waste	SO2	NO	0.00687	NO	NO	NO	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
D. Wastewater treatment and discharge	SO2	NO	NO	NO	NO	NO	NO	NO	
E. Other	SO2	NO	NO	NO	NO	NO	NO	NO	
6. Other	SO2	NO	NO	NO	NO	NO	NO	NO	

Pollutant:	NOx								
EMISSION CATEGORIES	Pollutant	Emissions in greenhouse gas (GHG) inventory (in kt)	Emissions reported under Directive 2001/81/EC (NEC) (in kt)	Absolute difference in kt (1)	Relative difference in % (2)	Emissions reported in the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) inventory (in kt)	Absolute difference in kt (1) 2	Relative difference in % (2) 3	Explanations for differences
Total (Net Emissions)		NO	45.81	NO	NO	45.81	NO	NO	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy		40.85	40.89	-0.04	0.00	40.89	-0.04	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	NOx	40.74	40.78	-0.04	0.00	40.78	-0.04	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	NOx	4.01	4.01	0.00	0.00	4.01	0.00	0.00	
2. Manufacturing industries and construction	NOx	5.70	5.70	0.00	0.00	5.70	0.00	0.00	
3. Transport	NOx	23.40	23.45	-0.04	0.00	23.45	-0.04	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	NOx	7.62	7.62	0.00	0.00	7.62	0.00	0.00	
5. Other	NOx	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	NOx	0.11	0.11	0.00	0.00	0.11	0.00	0.00	
1. Solid fuels	NOx	NO,NA	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	NOx	0.11	0.11	0.00	0.00	0.11	0.00	0.00	
2. Industrial processes and product use	NOx	0.94	0.98	-0.04	-0.04	0.98	-0.04	-0.04	
A. Mineral industry	NOx	NO	NO	NO	NO	NO	NO	NO	
B. Chemical industry	NOx	0.93	0.96	-0.02	-0.02	0.96	-0.02	-0.02	methodological difference between NIR and IIR
C. Metal industry	NOx	0.01	0.01	0.00	0.00	0.01	0.00	0.00	
D. Non-energy products from fuels and solvent use	NOx	NE,NA	0.00	NO	NO	0.00	NO	NO	
G. Other product manufacture and use	NOx	NO	NO	NO	NO	NO	NO	NO	
H. Other	NOx		NE,NA	NO	0.00	NE,NA	NO	NO	
3. Agriculture	NOx	3.77	3.77	0.00	0.00	3.77	0.00	0.00	
B. Manure management	NOx	0.07	0.07	0.00	0.00	0.07	0.00	0.00	
D. Agricultural soils	NOx	2.57	2.57	0.00	0.00	2.57	0.00	0.00	
F. Field burning of agricultural residues	NOx	NO	NO	NO	NO	NO	NO	NO	
J. Other	NOx	NO	NO	NO	NO	NO	NO	NO	
5. Waste	NOx	NO	NO	NO	NO	NO	NO	NO	
A. Solid waste disposal	NOx	NO,NA	0.17	NO	NO	0.17	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
B. Biological treatment of solid waste	NOx	NE,IE	NO	NO	NO	NO	NO	NO	
C. Incineration and open burning of waste	NOx	NO	0.16866	NO	NO	0.17	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
D. Wastewater treatment and discharge	NOx	NO,NA	NO	NO	NO	NO	NO	NO	
E. Other	NOx	NO	NO	NO	NO	NO	NO	NO	
6. Other	NOx	NO	NO	NO	NO	NO	NO	NO	

Pollutant:	NMVOC								
EMISSION CATEGORIES	Pollutant	Emissions in greenhouse gas (GHG) inventory (in kt)	Emissions reported under Directive 2001/81/EC (NEC) (in kt)	Absolute difference in kt (1)	Relative difference in % (2)	Emissions reported in the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) inventory (in kt)	Absolute difference in kt (1) 2	Relative difference in % (2) 3	Explanations for differences
Total (Net Emissions)		68.34	70.30	-1.95	-3%	70.30	-1.95	-3%	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy	NMVOC	27.21	28.61	-1.41	-0.05	28.61	-1.41	-0.05	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	NMVOC	24.50	25.91	-1.41	-0.05	25.91	-1.41	-0.05	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	NMVOC	0.44	0.44	0.00	0.00	0.44	0.00	0.00	
2. Manufacturing industries and construction	NMVOC	1.41	1.41	0.00	0.00	1.41	0.00	0.00	
3. Transport	NMVOC	3.42	4.83	-1.41	-0.29	4.83	-1.41	-0.29	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	NMVOC	19.22	19.22	0.00	0.00	19.22	0.00	0.00	
5. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	NMVOC	2.71	2.71	0.00	0.00	2.71	0.00	0.00	
1. Solid fuels	NMVOC	NO,NA	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	NMVOC	2.71	2.71	0.00	0.00	2.71	0.00	0.00	
2. Industrial processes and product use	NMVOC	31.07	31.84	-0.78	-0.02	31.84	-0.78	-0.02	
A. Mineral industry	NMVOC	NO	0.05	NO	NO	0.05	NO	NO	methodological difference between NIR and IIR
B. Chemical industry	NMVOC	0.04	0.04	0.00	0.00	0.04	0.00	0.00	
C. Metal industry	NMVOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
D. Non-energy products from fuels and solvent use	NMVOC	27.80	27.80	0.00	0.00	27.80	0.00	0.00	
G. Other product manufacture and use	NMVOC	NO	0.73	NO	NO	0.73	NO	NO	
H. Other	NMVOC	3.23	3.22	0.00	0.00	3.22	0.00	0.00	
3. Agriculture	NMVOC	9.02	9.02	0.00	0.00	9.02	0.00	0.03	
B. Manure management	NMVOC	7.34	7.34	0.00	0.00	7.34	0.00	0.04	
D. Agricultural soils	NMVOC	1.69	1.69	0.00	0.00	1.69	0.00	0.00	
F. Field burning of agricultural residues	NMVOC	NO	NO	NO	NO	NO	NO	NO	
J. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	
5. Waste	NMVOC	0.77	0.82	-0.05	-0.06	0.82	-0.05	-0.06	Data on Cremation and Open burning of waste are not included in GHG inventory
A. Solid waste disposal	NMVOC	0.76	0.77	-0.01	-0.01	0.77	-0.01	-0.01	
B. Biological treatment of solid waste	NMVOC	NE,IE	NO	NO	NO	NO	NO	NO	
C. Incineration and open burning of waste	NMVOC	NO	0.03841	NO	NO	0.04	NO	NO	Data on Cremation and Open burning of waste are not included in GHG inventory
D. Wastewater treatment and discharge	NMVOC	0.00	0.00	0.00	0.01	0.00	0.00	0.01	
E. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	
6. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	

Annex 5-5: Reporting on recalculations of the 2019 and 1990

Recalculated year	2019
Greenhouse gas	CO2

Note: Replicate table below if more gases need reporting.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas (CO2, N2O, CH4)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding	Impact of recalculation on total emissions including	Explanation for recalculations
Total National Emissions and Removals	**CO2**	12,096.58	12,250.94	154.3543786	1%	1%	1%	
1. Energy	**CO2**	15,681.00	15,681.00	0	0%	0%	0%	
A. Fuel combustion activities	**CO2**	15,477.34	15,477.34	0	0%	0%	0%	
1. Energy industries	**CO2**	3,880.44	3,880.44	0	0%	0%	0%	
2. Manufacturing industries and construction	**CO2**	2,421.11	2,421.11	0	0%	0%	0%	
3. Transport	**CO2**	6,516.87	6,516.87	0	0%	0%	0%	
4. Other sectors	**CO2**	2,658.92	2,658.92	0	0%	0%	0%	
5. Other	**CO2**	NO,IE	NO,IE	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CO2**	203.66	203.66	0	0%	0%	0%	
1. Solid fuels	**CO2**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CO2**	203.66	203.66	0	0%	0%	0%	CO2 scrubbing emission from procesing plant Ivanić added
C. CO2 transport and storage	**CO2**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CO2**	2,020.87	2,017.51	-3.359062435	0%	0%	0%	
A. Mineral industry	**CO2**	1,324.94	1,324.94	0	0%	0%	0%	
B. Chemical industry	**CO2**	594.60	594.60	0	0%	0%	0%	
C. Metal industry	**CO2**	4.91	4.91	0	0%	0%	0%	
D. Non-energy products from fuels and solvent use	**CO2**	96.41	93.05	-3.359062435	0%	0%	0%	Activity data and emissions aligned with the IIR report
G. Other product manufacture and use	**CO2**	NO	NO	NO	NO	NO	NO	
H. Other	**CO2**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**CO2**	76.97	76.97	0	0%	0%	0%	
A. Enteric fermentation	**CO2**			NO	NO	NO	NO	
B. Manure management	**CO2**			NO	NO	NO	NO	
C. Rice cultivation	**CO2**			NO	NO	NO	NO	
D. Agricultural soils	**CO2**			NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CO2**			NO	NO	NO	NO	
F. Field burning of agricultural residues	**CO2**			NO	NO	NO	NO	
G. Liming	**CO2**	3.38	3.38	0	0%	0%	0%	
H. Urea application	**CO2**	73.59	73.59	0	0%	0%	0%	
I. Other carbon-containing fertilizer	**CO2**	NA	NA	NO	NO	NO	NO	
J. Other	**CO2**	NO	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CO2**	-5,682.26	-5,524.54	157.7134411	1%	1%	1%	Estimation in LULUCF sector for NIR 2022 has been performed by using the nationally determined value for CS in biomass pool of perennial Cropland. This influenced emissions/removals in all land categories where LUC from or to CL occurs.
A. Forestland	**CO2**	-5,791.63	-5,795.42	-3.786922697	0%	0%	0%	Estimation in LULUCF sector for NIR 2022 has been performed by using the nationally determined value for CS in biomass pool of perennial Cropland instead of using the value prescribed by 2006 GL. This influenced emissions/removals in all land categories where LUC from or to CL occurs.
B. Cropland	**CO2**	447.03	575.86	128.8295023	1%	1%	1%	Please see comment under the Forestland
C. Grassland	**CO2**	-306.79	-314.92	-8.128059413	0%	0%	0%	Please see comment under the Forestland
D. Wetlands	**CO2**	12.43	11.34	-1.083724167	0%	0%	0%	Please see comment under the Forestland
E. Settlements	**CO2**	678.96	670.35	-8.614895278	0%	0%	0%	Please see comment under the Forestland
F. Other land	**CO2**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CO2**	-722.26	-671.76	50.49754036	0%	0%	0%	Due to the performed correction in HWP data for 2019 and methodological approach, the value for 1990 has been changed. Please see explanation for difference in HWP estimation provided for 2019 below.
H. Other	**CO2**	NO	NO	NO	NO	NO	NO	
5. Waste	**CO2**	NO,NA	NO,NA	NO	NO	NO	NO	
A. Solid waste disposal	**CO2**	NO,NA	NO,NA	NO	NO	NO	NO	
B. Biological treatment of solid waste	**CO2**			NO	NO	NO	NO	
C. Incineration and open burning of waste	**CO2**	NO	NO	NO	NO	NO	NO	
D. Waste water treatment and discharge	**CO2**			NO	NO	NO	NO	
E. Other	**CO2**	NO	NO	NO	NO	NO	NO	
6. Other (As specified in summary 1.A)	**CO2**	NO	NO	NO	NO	NO	NO	
Memo items:	**CO2**			0	0%	0%	0%	
International bunkers	**CO2**	683.77	683.77	0	0%	0%	0%	
Aviation	**CO2**	605.86	605.86	0	0%	0%	0%	
Navigation	**CO2**	77.91	77.91	0	0%	0%	0%	
Multilateral operations	**CO2**	C	C	NO	NO	NO	NO	
CO2 emissions from biomass	**CO2**	6,228.14	6,228.14	0	0%	0%	0%	
CO2 captured	**CO2**	NO	NO	NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	**CO2**	504.93	536.49	31.55812041	0%	0%	0%	A new CS-value for DOC in industrial waste has been used.
Indirect N2O				NO	NO	NO	NO	
Indirect CO2			NO,NA	NO	NO	NO	NO	

Recalculated year	2019
Greenhouse gas	CH4

Note: Replicate table below if more gases need reporting.

GREENHOUSE GAS SOURCE AND SINK CATEGORI	Gas (CO2, N2O, CH4)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
Total National Emissions and Removals	**CH4**	3,559.74	3,583.30	23.5502926	1%	0%	0%	
1. Energy	**CH4**	516.98	516.84	-0.13951822	0%	0%	0%	
A. Fuel combustion activities	**CH4**	350.62	350.48	-0.13951822	0%	0%	0%	
1. Energy industries	**CH4**	9.84	9.84	0	0%	0%	0%	
2. Manufacturing industries and construction	**CH4**	4.01	4.01	0	0%	0%	0%	
3. Transport	**CH4**	9.99	9.85	-0.13951822	0%	0%	0%	New version of COPERT model was used
4. Other sectors	**CH4**	326.78	326.78	0	0%	0%	0%	
5. Other	**CH4**	NO,IE	NO,IE	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CH4**	166.36	166.36	0	0%	0%	0%	
1. Solid fuels	**CH4**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CH4**	166.36	166.36	0	0%	0%	0%	
C. CO2 transport and storage	**CH4**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CH4**	NO,NE,IE,NA	NO,NE,IE,NA	NO	NO	NO	NO	
A. Mineral industry	**CH4**			NO	NO	NO	NO	
B. Chemical industry	**CH4**	NO,NE,IE	NO,NE,IE	NO	NO	NO	NO	
C. Metal industry	**CH4**	NO,NA	NO,NA	NO	NO	NO	NO	
D. Non-energy products from fuels and solvent use	**CH4**	NA	NA	NO	NO	NO	NO	
G. Other product manufacture and use	**CH4**	NO	NO	NO	NO	NO	NO	
H. Other	**CH4**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**CH4**	1,380.89	1,380.89	0	0%	0%	0%	
A. Enteric fermentation	**CH4**	994.69	994.69	0	0%	0%	0%	
B. Manure management	**CH4**	386.19	386.19	0	0%	0%	0%	
C. Rice cultivation	**CH4**	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	**CH4**	NE	NE	NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CH4**	NO	NO	NO	NO	NO	NO	
F. Field burning of agricultural residues	**CH4**	NO	NO	NO	NO	NO	NO	
G. Liming	**CH4**			NO	NO	NO	NO	
H. Urea application	**CH4**			NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**CH4**			NO	NO	NO	NO	
J. Other	**CH4**	NO	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CH4**	2.62	2.78	0.158607885	0%	0%	0%	
A. Forestland	**CH4**	2.30	2.30	0	0%	0%	0%	
B. Cropland	**CH4**	0.04	0.04	0	0%	0%	0%	
C. Grassland	**CH4**	0.28	0.43	0.158607885	0%	0%	0%	Estimation in LULUCF sector for NIR 2022 has been performed by using the nationally determined value for CS in biomass pool of perennial Cropland. This influenced emissions/removals in all land categories where LUC from or to CL occurs.
D. Wetlands	**CH4**	NO	NO	NO	NO	NO	NO	
E. Settlements	**CH4**	NO	NO	NO	NO	NO	NO	
F. Other land	**CH4**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CH4**			NO	NO	NO	NO	
H. Other	**CH4**	NO	NO	NO	NO	NO	NO	
5. Waste	**CH4**	1,659.27	1,682.80	23.53120294	1%	0%	0%	A new AD, DOC parameter and organic component removed as sludge have been used.
A. Solid waste disposal	**CH4**	1,203.38	1,222.18	18.80510136	1%	0%	0%	A new CS-value for DOC in industrial waste has been used.
B. Biological treatment of solid waste	**CH4**	4.96	11.24	6.280555299	0%	0%	0%	A new AD (different types of organic waste) has been used.
C. Incineration and open burning of waste	**CH4**	NO,NA	NO,NA	NO	NO	NO	NO	
D. Waste water treatment and discharge	**CH4**	450.93	449.37	-1.554453727	0%	0%	0%	A new AD for industrial wastewater as well organic component removed as sludge have been used.
E. Other	**CH4**	NO	NO	NO	NO	NO	NO	
6. Other (As specified in summary 1.A)	**CH4**	NO	NO	NO	NO	NO	NO	
Memo items:	**CH4**			0	0%	0%	0%	
International bunkers	**CH4**	0.10	0.29	0.182497175	0%	0%	0%	
Aviation	**CH4**	0.18	0.10	-0.078036438	0%	0%	0%	
Navigation	**CH4**	C	0.18	NO	NO	NO	NO	
Multilateral operations	**CH4**		C	NO	NO	NO	NO	
CO2 emissions from biomass	**CH4**	0.00		NO	NO	NO	NO	
CO2 captured	**CH4**	NO		NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	**CH4**	NE		NO	NO	NO	NO	
Indirect N2O				NO	NO	NO	NO	
Indirect CO2				NO	NO	NO	NO	

Recalculated year	2019								
Greenhouse gas	N2O	***Note: Replicate table below if more gases need reporting.***							
GREENHOUSE GAS SOURCE AND SINK CATEGORI	**Gas**	**Previous**	**Latest**	**Difference (CC**	**Difference(1)**	**Impact of**	**Impact of**	**Explanation for recalculations**
Total National Emissions and Removals	**N2O**	1,833.94	1,741.01	-92.93515374	-3%	0%	0%	
1. Energy	**N2O**	219.70	215.03	-4.673511424	0%	0%	0%	
A. Fuel combustion activities	**N2O**	219.52	214.85	-4.673511424	0%	0%	0%	
1. Energy industries	**N2O**	25.53	25.53	0	0%	0%	0%	
2. Manufacturing industries and construction	**N2O**	7.00	7.00	0	0%	0%	0%	
3. Transport	**N2O**	66.98	62.31	-4.673511424	0%	0%	0%	New version of COPERT model was used
4. Other sectors	**N2O**	120.01	120.01	0	0%	0%	0%	
5. Other	**N2O**	NO,IE	NO,IE	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**N2O**	0.18	0.18	0	0%	0%	0%	
1. Solid fuels	**N2O**	NO,NA	NO,NA	NO	NO	NO	NO	
2. Oil and natural gas	**N2O**	0.18	0.18	0	0%	0%	0%	
C. CO2 transport and storage	**N2O**	NO		NO	NO	NO	NO	
2. Industrial processes and product use	**N2O**	156.22	68.30	-87.921026	-2%	0%	0%	
A. Mineral industry	**N2O**			NO	NO	NO	NO	
B. Chemical industry	**N2O**	50.10	50.10	0	0%	0%	0%	
C. Metal industry	**N2O**	NO	NO	NO	NO	NO	NO	
D. Non-energy products from fuels and solvent use	**N2O**	NA	NA	NO	NO	NO	NO	
G. Other product manufacture and use	**N2O**	106.12	18.20	-87.921026	-2%	0%	0%	
H. Other	**N2O**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**N2O**	1,240.24	1,240.24	0	0%	0%	0%	
A. Enteric fermentation	**N2O**			NO	NO	NO	NO	
B. Manure management	**N2O**	147.16	147.16	0	0%	0%	0%	
C. Rice cultivation	**N2O**			NO	NO	NO	NO	
D. Agricultural soils	**N2O**	1,093.08	1,093.08	0	0%	0%	0%	
E. Prescribed burning of savannahs	**N2O**	NO	NO	NO	NO	NO	NO	
F. Field burning of agricultural residues	**N2O**	NO	NO	NO	NO	NO	NO	
G. Liming	**N2O**			NO	NO	NO	NO	
H. Urea application	**N2O**			NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**N2O**			NO	NO	NO	NO	
J. Other	**N2O**	NO	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**N2O**	122.86	123.04	0.172620547	0%	0%	0%	
A. Forestland	**N2O**	1.52	1.52	0	0%	0%	0%	
B. Cropland	**N2O**	20.83	20.83	0	0%	0%	0%	
C. Grassland	**N2O**	0.30	0.47	0.172620547	0%	0%	0%	Estimation in LULUCF sector for NIR 2022 has been performed by using the nationally determined value for CS in biomass pool of perennial Cropland. This influenced emissions/removals in all land categories where LUC from or to CL occurs.
D. Wetlands	**N2O**	1.52	1.52	0	0%	0%	0%	
E. Settlements	**N2O**	98.70	98.70	0	0%	0%	0%	
F. Other land	**N2O**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**N2O**			NO	NO	NO	NO	
H. Other	**N2O**	NO	NO	NO	NO	NO	NO	
5. Waste	**N2O**	94.91	94.40	-0.513236865	0%	0%	0%	A new AD (different types of organic waste, protein intake value) has been used.
A. Solid waste disposal	**N2O**			NO	NO	NO	NO	
B. Biological treatment of solid waste	**N2O**	3.55	4.64	1.089069271	0%	0%	0%	A new AD (different types of organic waste) has been used.
C. Incineration and open burning of waste	**N2O**	NO,NA	NO,NA	NO	NO	NO	NO	
D. Waste water treatment and discharge	**N2O**	91.36	89.76	-1.602306136	0%	0%	0%	A new data for protein intake value have been used.
E. Other	**N2O**	NO	NO	NO	NO	NO	NO	
6. Other (As specified in summary 1.A)	**N2O**	NO	NO	NO	NO	NO	NO	
Memo items:	**N2O**			0	0%	0%	0%	
International bunkers	**N2O**	5.60	5.60	0	0%	0%	0%	
Aviation	**N2O**	4.98	4.98	0	0%	0%	0%	
Navigation	**N2O**	0.62	0.62	0	0%	0%	0%	
Multilateral operations	**N2O**	C	C	NO	NO	NO	NO	
CO2 emissions from biomass	**N2O**			NO	NO	NO	NO	
CO2 captured	**N2O**	NO		NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	**N2O**	NE		NO	NO	NO	NO	
Indirect N2O			NO,NA	NO	NO	NO	NO	
Indirect CO2				NO	NO	NO	NO	

Recalculated year	1990							
Greenhouse gas	CO2	***Note: Replicate table below if more gases need reporting.***						
GREENHOUSE GAS SOURCE AND SINK CATEGORI	**Gas (CO2, N2O, CH4)**	**Previous submission (CO2-eq, kt)**	**Latest submission (CO2-eq, kt)**	**Difference (CO2-eq, kt)**	**Difference(1) (**	**Impact of recalculation on total emissions excluding**	**Impact of recalculation on total emissions including**	**Explanation for recalculations**
Total National Emissions and Removals	**CO2**	16,480.71	16,228.52	-252.1870078	-2%	-1%	-1%	
1. Energy	**CO2**	20,362.90	20,362.90	0	0%	0%	0%	
A. Fuel combustion activities	**CO2**	19,780.38	19,780.38	0	0%	0%	0%	
1. Energy industries	**CO2**	7,065.79	7,065.79	0	0%	0%	0%	
2. Manufacturing industries and construction	**CO2**	5,208.58	5,208.58	0	0%	0%	0%	
3. Transport	**CO2**	3,787.06	3,787.06	0	0%	0%	0%	
4. Other sectors	**CO2**	3,718.95	3,718.95	0	0%	0%	0%	
5. Other	**CO2**	NO,IE	NO,IE	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CO2**	582.52	582.52	0	0%	0%	0%	
1. Solid fuels	**CO2**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CO2**	582.52	582.52	0	0%	0%	0%	
C. CO2 transport and storage	**CO2**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CO2**	2,564.27	2,566.34	2.063234507	0%	0%	0%	
A. Mineral industry	**CO2**	1,302.67	1,302.67	0	0%	0%	0%	
B. Chemical industry	**CO2**	751.10	751.10	0	0%	0%	0%	
C. Metal industry	**CO2**	336.40	336.40	0	0%	0%	0%	
D. Non-energy products from fuels and solvent use	**CO2**	174.11	176.17	2.063234507	0%	0%	0%	Separately estimate emissions from lubricant use for two-stroke engines and report those emissions under the energy sector
G. Other product manufacture and use	**CO2**	NO	NO	NO	NO	NO	NO	
H. Other	**CO2**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**CO2**	50.02	50.02	0	0%	0%	0%	
A. Enteric fermentation	**CO2**			NO	NO	NO	NO	
B. Manure management	**CO2**			NO	NO	NO	NO	
C. Rice cultivation	**CO2**			NO	NO	NO	NO	
D. Agricultural soils	**CO2**			NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CO2**			NO	NO	NO	NO	
F. Field burning of agricultural residues	**CO2**			NO	NO	NO	NO	
G. Liming	**CO2**	NO	NO	NO	NO	NO	NO	
H. Urea application	**CO2**	50.02	50.02	0	0%	0%	0%	
I. Other carbon-containing fertilizer	**CO2**	NA	NA	NO	NO	NO	NO	
J. Other	**CO2**	NO	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CO2**	-6,497.02	-6,751.27	-254.2502423	-2%	-1%	-1%	Estimation in LULUCF sector for NIR 2022 has been performed by using the nationally determined value for CS in biomass pool of perennial Cropland instead of using the value prescribed by 2006 GL. This influenced emissions/removals in all land categories where LUC from or to CL occurs.
A. Forestland	**CO2**	-6,744.54	-7,200.60	-456.0572975	-3%	-1%	-2%	Estimation in LULUCF sector for NIR 2022 has been performed by using the nationally determined value for CS in biomass pool of perennial Cropland instead of using the value prescribed by 2006 GL. This influenced emissions/removals in all land categories where LUC from or to CL occurs.
B. Cropland	**CO2**	222.77	458.85	236.0796045	1%	1%	1%	Please see comment under the Forestland
C. Grassland	**CO2**	-7.88	-7.88	-1.53202E-11	0%	0%	0%	Please see comment under the Forestland
D. Wetlands	**CO2**	83.47	78.26	-5.206705092	0%	0%	0%	Please see comment under the Forestland
E. Settlements	**CO2**	250.71	237.96	-12.75745166	0%	0%	0%	Please see comment under the Forestland
F. Other land	**CO2**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CO2**	-301.54	-317.85	-16.30839249	0%	0%	0%	To determining the share of harvest from deforested areas in the total harvest in 2019 for the purpose of its exclusion from the HWP calculation, it was noticed that the data for 2018 were used instead of 2019 data due to an error in linking Excel spreadsheets. This has been corrected for NIR 2022
H. Other	**CO2**	NO	NO	NO	NO	NO	NO	
5. Waste	**CO2**	0.54	0.54	0	0%	0%	0%	
A. Solid waste disposal	**CO2**	NA,NO	NA,NO	NO	NO	NO	NO	
B. Biological treatment of solid waste	**CO2**			NO	NO	NO	NO	
C. Incineration and open burning of waste	**CO2**	0.54	0.54	0	0%	0%	0%	
D. Waste water treatment and discharge	**CO2**			NO	NO	NO	NO	
E. Other	**CO2**	NO	NO	NO	NO	NO	NO	
6. Other (As specified in summary 1.A)	**CO2**	NO	NO	NO	NO	NO	NO	
Memo items:	**CO2**			0	0%	0%	0%	
International bunkers	**CO2**	643.85	643.85	0	0%	0%	0%	
Aviation	**CO2**	496.62	496.62	0	0%	0%	0%	
Navigation	**CO2**	147.23	147.23	0	0%	0%	0%	
Multilateral operations	**CO2**	C	C	NO	NO	NO	NO	
CO2 emissions from biomass	**CO2**	5,237.84	5,237.84	0	0%	0%	0%	
CO2 captured	**CO2**	NO	NO	NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	**CO2**	183.17	194.62	11.44820752	0%	0%	0%	A new CS-value for DOC in industrial waste has been used.
Indirect N2O				NO	NO	NO	NO	
Indirect CO2		NA,NO	NA,NO	NO	NO	NO	NO	

Recalculated year	1990								
Greenhouse gas	CH4	***Note: Replicate table below if more gases need reporting.***							
GREENHOUSE GAS SOURCE AND SINK CATEGORI	**Gas (CO2, N2O, CH4)**	**Previous submission (CO2-eq, kt)**	**Latest submission (CO2-eq, kt)**	**Difference (CO2-eq, kt)**	**Difference(1) (%)**	**Impact of recalculation on total emissions excluding (%)**	**Impact of recalculation on total emissions including (%)**	**Explanation for recalculations**
Total National Emissions and Removals	**CH4**	4,306.72	4,309.02	2.299451582	0%	0%	0%	
1. Energy	**CH4**	832.59	833.35	0.755809069	0%	0%	0%	
A. Fuel combustion activities	**CH4**	413.48	414.23	0.755809069	0%	0%	0%	
1. Energy industries	**CH4**	5.43	5.43	0	0%	0%	0%	
2. Manufacturing industries and construction	**CH4**	9.24	9.24	0	0%	0%	0%	
3. Transport	**CH4**	41.14	41.90	0.755809069	0%	0%	0%	changes due to the use of new COPERT model version
4. Other sectors	**CH4**	357.67	357.67	0	0%	0%	0%	
5. Other	**CH4**	NO,IE	NO,IE	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CH4**	419.11	419.11	0	0%	0%	0%	
1. Solid fuels	**CH4**	59.64	59.64	0	0%	0%	0%	
2. Oil and natural gas	**CH4**	359.47	359.47	0	0%	0%	0%	
C. CO2 transport and storage	**CH4**	NO		NO	NO	NO	NO	
2. Industrial processes and product use	**CH4**	9.35	9.35	0	0%	0%	0%	
A. Mineral industry	**CH4**			NO	NO	NO	NO	
B. Chemical industry	**CH4**	5.45	5.45	0	0%	0%	0%	
C. Metal industry	**CH4**	3.90	3.90	0	0%	0%	0%	
D. Non-energy products from fuels and solvent use	**CH4**	NA	NA	NO	NO	NO	NO	
G. Other product manufacture and use	**CH4**	NO	NO	NO	NO	NO	NO	
H. Other	**CH4**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**CH4**	2,548.26	2,548.26	0	0%	0%	0%	
A. Enteric fermentation	**CH4**	2,121.15	2,121.15	0	0%	0%	0%	
B. Manure management	**CH4**	427.11	427.11	0	0%	0%	0%	
C. Rice cultivation	**CH4**	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	**CH4**	NE	NE	NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CH4**	NO	NO	NO	NO	NO	NO	
F. Field burning of agricultural residues	**CH4**	NO	NO	NO	NO	NO	NO	
G. Liming	**CH4**			NO	NO	NO	NO	
H. Urea application	**CH4**			NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**CH4**			NO	NO	NO	NO	
J. Other	**CH4**	NO	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CH4**	1.23	1.23	0	0%	0%	0%	
A. Forestland	**CH4**	1.12	1.12	0	0%	0%	0%	
B. Cropland	**CH4**	NO	NO	NO	NO	NO	NO	
C. Grassland	**CH4**	0.11	0.11	0	0%	0%	0%	
D. Wetlands	**CH4**	NO	NO	NO	NO	NO	NO	
E. Settlements	**CH4**	NO	NO	NO	NO	NO	NO	
F. Other land	**CH4**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CH4**			NO	NO	NO	NO	
H. Other	**CH4**	NO	NO	NO	NO	NO	NO	
5. Waste	**CH4**	915.30	916.84	1.543642513	0%	0%	0%	A new CS-value for DOC in industrial waste has been used.
A. Solid waste disposal	**CH4**	326.42	327.97	1.543642513	0%	0%	0%	A new CS-value for DOC in industrial waste has been used.
B. Biological treatment of solid waste	**CH4**	NO,NE,IE	NO,IE	NO	NO	NO	NO	
C. Incineration and open burning of waste	**CH4**	NA,NO	NA,NO	NO	NO	NO	NO	
D. Waste water treatment and discharge	**CH4**	588.88	588.88	0	0%	0%	0%	
E. Other	**CH4**	NO	NO	NO	NO	NO	NO	
6. Other (As specified in summary 1.A)	**CH4**	NO	NO	NO	NO	NO	NO	
Memo items:	**CH4**			0	0%	0%	0%	
International bunkers	**CH4**	0.43	0.43	0	0%	0%	0%	
Aviation	**CH4**	0.09	0.09	0	0%	0%	0%	
Navigation	**CH4**	0.34	0.34	0	0%	0%	0%	
Multilateral operations	**CH4**		C	NO	NO	NO	NO	
CO2 emissions from biomass	**CH4**	0.00		NO	NO	NO	NO	
CO2 captured	**CH4**	NO		NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	**CH4**	NE		NO	NO	NO	NO	
Indirect N2O				NO	NO	NO	NO	
Indirect CO2				NO	NO	NO	NO	

Recalculated year	1990							
Greenhouse gas	N2O	*Note: Replicate table below if more gases need reporting.*						
GREENHOUSE GAS SOURCE AND SINK CATEGORI	**Gas**	**Previous**	**Latest**	**Difference (CC**	**Difference(1)**	**Impact of**	**Impact of**	**Explanation for recalculations**
Total National Emissions and Removals	**N2O**	2,901.48	2,903.97	2.495211212	0%	0%	0%	
1. Energy	**N2O**	244.11	243.27	-0.842388788	0%	0%	0%	
A. Fuel combustion activities	**N2O**	243.42	242.57	-0.842388788	0%	0%	0%	
1. Energy industries	**N2O**	17.40	17.40	0	0%	0%	0%	
2. Manufacturing industries and construction	**N2O**	16.75	16.75	0	0%	0%	0%	
3. Transport	**N2O**	67.91	67.07	-0.842388788	0%	0%	0%	changes due to the use of new COPERT model version
4. Other sectors	**N2O**	141.35	141.35	0	0%	0%	0%	
5. Other	**N2O**	NO,IE	NO,IE	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**N2O**	0.69	0.69	0	0%	0%	0%	
1. Solid fuels	**N2O**	NO,NA	NO,NA	NO	NO	NO	NO	
2. Oil and natural gas	**N2O**	0.69	0.69	0	0%	0%	0%	
C. CO2 transport and storage	**N2O**	NO		NO	NO	NO	NO	
2. Industrial processes and product use	**N2O**	787.64	790.98	3.3376	0%	0%	0%	
A. Mineral industry	**N2O**			NO	NO	NO	NO	
B. Chemical industry	**N2O**	754.27	754.27	0	0%	0%	0%	
C. Metal industry	**N2O**	NO	NO	NO	NO	NO	NO	
D. Non-energy products from fuels and solvent use	**N2O**	NA	NA	NO	NO	NO	NO	
G. Other product manufacture and use	**N2O**	0.11	0.12	0.0112	0%	0%	0%	
H. Other	**N2O**		NA	NO	NO	NO	NO	
3. Agriculture	**N2O**	1,754.74	1,754.74	0	0%	0%	0%	
A. Enteric fermentation	**N2O**			NO	NO	NO	NO	
B. Manure management	**N2O**	329.05	329.05	0	0%	0%	0%	
C. Rice cultivation	**N2O**			NO	NO	NO	NO	
D. Agricultural soils	**N2O**	1,425.69	1,425.69	0	0%	0%	0%	
E. Prescribed burning of savannahs	**N2O**	NO	NO	NO	NO	NO	NO	
F. Field burning of agricultural residues	**N2O**	NO	NO	NO	NO	NO	NO	
G. Liming	**N2O**			NO	NO	NO	NO	
H. Urea application	**N2O**			NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**N2O**			NO	NO	NO	NO	
J. Other	**N2O**	NO	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**N2O**	48.09	48.09	0	0%	0%	0%	
A. Forestland	**N2O**	0.74	0.74	0	0%	0%	0%	
B. Cropland	**N2O**	3.95	3.95	0	0%	0%	0%	
C. Grassland	**N2O**	0.12	0.12	0	0%	0%	0%	
D. Wetlands	**N2O**	11.11	11.11	0	0%	0%	0%	
E. Settlements	**N2O**	32.17	32.17	0	0%	0%	0%	
F. Other land	**N2O**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**N2O**			NO	NO	NO	NO	
H. Other	**N2O**	NO	NO	NO	NO	NO	NO	
5. Waste	**N2O**	66.89	66.89	0	0%	0%	0%	
A. Solid waste disposal	**N2O**			NO	NO	NO	NO	
B. Biological treatment of solid waste	**N2O**	NO,NE,IE	NO,IE	NO	NO	NO	NO	
C. Incineration and open burning of waste	**N2O**	0.01	0.01	0	0%	0%	0%	
D. Waste water treatment and discharge	**N2O**	66.88	66.88	0	0%	0%	0%	
E. Other	**N2O**	NO	NO	NO	NO	NO	NO	
6. Other (As specified in summary 1.A)	**N2O**	NO	NO	NO	NO	NO	NO	
Memo items:	**N2O**			0	0%	0%	0%	
International bunkers	**N2O**	4.14	5.29	1.15433876	0%	0%	0%	
Aviation	**N2O**	1.15	4.14	2.98528652	0%	0%	0%	
Navigation	**N2O**	C	1.15	NO	NO	NO	NO	
Multilateral operations	**N2O**		C	NO	NO	NO	NO	
CO2 emissions from biomass	**N2O**	0.00		NO	NO	NO	NO	
CO2 captured	**N2O**	NO		NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	**N2O**	NE		NO	NO	NO	NO	
Indirect N2O			NA,NO	NO	NO	NO	NO	
Indirect CO2				NO	NO	NO	NO	
				NO	NO	NO	NO	

Recalculated year	2019	
Greenhouse gas	HFC	***Note: Replicate table below if more gases need reporting.***

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Gas (PFC, HFC, NF3, SF6, HFC-PFC Mix)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
F-gases: Total actual Emissions	**HFC**	1,560.96	552.60	-1008.359341	-65%	NO	-4%	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.B.9. Flurochemical production	**HFC**	NO	NO	NO	NO	NO	NO	
2.B.10. Other	**HFC**	NO	NO	NO	NO	NO	NO	
2.C.3. Aluminium production	**HFC**	NO	NO	NO	NO	NO	NO	
2.C.4. Magnesium production	**HFC**	NO	NO	NO	NO	NO	NO	
2.C.7. Other	**HFC**	NO	NO	NO	NO	NO	NO	
2.E.1. Integrated circuit or semiconductor	**HFC**	NO	NO	NO	NO	NO	NO	
2.E.2. TFT flat panel display	**HFC**	NO	NO	NO	NO	NO	NO	
2.E.3. Photovoltaics	**HFC**	NO	NO	NO	NO	NO	NO	
2.E.4. Heat transfer fluid	**HFC**	NO	NO	NO	NO	NO	NO	
2.E.5. Other *(as specified in table 2(II))*	**HFC**	NO	NO	NO	NO	NO	NO	
2.F.1. Refrigeration and air conditioning	**HFC**	1,513.19	538.62	-974.5660173	-64%	NO	-4%	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.F.2. Foam blowing agents	**HFC**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	**HFC**	16.24	5.41	-10.82809854	-67%	NO	0%	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.F.4. Aerosols	**HFC**	11.05	8.57	-2.481394846	-22%	NO	0%	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.F.5. Solvents	**HFC**	NO	NO	NO	NO	NO	NO	
2.F.6. Other applications	**HFC**	NO	NO	NO	NO	NO	NO	
2.G.1. Electrical equipment	**HFC**	NO	NO	NO	NO	NO	NO	
2.G.2. SF6 and PFCs from other product use	**HFC**	NO	NO	NO	NO	NO	NO	
2.G.4. Other	**HFC**	NO	NO	NO	NO	NO	NO	
2.H. Other (please specify)	**HFC**	NO	NO	NO	NO	NO	NO	

Recalculated year	2019	
Greenhouse gas	PFC	***Note: Replicate table below if more gases need reporting.***

GREENHOUSE GAS SOURCE AND SINK CATEGORI	Gas (PFC, HFC, NF3, SF6, HFC-PFC Mix)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
F-gases: Total actual Emissions	**PFC**	NO	NO	NO	NO	NO	NO	
2.B.9. Flurochemical production	**PFC**	NO	NO	NO	NO	NO	NO	
2.B.10. Other	**PFC**	NO	NO	NO	NO	NO	NO	
2.C.3. Aluminium production	**PFC**	NO	NO	NO	NO	NO	NO	
2.C.4. Magnesium production	**PFC**	NO	NO	NO	NO	NO	NO	
2.C.7. Other	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.1. Integrated circuit or semiconductor	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.2. TFT flat panel display	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.3. Photovoltaics	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.4. Heat transfer fluid	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.5. Other *(as specified in table 2(II))*	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.1. Refrigeration and air conditioning	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.2. Foam blowing agents	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.4. Aerosols	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.5. Solvents	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.6. Other applications	**PFC**	NO	NO	NO	NO	NO	NO	
2.G.1. Electrical equipment	**PFC**	NO	NO	NO	NO	NO	NO	
2.G.2. SF6 and PFCs from other product use	**PFC**	NO	NO	NO	NO	NO	NO	
2.G.4. Other	**PFC**	NO	NO	NO	NO	NO	NO	
2.H. Other (please specify)	**PFC**	NO	NO	NO	NO	NO	NO	

Recalculated year	2019
Greenhouse gas	SF6

Note: Replicate table below if more gases need reporting.

GREENHOUSE GAS SOURCE AND SINK CATEGORI	Gas (PFC, HFC, NF3, SF6, HFC-PFC Mix)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
F-gases: Total actual Emissions	**SF6**	0.00	0.00	-0.000108594	-32%	NO	0%	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.B.9. Flurochemical production	**SF6**	NO	NO	NO	NO	NO	NO	
2.B.10. Other	**SF6**	NO	NO	NO	NO	NO	NO	
2.C.3. Aluminium production	**SF6**	NO	NO	NO	NO	NO	NO	
2.C.4. Magnesium production	**SF6**	NO	NO	NO	NO	NO	NO	
2.C.7. Other	**SF6**	NO	NO	NO	NO	NO	NO	
2.E.1. Integrated circuit or semiconductor	**SF6**	NO	NO	NO	NO	NO	NO	
2.E.2. TFT flat panel display	**SF6**	NO	NO	NO	NO	NO	NO	
2.E.3. Photovoltaics	**SF6**	NO	NO	NO	NO	NO	NO	
2.E.4. Heat transfer fluid	**SF6**	NO	NO	NO	NO	NO	NO	
2.E.5. Other *(as specified in table 2(II))*	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.1. Refrigeration and air conditioning	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.2. Foam blowing agents	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.4. Aerosols	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.5. Solvents	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.6. Other applications	**SF6**	NO	NO	NO	NO	NO	NO	
2.G.1. Electrical equipment	**SF6**	0.00	0.00	-0.000108594	-32%	NO	0%	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.G.2. SF6 and PFCs from other product use	**SF6**	NO	NO	NO	NO	NO	NO	
2.G.4. Other	**SF6**	NO	NO	NO	NO	NO	NO	
2.H. Other (please specify)	**SF6**	NO	NO	NO	NO	NO	NO	

Recalculated year	1990	
Greenhouse gas	PFC	***Note: Replicate table below if more gases need reporting.***

GREENHOUSE GAS SOURCE AND SINK CATEGORI	Gas (PFC, HFC, NF3, SF6, HFC-PFC Mix)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
F-gases: Total actual Emissions	**PFC**	1,240.24	1,240.24	NO	NO	NO	NO	
2.B.9. Flurochemical production	**PFC**	NO	NO	NO	NO	NO	NO	
2.B.10. Other	**PFC**	NO	NO	NO	NO	NO	NO	
2.C.3. Aluminium production	**PFC**	1,240.24	1,240.24	NO	NO	NO	NO	
2.C.4. Magnesium production	**PFC**	NO	NO	NO	NO	NO	NO	
2.C.7. Other	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.1. Integrated circuit or semiconductor	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.2. TFT flat panel display	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.3. Photovoltaics	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.4. Heat transfer fluid	**PFC**	NO	NO	NO	NO	NO	NO	
2.E.5. Other *(as specified in table 2(II))*	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.1. Refrigeration and air conditioning	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.2. Foam blowing agents	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.4. Aerosols	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.5. Solvents	**PFC**	NO	NO	NO	NO	NO	NO	
2.F.6. Other applications	**PFC**	NO	NO	NO	NO	NO	NO	
2.G.1. Electrical equipment	**PFC**	NO	NO	NO	NO	NO	NO	
2.G.2. SF6 and PFCs from other product use	**PFC**	NO	NO	NO	NO	NO	NO	
2.G.4. Other	**PFC**	NO	NO	NO	NO	NO	NO	
2.H. Other (please specify)	**PFC**	NO	NO	NO	NO	NO	NO	

Recalculated year	1990	
Greenhouse gas	SF6	***Note: Replicate table below if more gases need reporting.***

GREENHOUSE GAS SOURCE AND SINK CATEGORI	Gas (PFC, HFC, NF3, SF6, HFC-PFC Mix)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
F-gases: Total actual Emissions	**SF6**	0.000470436	0.000458337	1.20995E-05	3%	NO	NO	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.B.9. Flurochemical production	**SF6**	NO	NO	NO	NO	NO	NO	
2.B.10. Other	SF6	NO	NO	NO	NO	NO	NO	
2.C.3. Aluminium production	SF6	NO	NO	NO	NO	NO	NO	
2.C.4. Magnesium production	SF6	NO	NO	NO	NO	NO	NO	
2.C.7. Other	SF6	NO	NO	NO	NO	NO	NO	
2.E.1. Integrated circuit or semiconductor	SF6	NO	NO	NO	NO	NO	NO	
2.E.2. TFT flat panel display	SF6	NO	NO	NO	NO	NO	NO	
2.E.3. Photovoltaics	SF6	NO	NO	NO	NO	NO	NO	
2.E.4. Heat transfer fluid	SF6	NO	NO	NO	NO	NO	NO	
2.E.5. Other *(as specified in table 2(II))*	SF6	NO	NO	NO	NO	NO	NO	
2.F.1. Refrigeration and air conditioning	SF6	NO	NO	NO	NO	NO	NO	
2.F.2. Foam blowing agents	**SF6**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	SF6	NO	NO	NO	NO	NO	NO	
2.F.4. Aerosols	SF6	NO	NO	NO	NO	NO	NO	
2.F.5. Solvents	SF6	NO	NO	NO	NO	NO	NO	
2.F.6. Other applications	SF6	NO	NO	NO	NO	NO	NO	
2.G.1. Electrical equipment	SF6	0.000470436	0.000458337	1.20995E-05	3%	NO	NO	Study results which includes the preparation of data on activities to improve the calculation of greenhouse gas emissions from subsectors 2.F. and 2.G. was used in NIR 2022
2.G.2. SF6 and PFCs from other product use	SF6	NO	NO	NO	NO	NO	NO	
2.G.4. Other	**SF6**	NO	NO	NO	NO	NO	NO	
2.H. Other (please specify)	SF6	NO	NO	NO	NO	NO	NO	

Annex 5-6: Reporting on consistency of reported emissions with data from the ETS

2020

Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	23,739.56	7,323.81	0.31	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,808.05	7,258.73	0.41	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	6,329.24	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,041.06	5,335.83	88.33%	
1.A.1 Energy industries	CO2	3,659.32	3,490.28	95.38%	
1.A.1.a Public electricity and heat production	CO2	2,621.72	2,563.75	97.79%	
1.A.1.b Petroleum refining	CO2	835.52	806.03	96.47%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	202.08	120.49	59.63%	
1.A.2. Manufacturing industries and construction	CO2	2,381.74	1,845.56	77.49%	
1.A.2.a Iron and steel	CO2	33.84	4.55	13.46%	
1.A.2.b Non-ferrous metals	CO2	25.53	15.19	59.50%	
1.A.2.c Chemicals	CO2	336.18	0.003	0.00%	
1.A.2.d Pulp, paper and print	CO2	115.41	109.88	95.21%	
1.A.2.e Food processing, beverages and tobacco	CO2	294.71	101.92	34.58%	
1.A.2.f Non-metallic minerals	CO2	1,257.40	1,607.19	127.82%	
1.A.2.g Other	CO2	318.67	6.82	2.14%	
1.A.3. Transport	CO2	5,732.11	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,727.25	NO	NO	
1.A.4.a Commercial / Institutional	CO2	570.75	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,477.27	NO	NO	
1.B Fugitive emissions from Fuels	CO2	288.18	NO	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,359.34	1,357.25	99.85%	
2.A.1 Cement Production	CO2	1,212.95	1,212.95	100.00%	
2.A.2. Lime production	CO2	103.67	103.67	100.00%	
2.A.3. Glass production	CO2	25.62	25.62	100.00%	
2.A.4. Other process uses of carbonates	CO2	17.10	15.01	87.78%	
2.B Chemical industry	CO2	535.32	559.81	104.57%	
2.B.1. Ammonia production	CO2	535.32	559.81	104.57%	
2.B.3. Adipic acid production (CO2)	CO2	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	NO	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	4.93	5.84	118.43%	
2.C.1. Iron and steel production	CO2	4.93	5.84	118.43%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	

N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	65.07997124	65.08	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

2019

Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	24,589.97	7,514.73	0.31	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,792.65	7,464.63	0.42	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	6,588.49	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,301.55	5,548.58	88.05%	
1.A.1 Energy industries	CO2	3,880.44	3,739.51	96.37%	
1.A.1.a Public electricity and heat production	CO2	2,645.10	2,581.30	97.59%	
1.A.1.b Petroleum refining	CO2	990.69	1,016.92	102.65%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	244.66	141.29	57.75%	
1.A.2. Manufacturing industries and construction	CO2	2,421.11	1,809.06	74.72%	
1.A.2.a Iron and steel	CO2	41.20	6.35	15.41%	
1.A.2.b Non-ferrous metals	CO2	27.00	7.25	26.86%	
1.A.2.c Chemicals	CO2	292.01	0.02	0.01%	
1.A.2.d Pulp, paper and print	CO2	110.62	104.50	94.47%	
1.A.2.e Food processing, beverages and tobacco	CO2	335.68	118.19	35.21%	
1.A.2.f Non-metallic minerals	CO2	1,279.73	1,570.81	122.75%	
1.A.2.g Other	CO2	334.88	1.94	NO	
1.A.3. Transport	CO2	6,516.87	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,658.92	NO	NO	
1.A.4.a Commercial / Institutional	CO2	612.03	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,400.82	NO	NO	
1.B Fugitive emissions from Fuels	CO2	286.94	NO	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,324.94	1,321.66	99.75%	
2.A.1 Cement Production	CO2	1,184.11	1,184.11	100.00%	
2.A.2. Lime production	CO2	92.74	92.74	100.00%	
2.A.3. Glass production	CO2	29.40	29.40	100.00%	
2.A.4. Other process uses of carbonates	CO2	18.68	15.40	82.43%	
2.B Chemical industry	CO2	594.60	587.15	98.75%	
2.B.1. Ammonia production	CO2	594.60	587.15	98.75%	
2.B.3. Adipic acid production (CO2)	CO2	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	NO	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	4.91	7.24	147.49%	
2.C.1. Iron and steel production	CO2	4.91	7.24	147.49%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	

N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	50.0991891	50.10	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

Reporting year:	2018				
Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	24,368.19	7,444.62	0.31	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,792.97	7,394.51	0.42	
CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	6,603.49	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,318.86	5,527.44	87.48%	
1.A.1 Energy industries	CO2	3,907.81	3,735.90	95.60%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	2,385.31	2,284.87	95.79%	
1.A.1.b Petroleum refining	CO2	1,317.29	1,316.70	99.96%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	205.21	134.33	65.46%	
1.A.2. Manufacturing industries and construction	CO2	2,411.05	1,791.54	74.31%	
1.A.2.a Iron and steel	CO2	54.27	9.33	17.19%	
1.A.2.b Non-ferrous metals	CO2	26.91		NO	
1.A.2.c Chemicals	CO2	279.62	0.02	0.01%	In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2c
1.A.2.d Pulp, paper and print	CO2	92.94	90.31	97.17%	
1.A.2.e Food processing, beverages and tobacco	CO2	334.08	17.18	5.14%	
1.A.2.f Non-metallic minerals	CO2	1,308.89	1,672.85	127.81%	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f. In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2f
1.A.2.g Other	CO2	314.34	1.84	NO	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	6,340.78	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,747.08	NO	NO	
1.A.4.a Commercial / Institutional	CO2	627.22	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,478.11	NO	NO	
1.B Fugitive emissions from Fuels	CO2	284.63	NO	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,358.42	1,358.35	99.99%	
2.A.1 Cement Production	CO2	1,210.72	1,210.72	100.00%	
2.A.2. Lime production	CO2	88.95	93.92	105.59%	
2.A.3. Glass production	CO2	30.50	30.50	100.00%	
2.A.4. Other process uses of carbonates	CO2	28.25	23.21	82.16%	
2.B Chemical industry	CO2	513.06	494.95	96.47%	
2.B.1. Ammonia production	CO2	513.06	494.95	96.47%	
2.B.3. Adipic acid production (CO2)	CO2	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	NO	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	8.99	13.77	153.16%	
2.C.1. Iron and steel production	CO2	8.99	13.77	153.16%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	
N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	50.10914065	50.11	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

Reporting year:	2017				
Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	25,447.36	8,367.77	0.33	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,793.28	8,269.17	0.46	
CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	7,205.94	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,894.34	6,261.51	90.82%	
1.A.1 Energy industries	CO2	4,464.77	4,268.40	95.60%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	2,895.71	2,792.92	96.45%	
1.A.1.b Petroleum refining	CO2	1,350.64	1,343.89	99.50%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	218.42	131.60	60.25%	
1.A.2. Manufacturing industries and construction	CO2	2,429.58	1,993.11	82.04%	
1.A.2.a Iron and steel	CO2	36.98	2.72	7.35%	
1.A.2.b Non-ferrous metals	CO2	20.71	NO	NO	
1.A.2.c Chemicals	CO2	332.42	2.71	0.82%	In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2c
1.A.2.d Pulp, paper and print	CO2	96.61	89.82	92.97%	
1.A.2.e Food processing, beverages and tobacco	CO2	358.38	176.62	49.28%	
1.A.2.f Non-metallic minerals	CO2	1,295.18	1,721.25	132.90%	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f. In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2f
1.A.2.g Other	CO2	289.30	NO	NO	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	6,570.29	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,821.56	NO	NO	
1.A.4.a Commercial / Institutional	CO2	626.65	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,565.73	NO	NO	
1.B Fugitive emissions from Fuels	CO2	311.59		NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,425.61	1,425.54	100.00%	
2.A.1 Cement Production	CO2	1,287.25	1,287.25	100.00%	
2.A.2. Lime production	CO2	82.08	82.08	100.00%	
2.A.3. Glass production	CO2	31.90	31.90	100.00%	
2.A.4. Other process uses of carbonates	CO2	24.38	24.31	99.72%	
2.B Chemical industry	CO2	566.79	580.12	102.35%	
2.B.1. Ammonia production	CO2	566.79	580.12	102.35%	
2.B.3. Adipic acid production (CO2)	CO2	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	NO	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	1.87	2.00	107.45%	
2.C.1. Iron and steel production	CO2	1.87	2.00	107.45%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	
N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	98.59885701	98.60	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

Reporting year:	2016

Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	24,577.87	8,267.11	0.34	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,793.60	8,157.76	0.46	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	7,312.18	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	7,075.46	6,321.20	89.34%	
1.A.1 Energy industries	CO2	4,846.79	4,494.58	92.73%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	3,347.32	3,203.95	95.72%	
1.A.1.b Petroleum refining	CO2	1,298.59	1,177.66	90.69%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	200.89	112.97	56.23%	
1.A.2. Manufacturing industries and construction	CO2	2,228.67	1,826.62	81.96%	
1.A.2.a Iron and steel	CO2	33.97	5.60	16.50%	
1.A.2.b Non-ferrous metals	CO2	10.66		NO	
1.A.2.c Chemicals	CO2	296.38	3.21	1.08%	In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2c
1.A.2.d Pulp, paper and print	CO2	105.50	78.14	74.07%	
1.A.2.e Food processing, beverages and tobacco	CO2	376.65	19.85	5.27%	
1.A.2.f Non-metallic minerals	CO2	1,116.55	1,719.81	154.03%	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f. In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2f
1.A.2.g Other	CO2	288.96	NO	NO	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	6,106.38	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,790.08	NO	NO	
1.A.4.a Commercial / Institutional	CO2	607.71	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,544.39	NO	NO	
1.B Fugitive emissions from Fuels	CO2	236.72	124.04	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,201.30	1,201.24	99.99%	
2.A.1 Cement Production	CO2	1,076.51	1,076.51	100.00%	
2.A.2. Lime production	CO2	63.79	63.79	100.00%	
2.A.3. Glass production	CO2	32.62	32.62	100.00%	
2.A.4. Other process uses of carbonates	CO2	28.39	28.32	99.78%	
2.B Chemical industry	CO2	547.86	510.22	NO	
2.B.1. Ammonia production	CO2	547.86	510.22	93.13%	
2.B.3. Adipic acid production (CO2)	CO2		NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	NO	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	1.05	1.05	100.00%	
2.C.1. Iron and steel production	CO2	1.05	1.05	100.00%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	

N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	109.3585794	109.36	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

Reporting year:	2015

Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	24,318.02	8,386.21	0.34	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,793.91	8,074.87	0.45	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2		NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,941.52	6,652.45	95.84%	
1.A.1 Energy industries	CO2	4,718.82	4,293.86	90.99%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	3,095.98	2,969.98	95.93%	
1.A.1.b Petroleum refining	CO2	1,387.39	1,217.48	87.75%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	235.45	106.40	45.19%	
1.A.2. Manufacturing industries and construction	CO2	2,222.70	2,358.58	106.11%	
1.A.2.a Iron and steel	CO2	51.58	10.98	21.29%	
1.A.2.b Non-ferrous metals	CO2	10.90	NO	NO	
1.A.2.c Chemicals	CO2	294.34	2.99	1.02%	In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2c
1.A.2.d Pulp, paper and print	CO2	70.04	43.21	61.69%	
1.A.2.e Food processing, beverages and tobacco	CO2	350.71	20.75	5.92%	
1.A.2.f Non-metallic minerals	CO2	1,146.98	2,280.65	198.84%	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f. In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2f
1.A.2.g Other	CO2	298.14	NO	NO	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	5,887.78	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,719.81	NO	NO	
1.A.4.a Commercial / Institutional	CO2	583.88	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,502.52	NO	NO	
1.B Fugitive emissions from Fuels	CO2	249.53	NO	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,306.35	1,306.39	100.00%	
2.A.1 Cement Production	CO2	1,169.23	1,169.23	100.00%	
2.A.2. Lime production	CO2	73.40	73.40	100.00%	
2.A.3. Glass production	CO2	30.68	30.68	100.00%	
2.A.4. Other process uses of carbonates	CO2	33.04	33.07	100.10%	
2.B Chemical industry	CO2	572.27	102.48	NO	
2.B.1. Ammonia production	CO2	572.27	NO	NO	
2.B.3. Adipic acid production (CO2)	CO2		NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	102.48	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	9.30	13.55	145.68%	
2.C.1. Iron and steel production	CO2	9.30	13.55	145.68%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	

N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	311.3476689	311.35	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

Reporting year:	2014

Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	23,845.24	8,387.46	0.35	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	17,650.84	8,121.27	0.46	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt CO2eq][3]	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2		NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	7,068.24	6,751.28	95.52%	
1.A.1 Energy industries	CO2	4,743.91	4,276.80	90.15%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	3,049.69	2,969.30	97.36%	
1.A.1.b Petroleum refining	CO2	1,516.22	1,210.10	79.81%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	178.00	97.40	54.72%	
1.A.2. Manufacturing industries and construction	CO2	2,324.33	2,474.49	106.46%	
1.A.2.a Iron and steel	CO2	55.80	19.10	34.22%	
1.A.2.b Non-ferrous metals	CO2	18.68	NO	NO	
1.A.2.c Chemicals	CO2	288.09	1,219.60	423.34%	In Inventory emissions from consumption of natural gas as feedstock for ammonia production is calculated under 2B1. IN ETS are calculated under 1A2c
1.A.2.d Pulp, paper and print	CO2	71.38	58.79	82.36%	
1.A.2.e Food processing, beverages and tobacco	CO2	399.58	188.06	47.06%	
1.A.2.f Non-metallic minerals	CO2	1,192.67	NO	NO	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.2.g Other	CO2	298.14	988.94	331.71%	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	5,580.73	27.24	0.49%	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,530.59	NO	NO	
1.A.4.a Commercial / Institutional	CO2	471.32	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	1,425.29	NO	NO	
1.B Fugitive emissions from Fuels	CO2	441.16	NO	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,354.11	1,354.10	100.00%	
2.A.1 Cement Production	CO2	1,225.09	1,225.09	100.00%	
2.A.2. Lime production	CO2	71.49	74.72	104.53%	
2.A.3. Glass production	CO2	30.48	43.31	142.06%	
2.A.4. Other process uses of carbonates	CO2	27.05	10.98	NO	
2.B Chemical industry	CO2	559.83	NO	NO	
2.B.1. Ammonia production	CO2	559.83	NO	NO	
2.B.3. Adipic acid production (CO2)	CO2		NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO	NO	NO	
2.B.5. Carbide production	CO2	NO	NO	NO	
2.B.6 Titanium dioxide production	CO2	NO	NO	NO	
2.B.7 Soda ash production	CO2	NO	NO	NO	
2.B.8 Petrochemical and carbon black production	CO2	NO	NO	NO	
2.C Metal production	CO2	10.11	15.89	157.12%	
2.C.1. Iron and steel production	CO2	10.11	15.89	157.12%	
2.C.2 Ferroalloys production	CO2	NO	NO	NO	
2.C.3 Aluminium production	CO2	NO	NO	NO	
2.C.4 Magnesium production	CO2	NO	NO	NO	
2.C.5 Lead production	CO2	NO	NO	NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	

N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	266.1946478	266.19	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	N2O	NO	NO	NO	

Reporting year:	2013

Total emissions (CO2 -eq)					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
Greenhouse gas emissions (total emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	24,580.24	8,785.79	0.36	
CO2 emissions (total CO2 emissions without LULUCF for GHG inventory and without emissions from 1A3a Civil aviation, total emissions from installations under Article 3h of Directive 2003/87/EC)	Total GHG	18,400.78	8,545.51	0.46	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	14,856.26	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	9,219.72	7,259.43	78.74%	
1.A.1 Energy industries	CO2	5,238.07	4,918.89	93.91%	In inventory dana from ETS are not used for emission
1.A.1.a Public electricity and heat production	CO2	3,614.08	3,493.80	96.67%	
1.A.1.b Petroleum refining	CO2	1,394.72	1,328.74	95.27%	
1.A.1.c Manufacture of solid fuels and other energy industries	CO2	229.27	96.35	42.02%	
1.A.2. Manufacturing industries and construction	CO2	2,384.92	2,340.54	98.14%	
1.A.2.a Iron and steel	CO2	58.36	19.83	33.98%	
1.A.2.b Non-ferrous metals	CO2	19.93	0.00	NO	
1.A.2.c Chemicals	CO2	253.20	1,157.79	457.27%	In Inventory emissions from consumption of natural gas as
1.A.2.d Pulp, paper and print	CO2	113.37	60.63	53.49%	
1.A.2.e Food processing, beverages and tobacco	CO2	388.01	170.55	43.96%	
1.A.2.f Non-metallic minerals	CO2	1,223.86	931.73	76.13%	In Inventory emissions from Construction sector are
1.A.2.g Other	CO2	328.20	NO	NO	In Inventory emissions from Construction sector are
1.A.3. Transport	CO2	5,636.55	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	1,143.93	NO	NO	
1.A.4.a Commercial / Institutional	CO2	508.91	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	635.02	NO	NO	
1.B Fugitive emissions from Fuels	CO2	452.80	NO	NO	
1.C CO2 Transport and storage	CO2	NO	NO	NO	
1.C.1 Transport of CO2	CO2	NO	NO	NO	
1.C.2 Injection and storage	CO2	NO	NO	NO	
1.C:3 Other 2.A Mineral products	CO2	NO	NO	NO	
2.A Mineral products	CO2	1,271.22	1,270.28	99.93%	
2.A.1 Cement Production	CO2	1,141.03	1,141.03	100.00%	
2.A.2. Lime production	CO2	74.26	74.26	100.00%	
2.A.3. Glass production	CO2	29.48	49.87	169.17%	
2.A.4. Other process uses of carbonates	CO2	26.46	5.12	19.36%	
2.B Chemical industry	CO2	509.33	0.00	NO	
2.B.1. Ammonia production	CO2	509.33		NO	
2.B.3. Adipic acid production (CO2)	CO2	NO		NO	
2.B.4. Caprolactam, glyoxal and glyoxylic acid production	CO2	NO		NO	
2.B.5. Carbide production	CO2	NO		NO	
2.B.6 Titanium dioxide production	CO2	NO		NO	
2.B.7 Soda ash production	CO2	NO		NO	
2.B.8 Petrochemical and carbon black production	CO2	NO,IE		NO	
2.C Metal production	CO2	13.93	15.80	113.43%	
2.C.1. Iron and steel production	CO2	13.93	15.80	113.43%	
2.C.2 Ferroalloys production	CO2	NO		NO	
2.C.3 Aluminium production	CO2	NO		NO	
2.C.4 Magnesium production	CO2	NO		NO	
2.C.5 Lead production	CO2	NO		NO	
2.C.6 Zinc production	CO2	NO	NO	NO	
2.C.7 Other metal production	CO2	NO	NO	NO	

N2O emissions					
Category[1]	Gas	Greenhouse gas inventory emissions [kt CO2eq][3]	Verified emissions under Directive 2003/87/EC [kt CO2eq][3]	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	240.2717276	240.27	100.00%	
2.B.3. Adipic acid production	N2O	NO	NO	NO	

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