ANNEXES TO THE NATIONAL INVENTORY REPORT

March, 2017

CONTENT

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.

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.

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
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

Source Categories Assessed in Key Source Category Analysis	Direct GHG
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
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	Aggregate F-gases
2.F.3 Fire Protection	Aggregate F-gases
2.F.4 Aerosols	Aggregate F-gases
2.G Other Product Manufacture and Use	N_2O
2.G Other Product Manufacture and Use	Aggregate 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
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

Source Categories Assessed in Key Source Category Analysis	Direct GHG
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	4,615.029	0.148	15%
1.A.3.b Road Transportation	CO_2	3,505.875	0.113	26%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	0.079	34%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	0.069	41%
3.A Enteric Fermentation	CH_4	1,977.594	0.063	47%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	0.059	53%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	0.055	59%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	0.053	64%
2.C.3 Aluminium Production	PFCs	1,240.239	0.040	68%
2.A.1 Cement Production	CO_2	1,085.790	0.035	71%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	0.033	75%
2.B.2 Nitric Acid Production	N_2O	754.265	0.024	77%
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	603.361	0.019	81%
2.B.1 Ammonia Production	CO_2	552.104	0.018	83%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.017	85%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.017	87%
5.A Solid Waste Disposal	CH_4	348.607	0.011	88%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	0.011	89%
3.B Manure Management	CH_4	327.781	0.011	90%
3.B Manure Management	N_2O	323.845	0.010	91%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.010	92%
5.D Wastewater Treatment and Discharge	CH_4	237.864	0.008	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	0.007	93%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.007	94%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	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	153.440	0.005	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	0.005	97%
1.A.3.c Railways	CO_2	140.079	0.004	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	0.004	98%
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	67.000	0.002	98%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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	45.970	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	0.001	99%
1.A.3.b Road Transportation	N_2O	38.685	0.001	99%
2.A.3 Glass Production	CO_2	35.871	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.001	100%
2.G Other Product Manufacture and Use	N_2O	33.376	0.001	100%

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.3.c Railways	N_2O	13.248	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	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%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	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	2.096	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	1.555	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	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%
2.B.1 Ammonia Production	N_2O	0.163	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	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%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_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.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	100%

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
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		**31,153.698**		

Table A1.3-2: Key categories analysis – Level Assessment - Tier 1 (Excluding LULUCF) – 2015

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.241	24%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.088	33%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.064	39%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.063	46%
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.053	51%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.052	56%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.051	61%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.050	66%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.044	71%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.042	75%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.036	78%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.031	82%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.023	84%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.017	86%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.016	87%
3.B Manure Management	CH_4	327.781	344.461	0.015	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.014	90%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.013	91%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.012	93%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.010	94%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.009	94%
3.B Manure Management	N_2O	323.845	146.728	0.006	95%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.006	96%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.006	96%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.003	97%
2.A.2 Lime Production	CO_2	153.440	73.397	0.003	97%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.003	97%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.003	97%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.002	98%
3.H Urea Application	CO_2	50.020	57.248	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.002	98%
1.A.3.c Railways	CO_2	140.079	55.384	0.002	99%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.002	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.002	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.002	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.001	99%
2.A.3 Glass Production	CO_2	35.871	30.684	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.001	99%
3.G Liming	CO_2	0.000	12.093	0.001	100%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.001	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.000	100%

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.000	100%
1.A.3.c Railways	N_2O	13.248	6.370	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	100%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	100%

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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	N_2O	0.007	0.000	0.000	100%
TOTAL		**31,153.698**	**23,502.150**		

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	6,704.183	0.173	17%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	0.119	29%
1.A.3.b Road Transportation	CO_2	3,505.875	0.090	38%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	0.063	44%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	0.056	50%
3.A Enteric Fermentation	CH_4	1,977.594	0.051	55%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	0.048	60%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	0.044	64%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	0.042	69%
2.C.3 Aluminium Production	PFCs	1,240.239	0.032	72%
2.A.1 Cement Production	CO_2	1,085.790	0.028	74%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	0.026	77%
2.B.2 Nitric Acid Production	N_2O	754.265	0.019	79%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.019	81%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	0.016	83%
2.B.1 Ammonia Production	CO_2	552.104	0.014	84%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.014	85%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.013	87%
5.A Solid Waste Disposal	CH_4	348.607	0.009	88%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	0.009	88%
3.B Manure Management	CH_4	327.781	0.008	89%
3.B Manure Management	N_2O	323.845	0.008	90%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.008	91%
4.G Harvested Wood Products	CO_2	301.544	0.008	92%
5.D Wastewater Treatment and Discharge	CH_4	237.864	0.006	92%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	0.006	93%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.006	93%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	0.006	94%
4.E.2 Land Converted to Settlements	CO_2	197.001	0.005	94%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	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	153.440	0.004	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	0.004	97%
1.A.3.c Railways	CO_2	140.079	0.004	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	0.003	97%
4.C.2 Land Converted to Grassland	CO_2	122.386	0.003	98%
2.C.3 Aluminium Production	CO_2	118.797	0.003	98%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	67.000	0.002	98%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.002	98%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.001	99%
3.H Urea Application	CO_2	50.020	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	0.001	99%
4.D.2 Land Converted to Wetlands	CO_2	43.067	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	0.001	99%
1.A.3.b Road Transportation	N_2O	38.685	0.001	99%
4.A.2 Land Converted to Forest Land	CO_2	38.633	0.001	99%

Tier 1 Analysis - Level Assessment Including LULUCF				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
2.A.3 Glass Production	CO_2	35.871	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.001	99%
2.G Other Product Manufacture and Use	N_2O	33.376	0.001	100%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	0.001	100%
4.B.2 Land Converted to Cropland	CO_2	23.651	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	10.450	0.000	100%
4(V) Biomass Burning	CO_2	8.987	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	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%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	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	2.096	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	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	CH_4	0.735	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%
2.B.1 Ammonia Production	N_2O	0.163	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	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%
5.C Incineration and Open Burning of Waste	N_2O	0.007	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.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.F.1 Refrigeration and Air conditioning	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		**38,843.466**		

Table A1.3-4: Key categories analysis – Level Assessment - Tier 1 (Including LULUCF) – 2015

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.187	19%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,704.183	5,419.286	0.178	36%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.068	43%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.049	48%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.049	53%
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.041	57%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.040	61%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.040	65%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.038	69%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.034	72%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.032	76%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.028	78%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.024	81%
4.E.2 Land Converted to Settlements	CO_2	197.001	642.588	0.021	83%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.018	85%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.013	86%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.012	87%
3.B Manure Management	CH_4	327.781	344.461	0.011	88%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.011	90%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.010	91%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.009	92%
4.A.2 Land Converted to Forest Land	CO_2	38.633	268.565	0.009	92%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.008	93%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.007	94%
3.B Manure Management	N_2O	323.845	146.728	0.005	94%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.005	95%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.004	95%
4.G Harvested Wood Products	CO_2	301.544	126.188	0.004	96%
4.C.2 Land Converted to Grassland	CO_2	122.386	117.835	0.004	96%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	85.054	0.003	96%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.003	97%
4(V) Biomass Burning	CO_2	8.987	80.594	0.003	97%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	73.912	0.002	97%
2.A.2 Lime Production	CO_2	153.440	73.397	0.002	97%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.002	98%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.002	98%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.002	98%
3.H Urea Application	CO_2	50.020	57.248	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.002	99%
1.A.3.c Railways	CO_2	140.079	55.384	0.002	99%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.002	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.001	99%

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.001	99%
4.B.2 Land Converted to Cropland	CO_2	23.651	32.145	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.001	99%
2.A.3 Glass Production	CO_2	35.871	30.684	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.000	99%
3.G Liming	CO_2	0.000	12.093	0.000	100%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.000	100%
4.D.2 Land Converted to Wetlands	CO_2	43.067	11.481	0.000	100%
4(V) Biomass Burning	CH_4	1.230	11.387	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.000	100%
4(V) Biomass Burning	N_2O	0.858	8.180	0.000	100%
1.A.3.c Railways	N_2O	13.248	6.370	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	100%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction -	CH_4	0.735	0.377	0.000	100%

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
Gaseous Fuels					
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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	N_2O	0.007	0.000	0.000	100%
TOTAL		**38,843.466**	**30,381.434**		

Table A1.3-5: Key categories analysis – Trend Assessment - Tier 1 (Excluding LULUCF) – 2015

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.170	0.186	19%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.128	0.140	33%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.091	0.099	43%
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.056	0.061	49%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.054	0.059	55%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.053	0.058	60%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.052	0.057	66%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.036	0.040	70%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.035	0.039	74%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.026	0.029	77%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.023	0.025	79%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.022	0.024	82%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.022	0.024	84%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.020	0.022	86%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.015	0.016	88%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.009	0.010	89%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.007	0.008	90%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.007	0.008	90%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.007	0.007	91%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.006	0.007	92%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.006	0.007	92%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.006	0.006	93%
3.B Manure Management	N_2O	323.845	146.728	0.006	0.006	94%
3.B Manure Management	CH_4	327.781	344.461	0.005	0.006	94%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0.005	0.006	95%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.005	0.005	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.005	0.005	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.003	0.003	96%
1.A.3.c Railways	CO_2	140.079	55.384	0.003	0.003	96%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	0.003	0.003	97%
2.A.2 Lime Production	CO_2	153.440	73.397	0.002	0.003	97%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.002	0.002	97%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.002	0.002	98%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.002	0.002	98%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.002	0.002	98%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.001	0.002	98%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.001	0.002	99%

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.001	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.001	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.001	0.001	99%
3.H Urea Application	CO_2	50.020	57.248	0.001	0.001	99%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.001	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.001	0.001	99%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.001	0.001	99%
3.G Liming	CO_2	0.000	12.093	0.001	0.001	99%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.001	0.001	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	6.370	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.684	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	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 (2015) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	0.000	100%
TOTAL		**31,153.698**	**23,502.150**			

Table A1.3-6: Key categories analysis – Trend Assessment - Tier 1 (Including LULUCF) – 2015

Tier 1 Analysis - Trend Assessment Including LULUCF						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.123	0.164	16%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.101	0.135	30%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.067	0.089	39%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.042	0.056	44%
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.041	0.055	50%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.041	0.054	55%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.038	0.051	60%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.030	0.039	64%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.029	0.039	68%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.022	0.029	71%
4.E.2 Land Converted to Settlements	CO_2	197.001	642.588	0.021	0.027	74%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.018	0.025	76%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.017	0.023	79%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.017	0.022	81%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.013	0.018	83%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.012	0.016	84%
4.A.2 Land Converted to Forest Land	CO_2	38.633	268.565	0.010	0.013	86%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,704.183	5,419.286	0.007	0.010	87%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.007	0.010	88%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.006	0.008	88%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.005	0.007	89%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.005	0.007	90%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.005	0.007	90%
4.G Harvested Wood Products	CO_2	301.544	126.188	0.005	0.006	91%
3.B Manure Management	N_2O	323.845	146.728	0.004	0.006	91%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.004	0.006	92%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	73.912	0.004	0.005	93%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0.004	0.005	93%
3.B Manure Management	CH_4	327.781	344.461	0.004	0.005	94%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.004	0.005	94%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.004	0.005	95%
4(V) Biomass Burning	CO_2	8.987	80.594	0.003	0.004	95%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.003	0.004	95%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	85.054	0.003	0.003	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.002	0.003	96%
1.A.3.c Railways	CO_2	140.079	55.384	0.002	0.003	96%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.002	0.003	97%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	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 (2015) Estimate (Gg eq-CO2)	Trend Assessment	% Contribution to trend	Cumulative Total (%)
2.A.2 Lime Production	CO_2	153.440	73.397	0.002	0.003	97%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.001	0.002	97%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.001	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.001	0.002	98%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.001	0.001	98%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.001	0.001	98%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.001	0.001	98%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.001	0.001	98%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.001	0.001	98%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.001	0.001	98%
4.D.2 Land Converted to Wetlands	CO_2	43.067	11.481	0.001	0.001	99%
4.C.2 Land Converted to Grassland	CO_2	122.386	117.835	0.001	0.001	99%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.001	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.001	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.001	0.001	99%
3.H Urea Application	CO_2	50.020	57.248	0.001	0.001	99%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.001	0.001	99%
4.B.2 Land Converted to Cropland	CO_2	23.651	32.145	0.001	0.001	99%
3.G Liming	CO_2	0.000	12.093	0.001	0.001	99%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.000	0.001	99%
4(V) Biomass Burning	CH_4	1.230	11.387	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.000	0.000	99%
4(V) Biomass Burning	N_2O	0.858	8.180	0.000	0.000	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.000	0.000	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	0.000	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	6.370	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.684	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	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 (2015) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	0.000	100%
TOTAL		**38,843.466**	**30,381.434**			

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 (%)**
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	0.174	17%
3.A Enteric Fermentation	CH_4	1,977.594	0.085	26%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.071	33%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	0.053	38%
5.A Solid Waste Disposal	CH_4	348.607	0.043	43%
1.A.3.b Road Transportation	CO_2	3,505.875	0.041	47%
2.C.3 Aluminium Production	PFCs	1,240.239	0.040	51%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	0.038	55%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	0.033	58%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.030	61%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	0.029	64%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.026	66%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	0.025	69%
2.B.2 Nitric Acid Production	N_2O	754.265	0.025	71%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	0.021	74%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.020	76%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	0.020	78%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	0.020	80%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.017	81%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	0.017	83%
3.B Manure Management	N_2O	323.845	0.016	85%
1.A.3.b Road Transportation	N_2O	38.685	0.013	86%
5.D Wastewater Treatment and Discharge	CH_4	237.864	0.013	87%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.011	88%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	0.011	89%
3.B Manure Management	CH_4	327.781	0.010	90%
5.D Wastewater Treatment and Discharge	N_2O	67.000	0.009	91%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.009	92%
2.C.2 Ferroalloys Production	CO_2	173.798	0.008	93%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	0.007	94%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.007	94%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.006	95%
2.G Other Product Manufacture and Use	N_2O	33.376	0.005	95%
2.A.1 Cement Production	CO_2	1,085.790	0.005	96%
3.H Urea Application	CO_2	50.020	0.005	96%
1.A.3.c Railways	N_2O	13.248	0.005	97%
1.A.3.b Road Transportation	CH_4	40.611	0.003	97%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	0.003	97%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.003	98%
2.B.1 Ammonia Production	CO_2	552.104	0.003	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	0.003	98%
2.C.3 Aluminium Production	CO_2	118.797	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	0.002	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	0.002	99%
1.A.3.c Railways	CO_2	140.079	0.002	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	0.002	99%

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.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.001	99%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.001	100%
2.A.2 Lime Production	CO_2	153.440	0.001	99%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	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	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.000	100%
2.A.3 Glass Production	CO_2	35.871	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	99%
1.B.2.c. Venting and flaring	CH_4	0.590	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	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	0.735	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	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%
2.B.1 Ammonia Production	CH_4	0.137	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_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.F.1 Refrigeration and Air conditioning	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	0.000	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 (%)**
	F-gases			
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	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		**31,153.698**		

Table A1.3-8: Key categories analysis – Level Assessment - Tier 2 (Excluding LULUCF) – 2015

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.184	18%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.162	35%
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.086	43%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.044	48%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.041	52%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.040	56%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.039	60%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.032	63%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.031	66%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.030	69%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.028	72%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.026	74%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.023	77%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.022	79%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.021	81%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.019	83%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.018	85%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.015	86%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.014	88%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.014	89%
3.B Manure Management	CH_4	327.781	344.461	0.013	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.013	92%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.011	93%
3.B Manure Management	N_2O	323.845	146.728	0.008	93%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.007	94%
3.H Urea Application	CO_2	50.020	57.248	0.007	95%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.005	95%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.005	96%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.004	96%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.003	97%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.003	97%
1.A.3.c Railways	N_2O	13.248	6.370	0.003	97%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.002	97%
3.G Liming	CO_2	0.000	12.093	0.002	98%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.002	98%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.002	98%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.002	98%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.002	98%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.001	99%

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.001	99%
1.A.3.c Railways	CO_2	140.079	55.384	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.001	99%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.001	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.000	99%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	100%
2.A.2 Lime Production	CO_2	153.440	73.397	0.000	99%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	99%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	99%
2.A.3 Glass Production	CO_2	35.871	30.684	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	100%

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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	N_2O	0.007	0.000	0.000	100%
TOTAL		**31,153.698**	**23,502.150**		

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	6,704.183	0.485	49%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	0.063	55%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	0.056	60%
4.E.2 Land Converted to Settlements	CO_2	197.001	0.034	64%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	0.029	67%
3.A Enteric Fermentation	CH_4	1,977.594	0.027	69%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.023	72%
4.C.2 Land Converted to Grassland	CO_2	122.386	0.023	74%
4.B.2 Land Converted to Cropland	CO_2	23.651	0.017	76%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	0.017	78%
4.G Harvested Wood Products	CO_2	301.544	0.016	79%
5.A Solid Waste Disposal	CH_4	348.607	0.014	80%
1.A.3.b Road Transportation	CO_2	3,505.875	0.013	82%
2.C.3 Aluminium Production	PFCs	1,240.239	0.013	83%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	0.012	84%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	0.011	85%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	0.010	86%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	0.009	87%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.008	88%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	0.008	89%
2.B.2 Nitric Acid Production	N_2O	754.265	0.008	90%
4.D.2 Land Converted to Wetlands	CO_2	43.067	0.007	90%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	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 - Solid Fuels	CO_2	1,702.511	0.006	92%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	0.006	93%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.006	94%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	0.006	94%
3.B Manure Management	N_2O	323.845	0.005	95%
1.A.3.b Road Transportation	N_2O	38.685	0.004	95%
5.D Wastewater Treatment and Discharge	CH_4	237.864	0.004	96%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.004	96%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	0.003	96%
3.B Manure Management	CH_4	327.781	0.003	97%
5.D Wastewater Treatment and Discharge	N_2O	67.000	0.003	97%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	0.003	97%
4.A.2 Land Converted to Forest Land	CO_2	38.633	0.003	97%
2.C.2 Ferroalloys Production	CO_2	173.798	0.003	98%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	0.002	98%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.002	98%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	0.002	98%
2.G Other Product Manufacture and Use	N_2O	33.376	0.002	98%
2.A.1 Cement Production	CO_2	1,085.790	0.002	99%
3.H Urea Application	CO_2	50.020	0.002	99%
1.A.3.c Railways	N_2O	13.248	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	0.001	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.001	99%

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.B.1 Ammonia Production	CO_2	552.104	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	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	5.715	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	0.001	99%
1.A.3.c Railways	CO_2	140.079	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	0.000	99%
2.C.1 Iron and Steel Production	CO_2	45.970	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	0.000	99%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.000	99%
2.A.2 Lime Production	CO_2	153.440	0.000	99%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	0.000	99%
4(V) Biomass Burning	CO_2	8.987	0.000	99%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.000	99%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.000	99%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.000	99%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.000	99%
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	2.096	0.000	99%
2.A.3 Glass Production	CO_2	35.871	0.000	99%
4(V) Biomass Burning	CH_4	1.230	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	0.000	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.000	99%
1.B.2.c. Venting and flaring	CH_4	0.590	0.000	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.000	99%
1.A.3.a Domestic Aviation	CO_2	6.601	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.000	99%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.000	99%
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	99%
1.A.3.c Railways	CH_4	0.174	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.000	99%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	99%
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	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.000	99%
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	CO_2	0.000	0.000	99%

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 (%)**
Fossil Fuels				
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.000	99%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	0.000	99%
2.F.4 Aerosols	Aggregate F-gases	0.000	0.000	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	0.000	100%
3.G Liming	CO_2	0.000	0.000	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	0.000	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	0.000	100%
TOTAL		**38,843.466**		

Table A1.3-10: Key categories analysis – Level Assessment - Tier 2 (Including LULUCF) – 2015

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
4.A.1 Forest Land Remaining Forest Land	CO_2	6,704.183	5,419.286	0.531	53%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	73.912	0.056	59%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	85.054	0.052	64%
4.E.2 Land Converted to Settlements	CO_2	197.001	642.588	0.049	69%
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.044	73%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.039	77%
4.A.2 Land Converted to Forest Land	CO_2	38.633	268.565	0.024	79%
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.021	81%
4.C.2 Land Converted to Grassland	CO_2	122.386	117.835	0.020	84%
4.B.2 Land Converted to Cropland	CO_2	23.651	32.145	0.016	85%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.011	86%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.010	87%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.010	88%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.009	89%
4.G Harvested Wood Products	CO_2	301.544	126.188	0.008	90%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.008	91%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.008	91%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.007	92%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.007	93%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.006	93%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.005	94%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.005	95%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.005	95%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.004	95%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.004	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.004	96%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.003	97%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.003	97%
3.B Manure Management	CH_4	327.781	344.461	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.003	98%
4.D.2 Land Converted to Wetlands	CO_2	43.067	11.481	0.003	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.003	98%
3.B Manure Management	N_2O	323.845	146.728	0.002	98%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.002	98%
3.H Urea Application	CO_2	50.020	57.248	0.002	99%
4(V) Biomass Burning	CO_2	8.987	80.594	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.001	99%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.001	99%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.001	99%
1.A.3.c Railways	N_2O	13.248	6.370	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.001	99%
3.G Liming	CO_2	0.000	12.093	0.000	99%

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.000	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.000	99%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	100%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.000	100%
4(V) Biomass Burning	N_2O	0.858	8.180	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.000	100%
1.A.3.c Railways	CO_2	140.079	55.384	0.000	100%
4(V) Biomass Burning	CH_4	1.230	11.387	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	100%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	100%
2.A.2 Lime Production	CO_2	153.440	73.397	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	100%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.684	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.000	100%

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2015) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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	N_2O	0.007	0.000	0.000	100%
TOTAL		**38,843.466**	**30,381.434**		

Table A1.3-11: Key categories analysis – Trend Assessment - Tier 2 (Excluding LULUCF) – 2015

Tier 2 Analysis - Trend Assessment Excluding LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.039	0.273	27%
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.012	0.087	36%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.009	0.064	42%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.008	0.060	48%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.007	0.046	53%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.006	0.039	57%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.005	0.035	60%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.004	0.031	64%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.004	0.027	66%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.004	0.026	69%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.004	0.026	71%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.003	0.021	73%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.003	0.019	75%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.003	0.018	77%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.003	0.018	79%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.002	0.017	81%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.002	0.016	82%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.002	0.013	84%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.002	0.012	85%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.002	0.012	86%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.002	0.011	87%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.002	0.011	88%
3.B Manure Management	N_2O	323.845	146.728	0.002	0.011	89%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.001	0.010	90%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.001	0.007	91%
3.B Manure Management	CH_4	327.781	344.461	0.001	0.007	92%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.001	0.006	92%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.001	0.005	93%
3.H Urea Application	CO_2	50.020	57.248	0.001	0.004	93%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.001	0.004	94%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.001	0.004	94%
3.G Liming	CO_2	0.000	12.093	0.001	0.004	94%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.001	0.004	95%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.001	0.004	95%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.001	0.004	96%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.000	0.004	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	0.003	96%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	0.003	97%
1.A.3.c Railways	N_2O	13.248	6.370	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 (2015) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.000	0.003	97%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.000	0.003	97%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.000	0.002	98%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	0.001	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	0.001	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	0.001	98%
1.A.3.c Railways	CO_2	140.079	55.384	0.000	0.001	99%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.000	0.001	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.000	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	0.001	99%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.000	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.000	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.000	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.000	0.001	99%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	0.001	99%
2.A.2 Lime Production	CO_2	153.440	73.397	0.000	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	0.000	99%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	0.000	99%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	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 (2015) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.684	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	0	0.000	100%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0	0.000	100%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0	0.000	100%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	0	0.000	100%
TOTAL		**31,153.698**	**23,502.150**			

Table A1.3-12: Key categories analysis – Trend Assessment - Tier 2 (Including LULUCF) – 2015

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
4.B.1 Cropland Remaining Cropland	CO_2	215.132	73.912	0.059	0.209	21%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	85.054	0.031	0.110	32%
4.E.2 Land Converted to Settlements	CO_2	197.001	642.588	0.031	0.110	43%
5.A Solid Waste Disposal	CH_4	348.607	1,253.821	0.029	0.101	53%
4.A.2 Land Converted to Forest Land	CO_2	38.633	268.565	0.018	0.064	59%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,704.183	5,419.286	0.014	0.051	64%
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	0.009	0.031	68%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	0.007	0.025	70%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	403.644	0.006	0.022	72%
4.G Harvested Wood Products	CO_2	301.544	126.188	0.006	0.021	74%
4.B.2 Land Converted to Cropland	CO_2	23.651	32.145	0.006	0.020	77%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	0.005	0.017	78%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	56.166	0.004	0.015	80%
4.D.2 Land Converted to Wetlands	CO_2	43.067	11.481	0.004	0.015	81%
3.A Enteric Fermentation	CH_4	1,977.594	1,024.357	0.004	0.015	83%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	287.684	0.004	0.013	84%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	331.870	235.387	0.003	0.012	85%
4.C.2 Land Converted to Grassland	CO_2	122.386	117.835	0.003	0.011	86%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	0.003	0.011	87%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	0.003	0.010	88%
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	0.003	0.009	89%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.001	0.002	0.008	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	0.002	0.008	91%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	0.002	0.007	92%
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	0.002	0.006	92%
1.A.3.b Road Transportation	N_2O	38.685	48.217	0.002	0.006	93%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	39.223	0.001	0.005	93%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	60.991	0.001	0.005	94%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	0.001	0.005	94%
3.B Manure Management	N_2O	323.845	146.728	0.001	0.004	95%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	0.001	0.004	95%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	145.968	0.001	0.004	95%
5.D Wastewater Treatment and Discharge	N_2O	67.000	82.247	0.001	0.004	96%
4(V) Biomass Burning	CO_2	8.987	80.594	0.001	0.003	96%
2.G Other Product Manufacture and Use	N_2O	33.376	3.805	0.001	0.003	96%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,027.975	735.051	0.001	0.003	97%
3.B Manure Management	CH_4	327.781	344.461	0.001	0.002	97%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	0.001	0.002	97%

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2015) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	0.001	0.002	97%
3.H Urea Application	CO_2	50.020	57.248	0.000	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	0.000	0.002	98%
1.A.3.b Road Transportation	CH_4	40.611	12.035	0.000	0.001	98%
3.G Liming	CO_2	0.000	12.093	0.000	0.001	98%
2.F.4 Aerosols	Aggregate F-gases	0.000	11.587	0.000	0.001	98%
2.A.1 Cement Production	CO_2	1,085.790	1,169.235	0.000	0.001	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	0.000	0.001	98%
1.A.3.c Railways	N_2O	13.248	6.370	0.000	0.001	98%
5.B Biological Treatment of Soild Waste	CH_4	0.000	6.161	0.000	0.001	99%
2.B.2 Nitric Acid Production	N_2O	754.265	311.348	0.000	0.001	99%
5.D Wastewater Treatment and Discharge	CH_4	237.864	206.602	0.000	0.001	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	4.406	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	2.649	0.000	0.001	99%
4(V) Biomass Burning	N_2O	0.858	8.180	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	55.770	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	0.000	0.001	99%
1.A.3.c Railways	CO_2	140.079	55.384	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	0.000	0.001	99%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	0.000	0.001	99%
4(V) Biomass Burning	CH_4	1.230	11.387	0.000	0.000	99%
2.B.1 Ammonia Production	CO_2	552.104	537.042	0.000	0.000	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.688	0.000	0.000	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	5.265	0.000	0.000	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	39.823	0.000	0.000	99%
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	0.000	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO_2	45.970	13.630	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	0.000	100%
2.A.2 Lime Production	CO_2	153.440	73.397	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.465	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	1.675	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 (2015) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.031	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.016	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.177	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.046	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.293	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.684	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.062	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	0.000	0.000	100%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000		0	100%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000		0	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000		0	100%
2.C.3 Aluminium Production	CO_2	118.797	0.000		0	100%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000		0	100%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000		0	100%
TOTAL		**38,843.466**	**30,381.434**			

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

Tier 1 and Tier 2 Analysis - Key Source Analysis Summary (Croatian Inventory, year 1990)					
A	B	C	D		E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification		Com.
1. Energy					
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	Yes	L1e, L2e	L1i	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	Yes	L1e, L2e	L1i, L2i	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	Yes	L1e	L1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	Yes	L1e, L2e	L1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	Yes	L1e, L2e	L1i, L2i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	Yes	L1e, L2e	L1i	
1.A.3.b Road Transportation	CO_2	Yes	L1e, L2e	L1i, L2i	
1.A.3.b Road Transportation	N_2O	Yes	L2e		
1.A.4 Other Sectors - Biomass	CH_4	Yes	L1e, L2e	L1i, L2i	
1.A.4 Other Sectors - Biomass	N_2O	Yes	L2e		
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	CO_2	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	L1i	
2.B.1 Ammonia Production	CO_2	Yes	L1e	L1i	
2.B.2 Nitric Acid Production	N_2O	Yes	L1e, L2e	L1i, L2i	
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, L2e	L1i	
3. Agriculture					
3.A Enteric Fermentation	CH_4	Yes	L1e, L2e	L1i, L2i	
3.B Manure Management	CH_4	Yes	L1e, L2e	L1i	
3.B Manure Management	N_2O	Yes	L1e, L2e	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	

L1e - Level excluding LULUCF Tier1
L1i - Level including LULUCF Tier1
L2e - Level excluding LULUCF Tier2
L2i - Level including LULUCF Tier2

Table A1.3-14: Source Analysis Summary (Croatian Inventory, 2015)

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, 2017)							
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	L1i		
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	Yes	L1e, L2e	T1e, T2e	L1i	T1i, T2i	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	Yes	L1e, L2e	T1e, T2e	L1i	T1i, T2i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	Yes	L1e	T1e, T2e	L1i	T1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	Yes	L1e, L2e	T1e, T2e	L1i	T1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	Yes	L1e	T1e, T2e	L1i	T1i, T2i	
1.A.3.b Road Transportation	CO_2	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i, T2i	
1.A.3.b Road Transportation	N_2O	Yes	L2e	T2e			
1.A.4 Other Sectors - Biomass	CH_4	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i, T2i	
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	
1.A.4 Other Sectors - Liquid Fuels	N_2O	Yes	L2e				
1.A.4 Other Sectors - Solid Fuels	CO_2	Yes		T1e, T2e		T1i	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	Yes		T2e		T1i	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	Yes		T1e, T2e		T1i, T2i	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	Yes	L2e	T2e	L1i		
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	Yes	L1e, L2e	T1e, 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	T1	
2.B.2 Nitric Acid Production	N_2O	Yes	L1e	T1e	L1i	T1i	
2.B.8 Petrochemical and Carbon Black Production	CO_2	Yes		T1e, T2e		T1i, T2i	
2.C.2 Ferroalloys Production	CO_2	Yes		T1e		T1i	
2.C.3 Aluminium Production	CO_2	Yes		T1e		T1i	
2.C.3 Aluminium Production	PFCs	Yes		T1e		T1i	
2.D Non-energy Products from Fuels and Solvent Use	CO_2	Yes		T2e		T1i	
2.F.1 Refrigeration and Air conditioning - Aggregate	F-gases	Yes	L1e, L2e	T1e, T2e	L1i	T1i, T2i	
3. Agriculture							
3.A Enteric Fermentation	CH_4	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i, T2i	
3.B Manure Management	CH_4	Yes	L1e, L2e	T1e	L1i	T1i	
3.B Manure Management	N_2O	Yes	L1e	T1e, T2e	L1i	T1i	
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	T2e	L1i, L2i	T2i	
4. Land use, land use change and forestry							
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	Yes			L2i	T2i	
4.A.1 Forest Land Remaining Forest Land	CO_2	Yes			L1i, L2i	T1i, T2i	
4.A.2 Land Converted to Forest Land	CO_2	Yes			L1i, L2i	T1i, T2i	
4.B.1 Cropland Remaining Cropland	CO_2	Yes			L2i	T1i, T2i	
4.B.2 Land Converted to Cropland	CO_2	Yes			L2i	T2i	
4.C.2 Land Converted to Grassland	CO_2	Yes			L2i	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			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		

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, 2017)								
A	B	C	D					E
IPCC Source Categories	GHG	Key	If Column C is Yes, Criteria for Identification					Com.
5.D Wastewater Treatment and Discharge	N_2O	Yes	L2e	T2e				

L1e - Level excluding LULUCF - Tier1
L2e - Level excluding LULUCF - Tier2
L1i - Level including LULUCF - Tier1
L2i - Level including LULUCF - Tier2

T1e - Trend excluding LULUCF - Tier1
T2e - Trend excluding LULUCF - Tier2
T1i - Trend including LULUCF - Tier1
T2i - Trend including LULUCF - Tier2

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).

2.1.1 Estimation of Uncertainty by Monte Carlo Simulation (Approach 2)

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.

Uncertainty distributions

A) Distributions

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

B)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.

C) 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.

A.5.1.3. Uncertainty in the emissions excluding LULUCF

The estimate of CO_2-eq emissions in 2015 was estimated at 23,502.15 Gg CO_2-eq.

The estimate of CO_2-eq emissions in 1990 was estimated at 31,153.70 Gg CO_2-eq.

Monte Carlo analysis shows that with a certainty of 95% we can say that the total emissions of categories for the year 2015 (23,829.05 Gg CO_2-eq) according to simulation varies between 22,793.66 Gg CO_2-eq (2.5% percentile) and 25,022.83 Gg CO_2-eq (97.5% percentile).

Figure A2.1-1: Distribution of total CO_2 emission for year 2015 excluding LULUCF

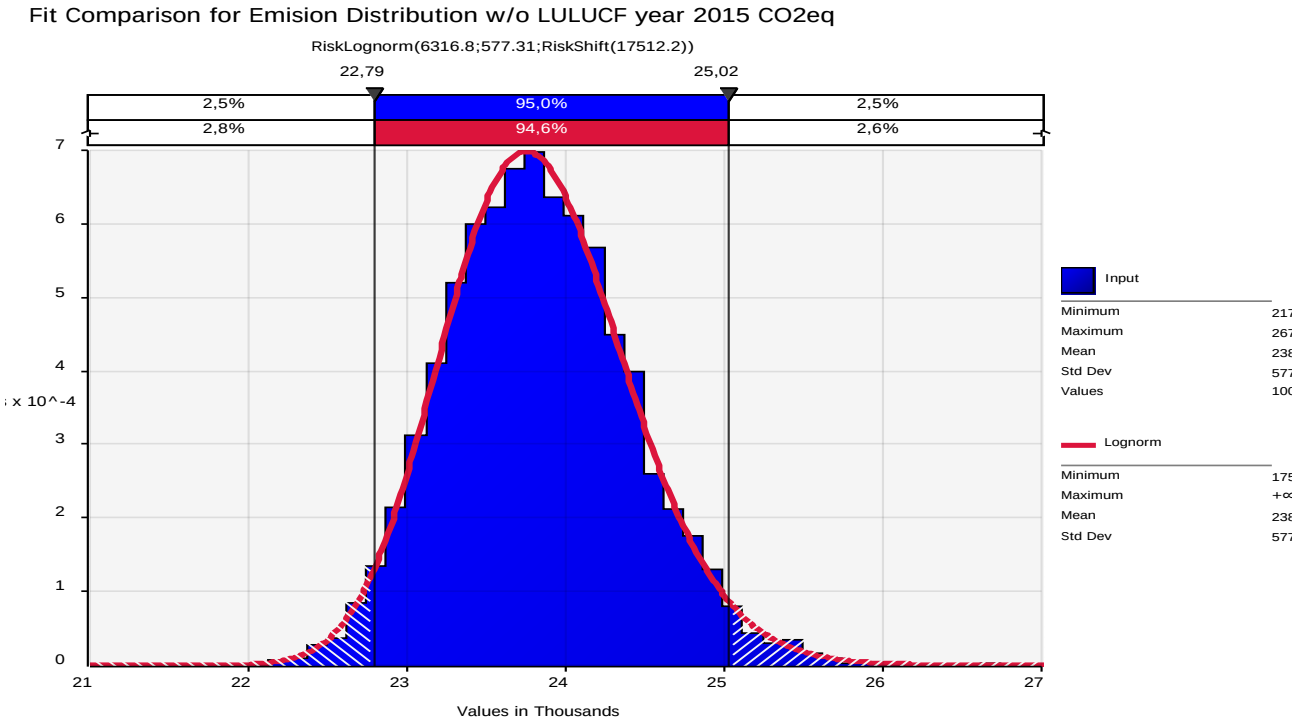

Figure A2.1-1 shows the distribution of total CO_2 emission for year 2015 with a corresponding probability density function (red line) that best matches the simulation results.

Monte Carlo analysis shows that with a certainty of 95% we can say that the total simulated emissions of all categories excluding LULUCF for the year 1990 (31,548.64 Gg CO_2-eq) varies between 30,381.83 Gg CO_2-eq (2.5% percentile) and 32,804.17 Gg CO_2-eq (97.5% percentile).

Figure A2.1-2: Distribution of total CO_2 emission for year 1990 excluding LULUCF

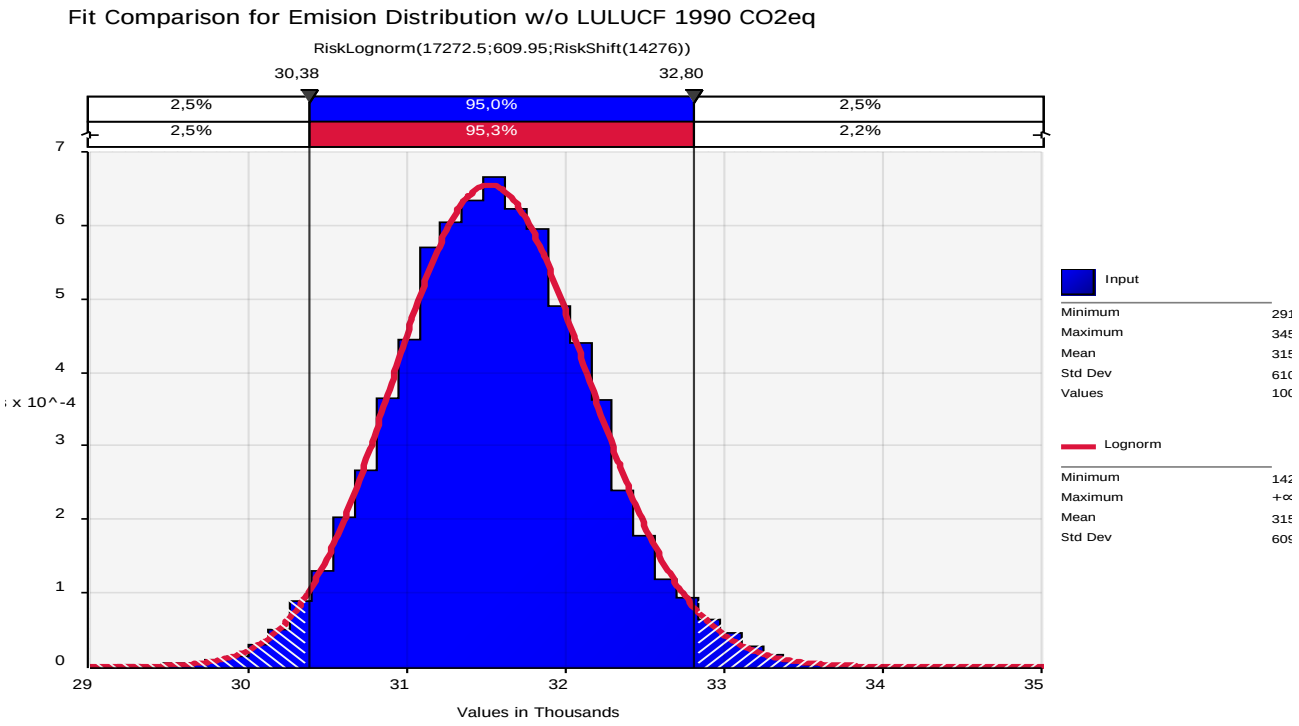

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Figure A2.1-2 shows the distribution of total CO_2 emission for year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

A.5.1.4. 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 -24.56%, simulated trend is -24.44 % and the 95% probability range of the trend is -28.78% (2,5% percentile) to -19.73% (97.5% percentile).

Figure A2.1-3: Distribution of trend for year 2015 with the respect to year 1990

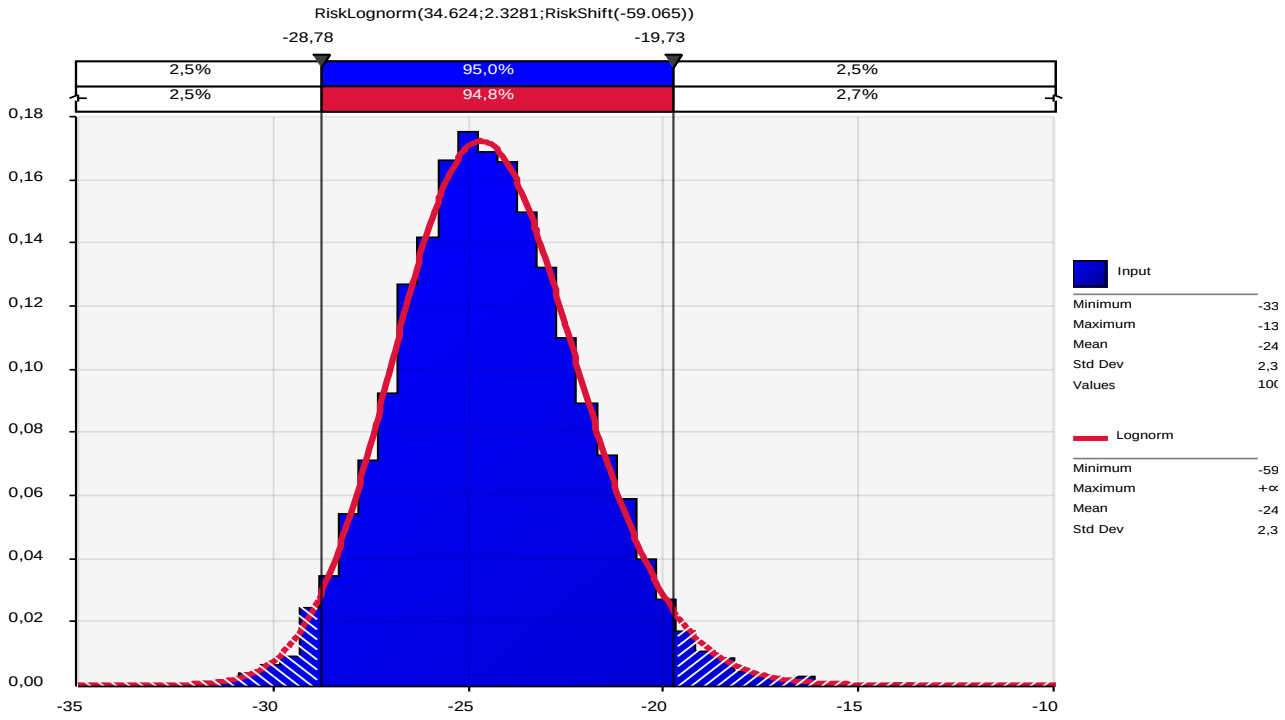


Figure A2.1-3: shows the distribution of trend for year 2015 respect to year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

A.5.1.5. Uncertainty in the emissions including LULUCF

The estimate of CO_2-eq emissions in 2015 was estimated at 18,517.68 Gg CO_2-eq.

The estimate of CO_2-eq emissions in 1990 was estimated at 24,509.98 Gg CO_2-eq.

Monte Carlo analysis shows that with a certainty of 95% we can say that the total emissions of categories for the year 2015 (22,822,29 Gg CO_2-eq) according to simulation varies between 15,995.31 Gg CO_2-eq (2.5% percentile) and 29,777.33 Gg CO_2-eq (97.5% percentile).

Figure A2.1-4 shows the distribution of total CO_2 emission including LULUCF for year 2015 with a corresponding probability density function (red line) that best matches the simulation results.

Figure A2.1-4: Distribution of total CO_2 emission for year 2015 including LULUCF

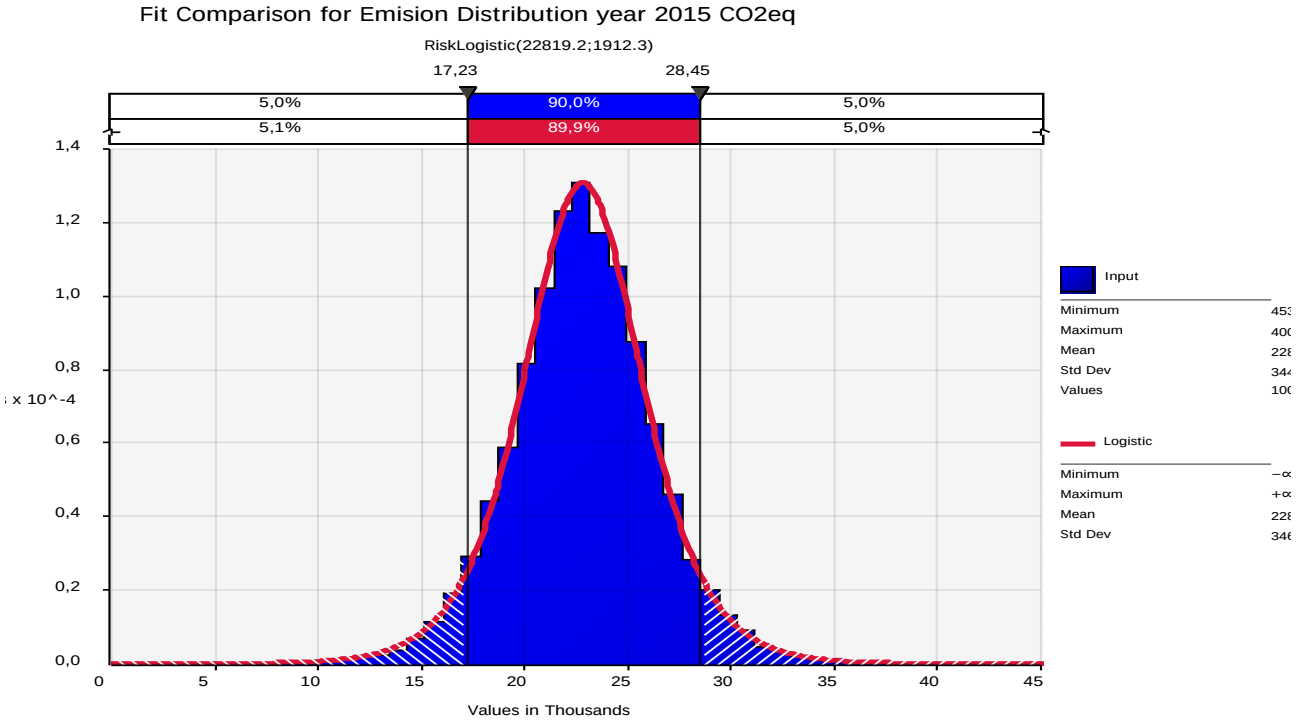
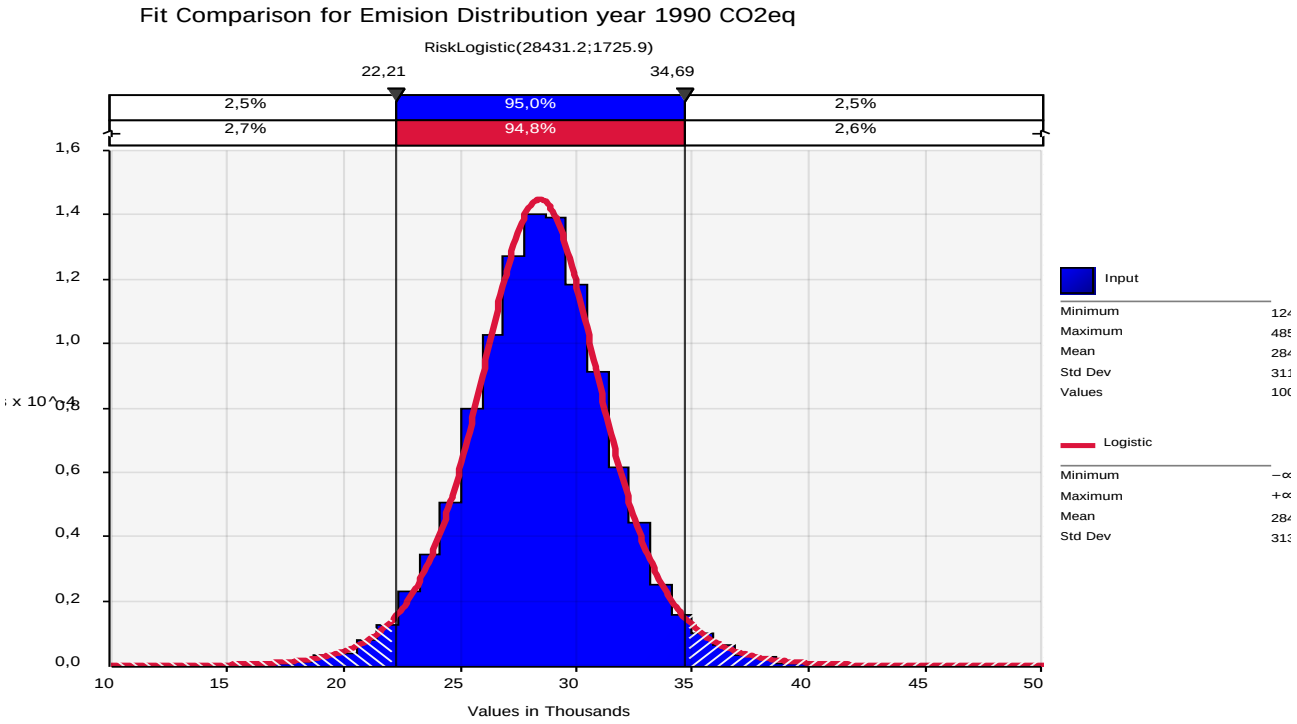


Figure A2.1-5: Distribution of total CO_2 emission for year 1990 including LULUCF



Monte Carlo analysis shows that with a certainty of 95% we can say that the total simulated emissions of all categories including LULUCF for the year 1990 (28,426.37 Gg CO_2-eq) varies between 22,211.47 Gg CO_2-eq (2.5% percentile) and 34,691.60 Gg CO_2-eq (97.5% percentile).

Figure A2.1-5 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.

A.5.1.6. Uncertainty in the trend including LULUCF

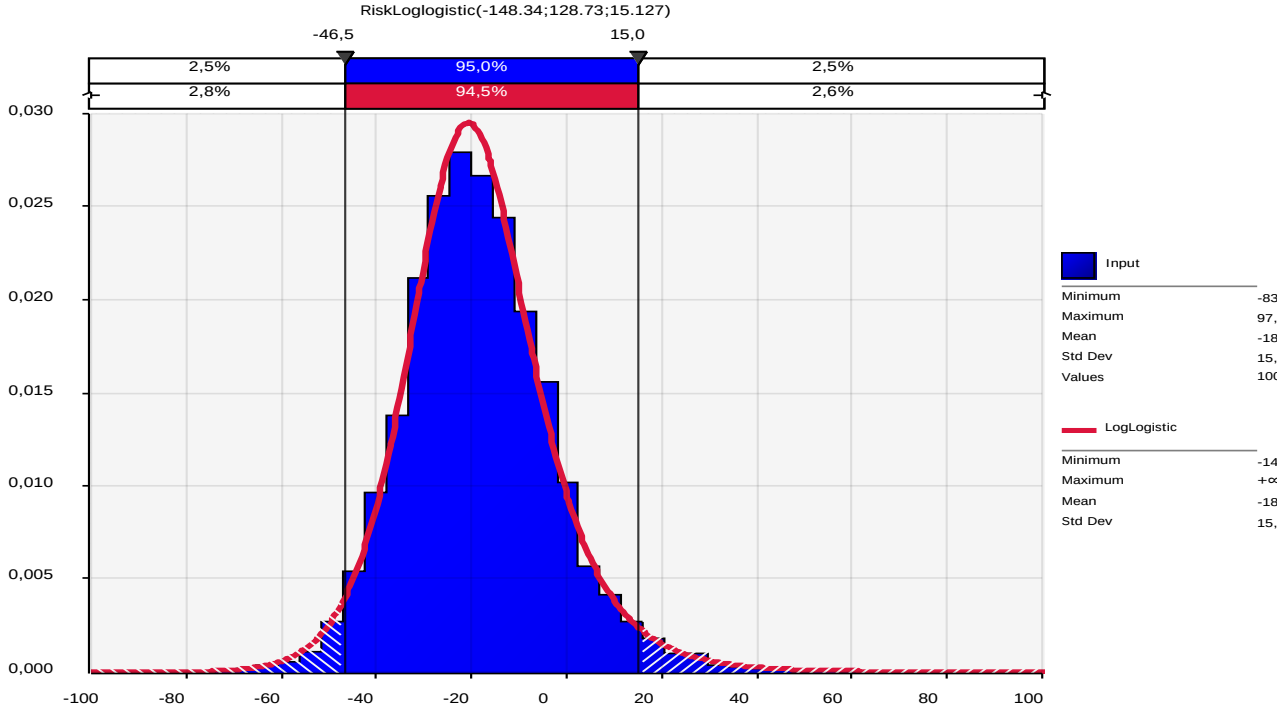
The trend in the inventory is estimated for each category and for the total summary emission (all categories included) with the following forumula:

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

The Inventory trend including LULUCF is -24,45%, simulated trend is -18,71% and the 95% probability range of the trend is -46.54% (2,5% percentile) to 15.05% (97.5% percentile), so the uncertainty introduced in trend varies from -22.09% to 39.49% with respect to the base year emissions.

Figure A2.1-6: shows the distribution of trend for year 2015 respect to year 1990 with a corresponding probability density function (red line) that best matches the simulation results, including LULUCF.

Figure A2.1-6: Distribution of trend for year 2015 with the respect to year 1990 including LULUCF



2.2. TABLE 3.3 OF VOLUME 1 OF THE 2006 IPCC GUIDELINES

Table A2:2-1: Uncertainty estimates from the Monte Carlo simulation for the year 2015 (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 CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,206.430	-5	5	-5	5	-6.89	7.13	0.000156	-73.86	-2.47	2.66	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.820	-5	5	-50	50	-50.03	49.98	0.000000	-77.84	-12.09	26.80	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	2.067	-5	5	-200	200	-91.76	206.12	0.000000	-76.82	-21.69	334.07	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,064.409	-5	5	-5	5	-6.94	7.22	0.000466	242.15	-32.31	35.02	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.546	-5	5	-50	50	-49.84	50.02	0.000000	242.15	-189.23	403.80	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	9.755	-5	5	-200	200	-91.69	207.95	0.000005	242.15	-320.69	5290.61	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,500.828	-5	5	-5	5	-6.93	7.17	0.000244	-19.01	-7.72	8.42	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	1.090	-5	5	-50	50	-50.41	50.49	0.000000	-29.91	-38.81	86.04	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	5.146	-5	5	-200	200	-91.78	208.58	0.000001	-9.97	-84.28	1330.67	
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4		1.675	-5	5	-50	50	-50.25	50.64	0.000000				2
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O		2.649	-5	5	-200	200	-91.71	208.22	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	985.826	-5	5	-5	5	-7.03	7.20	0.000106	-54.32	-4.32	4.77	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.853	-5	5	-50	50	-50.15	50.04	0.000000	-59.29	-22.26	51.36	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	2.020	-5	5	-200	200	-91.79	208.65	0.000000	-59.38	-38.11	598.51	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	334.807	-5	5	-5	5	-6.94	7.16	0.000012	-80.33	-1.86	2.13	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	0.858	-5	5	-50	50	-50.10	49.83	0.000000	-79.56	-11.31	24.22	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.534	-5	5	-200	200	-91.75	206.70	0.000000	-79.56	-19.13	336.71	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	846.302	-5	5	-5	5	-6.86	7.13	0.000078	-48.43	-4.94	5.41	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.377	-5	5	-50	50	-50.29	50.61	0.000000	-48.66	-28.32	62.06	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.450	-5	5	-200	200	-91.77	209.22	0.000000	-48.66	-47.98	740.76	
1.A.2 Fuel combustion - Manufacturing Industries and	CO_2		55.770	-5	5	-5	5	-7.04	7.10	0.000000				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 CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
Construction - Other Fossil Fuels														
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4		0.293	-5	5	-50	50	-50.31	49.94	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O		0.465	-5	5	-200	200	-91.71	209.21	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	0.954	-5	5	-50	50	-49.78	50.57	0.000000	-64.68	-19.41	42.09	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.516	-5	5	-200	200	-91.66	207.81	0.000000	-64.68	-33.07	537.13	
1.A.3.a Domestic Aviation	CO_2	6.601	30.796	-5	5	-5	5	-7.05	7.15	0.000000	366.54	-44.17	48.27	
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	-5	5	-50	50	-50.08	50.08	0.000000	366.15	-256.83	566.37	
1.A.3.a Domestic Aviation	N_2O	0.055	0.257	-5	5	-200	200	-91.69	207.43	0.000000	366.15	-437.10	6703.65	
1.A.3.b Road Transportation	CO_2	3,505.875	5,666.953	-5	5	-5	5	-7.09	7.23	0.003489	61.64	-15.73	17.22	
1.A.3.b Road Transportation	CH_4	40.611	12.035	-5	5	-50	50	-50.21	50.80	0.000001	-70.37	-16.19	37.40	
1.A.3.b Road Transportation	N_2O	38.685	48.217	-5	5	-200	200	-91.76	209.65	0.000126	24.64	-117.06	1941.90	
1.A.3.c Railways	CO_2	140.079	55.384	-5	5	-5	5	-6.91	7.11	0.000000	-60.46	-3.73	4.23	
1.A.3.c Railways	CH_4	0.174	0.062	-5	5	-50	50	-50.07	50.14	0.000000	-64.41	-19.64	43.36	
1.A.3.c Railways	N_2O	13.248	6.370	-5	5	-200	200	-91.74	208.28	0.000002	-51.92	-45.10	687.02	
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	130.390	-5	5	-5	5	-6.87	7.16	0.000002	-2.97	-9.16	10.31	
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.308	-5	5	-50	50	-50.40	50.54	0.000000	-2.79	-53.22	118.85	
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.049	-5	5	-200	200	-91.80	207.57	0.000000	-2.79	-91.09	1510.97	
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,222.581	-5	5	-5	5	-6.99	7.20	0.000160	-50.11	-4.80	5.32	
1.A.4 Other Sectors - Liquid Fuels	CH_4	6.331	2.728	-5	5	-50	50	-50.02	50.40	0.000000	-56.91	-23.63	52.99	
1.A.4 Other Sectors - Liquid Fuels	N_2O	88.151	67.666	-5	5	-200	200	-91.74	208.46	0.000247	-23.24	-72.12	1149.81	
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	9.490	-5	5	-5	5	-7.02	7.12	0.000000	-98.19	-0.17	0.19	
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.705	-5	5	-50	50	-50.15	50.29	0.000000	-97.89	-1.15	2.59	
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.042	-5	5	-200	200	-91.74	208.24	0.000000	-98.21	-1.67	26.70	
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,487.685	-5	5	-5	5	-6.92	7.14	0.000236	99.94	-18.97	21.00	
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.315	-5	5	-50	50	-50.31	50.24	0.000000	98.51	-108.29	244.47	
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.792	-5	5	-200	200	-91.70	207.58	0.000000	41.59	-132.73	2101.98	
1.A.4 Other Sectors - Biomass	CH_4	316.275	366.286	-5	5	-50	50	-50.17	50.49	0.000732	15.81	-63.34	140.94	
1.A.4 Other Sectors - Biomass	N_2O	50.267	58.216	-5	5	-200	200	-91.69	208.31	0.000183	15.81	-108.76	1741.95	
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 -	CO_2	157.786	39.223											

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 CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
Oil														
1. Exploration	CO_2	28.536	7.093	-5	5	-50	50	-50.14	50.19	0.000000	-75.14	-13.59	30.23	
2. Production(7)	CO_2	129.245	32.127	-5	5	-50	50	-50.22	50.95	0.000006	-75.14	-13.53	30.49	
3. Transport	CO_2	0.006	0.004	-5	5	-50	50	-50.15	50.33	0.000000	-35.73	-35.35	77.30	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**CH_4**	**220.600**	**56.166**											
1. Exploration	CH_4	15.205	3.780	-5	5	-100	100	-84.30	101.67	0.000000	-75.14	-21.21	149.02	
2. Production(7)	CH_4	199.531	49.598	-5	5	-100	100	-84.09	100.91	0.000047	-75.14	-21.32	145.46	
3. Transport	CH_4	1.516	0.974	-5	5	-100	100	-84.48	100.53	0.000000	-35.73	-55.02	364.59	
4. Refining/storage	CH_4	4.348	1.814	-5	5	-100	100	-84.26	101.11	0.000000	-58.28	-35.83	248.86	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**N_2O**	**0.064**	**0.016**	-5	5	-10	1000	-9.64	1001.72	0.000000	-75.14	-20.72	124.62	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	**CO_2**	**522.064**	**287.684**											
1. Exploration	CO_2	18.043	16.206	-5	5	-50	50	-50.08	50.08	0.000001	-10.18	-51.18	95.87	
2. Production(7)	CO_2	418.423	194.572	-5	5	-100	100	-84.27	102.47	0.000722	-53.50	-39.88	282.32	
3. Processing	CO_2	85.568	76.857	-5	5	-100	100	-84.44	101.31	0.000112	-10.18	-77.08	488.37	
4. Transmission and storage	CO_2	0.011	0.010	-5	5	-100	100	-84.32	100.05	0.000000	-6.23	-80.14	528.06	
5. Distribution	CO_2	0.019	0.039	-5	5	-20	500	-19.69	500.80	0.000000	102.00	-154.34	645.98	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	**CH_4**	**148.067**	**145.968**											
1. Exploration	CH_4	9.614	8.635	-5	5	-100	100	-84.04	100.60	0.000001	-10.18	-76.54	545.22	
2. Production(7)	CH_4	66.445	59.681	-5	5	-100	100	-84.07	101.06	0.000068	-10.18	-76.54	558.83	
3. Processing	CH_4	29.338	26.351	-5	5	-100	100	-84.22	100.37	0.000013	-10.18	-76.53	518.17	
4. Transmission and storage	CH_4	32.239	30.230	-5	5	-100	100	-84.32	101.06	0.000017	-6.23	-79.96	538.99	
5. Distribution	CH_4	10.431	21.071	-5	5	-20	500	-20.59	500.54	0.000070	102.00	-152.73	632.05	
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	-84.27	100.73	0.000000	-94.70	-4.53	31.88	
1.B.2.c. Venting and flaring	**CH_4**	**0.590**	**0.031**											
1. Venting - Oil	CH_4	0.590	0.031	-5	5	-100	100	-84.20	100.84	0.000000	-94.70	-4.53	33.12	
1.B.2.c. Venting and flaring	**N_2O**	**0.630**	**0.177**											
2. Flaring - Oil	N_2O	0.598	0.149	-5	5	-100	100	-84.22	101.17	0.000000	-75.14	-21.43	133.22	
2. Flaring - Gas	N_2O	0.032	0.029	-5	5	-100	100	-84.43	101.20	0.000000	-10.18	-76.53	530.90	
2.A.1 Cement Production	**CO_2**	**1,085.790**	**1,169.235**	-2	2	-2	2	-2.75	2.86	0.000024	7.69	-4.21	4.39	

TABLE 3.3
GENERAL REPORTING TABLE FOR UNCERTAINTY

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		Gg CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
2.A.2 Lime Production	**CO_2**	**153.440**	**73.397**	-2	2	-2	2	-2.75	2.80	0.000000	-52.17	-1.88	1.92	
2.A.3 Glass Production	**CO_2**	**35.871**	**30.684**	-2	2	-2	2	-2.79	2.81	0.000000	-14.46	-3.40	3.52	
2.A.4 Other Process Uses of Carbonates	**CO_2**	**5.775**	**39.823**											
2.A.4.a Ceramics	CO_2	5.775	33.073	-7.5	7.5	-5	5	-8.74	9.19	0.000000	472.72	-68.22	77.51	
2.A.4.b Other uses of Soda Ash	CO_2		6.751	-7.5	7.5	-5	5	-9.02	9.01	0.000000				
2.B.1 Ammonia Production	**CO_2**	**552.104**	**537.042**	-2	2	-2	2	-2.84	2.85	0.000005	-2.73	-3.83	4.03	5
2.B.1 Ammonia Production	**CH_4**	**0.137**	**0.168**	-5	5	-50	50	-50.25	50.48	0.000000	22.53	-67.05	148.18	
2.B.1 Ammonia Production	**N_2O**	**0.163**	**0.200**	-5	5	-200	200	-91.65	208.33	0.000000	22.53	-113.87	1802.71	
2.B.2 Nitric Acid Production	**N_2O**	**754.265**	**311.348**	-2	2	-2	2	-2.80	2.78	0.000002	-58.72	-6.94	10.49	
2.B.8 Petrochemical and Carbon Black Production	**CO_2**	**219.763**	**0.001**											
2.B.8.a Methanol	CO_2		0.001	-7.5	7.5	-30	30	-30.53	31.25	0.000000				2
2.B.8.b Ethylene	CO_2	125.652												
2.B.8.c Ethylene Dichloride and Vinyl Chloride Monomer	CO_2	13.877												2
2.B.8.f Carbon Black	CO_2	80.235												2
2.B.8 Petrochemical and Carbon Black Production	**CH_4**	**5.493**	**0.000**											
2.B.8.a Methanol	CH_4		0.000	-7.5	7.5	-30	30	-30.52	31.66	0.000000				2
2.B.8.b Ethylene	CH_4	5.447												
2.B.8.f Carbon Black	CH_4	0.046												2
2.C.1 Iron and Steel Production	**CO_2**	**45.970**	**13.630**											
2.C.1.a Steel	CO_2	45.970	13.630	-5	5	-5	5	-7.16	7.10	0.000000	-70.35	-4.23	5.28	
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**	**189.428**	**60.991**											
2.D Non-energy Products from Fuels and Solvent Use\2.D.1 Lubricant Use	CO_2	72.603	15.821	-5	5	-50	50	-50.03	50.82	0.000001	-78.21	-12.01	26.56	
2.D Non-energy Products from Fuels and Solvent Use\2. Paraffin wax use	CO_2	22.816	3.783	-5	5	-50	50	-49.98	50.47	0.000000	-83.42	-9.04	20.56	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Solvent use	CO_2	93.994	35.547	NA	NA	-50	50	-40.78	58.47	0.000007	-62.18	-18.97	37.19	4

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		Gg CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Road paving with asphalt	CO_2	0.005	0.020	-10	10	-50	50	-50.31	52.47	0.000000	281.15	-210.12	465.89	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Other\Urea based CC	CO_2		5.805	-5	5	-5	5	-7.06	7.13	0.000000				
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Asphalt roofing	CO_2	0.009	0.015	-10	10	-50	50	-50.52	50.80	0.000000	57.01	-86.00	193.07	
2.F.1 Refrigeration and Air conditioning	**Aggregate F-gases**		**403.644**											
2.F.1.a Commercial Refrigeration\HFC-143a	HFC-143a		87.339	-50	50	-50	50	-62.74	80.96	0.000087				2
2.F.1.a Commercial Refrigeration\HFC-125	HFC-125		57.866	-50	50	-50	50	-62.70	81.46	0.000038				2
2.F.1.a Commercial Refrigeration\HFC-134a	HFC-134a		2.149	-50	50	-50	50	-61.71	80.48	0.000000				2
2.F.1.b Domestic Refrigeration\HFC-134a	HFC-134a		0.397	-50	50	-50	50	-62.41	79.13	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-23	HFC-23		0.165	-50	50	-50	50	-62.58	80.63	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-134a	HFC-134a		5.830	-50	50	-50	50	-62.42	78.30	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-125	HFC-125		20.916	-50	50	-50	50	-62.07	77.58	0.000005				2
2.F.1.c Industrial Refrigeration\HFC-143a	HFC-143a		0.787	-50	50	-50	50	-61.81	80.87	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-32	HFC-32		3.809	-50	50	-50	50	-62.57	79.58	0.000000				2
2.F.1.c Industrial Refrigeration\C2F6	PFC-116		0.034	-50	50	-50	50	-62.36	80.33	0.000000				2
2.F.1.d Transport Refrigeration\HFC-134a	HFC-134a		42.292	-50	50	-50	50	-62.35	79.31	0.000020				2
2.F.1.e Mobile Air-Conditioning\HFC-134a	HFC-134a		156.800	-50	50	-50	50	-62.77	79.98	0.000273				2
2.F.1.f Stationary Air-Conditioning\HFC-32	HFC-32		3.209	-50	50	-50	50	-62.84	80.59	0.000000				2
2.F.1.f Stationary Air-Conditioning\HFC-125	HFC-125		17.106	-50	50	-50	50	-61.59	80.17	0.000003				2
2.F.1.f Stationary Air-Conditioning\HFC-134a	HFC-134a		4.945	-50	50	-50	50	-62.24	79.60	0.000000				2
2.F.3 Fire Protection	**Aggregate F-gases**		**4.688**											
2.F.3 Fire Protection\HFC-125	HFC-125		0.504	-50	50	-50	50	-62.21	79.75	0.000000				2
2.F.3 Fire Protection\HFC-227ea	HFC-227ea		3.478	-50	50	-50	50	-62.99	79.85	0.000000				2
2.F.3 Fire Protection\HFC-236fa	HFC-236fa		0.706	-50	50	-50	50	-63.50	78.89	0.000000				2
2.F.4 Aerosols	**Aggregate F-gases**		**11.587**											
2.F.4 Aerosols\2.F.4.a Metered Dose Inhalers\HFC-134a	HFC-134a		11.587	-50	50	-50	50	-61.76	81.59	0.000002				2
2.G Other Product Manufacture and Use	**N_2O**	**33.376**	**3.805**											
2.G.3 N2O from Product Uses\2.G.3.a Medical Applications	N_2O	32.780	3.805	-50	50	-50	50	-61.65	82.52	0.000000	-88.39	199.77	2005.56	
2.G.3 N2O from Product Uses\2.G.3.b Other\Propellant for	N_2O	0.596												2

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		Gg CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
pressure and aerosol products														
2.G Other Product Manufacture and Use	**Aggregate F-gases**	**10.450**	**5.265**											
2.G.1 Electrical Equipment\SF6	SF_6	10.450	5.265	-50	50	-50	50	-96.27	-81.97	0.000000	-49.62			
3.A Enteric Fermentation	**CH_4**	**1,977.594**	**1,024.357**											
Mature dairy cattle	CH_4	1,330.509	479.388	-30	30	-20	20	-33.97	37.80	0.000650	-63.97	-14.53	24.65	
Other mature cattle	CH_4	100.769	101.730	-10	10	-20	20	-21.74	23.18	0.000011	0.95	-27.70	37.97	
Growing cattle	CH_4	389.275	283.874	-10	10	-20	20	-22.06	22.93	0.000088	-27.08	-19.93	27.35	
Sheep	CH_4	93.875	119.719	-10	10	-20	20	-21.83	23.24	0.000016	27.53	-34.96	47.77	
Market swine	CH_4	5.800	5.203	-10	10	-20	20	-21.97	22.66	0.000000	-10.29	-24.22	33.47	
Breeding swine	CH_4	14.066	16.229	-10	10	-20	20	-21.67	22.89	0.000000	15.37	-31.34	42.36	
Goats	CH_4	21.500	7.757	-10	10	-20	20	-21.66	22.88	0.000000	-63.92	-9.97	13.63	
Horses	CH_4	17.550	9.841	-30	30	-20	20	-34.41	38.25	0.000000	-43.93	-22.78	38.97	
Mules and Asses	CH_4	4.250	0.617	-30	30	-20	20	-34.29	38.77	0.000000	-85.48	-5.91	10.04	
3.B Manure Management	**CH_4**	**327.781**	**344.461**											
Mature dairy cattle	CH_4	149.038	148.605	-30	30	-20	20	-34.01	38.43	0.000064	-0.29	-40.48	70.55	
Other mature cattle	CH_4	7.889	16.534	-10	10	-20	20	-21.73	23.14	0.000000	109.59	-58.37	79.18	
Growing cattle	CH_4	52.552	58.616	-10	10	-20	20	-21.94	22.96	0.000004	11.54	-31.23	41.93	
Sheep	CH_4	2.513	2.087	-10	10	-20	20	-21.95	23.49	0.000000	-16.97	-22.26	31.68	
Market swine	CH_4	32.520	35.452	-10	10	-20	20	-21.51	23.16	0.000001	9.01	-29.34	41.45	
Breeding swine	CH_4	57.583	73.893	-10	10	-20	20	-21.53	23.21	0.000006	28.33	-35.87	49.13	
Goats	CH_4	0.443	0.163	-10	10	-20	20	-21.93	22.83	0.000000	-63.22	-10.17	13.66	
Horses	CH_4	1.749	0.981	-30	30	-20	20	-34.50	37.95	0.000000	-43.93	-23.02	39.33	
Mules and Asses	CH_4	0.645	0.094	-30	30	-20	20	-34.46	37.82	0.000000	-85.48	-5.99	9.97	
Poultry	CH_4	22.849	8.036	-10	10	-20	20	-21.75	23.19	0.000000	-64.83	-9.70	13.11	
3.B Manure Management	**N_2O**	**323.845**	**146.728**											
Mature dairy cattle	N_2O	56.942	14.289	-30	30	-50	100	-54.17	108.07	0.000003	-74.91	-16.63	49.26	
Other mature cattle	N_2O	4.558	4.409	-10	10	-50	100	-50.35	100.24	0.000000	-3.26	-60.85	169.31	
Growing cattle	N_2O	30.363	15.631	-10	10	-50	100	-50.66	101.07	0.000003	-48.52	-32.43	84.66	
Sheep	N_2O	2.165	2.013	-10	10	-50	100	-50.59	102.23	0.000000	-7.05	-58.30	156.96	
Market swine	N_2O	10.580	2.088	-10	10	-50	100	-50.91	100.72	0.000000	-80.27	-12.36	32.45	
Breeding swine	N_2O	6.349	1.143	-10	10	-50	100	-50.19	101.45	0.000000	-82.00	-11.38	30.08	
Goats	N_2O	0.212	0.120	-10	10	-50	100	-50.02	102.10	0.000000	-43.13	-35.73	96.02	
Horses	N_2O	1.200	0.641	-30	30	-50	100	-53.88	110.27	0.000000	-46.62	-35.33	103.09	

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		Gg CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
Mules and Asses	N_2O	0.057	0.023	-30	30	-50	100	-53.99	111.60	0.000000	-58.69	-27.31	79.38	
Poultry	N_2O	19.668	6.930	-10	10	-50	100	-50.44	101.72	0.000001	-64.76	-22.17	58.22	
Indirect N2O emission	*N_2O*	*191.752*	*99.442*											
Total N volatilised as NH3 and NOx	N_2O	191.752	99.442	-10	10	-30	30	-31.04	32.56	0.000021	-48.14	-19.42	30.93	
3.D.1 Direct N2O Emissions From Managed Soils	**N_2O**	**1,027.975**	**735.051**											
Inorganic N fertilizers	N_2O	503.002	410.855	-20	20	-30	30	-33.64	38.43	0.000475	-18.32	-33.08	56.15	
Organic N fertilizers	N_2O	221.650	129.751	-10	10	-30	30	-31.51	32.60	0.000037	-41.46	-21.80	34.42	
Urine and dung deposited by grazing animals	N_2O	105.742	37.882	-10	10	-50	50	-50.34	52.18	0.000008	-64.17	-20.13	45.20	
Crop residues	N_2O	187.207	146.328	-20	20	-30	30	-33.76	37.37	0.000061	-21.84	-31.67	54.12	
Mineralization/immobilization associated with loss/gain of soil organic matter	N_2O	0.314	0.175	-20	20	-30	30	-34.15	38.48	0.000000	-44.37	-22.97	38.33	
Cultivation of organic soils	N_2O	10.061	10.061	-10	10	-500	500	-88.90	548.27	0.000025	0.00	-95.52	1976.37	
3.D.2 Indirect N2O Emissions From Managed Soils	**N_2O**	**331.870**	**235.387**											
Atmospheric deposition	N_2O	109.689	73.507	-20	20	-250	250	-91.73	269.22	0.000429	-32.99	-63.11	1129.20	
Nitrogen leaching and run-off	N_2O	222.180	161.880	-20	20	-400	400	-90.30	443.59	0.004539	-27.14	-69.66	1406.04	
3.G Liming	**CO_2**		**12.093**	-50	50	-50	50	-62.22	80.48	0.000002				
3.H Urea Application	**CO_2**	**50.020**	**57.248**	-20	20	-50	50	-51.39	56.42	0.000021	14.45	-65.61	149.39	
4.A.1 Forest Land Remaining Forest Land	**CO_2**	**- 6,704.183**	**- 5,419.286**					-52.40	194.14	0.907791	-19.17	-708.73	682.94	1, 3
4.A.2 Land Converted to Forest Land	**CO_2**	**- 38.633**	**- 268.565**					-179.77	170.70	0.004511	595.18	-2125.81	3514.95	1, 3
4.B.1 Cropland Remaining Cropland	**CO_2**	**215.132**	**73.912**					-1489.83	1431.69	0.023816	-65.64	-1152.30	1113.44	1, 3
4.B.2 Land Converted to Cropland	**CO_2**	**23.651**	**32.145**					-1007.25	921.73	0.001953	35.91	-1532.33	1272.90	1, 3
4.C.1 Grassland Remaining Grassland	**CO_2**	**2.069**	**2.069**					-95.84	95.71	0.000000	0.00	-145.42	400.18	1, 3
4.C.2 Land Converted to Grassland	**CO_2**	**- 122.386**	**- 117.835**					-265.19	343.59	0.002618	-3.72	-1281.51	1124.50	1, 3
4.D.2 Land Converted to Wetlands	**CO_2**	**43.067**	**11.481**					-200.54	467.22	0.000030	-73.34	-162.48	225.18	1, 3
4.E.2 Land Converted to Settlements	**CO_2**	**197.001**	**642.588**					-92.92	150.83	0.012478	226.18	-314.64	1017.91	1, 3
4.G Harvested Wood Products	**CO_2**	**- 301.544**	**- 126.188**					-130.39	131.66	0.000557	-58.15	-109.48	274.00	1, 3
4(III).Direct N2O emissions from N mineralization/immobilization	**N_2O**	**31.027**	**85.054**					-1214.46	1045.35	0.018772	174.13	-2513.71	2414.92	1, 3
4(V) Biomass Burning	**CO_2**	**8.987**	**80.594**					-27.50	30.05	0.000011	796.77	-303.04	537.87	1, 3
4(V) Biomass Burning	**CH_4**	**1.230**	**11.387**					-31.64	26.31	0.000000	825.46	-484.35	2434.09	1, 3
4(V) Biomass Burning	**N_2O**	**0.858**	**8.180**					-14.60	73.03	0.000000	853.45	-285.91	1920.71	1, 3
5.A Solid Waste Disposal	**CH_4**	**348.607**	**1,253.821**											
5.A.1 Managed Waste Disposal Sites\5.A.1.a Anaerobic	CH_4	17.258	1,055.949	-50	50	-50	50	-62.56	80.86	0.012627	6018.69	-4181.01	12543.80	
5.A.2 Unmanaged Waste Disposal Sites	CH_4	331.349	197.872	-50	50	-50	50	-62.11	80.65	0.000437	-40.28	-40.07	123.02	

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 CO2 equivalent	Gg CO2 equivalent	(-) %	(+) %	(-) %	(+) %	(-) %	(+) %	(fraction)	(% of base year)	(-) %	(+) %	
5.B Biological Treatment of Soild Waste	**CH_4**		**6.161**											
5.B Biological Treatment of Soild Waste\5.B.1 Composting	CH_4		6.161	-50	50	-100	100	-86.36	130.89	0.000001				2
5.B Biological Treatment of Soild Waste	**N_2O**		**4.406**											
5.B Biological Treatment of Soild Waste\5.B.1 Composting	N_2O		4.406	-50	50	-110	110	-87.53	140.84	0.000001				2
5.C Incineration and Open Burning of Waste	**CO_2**	**0.536**	**0.046**											
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Clinical Waste	CO_2	0.123	0.046	-50	50	-30	30	-53.90	63.33	0.000000	-63.00	-22.15	55.65	
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Industrial Solid Wastes	CO_2	0.413												2
5.C Incineration and Open Burning of Waste	**N_2O**	**0.007**												
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.D Wastewater Treatment and Discharge	**CH_4**	**237.864**	**206.602**											
5.D.1 Domestic wastewater	CH_4	141.221	109.969	-30	30	-30	30	-39.10	45.45	0.000047	-22.13	-35.98	67.08	
5.D.2 Industrial wastewater	CH_4	96.643	96.633	-30	30	-30	30	-38.96	46.83	0.000037	-0.01	-46.32	87.65	
5.D Wastewater Treatment and Discharge	**N_2O**	**67.000**	**82.247**											
5.D.1 Domestic wastewater	N_2O	67.000	82.247	-50	50	-50	50	-63.06	80.40	0.000076	22.76	-83.16	264.72	
TOTAL	**CO2eq**	**24,509.977**	**18,517.685**					**-13.62**	**60.80**	**1.000000**	**-24.45**	**-22.09**	**39.49**	

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	1995	2000	2005	2010	2011	2012	2013	2014	2015
Fuel consumption	**UNIT**										
Hard coal	1000 t	253.70	96.20	569.80	887.50	915.60	957.10	855.50	932.60	919.00	872.90
Fuel oil	1000 t	570.40	327.80	283.40	284.00	15.10	58.50	60.10	18.90	1.60	10.60
Light heating oil	1000 t	0.30	24.10	0.20	3.00	0.90	0.90	1.20	0.90	1.00	2.10
Natural gas	1000000 m3	201.70	114.10	155.80	36.30	24.00	27.00	14.00	2.70	0.60	52.50
Coke oven gas	1000000 m3	24.50									
Biogas	PJ				0.11	0.02	0.00	0.01	0.17	0.39	0.25
Other biomass	PJ					0.00	0.00	0.00	0.00	0.00	0.00
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	24.64	25.00
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
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
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
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
NCV for other biomass											
EMISSION FACTORS		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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
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 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
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
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
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
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
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
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	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
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
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 - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	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
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
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

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

ACTIVITY DATA		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
Fuel consumption	**UNIT**										
Hard coal	1000 t										
Fuel oil	1000 t	118.00	337.10	108.60	162.00	108.30	90.90	49.60	27.40	26.80	35.80
Light heating oil	1000 t	0.00	#REF!	0.90	1.50	0.10	0.00	0.60	0.00	0.00	0.00
Natural gas	1000000 m3	315.50	103.50	363.40	479.00	649.90	652.10	673.90	580.40	352.10	343.70
Coke oven gas	1000000 m3										
Biogas	PJ				0.00	0.14	0.17	0.34	0.41	0.48	1.07
Other biomass	TJ					1.90	803.20	1003.50	1146.10	1190.30	2189.00
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	24.64	25.00
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
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
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
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
NCV for other biomass		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EMISSION FACTORS		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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
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 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
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
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
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
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
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
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	3.67	2.20	2.73	2.87	3.67	3.58	3.51	3.24	2.25	2.42
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	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
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
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 - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	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
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
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

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

ACTIVITY DATA		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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
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
Natural gas	1000000 m3	0.00	36.20	53.00	71.30	86.50	76.00	76.60	85.90	71.60	72.40
Coke oven gas	1000000 m3										
Biogas	PJ					0.00	0.00	0.00	0.00	0.00	0.00
Other biomass	PJ					0.00	0.00	0.00	0.00	0.00	0.00
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		
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
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
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
NCV for coke oven gas	MJ/kg	17.91									
NCV for biogas	TJ/PJ					1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for other biomass	TJ/PJ					1000.00	1000.00	1000.00	1000.00	1000.00	1000.00
NCV for gas works gas	MJ/m3				21.47						
NCV for LPG	MJ/kg	46.89	46.89								
EMISSION FACTORS		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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
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 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
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
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
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
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
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 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
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
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogass	kg/TJ	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
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
EF CH4 - LPG	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF 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
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 - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	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
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
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
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
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

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

Refining - transformation		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
Fuel consumption											
Fuel oil (1000 t)	1000 t	227.20	199.50	193.40	254.00	244.30	196.30	153.30	108.40	100.80	134.10
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
LPG (1000 t)	1000 t	0.00	0.00	0.00	9.50	0.00	0.00	2.70	1.50	0.00	0.00
NCV for LPG (MJ/kg)	MJ/kg	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	0.00	0.00	0.00	70.70	55.90	43.90	54.50	40.80	25.30	31.30
NCV for petroleum coke (MJ	MJ/kg	33.57	29.31	31.00	31.00	31.00	31.00	31.00	31.00	31.00	31.00
Refinery gas (1000 t)	1000 t	58.40	27.70	40.70	241.10	161.50	267.10	293.80	175.40	276.20	208.10
NCV for refinery gas (MJ/kg	MJ/kg	48.57	48.57	48.57	48.57	48.57	48.57	46.00	46.00	42.60	42.60
Natural gas (1000000 m3)	1000 t	7.30	7.10	0.20	1.20	27.10	158.40	212.40	237.50	227.20	183.30
NCV for natural gas (MJ/m3	MJ/kg	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.60	34.60
Total fuel cunsumption (TJ)	TJ	**12,215.86**	**9,604.69**	**9,756.35**	**24,596.44**	**20,316.77**	**27,608.84**	**28,713.63**	**21,835.13**	**24,462.69**	**21,567.02**
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
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
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
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
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
CO2 Emission (Gg)	Gg	**884.06**	**711.62**	**715.86**	**1,729.54**	**1,448.87**	**1,805.63**	**1,849.22**	**1,394.72**	**1,516.22**	**1,387.39**
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
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
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
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
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
CH4 Emission (Mg)	Mg	**30.48**	**25.64**	**25.30**	**45.01**	**39.95**	**43.39**	**41.04**	**30.55**	**32.56**	**32.35**
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
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
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
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
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
N2O Emission (Mg)	Mg	**5.79**	**4.97**	**4.86**	**10.63**	**9.37**	**8.61**	**8.32**	**6.13**	**5.57**	**6.21**

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

Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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**
Emissions										
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	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
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)	**85.40**	**0.32**	**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
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	**1.92**	**0.01**	**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
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	**0.19**	**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	2011	2012	2013	2014	2015
Fuel consumption										
LPG (1000 t)	12.10		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)	0.70	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)	391.10	204.70	140.00	175.50	241.70	156.30	114.40	120.20	91.70	121.30
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
Other Kerosene prod (petrolej) (1000 t)										
NCV for petroleum (MJ/m3)										
Total fuel cunsumption (TJ)	**13,894.67**	**6,989.70**	**5,110.13**	**6,201.91**	**8,217.80**	**5,314.20**	**3,889.60**	**4,086.80**	**3,172.82**	**4,196.98**
Emissions										
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	**784.00**	**392.66**	**292.46**	**352.16**	**461.02**	**298.13**	**218.21**	**229.27**	**178.00**	**235.45**
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	**13.95**	**7.05**	**5.72**	**6.67**	**8.22**	**5.31**	**3.89**	**4.09**	**3.17**	**4.20**
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	**1.40**	**0.71**	**0.66**	**0.74**	**0.82**	**0.53**	**0.39**	**0.41**	**0.32**	**0.42**

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

Manufacture of solid fuels and other energy industries	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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)	0.70	0.40	0.40							
NCV for light heating oil (MJ/kg)	42.71	42.71	42.71							
Natural gas (1000000 m3)	0.90	1.10	0.50							
NCV for natural gas (MJ/m3)	34.00	34.00	34.00							
Other Kerosene prod (petrolej) (1000 t)										
NCV for petroleum (MJ/m3)										
Biogas								22.54	17.30	26.54
NCV for biogas (TJ/TJ)								1.00	1.00	1.00
Total fuel cunsumption (TJ)	**60.50**	**54.48**	**34.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Emissions										
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
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
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
CO2 Emission (Gg)	**3.93**	**3.36**	**2.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
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
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
CH4 Emission (Mg)	**0.12**	**0.09**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
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
N2O Emission (Mg)	**0.02**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Table A3-8: 1A2a-g – fuel consumption

1A2a Iron and Steal									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0	0.6	1.6	0.2	1.3	1.5	0.9
Coking coal (kameni ugljen)	10^3 t	0	1	0	0	0.3	0.2	0	1.8
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	28.7	22.9	35	31.5	15.5	15.7	15.6	17.5
Wood	10^3 m^3			0.8	0.7	0.5	0.3	0.3	0.5
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0.6	0	0
Coke oven coke	10^3 t	5.2	4.3	3.7	2	1.6	2.5	2.5	0.6
Liquified petroleum gas	10^3 t	1.7	4.2	1.4	2.1	2.8	3.8	2.2	0.8
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							0	0
Diesel	10^3 t		0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	4.1	2.7	0.9	1.2	0.7	0.6	0.5	0.6
Residual fuel oil	10^3 t	1.3	2.7	1.2	1	1.3	1.1	1.4	1.1
Petroleum coke	10^3 t	0	0	0.7	0	0.2	0	0.3	0.3
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^3 m^3	0	0.031	0	0	0	0	0	0

1A2b Non-Ferrous metals									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	4.6	1	0.4	1.2	1.1	0.9	1.1	2.6
Wood	10^3 m^3			0.6	0.6	0.5	0.4	0.4	0.2
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	0
Coke oven coke	10^3 t	0	0	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	0.5	2.1	3.1	3.8	5.1	5.3	4.2	0.8
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							0.6	0.2
Diesel	10^3 t		0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	1.4	0.2	0.1	0.2	0.8	0.8	0.7	0.9
Residual fuel oil	10^3 t	0.5	4	1.2	1.4	0	0.0	0	0
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	0	0	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2c Chemicals									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0.2	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	1.2	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	139.3	183.1	227.6	210.2	143.4	129.8	140.2	146.9
Wood	10^3 m^3			0.1	0.1	0.1	0	0	0
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	0
Coke oven coke	10^3 t	0	0	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	5.7	0	0.1	0.1	0.1	0.1	0.2	0
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							1.4	2.4
Diesel	10^3 t		0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	9	0.5	0.4	0.4	0.6	0.6	0.5	0.5
Residual fuel oil	10^3 t	99.7	73	3.6	4.9	1.3	1.1	3	0
Petroleum coke	10^3 t	0	0.7	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	0	0	0	0	0	0	0	0

1A2d Pulp, paper and print									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	74.3	69.2	68.8	65.8	58.8	53.3	34.7	27.6
Wood	10^3 m^3			13.2	0	0	0	0	0.1
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	169.4	151.8	193.2	422.6	145.9301546	5.5	20
Coke oven coke	10^3 t	0	0	0	0	0	0	0	0
Liquified petroleum gas	10^3 t	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							0	0
Diesel	10^3 t		0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	0.9	1.6	0.1	0.1	0.1	0.1	0	0
Residual fuel oil	10^3 t	9.2	11.9	9.5	7.1	4.3	3.5	1.2	5.2
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	0	0.031	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2e Food Processing, Beverages and Tobacco									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0	0.7	0.5	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	1.2	0.9	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	39.2	47.7	39.9	41	35.7	35.7	35	34
Lignite	10^3 t	18.1	0	0	0	0	0	0	0
Natural gas	10^6 m^3	139.4	173	166.6	156.1	143.6	133.7	137.9	114.7
Wood	10^3 m^3			0.5	0.7	1.4	4.2	10.6	13.5
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	9.37	0	0
Coke oven coke	10^3 t	4.8	9.6	6.4	6.4	7	3	5.2	4
Liquified petroleum gas	10^3 t	0.6	1.6	1.3	1.5	1.2	1.4	1.5	1.4
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							0	0
Diesel	10^3 t		0	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	13.1	13.3	10	9.9	9.9	9.1	8.9	8.7
Residual fuel oil	10^3 t	29.1	32.4	22.9	23.6	12.2	9.8	7.7	9.1
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	0.1	0.1099	0	0	0	0	0	0

1A2f Non-Metalic Minerals									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0.1	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	1	0	0	0
Lignite	10^3 t	0	0	0	0	0	0	0	0
Natural gas	10^6 m^3	54.5	73.4	56.4	55.4	48.4	50.1	48.5	41.8
Wood	10^3 m^3			0	0	0	0	0	0
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0	0
Coke oven coke	10^3 t	7.6	7.7	0.1	0	0	0	0	0
Liquified petroleum gas	10^3 t	2.8	2.2	0.2	0.2	0.1	0.2	0.2	0.2
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							0	0
Diesel	10^3 t		0.1	0	0	0	0	0	0
Gas/Diesel oil	10^3 t	0.3	2.7	0	0.1	0	0	0	0
Residual fuel oil	10^3 t	2.2	3.8	2.2	1.8	1.8	0.1	0	0
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	2.5	0.923	0	0	0	0	0	0

Table A3-8: 1A2a-g – fuel consumption

1A2g v Construction									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0	0	0	0	1.3	0	0
Coking coal (kameni ugljen)	10^3 t	68.8	168.3	193.4	162	145.9	120.7	106.6	74.7
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	3	5	1.1	18.4	0	4.5	1.5	2.7
Lignite	10^3 t	2	0	0	0	0	1.3	0	0
Natural gas	10^6 m^3	195.9	124.4	76.4	67.6	54.1	39.3	36.3	40.7
Wood	10^3 m^3			0.3	0.2	0.5	0.2	0.7	0.9
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	0	0	370.6	213.6	361.4	391.6	12.1	289
Coke oven coke	10^3 t	0	0	17.3	18.7	19.5	19.4	21.3	20.6
Liquified petroleum gas	10^3 t	4.1	4.6	3.2	2.8	3.1	2.7	2.4	1.6
Motor Gasoline	10^3 t			0	0	0	0	0	0
Petroleum	10^3 t							0	0
Diesel	10^3 t		15	14.3	13.5	12	12.3	11.6	11.1
Gas/Diesel oil	10^3 t	24.9	7	4.3	3.5	3.1	2.6	2.5	2.7
Residual fuel oil	10^3 t	160.9	53.1	7.3	5.6	5.5	4.4	4.9	3.9
Petroleum coke	10^3 t	16.3	171.6	115.3	93.3	93.7	146.4	154.7	167.2
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	0.1	0	0	0	0	0	0	0
Industrial waste-non ren.	TJ			319.1	179.4	340.6	366.2	424.9	390

1A2g viii Other industry (analiza industrije+Opća potrošnja-Građevinarstvo)									
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	10^3 t		0	0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0.1	4.2	0	0	0	0	0	0
Lignite	10^3 t	0.1	0.2	0	0	0	0	0	0
Natural gas	10^6 m^3	50.8	65.3	54.4	59.9	52.7	43.4	42.1	44.2
Wood	10^3 m^3			39.4	44.5	45.6	44.4	35.3	27.4
Biogas	TJ			0	0	0	0	0	0
Wood waste	TJ	1979.4	2087.5	1456.677	1232.8	1306.1	1260.09985	1188	579
Coke oven coke	10^3 t	0.7	1	0.1	0.1	0	0	0	0
Liquified petroleum gas	10^3 t	4.4	8	6.8	5.5	5.8	5.5	5.7	5.7
Motor Gasoline	10^3 t	7.8	6.9	5.1	4.7	4.2	4.1	4.1	4
Petroleum	10^3 t							0	0
Diesel	10^3 t	68	110.6	102.2	98.3	90	87.4	78.6	79.2
Gas/Diesel oil	10^3 t	8.2	23	12.2	11.6	10.7	9.8	8.4	8.7
Residual fuel oil	10^3 t	22.6	17.7	8.4	5.8	5.7	3.6	3.3	3.8
Petroleum coke	10^3 t	0	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0	0
Gas works gas	10^6 m^3	4.2	2.456	0	0	0	0	0	0

1A2g vii Off-road vehicles and other machinery											
Fuel consumption	Jedinica	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
Motor gasoline	10^3 t	0.2	8.5	7.6	6.9	5.1	4.7	4.2	4.1	4.1	4
Diesel	10^3 t	137.1	43.6	66.1	125.7	116.5	111.8	102	99.7	90.2	90.3

Table A3-8: 1A2a-g – fuel consumption

1A2g viii - Total for the period from 1990 -2000				
Fuel consumption	Jedinica	1990	1995	2000
Antracit	10^3 t	107.2	5	
Kameni ugljen-Bitumenous Coal	10^3 t	42	41.9	53.2
Mrki ugljen-Sub-bituminous Coal	10^3 t	261.2	95.8	28.2
Lignit-Lignite	10^3 t	73.2	56.3	14.4
Briquetts	10^3 t	3.3		
Natural gas	10^6 m^3	845.7	656.8	703.8
Fuel wood	10^3 m^3			
Biogass	TJ			
Wood waste	TJ	3600	2450	2227.6
Coke oven coke	10^3 t	251.2	31.4	37.7
Liquified petroleum gas	10^3 t	17.5	17.6	21
Motor gasoline	10^3 t	0.2	8.5	7.6
Diesel	10^3 t	137.1	43.6	66.1
Gas/diesel oil	10^3 t	109.4	57.9	64.7
Residual fuel oil	10^3 t	419.2	269.7	302.2
Petroleum coke	10^3 t	0		
Koksni plin-Coke oven gas	106 m3	29.9		
Petroleum coke	10^3 t	0.1		
Lubricants	10^3 t	8.6		
Gas works gas	10^6 m^3	6.1	9.84	7.9

Table A3-9: 1A2a-g – NCV and emission factors

Net Calorific Value		2001	2005	2010	2011	2012	2013	2014	2015
Anthracite	MJ/kg		29.31	29.31	29.31	29.31	29.31	29.31	29.31
Coking coal (kameni ugljen)	MJ/kg	25.8	25.1	24.77332	25.24	26.46616	27.0700000	26.2	26.7
Sub-Bituminous Coal (Mrki ugljen)	MJ/kg	18.2	18.5	17.6	17.1	17.8	16.74	16.89	17
Lignite	MJ/kg	12.2	12.1				10.5	0	0
Natural gas	MJ/m3	34.0	34.0	34.0	34.0	34.0	34.0	34.6	34.6
Wood	MJ/m3	9.0	9.0	9.0	9.0	9.0	9.0	9	9
Biogas	TJ/TJ	1.0	1.0	1.0	1.0	1.0	1.0	1	1
Wood waste	TJ/TJ	1.0	1.0	1.0	1.0	1.0	1.0	1	1
Coke oven coke	MJ/kg	29.3	29.3	29.3	29.3	29.3	29.3	29.31	29.31
Liquified petroleum gas	MJ/kg	46.9	46.9	46.9	46.9	46.9	46.9	46.89	46.89
Motor Gasoline	MJ/kg	44.6	44.6	44.6	44.6	44.6	44.6	44.59	44.59
Petroleum	MJ/kg							43.96	43.96
Diesel	MJ/kg	42.7	42.7	42.7	42.7	42.7	42.7	42.71	42.71
Gas/Diesel oil	MJ/kg	42.7	42.7	42.7	42.7	42.7	42.7	42.71	42.71
Residual fuel oil	MJ/kg	40.2	40.2	40.2	40.2	40.2	40.2	40.19	40.19
Petroleum coke	MJ/kg	31.0	31.0	31.0	31.0	31.0	31.0	31	31
Refinery gas	MJ/kg							0	0
Other oil derivates	MJ/kg							0	0
Gas works gas	MJ/m3	19.5	21.47					0	0
Other fosil fuels	TJ/TJ	1.0	1.0	1.0	1.0	1.0	1.0	1	1

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	1996	2009	2010	2011	2012	2013	2014	2015
Fuel consumption											
Aviation gasoline	1000 t	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.30
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	7.00	11.00	9.00	10.00	9.00	9.00	8.70	9.50
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	0.00							
NCV motor gasoline	MJ/kg	44.59	44.59	44.59							
Total fuel cunsumption	TJ	**92.46**	**321.10**	**307.72**	**528.15**	**440.23**	**484.19**	**440.23**	**440.23**	**427.04**	**431.00**
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**	**22.00**	**37.70**	**31.41**	**34.55**	**31.41**	**31.41**	**30.47**	**30.80**
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**	**0.15**	**0.26**	**0.22**	**0.24**	**0.22**	**0.22**	**0.21**	**0.22**
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**	**0.62**	**1.06**	**0.88**	**0.97**	**0.88**	**0.88**	**0.85**	**0.86**

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

1A3bi	CARS		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
	FUEL CONSUMPTION											
	Gasoline	t	722.22	527.60	715.13	669.21	593.09	581.06	544.15	532.54	487.61	486.99
	Diesel oil	t	36.02	127.46	184.56	402.78	521.75	529.06	556.27	490.57	598.66	679.22
	LPG	t	#DIV/0!	13.70	9.80	22.10	58.70	43.10	54.80	56.30	60.40	67.00
	CNG	106 m3					0.04	0.02	0.03	0.06	0.16	0.16
	Biodiesel	t										
	NCV											
	Gasoline	MJ/kg	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
	Diesel oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
	LPG	MJ/kg	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
	CNG	MJ/106m3	34	34	34	34	34	34	34	34	34	34.6
	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
	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
	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
	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
	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

1A3bii	LIGHT DUTY TRUCKS		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
	FUEL CONSUMPTION											
	Gasoline	t	28.85449	21.88328	32.40326	11.55513	15.37146	14.11826	10.04286	9.25653	9.510871	9.449431
	Diesel oil	t	87.87363	99.68984	158.7776	284.7596	259.2275	249.4249	228.8386	217.86	187.0561	195.3016
	LPG	t	0	0	0	0	0	0	0	0	0	0
	CNG	106 m3										
	Biodiesel	t										
	NCV											
	Gasoline	MJ/kg	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
	Diesel oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
	LPG	MJ/kg	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
	CNG	MJ/106m3	34	34	34	34	34	34	34	34	34	34.6
	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
	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
	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
	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
	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

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

1A3biii	HEAVY DUTY TRUCKS+BUSSES		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
	FUEL CONSUMPTION											
	Gasoline	t	2.2670	1.2115	1.2417	1.2738	1.0036	0.7871	0.6261	0.5703	0.7190	0.6133
	Diesel oil	t	242.3113	183.2491	214.4574	268.0618	319.0264	308.2179	280.4962	393.8747	334.4795	343.2799
	LPG	t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CNG	106 m3					2.5619	0.7788	0.9683	1.8377	3.7394	3.8350
	Biodiesel	t										
	NCV											
	Gasoline	MJ/kg	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
	Diesel oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
	LPG	MJ/kg	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
	CNG	MJ/106m3	34	34	34	34	34	34	34	34	34	34.6
	Biodiesel	MJ/kg	0	0	0	0	0	0	0	0	0	0
	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
	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
	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
	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
	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

1A3biv	MOTORCYCLES		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
	FUEL CONSUMPTION											
	Gasoline	t	6.163	7.205	15.429	11.461	27.137	26.036	23.382	22.330	23.259	22.944
	Diesel oil	t										
	LPG	t										
	CNG	106 m3										
	Biodiesel	t										
	NCV											
	Gasoline	MJ/kg	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
	Diesel oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
	LPG	MJ/kg	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
	CNG	MJ/106m3	34	34	34	34	34	34	34	34	34	34.6
	Biodiesel	MJ/kg	0	0	0	0	0	0	0	0	0	0
	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
	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
	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
	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
	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

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

		1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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	30.70	27.20	30.50	28.50	26.40	24.80	23.40	21.20	17.50
NCV for diesel (MJ/kg)	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	1000 t	0.20	1.50								
NCV for fuel oil (MJ/kg)	MJ/kg	40.19	40.19								
Light heating oil (1000 t)	1000 t	1.10	1.70								
NCV for light heating oil (MJ/	MJ/kg	42.71	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**	**1,448.49**	**1,166.17**	**1,302.66**	**1,217.24**	**1,127.54**	**1,059.21**	**999.41**	**905.45**	**747.43**
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
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
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
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
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
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
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
EF CO2 - petroleum (t/TJ)	t/TJ										
CO2 Emission (Gg)	Gg	**140.08**	**107.21**	**86.39**	**96.53**	**90.20**	**83.55**	**78.49**	**74.06**	**67.09**	**55.38**
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
EF CH4 - diesel (kg/TJ)	kg/TJ	4.15	4.15	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32
EF CH4 - fuel oil (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	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
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
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
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
EF CH4 - petroleum (t/TJ)	kg/TJ										
CH4 Emission (Mg)	Mg	**6.97**	**5.84**	**3.87**	**4.32**	**4.04**	**3.74**	**3.52**	**3.32**	**3.01**	**2.48**
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
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
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
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
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
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
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
EF N2O - petroleum (t/TJ)	kg/TJ										
N2O Emission (Mg)	Mg	**44.46**	**37.58**	**33.23**	**37.26**	**34.81**	**32.25**	**30.29**	**28.58**	**25.90**	**21.38**

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

National navigation	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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	35.40	33.50	38.50	42.00	41.20
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
Fuel oil (1000 t)	2.10	6.20	1.40		2.00	1.80	1.90		0.40	
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19		40.19	40.19	40.19		40.19	
Light heating oil (1000 t)	1.60	1.50							1.10	
NCV for light heating oil (MJ/kg)	42.71	42.71							42.71	
Total fuel cunsumption (TJ)	**1,810.07**	**1,330.87**	**1,167.29**	**1,358.18**	**1,566.69**	**1,584.28**	**1,507.15**	**1,644.34**	**1,856.88**	**1,759.65**
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 - diesel (t/TJ)	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
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
CO2 Emission (Gg)	**134.38**	**99.31**	**86.62**	**100.64**	**116.36**	**117.63**	**111.93**	**121.85**	**137.65**	**130.39**
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
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
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
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
CH4 Emission (Mg)	**12.67**	**9.32**	**8.17**	**9.51**	**10.97**	**11.09**	**10.55**	**11.51**	**13.00**	**12.32**
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 - diesel (kg/TJ)	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
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
N2O Emission (Mg)	**3.48**	**2.53**	**2.33**	**2.72**	**3.13**	**3.17**	**3.01**	**3.29**	**3.62**	**3.52**

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

Commercial/Institutional	1990	1991	1992	2010	2011	2012	2013	2014	2015
Fuel consumption									
Petroleum (1000 t)	3.80	0.53	0.40						
NCV for jet kerosene (MJ/kg)	43.94	43.96	43.96						
Light heating oil (1000 t)	90.30	65.50	65.80	73.80	64.80	50.00	44.20	36.10	44.60
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
Fuel oil (1000 t)	67.60	27.80	7.80	8.00	9.70	9.50	4.60	3.20	2.70
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	4.30	21.90	14.90	12.90	13.70	12.10	12.10	12.10	12.30
NCV for LPG (MJ/kg)	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89	46.89
Brown coal (1000 t) (MU)	24.50	13.00	4.30	2.20	5.20	4.90	0.50	0.10	
NCV for brown coal (MJ/kg)	16.74	16.74	16.75	17.60	17.10	17.80	18.00	16.89	16.89
Lignite (1000 t)	40.00	24.00	3.20	0.30	0.10			0.10	0.10
NCV for lignite (MJ/kg)	10.90	10.89	10.89	11.60	11.60	11.60		10.50	10.50
Briquettes (1000 t)	2.90								
NCV for briquettes (MJ/kg)	16.74								
Gas work gas (1000000 m3)	4.90	7.40	6.39	2.84	2.49	1.87	1.49	1.14	0.39
NCV for gas work gas (MJ/m3)	15.82	15.91	15.91	18.72	17.20	17.20	17.10	17.10	17.10
Natural gas (1000000 m3)	124.30	86.02	77.90	192.70	173.50	162.00	166.00	159.80	204.80
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.60	34.60
Petroleum coke (1000 t)	1.50								
NCV for petroleum coke (MJ/kg)	33.57								
Anthracite (1000 t)							0.10		
NCV for anthracite(MJ/kg)							29.31		
Solid Biomass-Wood (TJ) + charcoal	0.00	0.00	0.00	129.80	157.85	140.00	143.00	177.98	213.50
Bio gass (TJ)				102.26	110.60	86.07	75.83	103.20	116.59
Total fuel cunsumption (TJ)	**12,190.9**	**8,486.4**	**6,835.4**	**10,957.7**	**10,100.1**	**8,938.2**	**8,540.3**	**8,070.2**	**10,014.1**
Emissions									
EF CO2 - petroleum (t/TJ)	73.30	73.30	73.30	73.30	73.30	73.30	73.30	73.30	73.30
EF CO2 - diesel (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - fuel oil (t/TJ)	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - brown coal (t/TJ)	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10
EF CO2 - lignite (t/TJ)	101.00	101.00	101.00	101.00	101.00	101.00	101.00	101.00	101.00
EF CO2 - briquettes (t/TJ)	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50
EF CO2 - gas works gas (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - petroleum coke (t/TJ)	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50	97.50
EF CO2 -anthracite (t/TJ)	98.30	98.30	98.30	98.30	98.30	98.30	98.30	98.30	98.30
EF CO2 - solid biomass wood (t/TJ)	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00
EF CO2 - landfill gas(t/TJ)	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
CO2 Emission (Gg)	**854.65**	**576.89**	**441.42**	**690.73**	**641.00**	**562.78**	**529.07**	**496.89**	**614.15**

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

Commercial/Institutional	1990	1991	1992	2010	2011	2012	2013	2014	2015
EF CH4 - petroleum (kg/TJ)	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
EF CH4 - fuel oil (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - LPG (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - brown coal (kg/TJ)	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
EF CH4 - briquettes (kg/TJ)	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
EF CH4 - natural gas (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - petroleum coke (t/TJ)	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
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
EF CH4 - landfill gas (t/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CH4 Emission (Mg)	**99.38**	**64.52**	**49.73**	**110.66**	**113.30**	**99.01**	**95.31**	**101.22**	**123.12**
EF N2O - petroleum (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - diesel (kg/TJ)	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
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - brown coal (kg/TJ)	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - lignite (kg/TJ)	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
EF N2O - gas work gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - petroleum coke (t/TJ)	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
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
EF N2O - landfill gas (t/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	**5.87**	**3.49**	**2.39**	**3.40**	**3.33**	**2.82**	**2.46**	**2.34**	**2.84**

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

Residential	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
Fuel consumption										
Fuel consumption - mobile										
Gasoline (1000 t)	4.00	7.80	12.10	8.10	8.20	8.20	7.70	7.40	7.50	7.50
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
Fuel consumption - stationary										
Petroleum (1000 t)		7.90	1.60	1.00	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	43.96	43.96
Light heating oil (1000 t)	215.90	198.60	231.50	252.80	138.80	122.00	94.50	83.50	68.30	84.50
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
Fuel oil (1000 t)	48.70	6.50	8.10	15.40	10.40	11.90	12.30	7.10	5.10	4.30
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)	97.90	57.30	51.90	60.90	72.20	74.40	56.90	54.20	47.40	47.60
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
Brown coal (1000 t)	123.10	11.10	12.00	14.00	6.10	2.30	4.10	2.60	2.00	1.20
NCV for brown coal (MJ/kg)	16.74	17.30	17.80	18.50	17.60	17.10	17.80	18.00	16.89	17.00
Lignite (1000 t)	207.30	10.80	15.00	11.70	9.40	9.00	4.80	11.50	7.40	7.00
NCV for lignite (MJ/kg)	10.90	10.10	12.00	12.10	11.60	11.60	10.70	10.50	10.50	10.50
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	11.81	9.90	10.24	7.20	4.98	3.75		1.06	0.19
NCV for gas work gas (MJ/m3)	15.82	15.91	19.49	21.47	17.20	17.20	17.10		17.10	17.10
Natural gas (1000000 m3)	230.00	381.30	496.60	687.80	732.90	670.20	630.20	601.30	524.10	540.00
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
Solid Biomass-Wood (TJ)	42,170.0	44,091.0	39,690.0	49,824.0	49,539.0	48,344.0	48,329.0	48,003.0	42,254.0	48,622.7
Charcoal (TJ)	0.00	0.00	0.00	0.00	154.00	139.26	83.74	139.00	139.89	
Total fuel cunsumption (TJ)	**70,745.6**	**69,669.5**	**70,417.3**	**88,506.4**	**85,088.7**	**81,086.5**	**77,614.7**	**75,512.0**	**66,345.2**	**73,752.1**
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**
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
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
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 - 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
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
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
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
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
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
EF CO2 - solid biomass wood (t/T	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

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

Residential	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
CO2 Emission (Gg)	**6,751.88**	**6,571.14**	**6,393.72**	**7,997.56**	**7,703.87**	**7,398.41**	**7,172.20**	**7,027.67**	**6,173.41**	**6,948.26**
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**
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
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
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 - brown coal (kg/TJ)	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
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
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
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
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
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
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
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
CH4 Emission (Mg)	**14,155.3**	**13,491.2**	**12,230.9**	**15,317.9**	**15,167.1**	**14,767.0**	**14,724.3**	**14,636.1**	**12,874.1**	**14,760.7**
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**
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
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
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 - brown coal (kg/TJ)	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
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
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
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
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
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
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
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
N2O Emission (Mg)	**183.95**	**184.33**	**168.07**	**209.94**	**205.70**	**200.15**	**199.05**	**197.23**	**173.47**	**199.20**

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

Agriculture/forestry/fishing	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
Fuel consumption										
Other kerosene (1000 t)	0.10	0.10								
NCV for other kerosene (MJ/kg)	43.94	44.40								
Diesel + light heating oil (1000 t)	232.60	159.10	237.60	197.40	200.10	200.20	186.30	182.20	182.20	182.60
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	6,799.6	10,147.9	8,431.0	8,546.3	8,550.5	7,956.9	7,781.8	7,781.8	7,798.8
Fuel oil (1000 t)	12.30	6.20	13.40	4.70	4.40	4.40	4.10	3.50	2.50	2.10
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	3.20	2.60	2.70	2.70	2.70	2.50	2.50	2.50	2.50
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	15.50	14.50	23.20	22.20	21.50	20.70	21.00	21.70	21.40
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
Fuel consumption - stationary (TJ)	1,550.7	926.2	1,153.5	1,104.3	1,058.2	1,034.4	985.8	971.9	968.5	942.1
Total fuel cunsumption (TJ)	**11,489.4**	**7,725.8**	**11,301.4**	**9,535.3**	**9,604.5**	**9,585.0**	**8,942.7**	**8,753.7**	**8,750.3**	**8,740.9**
Agriculture/forestry/fishing										
Emissions										
EF CO2 - gasoline (t/TJ)	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	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**	**503.84**	**751.96**	**624.73**	**633.28**	**633.60**	**589.60**	**576.63**	**576.63**	**577.89**
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**	**58.32**	**77.03**	**66.86**	**64.02**	**62.68**	**59.63**	**58.34**	**57.29**	**55.47**
Total CO2 emission (Gg)	**835.42**	**562.16**	**828.99**	**691.59**	**697.30**	**696.28**	**649.24**	**634.97**	**633.92**	**633.36**
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**	**28.82**	**42.11**	**34.99**	**35.47**	**35.48**	**33.02**	**32.29**	**32.29**	**32.37**
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**	**5.88**	**8.46**	**6.47**	**6.18**	**6.06**	**5.75**	**5.56**	**5.34**	**5.13**
Total CH4 emission (Mg)	**52.07**	**34.70**	**50.57**	**41.45**	**41.64**	**41.54**	**38.77**	**37.86**	**37.64**	**37.50**
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**	**194.34**	**290.23**	**241.13**	**244.42**	**244.55**	**227.57**	**222.56**	**222.56**	**223.05**
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**	**0.22**	**0.38**	**0.20**	**0.19**	**0.19**	**0.18**	**0.17**	**0.15**	**0.14**
Total N2O emission (Mg)	**284.53**	**194.56**	**290.61**	**241.33**	**244.62**	**244.74**	**227.75**	**222.73**	**222.71**	**223.18**

Table A3-18: 1B1 –coal production data and CH_4 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	2011	2012	2013	2014	2015
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	772.56	697.56	698.49	689.77	779.30
Well Testing	10^3 m^3 total oil production		1.B.2.a.ii	3135.12	1744.53	1411.51	1100.00	837.67	772.56	697.56	698.49	689.77	779.30
Well Servicing	10^3 m^3 total oil production		1.B.2.a.ii	3135.12	1744.53	1411.51	1100.00	837.67	772.56	697.56	698.49	689.77	779.30
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	1.00E-04	1.00E-04
Well Testing	$Gg/10^3$ m^3 total oil production	Flaring and Venting	1.B.2.a.ii	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03
Well Servicing	$Gg/10^3$ m^3 total oil production	Flaring and Venting	1.B.2.a.ii	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	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	3.30E-05	3.30E-05
Well Testing	$Gg/10^3$ m^3 total oil production	Flaring and Venting	1.B.2.a.ii	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05
Well Servicing	$Gg/10^3$ m^3 total oil production	Flaring and Venting	1.B.2.a.ii	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	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
Well Testing	$Gg/10^3$ m^3 total oil production	Flaring and Venting	1.B.2.a.ii	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	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
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	772.56	697.56	698.49	689.77	779.30
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	772.56	697.56	698.49	689.77	779.30
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	772.56	697.56	698.49	689.77	779.30
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	1.30E-04	1.30E-04
Conventional oil	$Gg/10^3$ m^3 total oil production	Venting	1.B.2.a.i	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05
Conventional oil	$Gg/10^3$ m^3 total oil production	Flaring	1.B.2.a.ii	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	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	1.80E-03	1.80E-03
Conventional oil	$Gg/10^3$ m^3 total oil production	Venting	1.B.2.a.i	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04
Conventional oil	$Gg/10^3$ m^3 total oil production	Flaring	1.B.2.a.ii	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	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
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
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
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	11229.85	3835.98	5551.99	8243.94	7454.46	6184.73	5182.86	6275.87	5780.74	7217.42
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	85.04	42.67	41.30	49.84969	50.01066
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	4.90E-07	4.90E-07
Tanker Trucks and Rail	$Gg/10^3$ m^3 total oil transported	Venting	1.B.2.a.i	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	2.30E-06	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	5.40E-06	5.40E-06
Tanker Trucks and Rail	$Gg/10^3$ m^3 total oil transported	Venting	1.B.2.a.i	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	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
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
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	7977.56	6321.51	6120.7	5803.6	3769.19	3904.65	3614.3	3526.51	2838.8372	3328.3721
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
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	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

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

1. B. 2. b. Natural Gas				1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
1. Exploration	Unit	Emission source	IPCC Code										
ACTIVITY DATA													
Well Drilling	10^3 m^3 total natural gas production		1.B.2.a.ii	1982.30	1966.40	1638.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
Well Testing	10^3 m^3 total natural gas production		1.B.2.a.ii	1982.30	1966.40	1638.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
Well Servicing	10^3 m^3 total natural gas production		1.B.2.a.ii	1982.30	1966.40	1638.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
EMISSION FACTOR													
CO2													
Well Drilling	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04	1.00E-04
Well Testing	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03
Well Servicing	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06
CH4													
Well Drilling	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05	3.30E-05
Well Testing	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05
Well Servicing	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
N2O													
Well Drilling	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Well Testing	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08
Well Servicing	Gg/10^3 m^3 total natural gas production	Flaring and Venting	1.B.2.a.ii	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	2471.40	2013.10	1856.10	1747.00	1780.50
Gas production	10^6 m^3 gas produced	Flaring	1.B.2.b.ii	1982.30	1966.40	1658.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
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
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
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
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
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
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
3. Processing	Unit	Emission source	IPCC Code										
ACTIVITY DATA													
Default weighted	10^6 m^3 gas produced	Fugitives	1.B.2.b.iii.3	1982.30	1966.40	1658.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
Default weighted	10^6 m^3 gas produced	Flaring	1.B.2.b.ii	1982.30	1966.40	1658.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
Default weighted	10^6 m^3 gas produced	Raw CO2 venting	1.B.2.b.i	1982.30	1966.40	1658.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
EMISSION FACTOR													
CO2													
Default weighted	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
Default weighted	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
Default weighted	Gg/10^6 m^3 gas produced	Raw CO2 venting	1.B.2.b.i	4.00E-02	4.00E-02	4.00E-02	4.00E-02	4.00E-02	4.00E-02	4.00E-02	4.00E-02	4.00E-02	4.00E-02
CH4													
Default weighted	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
Default weighted	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
Default weighted	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
N2O													
Default weighted	Gg/10^6 m^3 gas produced	Fugitives	1.B.2.b.iii.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Default weighted	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
Default weighted	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
4. Transmission a	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	3165	2971.7	2809.9	2443.6	2519.2
Transmission	10^6 m^3 marketable gas	Venting	1.B.2.b.i	2686.6	2367.9	2704.8	2909.9	3241.5	3165	2971.7	2809.9	2443.6	2519.2
Storage	10^6 m^3 marketable gas	All	1.B.2.b.iii.4	2686.6	2367.9	2704.8	2909.9	3241.5	3165	2971.7	2809.9	2443.6	2519.2
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
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
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
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
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
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
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
Transmission	Gg/10^6 m^3 marketable gas	Venting	1.B.2.b.i	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
5. Distribution of	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	865.2	812.9	788.3	705.6	766.2
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
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
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

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

1. B. 2. a. Oil				1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
2. Production	Unit	mission sourc	IPCC Code										
ACTIVITY DATA													
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	772.56	697.56	698.49	689.77	779.30
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
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
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
3. Transport	Unit	mission sourc	IPCC Code										
ACTIVITY DATA													
Pipelines	10^3 m^3 total oil transported by pipelines	All	1.B.2.a.iii.3	11229.85	3835.98	5551.99	8243.94	7454.46	6184.73	5182.86	6275.87	5780.74	7217.42
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	85.04	42.67	41.30	49.85	50.01
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
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
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

1. B. 2. c. 2 ii Venting anf Flaring - Gas				1990	1995	2000	2005	2010	2011	2012	2013	2014	2015
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	1966.40	1658.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
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
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	1966.40	1658.50	2283.40	2727.20	2471.40	2013.10	1856.10	1747.00	1780.50
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

ANNEX 4: THE NATIONAL ENERGY BALANCE FOR THE MOST RECENT INVENTORY YEAR

Table A4-1: National Energy balance for 2015, natural units

ENERGY BALANCE 2014 natural units	Anthracite	Hard coal	Brown coal	Lignite	Crude oil	Natural gas
	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^6 m^3
Production					670.2	1780.5
Import	0.9	1000.5	50.3	7.1	2328.0	1050.1
Export		28.2	0.2			367.4
Import-processing						
Export-processing						
Stock change		-22.9	-12.2		-84.4	56.0
Bunkers						
Energy supplied	**0.9**	**949.4**	**37.9**	**7.1**	**2913.8**	**2519.2**
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						
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		872.9				52.5
public cogeneration plants						343.7
public heating plants						72.4
industrial cogeneration plants			34.0			257.5
– in rafineries						43.8
– in gas production						40.4
Industrial heating plants						54.6
Petroleum refineries					2862.4	88.4
NGL-plant					51.4	12.2
Coke plant						
Gas works						0.3
Total transformation sector		**872.9**	**34.0**		**2913.8**	**881.6**
Energy sector own use						
Oil and gas extraction						75.9
Coal production						
Electric energy supply industry						
hydro power plants						
thermal power plants						
public cogeneration plants						
industrial cogeneration plants						
Wind power						
Petroleum refineries						48.1
NGL-plant						5.0
Gas works						
Total energy sector own use						**129.0**
Losses						**31.7**
Final energy demand	**0.9**	**76.5**	**3.9**	**7.1**	**0.0**	**1476.9**
Non energy use						**495.6**
Energy sector						
Petrochemical industry						495.6
Other industry						
Construction						
Transport						
Agriculture						
Energy consumption	**0.9**	**76.5**	**3.9**	**7.1**	**0.0**	**981.3**
Industry	**0.9**	**76.5**	**2.7**			**211.1**
Iron and steel	0.9	1.8				16.5
Non-ferrous metals						2.6
Non-metallic minerals						38.7
Chemical						11.5
Construction materials		74.7	2.7			40.7
Pulp and paper						6.7
Food production						57.3
Not elsewhere specified						37.1
Transport						**4.0**
Rail						
Road						0.2
Air						
– international						
– domestic						
Sea and River						
Public transport						3.8
Not elsewhere specified						
Other sectors			**1.2**	**7.1**		**766.2**
Households			1.2	7.0		540.0
Services				0.1		204.8
Agriculture						21.4
Construction						

Table A4-1: National Energy balance for 2015, natural units, cont.

ENERGY BALANCE 2014 natural units	Hydro energy	Fuel wood	Wind energy	Solar energy	Geothermal energy	Landfill gas	Biofuels	Other biomass
	TJ	10^3 m^3	TJ	TJ	TJ	10^3 m^3	10^3 t	TJ
Production	61625.7	5988.3	7485.8	973.8	449.3	84873.0	17.4	10299.1
Import		33.2					10.7	486.4
Export		689.1					0.7	6251.3
Import-processing								
Export-processing								
Stock change								160.8
Bunkers								
Energy supplied	**61625.7**	**5332.4**	**7485.8**	**973.8**	**449.3**	**84873.0**	**27.4**	**4695.0**
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	61625.7							
– small HPP	947.6							
Wind power plants			7485.8					
Solar power plants				538.7				
Geothermal power plants								
thermal power plants						14409.0		
public cogeneration plants						60968.0		2189.0
public heating plants								
industrial cogeneration plants						7037.0		
– in rafineries								
– in gas production								
Industrial heating plants								494.4
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total transformation sector	**61625.7**		**7485.8**	**538.7**		**82414.0**		**2683.4**
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								
NGL-plant								
Gas works								
Total energy sector own use								
Losses						**2459.0**		
Final energy demand		**5332.4**		**435.1**	**449.3**		**27.4**	**2011.6**
Non energy use								
Energy sector								
Petrochemical industry								
Other industry								
Construction								
Transport								
Agriculture								
Energy consumption		**5332.4**		**435.1**	**449.3**		**27.4**	**2011.6**
Industry		**42.6**						**783.6**
Iron and steel		0.5						
Non-ferrous metals		0.2						
Non-metallic minerals								
Chemical								
Construction materials		0.9						679.0
Pulp and paper		0.1						14.0
Food production		13.5						
Not elsewhere specified		27.4						90.6
Transport							**27.4**	
Rail								
Road							26.3	
Air								
– international								
– domestic								
Sea and River								
Public transport							1.1	
Not elsewhere specified								
Other sectors		**5289.8**		**435.1**	**449.3**			**1228.0**
Households		5277.0		435.1				1129.7
Services		12.8			280.0			98.3
Agriculture					169.3			
Construction								

Table A4-1: National Energy balance for 2015, natural units, cont.

ENERGY BALANCE 2014 natural units	Coke oven coke	petroleum gases	motor gasoline	motor gasoline	Petroleum	Jet fuel	Diesel oil	Light heating oil	Low sulphur fuel oil	Standard fuel oil
	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t
Production		247.8	842.9			104.3	1082.1	167.5		489.2
Import	26.2	35.9	217.4	0.4	2.6	24.2	1054.0	49.7	8.2	47.6
Export	1.0	142.8	518.8			6.1	550.4	48.7	1.5	375.7
Import-processing										
Export-processing										
Stock change		-0.9	-10.0			-1.9	-46.0	-0.1		48.8
Bunkers							1.5			0.2
Energy supplied	**25.2**	**140.0**	**531.5**	**0.4**	**2.6**	**120.5**	**1538.2**	**168.4**	**6.7**	**209.7**
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		209.1	842.9			104.3	1082.1	167.5		489.2
NGL-plant		38.7								
Coke plant										
Gas works										
Total production		**247.8**	**842.9**			**104.3**	**1082.1**	**167.5**		**489.2**
Transformation sector										
hydro power plants										
– small HPP										
Wind power plants										
Solar power plants										
Geothermal power plants										
thermal power plants								2.1		10.6
public cogeneration plants										35.8
public heating plants								3.9		3.7
industrial cogeneration plants										68.7
– in rafineries										67.6
– in gas production										
Industrial heating plants								0.4		55.6
Petroleum refineries										
NGL-plant										
Coke plant										
Gas works										
Total transformation sector								**6.4**		**174.4**
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										20.5
NGL-plant										
Gas works										
Total energy sector own use										**20.5**
Losses										
Final energy demand	**25.2**	**140.0**	**531.5**	**0.4**	**2.6**	**120.5**	**1538.2**	**162.0**	**6.7**	**14.8**
Non energy use										
Energy sector										
Petrochemical industry										
Other industry										
Construction										
Transport										
Agriculture										
Energy consumption	**25.2**	**140.0**	**531.5**	**0.4**	**2.6**	**120.5**	**1538.2**	**162.0**	**6.7**	**14.8**
Industry	**25.2**	**8.7**			**2.6**		**11.1**	**16.2**	**6.7**	**5.7**
Iron and steel	0.6	0.8						0.6	0.3	0.3
Non-ferrous metals		0.8			0.2			0.9		
Non-metallic minerals		0.2								
Chemical					2.4			0.5		
Construction materials	20.6	1.6					11.1	2.7	3.5	0.4
Pulp and paper		0.1								
Food production	4.0	1.4						8.3	2.1	4.2
Not elsewhere specified		3.8						3.2	0.8	0.8
Transport		**67.0**	**520.0**	**0.4**		**120.5**	**1276.5**			
Rail							17.5			
Road		67.0	520.0				1195.4			
Air				0.4		120.5				
– international				0.1		111.0				
– domestic				0.3		9.5				
Sea and River							41.2			
Public transport							22.4			
Not elsewhere specified										
Other sectors		**64.3**	**11.5**				**250.6**	**145.8**		**9.1**
Households		47.6						84.5		4.3
Services		12.3						44.6		2.7
Agriculture		2.5	7.5				171.4	11.2		2.1
Construction		1.9	4.0				79.2	5.5		

Table A4-1: National Energy balance for 2015, natural units, cont.

ENERGY BALANCE 2014 natural units	Naphta	White spirit	Bitumen	Other oils	Lubricants	Petroleum coke	Etan	Other derivates
	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t	10^3 t
Production	69.9			13.5		53.3		120.1
Import		2.9	107.8	28.1	7.8	169.0		
Export	49.4	0.2	0.6	9.2	0.1	15.2		139.6
Import-processing								
Export-processing								
Stock change	-3.1			-0.2		-8.3		19.7
Bunkers								
Energy supplied	**17.4**	**2.7**	**107.2**	**32.2**	**7.7**	**198.8**		**0.2**
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	52.5			13.5		53.3		120.1
NGL-plant	17.4							
Coke plant								
Gas works								
Total production	**69.9**			**13.5**		**53.3**		**120.1**
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								
– in rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries	17.4							
NGL-plant								
Coke plant								
Gas works								
Total transformation sector	**17.4**							
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						31.3		
NGL-plant								
Gas works								
Total energy sector own use						**31.3**		
Losses								
Final energy demand	**0.0**	**2.7**	**107.2**	**32.2**	**7.7**	**167.5**		**0.2**
Non energy use		**2.7**	**107.2**	**32.2**	**7.7**			**0.2**
Energy sector				2.1				
Petrochemical industry								
Other industry		2.7	9.8	6.2	7.7			0.2
Construction			97.4	1.1				
Transport				21.4				
Agriculture				1.4				
Energy consumption	**0.0**					**167.5**		**0.0**
Industry						**167.5**		
Iron and steel						0.3		
Non-ferrous metals								
Non-metallic minerals								
Chemical								
Construction materials						167.2		
Pulp and paper								
Food production								
Not elsewhere specified								
Transport								
Rail								
Road								
Air								
– international								
– domestic								
Sea and River								
Public transport								
Not elsewhere specified								
Other sectors								
Households								
Services								
Agriculture								
Construction								

Table A4-1: National Energy balance for 2015, natural units, cont.

ENERGY BALANCE 2014 natural units	Refinery gas	Refinery semiproducts	Aditives	Gas works gas	Electricity	Steam and hot water	waste, non renewable
	10^3 t	10^3 t	10^3 t	10^3 m^3	GWh	TJ	TJ
Production	208.1			600.0	11402.0	25363.6	390.0
Import		382.8	53.4		8868.5		
Export					2080.1		
Import-processing							
Export-processing							
Stock change		0.3					
Bunkers							
Energy supplied	**208.1**	**383.1**	**53.4**	**600.0**	**18190.4**	**25363.6**	**390.0**
Production							
hydro power plants					6555.4		
– small HPP					100.8		
Wind power plants					796.3		
Solar power plants					57.3		
Geothermal power plants							
thermal power plants					2595.9		
public cogeneration plants					1087.6	8832.6	
public heating plants						2272.7	
industrial cogeneration plants					309.5	9611.3	
– in rafineries					90.8	3777.0	
– in gas production					84.4	702.4	
Industrial heating plants						4006.9	
Petroleum refineries	208.1						
NGL-plant							
Coke plant							
Gas works				600.0			
Total production	**208.1**			**600.0**	**11402.0**	**24723.5**	
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	16.8						
– in rafineries	16.8						
– in gas production							
Industrial heating plants	4.9						
Petroleum refineries		383.1	53.4				
NGL-plant							
Coke plant							
Gas works							
Total transformation sector	**21.7**	**383.1**	**53.4**				
Energy sector own use							
Oil and gas extraction					125.2	420.0	
Coal production						120.9	
Electric energy supply industry					31.1		
hydro power plants					269.7		
thermal power plants					236.4		
public cogeneration plants					129.8	543.1	
industrial cogeneration plants							
Wind power					3.9		
Petroleum refineries	186.4				255.7	5573.5	
NGL-plant					18.7	282.4	
Gas works							
Total energy sector own use	**186.4**				**1070.5**	**6939.9**	
Losses				**13.9**	**1801.5**	**1588.1**	
Final energy demand	**0.0**			**586.1**	**15318.4**	**16835.6**	**390.0**
Non energy use							
Energy sector							
Petrochemical industry							
Other industry							
Construction							
Transport							
Agriculture							
Energy consumption	**0.0**			**586.1**	**15318.4**	**16835.6**	**390.0**
Industry					**3358.6**	**9621.4**	**390.0**
Iron and steel					365.1	59.2	
Non-ferrous metals					35.7		
Non-metallic minerals					132.5	92.6	
Chemical					309.5	4238.6	
Construction materials					489.9		390.0
Pulp and paper					189.9	816.6	
Food production					699.6	2634.4	
Not elsewhere specified					1136.4	1780.0	
Transport					**290.7**		
Rail					152.4		
Road							
Air					24.6		
– international							
– domestic					24.6		
Sea and River					21.5		
Public transport					61.8		
Not elsewhere specified					30.4		
Other sectors				**586.1**	**11669.1**	**7214.2**	
Households				193.5	6202.5	5646.8	
Services				392.6	5328.0	1392.0	
Agriculture					62.3	175.4	
Construction					76.3		

Table A4-2: National Energy balance for 2015, energy units

PJ	Anthracite	Hard coal	Brown coal	Lignite	Crude oil	Natural gas
Production	-	-	-	-	28.62	61.605
Import	0.03	25.15	0.86	0.07	99.41	36.333
Export	-	0.71	0.00	-	-	12.712
Import-processing	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-
Stock change	-	- 0.58	- 0.21	-	- 3.60	1.938
Bunkers	-	-	-	-	-	-
Energy supplied	**0.03**	**23.87**	**0.64**	**0.07**	**124.42**	**87.16**
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	**0.03**	**23.87**	**0.64**	**0.07**	**124.42**	**87.16**
Transformation sector	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-
– small HPP	-	-	-	-	-	-
Wind power plants	-	-	-	-	-	-
Solar power plants	-	-	-	-	-	-
Geothermal power plants	-	-	-	-	-	-
thermal power plants	-	21.82	-	-	-	1.82
public cogeneration plants	-	-	-	-	-	11.89
public heating plants	-	-	-	-	-	2.51
industrial cogeneration plants	-	-	0.58	-	-	8.91
– in rafineries	-	-	-	-	-	1.52
– in gas production	-	-	-	-	-	1.40
Industrial heating plants	-	-	-	-	-	1.89
Petroleum refineries	-	-	-	-	122.22	3.06
NGL-plant	-	-	-	-	2.19	0.42
Coke plant	-	-	-	-	-	-
Gas works	-	-	-	-	-	0.01
Total transformation sector	**-**	**21.82**	**0.58**	**-**	**124.42**	**30.50**
Energy sector own use	-	-	-	-	-	-
Oil and gas extraction	-	-	-	-	-	2.63
Coal production	-	-	-	-	-	-
Electric energy supply industry	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	-
public cogeneration plants	-	-	-	-	-	-
industrial cogeneration plants	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-
Petroleum refineries	-	-	-	-	-	1.66
NGL-plant	-	-	-	-	-	0.17
Gas works	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**4.46**
Losses	-	-	-	-	-	1.10
Final energy demand	**0.03**	**2.04**	**0.07**	**0.07**	**-**	**51.10**
Non energy use	**-**	**-**	**-**	**-**	**-**	**17.15**
Energy sector	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	17.15
Other industry	-	-	-	-	-	-
Construction	-	-	-	-	-	-
Transport	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-
Energy consumption	**0.03**	**2.04**	**0.07**	**0.07**	**-**	**33.95**
Industry	**0.03**	**2.04**	**0.05**	**-**	**-**	**7.30**
Iron and steel	0.03	0.05	-	-	-	0.57
Non-ferrous metals	-	-	-	-	-	0.09
Non-metallic minerals	-	-	-	-	-	1.34
Chemical	-	-	-	-	-	0.40
Construction materials	-	1.99	0.05	-	-	1.41
Pulp and paper	-	-	-	-	-	0.23
Food production	-	-	-	-	-	1.98
Not elsewhere specified	-	-	-	-	-	1.28
Transport	**-**	**-**	**-**	**-**	**-**	**0.14**
Rail	-	-	-	-	-	-
Road	-	-	-	-	-	0.01
Air	-	-	-	-	-	-
– international	-	-	-	-	-	-
– domestic	-	-	-	-	-	-
Sea and River	-	-	-	-	-	-
Public transport	-	-	-	-	-	0.13
Not elsewhere specified	-	-	-	-	-	-
Other sectors	**-**	**-**	**0.02**	**0.07**	**-**	**26.51**
Households	-	-	0.02	0.07	-	18.68
Services	-	-	-	0.00	-	7.09
Agriculture	-	-	-	-	-	0.74
Construction	-	-	-	-	-	-

Table A4-2: National Energy balance for 2015, energy units, cont.

PJ	Hydro energy	Fuel wood	Wind energy	Solar energy	Geothermal energy	Landfill gas	Biofuels	Other biomass
Production	61.63	53.895	7.486	0.974	0.449	1.5066	0.648	10.299
Import	-	0.30	-	-	-	-	0.40	0.49
Export	-	6.20	-	-	-	-	0.03	6.25
Import-processing	-	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-	-
Stock change	-	-	-	-	-	-	-	0.16
Bunkers	-	-	-	-	-	-	-	-
Energy supplied	**61.63**	**47.99**	**7.49**	**0.97**	**0.45**	**1.5066**	**1.02**	**4.70**
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	**61.63**	**47.99**	**7.49**	**0.97**	**0.45**	**1.5066**	**1.02**	**4.70**
Transformation sector	-	-	-	-	-	-	-	-
hydro power plants	61.63	-	-	-	-	-	-	-
– small HPP	0.95	-	-	-	-	-	-	-
Wind power plants	-	-	7.49	-	-	-	-	-
Solar power plants	-	-	-	0.54	-	-	-	-
Geothermal power plants	-	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	0.2487	-	-
public cogeneration plants	-	-	-	-	-	1.0724	-	2.19
public heating plants	-	-	-	-	-	-	-	-
industrial cogeneration plants	-	-	-	-	-	0.1431	-	-
– in rafineries	-	-	-	-	-	-	-	-
– in gas production	-	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-	-	0.49
Petroleum refineries	-	-	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total transformation sector	**61.63**	**-**	**7.49**	**0.54**	**-**	**1.4642**	**-**	**2.68**
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	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Losses	-	-	-	-	-	0.0424	-	-
Final energy demand	**-**	**47.99**	**-**	**0.44**	**0.45**	**0.0000**	**1.02**	**2.01**
Non energy use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Energy sector	-	-	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-	-
Other industry	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-
Energy consumption	**-**	**47.99**	**-**	**0.44**	**0.45**	**0.0000**	**1.02**	**2.01**
Industry	**-**	**0.38**	**-**	**-**	**-**	**-**	**-**	**0.78**
Iron and steel	-	0.00	-	-	-	-	-	-
Non-ferrous metals	-	0.00	-	-	-	-	-	-
Non-metallic minerals	-	-	-	-	-	-	-	-
Chemical	-	-	-	-	-	-	-	-
Construction materials	-	0.01	-	-	-	-	-	0.68
Pulp and paper	-	0.00	-	-	-	-	-	0.01
Food production	-	0.12	-	-	-	-	-	-
Not elsewhere specified	-	0.25	-	-	-	-	-	0.09
Transport	**-**	**-**	**-**	**-**	**-**	**-**	**1.02**	**-**
Rail	-	-	-	-	-	-	-	-
Road	-	-	-	-	-	-	0.98	-
Air	-	-	-	-	-	-	-	-
– international	-	-	-	-	-	-	-	-
– domestic	-	-	-	-	-	-	-	-
Sea and River	-	-	-	-	-	-	-	-
Public transport	-	-	-	-	-	-	0.04	-
Not elsewhere specified	-	-	-	-	-	-	-	-
Other sectors	**-**	**47.61**	**-**	**0.44**	**0.45**	**-**	**-**	**1.23**
Households	-	47.49	-	0.44	-	-	-	1.13
Services	-	0.12	-	-	0.28	-	-	0.10
Agriculture	-	-	-	-	0.17	-	-	-
Construction	-	-	-	-	-	-	-	-

Table A4-2: National Energy balance for 2015, 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	-	-	-	-	-	-	-	-	-	-
Import	0.77	1.68	9.69	0.02	0.11	1.06	45.02	2.12	0.33	1.91
Export	0.03	6.70	23.13	-	-	0.27	23.51	2.08	0.06	15.10
Import-processing	-	-	-	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-	-	-	-
Stock change	-	- 0.04	- 0.45	-	-	- 0.08	- 1.96	- 0.00	-	1.96
Bunkers	-	-	-	-	-	-	0.06	-	-	0.01
Energy supplied	**0.74**	**- 5.05**	**- 13.89**	**0.02**	**0.11**	**0.71**	**19.48**	**0.04**	**0.27**	**- 11.23**
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	-	9.80	37.58	-	-	4.59	46.22	7.15	-	19.66
NGL-plant	-	1.81	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-
Total production	**-**	**11.62**	**37.58**	**-**	**-**	**4.59**	**46.22**	**7.15**	**-**	**19.66**
Gross production	**0.74**	**6.56**	**23.70**	**0.02**	**0.11**	**5.30**	**65.70**	**7.19**	**0.27**	**8.43**
Transformation sector	-	-	-	-	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-	-	-	-	-
– small HPP	-	-	-	-	-	-	-	-	-	-
Wind power plants	-	-	-	-	-	-	-	-	-	-
Solar power plants	-	-	-	-	-	-	-	-	-	-
Geothermal power plants	-	-	-	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	-	-	0.09	-	0.43
public cogeneration plants	-	-	-	-	-	-	-	-	-	1.44
public heating plants	-	-	-	-	-	-	-	0.17	-	0.15
industrial cogeneration plants	-	-	-	-	-	-	-	-	-	2.76
– in rafineries	-	-	-	-	-	-	-	-	-	2.72
– in gas production	-	-	-	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-	-	0.02	-	2.23
Petroleum refineries	-	-	-	-	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-
Total transformation sector	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.27**	**-**	**7.01**
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	-	-	-	-	-	-	-	-	-	0.82
NGL-plant	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.82**
Losses	-	-	-	-	-	-	-	-	-	-
Final energy demand	**0.74**	**6.56**	**23.70**	**0.02**	**0.11**	**5.30**	**65.70**	**6.92**	**0.27**	**0.59**
Non energy use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Energy sector	-	-	-	-	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-	-	-	-
Other industry	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-	-	-
Energy consumption	**0.74**	**6.56**	**23.70**	**0.02**	**0.11**	**5.30**	**65.70**	**6.92**	**0.27**	**0.59**
Industry	**0.74**	**0.41**	**-**	**-**	**0.11**	**-**	**0.47**	**0.69**	**0.27**	**0.23**
Iron and steel	0.02	0.04	-	-	-	-	-	0.03	0.01	0.01
Non-ferrous metals	-	0.04	-	-	0.01	-	-	0.04	-	-
Non-metallic minerals	-	0.01	-	-	-	-	-	-	-	-
Chemical	-	-	-	-	0.11	-	-	0.02	-	-
Construction materials	0.60	0.08	-	-	-	-	0.47	0.12	0.14	0.02
Pulp and paper	-	0.00	-	-	-	-	-	-	-	-
Food production	0.12	0.07	-	-	-	-	-	0.35	0.08	0.17
Not elsewhere specified	-	0.18	-	-	-	-	-	0.14	0.03	0.03
Transport	**-**	**3.14**	**23.19**	**0.02**	**-**	**5.30**	**54.52**	**-**	**-**	**-**
Rail	-	-	-	-	-	-	0.75	-	-	-
Road	-	3.14	23.19	-	-	-	51.06	-	-	-
Air	-	-	-	0.02	-	5.30	-	-	-	-
– international	-	-	-	0.00	-	4.88	-	-	-	-
– domestic	-	-	-	0.01	-	0.42	-	-	-	-
Sea and River	-	-	-	-	-	-	1.76	-	-	-
Public transport	-	-	-	-	-	-	0.96	-	-	-
Not elsewhere specified	-	-	-	-	-	-	-	-	-	-
Other sectors	**-**	**3.02**	**0.51**	**-**	**-**	**-**	**10.70**	**6.23**	**-**	**0.37**
Households	-	2.23	-	-	-	-	-	3.61	-	0.17
Services	-	0.58	-	-	-	-	-	1.90	-	0.11
Agriculture	-	0.12	0.33	-	-	-	7.32	0.48	-	0.08
Construction	-	0.09	0.18	-	-	-	3.38	0.23	-	-

Table A4-2: National Energy balance for 2015, energy units, cont.

PJ	Naphta	White spirit	Bitumen	Lubricants	Paraffin and wax	Petroleum coke	Etan	Other derivates
Production	-	-	-	-	-	-	-	-
Import	-	0.10	3.61	0.94	0.26	5.24	-	-
Export	2.20	0.01	0.02	0.31	0.00	0.47	-	5.61
Import-processing	-	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-	-
Stock change	- 0.14	-	-	- 0.01	-	- 0.26	-	0.79
Bunkers	-	-	-	-	-	-	-	-
Energy supplied	**- 2.34**	**0.09**	**3.59**	**0.63**	**0.26**	**4.51**	**-**	**- 4.82**
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	2.34	-	-	0.45	-	1.65	-	4.83
NGL-plant	0.78	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total production	**3.12**	**-**	**-**	**0.45**	**-**	**1.65**	**-**	**4.83**
Gross production	**0.78**	**0.09**	**3.59**	**1.08**	**0.26**	**6.16**	**-**	**0.01**
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	0.78	-	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total transformation sector	**0.78**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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	-	-	-	-	-	0.97	-	-
NGL-plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**0.97**	**-**	**-**
Losses	-	-	-	-	-	-	-	-
Final energy demand	**- 0.00**	**0.09**	**3.59**	**1.08**	**0.26**	**5.19**	**-**	**0.01**
Non energy use	**-**	**0.0905**	**3.5912**	**1.0787**	**0.2580**	**-**	**-**	**0.0080**
Energy sector	-	-	-	0.07	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-	-
Other industry	-	0.09	0.33	0.21	0.26	-	-	0.01
Construction	-	-	3.26	0.04	-	-	-	-
Transport	-	-	-	0.72	-	-	-	-
Agriculture	-	-	-	0.05	-	-	-	-
Energy consumption	**- 0.00**	**-**	**-**	**-**	**-**	**5.19**	**-**	**-**
Industry	**-**	**-**	**-**	**-**	**-**	**5.19**	**-**	**-**
Iron and steel	-	-	-	-	-	0.01	-	-
Non-ferrous metals	-	-	-	-	-	-	-	-
Non-metallic minerals	-	-	-	-	-	-	-	-
Chemical	-	-	-	-	-	-	-	-
Construction materials	-	-	-	-	-	5.18	-	-
Pulp and paper	-	-	-	-	-	-	-	-
Food production	-	-	-	-	-	-	-	-
Not elsewhere specified	-	-	-	-	-	-	-	-
Transport	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Rail	-	-	-	-	-	-	-	-
Road	-	-	-	-	-	-	-	-
Air	-	-	-	-	-	-	-	-
– international	-	-	-	-	-	-	-	-
– domestic	-	-	-	-	-	-	-	-
Sea and River	-	-	-	-	-	-	-	-
Public transport	-	-	-	-	-	-	-	-
Not elsewhere specified	-	-	-	-	-	-	-	-
Other sectors	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Households	-	-	-	-	-	-	-	-
Services	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-

Table A4-2: National Energy balance for 2015, energy units, cont.

PJ	Refinery gas	Refinery semiproducts	Aditives	Gas works gas	Electricity	Steam and hot water	Industrial waste, non renewable
Production	-	-	-	-	-	0.64	0.39
Import	-	16.35	2.28	-	31.93	-	-
Export	-	-	-	-	7.49	-	-
Import-processing	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-
Stock change	-	0.01	-	-	-	-	-
Bunkers	-	-	-	-	-	-	-
Energy supplied	**-**	**16.36**	**2.28**	**-**	**24.44**	**0.64**	**0.39**
Production	-	-	-	-	-	-	-
hydro power plants	-	-	-	-	23.60	-	-
– small HPP	-	-	-	-	0.36	-	-
Wind power plants	-	-	-	-	2.87	-	-
Solar power plants	-	-	-	-	0.21	-	-
Geothermal power plants	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	9.35	-	-
public cogeneration plants	-	-	-	-	3.92	8.83	-
public heating plants	-	-	-	-	-	2.27	-
industrial cogeneration plants	-	-	-	-	1.11	9.61	-
– in rafineries	-	-	-	-	0.33	3.78	-
– in gas production	-	-	-	-	0.30	0.70	-
Industrial heating plants	-	-	-	-	-	4.01	-
Petroleum refineries	8.87	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-
Gas works	-	-	-	0.01	-	-	-
Total production	**8.87**	**-**	**-**	**0.01**	**41.05**	**24.72**	**-**
Gross production	**8.87**	**16.36**	**2.28**	**0.01**	**65.49**	**25.36**	**0.39**
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	0.72	-	-	-	-	-	-
– in rafineries	0.72	-	-	-	-	-	-
– in gas production	-	-	-	-	-	-	-
Industrial heating plants	0.21	-	-	-	-	-	-
Petroleum refineries	-	16.36	2.28	-	-	-	-
NGL-plant	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-
Total transformation sector	**0.92**	**16.36**	**2.28**	**-**	**-**	**-**	**-**
Energy sector own use	-	-	-	-	-	-	-
Oil and gas extraction	-	-	-	-	0.45	0.42	-
Coal production	-	-	-	-	-	0.12	-
Electric energy supply industry	-	-	-	-	0.11	-	-
hydro power plants	-	-	-	-	0.97	-	-
thermal power plants	-	-	-	-	0.85	-	-
public cogeneration plants	-	-	-	-	0.47	0.54	-
industrial cogeneration plants	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	0.01	-	-
Petroleum refineries	7.94	-	-	-	0.92	5.57	-
NGL-plant	-	-	-	-	0.07	0.28	-
Gas works	-	-	-	-	-	-	-
Total energy sector own use	**7.94**	**-**	**-**	**-**	**3.85**	**6.94**	**-**
Losses	-	-	-	0.00	6.49	1.59	-
Final energy demand	**0.00**	**-**	**-**	**0.01**	**55.15**	**16.84**	**0.39**
Non energy use	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Energy sector	-	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-
Other industry	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-
Energy consumption	**0.00**	**-**	**-**	**0.01**	**55.15**	**16.84**	**0.39**
Industry	**-**	**-**	**-**	**-**	**12.09**	**9.62**	**0.39**
Iron and steel	-	-	-	-	1.31	0.06	-
Non-ferrous metals	-	-	-	-	0.13	-	-
Non-metallic minerals	-	-	-	-	0.48	0.09	-
Chemical	-	-	-	-	1.11	4.24	-
Construction materials	-	-	-	-	1.76	-	0.39
Pulp and paper	-	-	-	-	0.68	0.82	-
Food production	-	-	-	-	2.52	2.63	-
Not elsewhere specified	-	-	-	-	4.09	1.78	-
Transport	**-**	**-**	**-**	**-**	**1.05**	**-**	**-**
Rail	-	-	-	-	0.55	-	-
Road	-	-	-	-	-	-	-
Air	-	-	-	-	0.09	-	-
– international	-	-	-	-	-	-	-
– domestic	-	-	-	-	0.09	-	-
Sea and River	-	-	-	-	0.08	-	-
Public transport	-	-	-	-	0.22	-	-
Not elsewhere specified	-	-	-	-	0.11	-	-
Other sectors	**-**	**-**	**-**	**0.01**	**42.01**	**7.21**	**-**
Households	-	-	-	0.00	22.33	5.65	-
Services	-	-	-	0.01	19.18	1.39	-
Agriculture	-	-	-	-	0.22	0.18	-
Construction	-	-	-	-	0.27	-	-

ANNEX 5: ANY ADDITIONAL INFORMATION

ANNEX 5-1: ARCHIVING, INVENTORY DATA RECORD SHEET

INVENTORY DATA RECORD SHEET

Year: 2015

MODULE: ENERGY	
SUBMODULE: CO_2 from Fuel Combustion by Source Categories	
WORKSHEET: 1_1A1A_PUBLIC_ELE_HEAT_1990-2014	**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 2015; Annual Energy Report: ''Energy in Croatia 2016''
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

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.

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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 2017 v4
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]	16713.24	3745.42	2800.63	NO	1240.24	10.45	NO	NO	24509.98
1. Energy	20758.79	842.81	230.24						21831.84
A. Fuel combustion (sectoral approach)	20078.93	413.91	229.55						20722.40
1. Energy industries	7071.41	5.42	17.49						7094.31
2. Manufacturing industries and construction	5501.67	9.73	17.64						5529.04
3. Transport	3786.94	41.10	53.07						3881.11
4. Other sectors	3718.91	357.67	141.35						4217.93
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	679.85	428.90	0.69						1109.45
1. Solid fuels	NO	59.64	NO,NA						59.64
2. Oil and natural gas	679.85	369.26	0.69						1049.80
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2580.73	9.53	787.80	NO	1240.24	10.45	NO	NO	4628.76
A. Mineral industry	1280.88								1280.88
B. Chemical industry	771.87	5.63	754.43	NO	NO	NO	NO	NO	1531.93
C. Metal industry	338.56	3.90	NO	NO	1240.24	NO	NO	NO	1582.70
D. Non-energy products from fuels and solvent use	189.43	NA	NA						189.43
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	33.38	NO	NO	10.45	NO	NO	43.83
H. Other	NA	NA	NA						NA
3. Agriculture	50.02	2305.38	1683.69						4039.08
A. Enteric fermentation		1977.59							1977.59
B. Manure management		327.78	323.85						651.63
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1359.84						1359.84
E. Prescribed burning of savannas		NA	NA						NA
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]	-6676.84	1.23	31.89						-6643.72
A. Forest land	-6733.83	1.12	0.74						-6731.97
B. Cropland	238.78	NO	3.50						242.28
C. Grassland	-120.32	0.11	0.12						-120.09
D. Wetlands	43.07	NO	4.51						47.57
E. Settlements	197.00	NO	23.02						220.02
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-301.54								-301.54
H. Other	NO	NO	NO						NO
5. Waste	0.54	586.47	67.01						654.01
A. Solid waste disposal	NA,NO	348.61							348.61
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		237.86	67.00						304.86
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	0.86	2.40						647.10
Aviation	496.62	0.52	1.24						498.38
Navigation	147.23	0.34	1.15						148.72
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5126.24								5126.24
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									31153.70
Total CO_2 equivalent emissions with land use, land-use change and forestry									24509.98
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 2017 v4
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]	9375.51	3624.05	2651.96	NO	850.75	10.33	NO	NO	16512.61
1. Energy	15252.77	792.47	199.29						16244.53
A. Fuel combustion (sectoral approach)	14586.28	442.21	198.78						15227.28
1. Energy industries	4738.14	3.97	12.00						4754.11
2. Manufacturing industries and construction	3919.00	7.08	12.57						3938.65
3. Transport	2866.87	31.02	43.67						2941.55
4. Other sectors	3062.28	400.14	130.55						3592.97
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	666.49	350.26	0.50						1017.26
1. Solid fuels	NO	53.15	NO,NA						53.15
2. Oil and natural gas	666.49	297.11	0.50						964.10
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1964.66	8.91	696.33	NO	850.75	10.33	NO	NO	3530.98
A. Mineral industry	863.47								863.47
B. Chemical industry	682.27	5.18	662.95	NO	NO	NO	NO	NO	1350.41
C. Metal industry	273.84	3.73	NO	NO	850.75	NO	NO	NO	1128.32
D. Non-energy products from fuels and solvent use	145.07	NA	NA						145.07
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	33.38	NO	NO	10.33	NO	NO	43.71
H. Other	NA	NA	NA						NA
3. Agriculture	50.95	2219.25	1659.51						3929.71
A. Enteric fermentation		1884.45							1884.45
B. Manure management		334.80	310.12						644.92
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1349.39						1349.39
E. Prescribed burning of savannas		NA	NA						NA
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]	-7893.40	3.18	33.44						-7856.78
A. Forest land	-8507.50	3.00	1.98						-8502.52
B. Cropland	235.25	NO	3.37						238.62
C. Grassland	-91.88	0.18	0.19						-91.51
D. Wetlands	43.14	NO	4.51						47.65
E. Settlements	205.21	NO	23.38						228.58
F. Other land	NO	NO	NO						NO
G. Harvested wood products	222.39								222.39
H. Other	NO	NO	NO						NO
5. Waste	0.54	600.24	63.40						664.17
A. Solid waste disposal	NA,NO	362.83							362.83
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		237.41	63.39						300.80
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	0.10	0.24						94.63
Aviation	94.29	0.10	0.24						94.63
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5986.51								5986.51
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24369.39
Total CO_2 equivalent emissions with land use, land-use change and forestry									16512.61
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 2017 v4
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)]	8518.55	3245.89	2715.59	NO	NO	10.42	NO	NO	14490.45
1. Energy	14532.35	697.58	179.24						15409.17
A. Fuel combustion (sectoral approach)	13856.50	377.02	178.79						14412.31
1. Energy industries	5404.66	4.57	15.42						5424.64
2. Manufacturing industries and construction	3114.89	5.44	9.58						3129.91
3. Transport	2776.67	27.67	37.68						2842.01
4. Other sectors	2560.29	339.34	116.12						3015.75
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	675.85	320.55	0.46						996.86
1. Solid fuels	NO	41.30	NO,NA						41.30
2. Oil and natural gas	675.85	279.26	0.46						955.56
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2008.74	7.77	898.81	NO	NO	10.42	NO	NO	2925.73
A. Mineral industry	938.79								938.79
B. Chemical industry	850.24	5.32	865.43	NO	NO	NO	NO	NO	1720.98
C. Metal industry	118.53	2.45	NO	NO	NO	NO	NO	NO	120.98
D. Non-energy products from fuels and solvent use	101.19	NA	NA						101.19
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	33.38	NO	NO	10.42	NO	NO	43.79
H. Other	NA	NA	NA						NA
3. Agriculture	65.51	1911.63	1531.76						3508.90
A. Enteric fermentation		1616.74							1616.74
B. Manure management		294.89	254.54						549.42
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1277.22						1277.22
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8088.59	15.15	42.13						-8031.30
A. Forest land	-8805.57	13.64	9.00						-8782.93
B. Cropland	222.58	NO	3.25						225.83
C. Grassland	-81.16	1.51	1.64						-78.01
D. Wetlands	43.16	NO	4.51						47.67
E. Settlements	207.86	NO	23.74						231.60
F. Other land	NO	NO	NO						NO
G. Harvested wood products	324.54								324.54
H. Other	NO	NO	NO						NO
5. Waste	0.54	613.76	63.65						677.95
A. Solid waste disposal	NA,NO	376.81							376.81
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		236.95	63.64						300.60
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	0.08	0.18						72.55
Aviation	72.29	0.08	0.18						72.55
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5219.31								5219.31
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22521.75
Total CO_2 equivalent emissions with land use, land-use change and forestry									14490.45
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 2017 v4
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)]	8606.12	3314.48	2347.21	NO	NO	10.53	NO	NO	14278.34
1. Energy	15321.31	727.77	193.62						16242.70
A. Fuel combustion (sectoral approach)	14434.43	393.46	193.16						15021.06
1. Energy industries	5929.31	4.88	17.13						5951.31
2. Manufacturing industries and construction	3031.80	5.21	9.17						3046.18
3. Transport	2925.04	27.16	46.40						2998.59
4. Other sectors	2548.29	356.21	120.46						3024.97
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	886.88	334.31	0.46						1221.65
1. Solid fuels	NO	39.52	NO,NA						39.52
2. Oil and natural gas	886.88	294.79	0.46						1182.12
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1707.24	6.42	685.77	NO	NO	10.53	NO	NO	2409.96
A. Mineral industry	804.89								804.89
B. Chemical industry	729.48	5.32	652.39	NO	NO	NO	NO	NO	1387.20
C. Metal industry	58.10	1.10	NO	NO	NO	NO	NO	NO	59.20
D. Non-energy products from fuels and solvent use	114.77	NA	NA						114.77
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	33.38	NO	NO	10.53	NO	NO	43.91
H. Other	NA	NA	NA						NA
3. Agriculture	52.14	1917.55	1348.87						3318.55
A. Enteric fermentation		1605.03							1605.03
B. Manure management		312.52	257.67						570.18
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1091.20						1091.20
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8475.11	34.39	55.09						-8385.63
A. Forest land	-8965.53	32.81	21.64						-8911.09
B. Cropland	210.23	NO	3.13						213.35
C. Grassland	-84.74	1.58	1.72						-81.43
D. Wetlands	43.17	NO	4.51						47.69
E. Settlements	210.52	NO	24.10						234.61
F. Other land	NO	NO	NO						NO
G. Harvested wood products	111.24								111.24
H. Other	NO	NO	NO						NO
5. Waste	0.54	628.35	63.86						692.75
A. Solid waste disposal	NA,NO	391.85							391.85
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		236.50	63.86						300.36
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	0.19	0.46						182.95
Aviation	182.30	0.19	0.46						182.95
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5493.15								5493.15
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22663.97
Total CO_2 equivalent emissions with land use, land-use change and forestry									14278.34
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 A5.2-6: GHG emission in Croatia, 1994

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 1994
Submission 2017 v4
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)]	7749.22	3083.69	2361.97	NO	NO	10.64	NO	NO	13205.52
1. Energy	14364.19	662.15	188.53						15214.87
A. Fuel combustion (sectoral approach)	13571.13	359.88	188.11						14119.12
1. Energy industries	4630.04	3.27	12.05						4645.37
2. Manufacturing industries and construction	3202.34	4.85	8.64						3215.82
3. Transport	3102.80	29.54	48.89						3181.24
4. Other sectors	2635.95	322.22	118.52						3076.69
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	793.06	302.27	0.42						1095.75
1. Solid fuels	NO	35.44	NO,NA						35.44
2. Oil and natural gas	793.06	266.83	0.42						1060.31
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1929.89	6.71	739.82	NO	NO	10.64	NO	NO	2687.06
A. Mineral industry	976.59								976.59
B. Chemical industry	749.67	5.08	706.44	NO	NO	NO	NO	NO	1461.19
C. Metal industry	80.11	1.63	NO	NO	NO	NO	NO	NO	81.74
D. Non-energy products from fuels and solvent use	123.51	NA	NA						123.51
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	33.38	NO	NO	10.64	NO	NO	44.02
H. Other	NA	NA	NA						NA
3. Agriculture	47.57	1753.38	1327.28						3128.24
A. Enteric fermentation		1442.05							1442.05
B. Manure management		311.33	237.33						548.66
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1089.95						1089.95
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8592.96	11.51	39.92						-8541.54
A. Forest land	-8965.09	10.68	7.04						-8947.37
B. Cropland	225.81	NO	3.00						228.81
C. Grassland	-93.18	0.82	0.90						-91.46
D. Wetlands	43.19	NO	4.52						47.70
E. Settlements	212.72	NO	24.46						237.19
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-16.42								-16.42
H. Other	NO	NO	NO						NO
5. Waste	0.54	649.94	66.42						716.90
A. Solid waste disposal	NA,NO	408.74							408.74
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		241.20	66.41						307.62
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	0.60	1.75						406.16
Aviation	264.02	0.28	0.66						264.96
Navigation	139.78	0.32	1.09						141.20
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	4929.23								4929.23
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									21747.06
Total CO_2 equivalent emissions with land use, land-use change and forestry									13205.52
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 A5.2-7: GHG emission in Croatia, 1995

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 1995
Submission 2017 v4
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)]	7866.87	3041.21	2280.73	29.32	NO	11.12	NO	NO	13229.25
1. Energy	15263.42	679.03	179.50						16121.96
A. Fuel combustion (sectoral approach)	14331.09	379.67	179.10						14889.86
1. Energy industries	5226.83	4.04	12.35						5243.22
2. Manufacturing industries and construction	2954.66	4.74	8.46						2967.87
3. Transport	3292.78	30.88	44.29						3367.95
4. Other sectors	2856.82	340.01	114.00						3310.83
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	932.34	299.36	0.40						1232.10
1. Solid fuels	NO	28.23	NO,NA						28.23
2. Oil and natural gas	932.34	271.14	0.40						1203.87
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1682.55	6.06	711.45	29.32	NO	11.12	NO	NO	2440.50
A. Mineral industry	759.97								759.97
B. Chemical industry	770.84	5.28	678.08	NO	NO	NO	NO	NO	1454.19
C. Metal industry	38.37	0.78	NO	NO	NO	NO	NO	NO	39.15
D. Non-energy products from fuels and solvent use	113.37	NA	NA						113.37
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				29.32	NO	NO	NO	NO	29.32
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.12	NO	NO	44.50
H. Other	NA	NA	NA						NA
3. Agriculture	46.29	1681.65	1280.29						3008.23
A. Enteric fermentation		1376.67							1376.67
B. Manure management		304.97	223.41						528.39
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1056.88						1056.88
E. Prescribed burning of savannas		NA	NA						NA
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)]	-9125.93	7.54	37.41						-9080.97
A. Forest land	-9461.17	7.03	4.63						-9449.51
B. Cropland	231.04	NO	2.88						233.92
C. Grassland	-99.43	0.52	0.56						-98.35
D. Wetlands	43.20	NO	4.52						47.72
E. Settlements	216.02	NO	24.82						240.84
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-55.59								-55.59
H. Other	NO	NO	NO						NO
5. Waste	0.54	666.93	72.07						739.53
A. Solid waste disposal	NA,NO	429.46							429.46
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		237.46	72.06						309.53
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	348.25	0.49	1.42						350.16
Aviation	245.16	0.26	0.61						246.04
Navigation	103.08	0.24	0.81						104.13
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5212.59								5212.59
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22310.22
Total CO_2 equivalent emissions with land use, land-use change and forestry									13229.25
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 A5.2-8: GHG emission in Croatia, 1996

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 1996
Submission 2017 v4
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)]	8758.28	3044.10	2292.37	49.77	NO	11.57	NO	NO	14156.10
1. Energy	15828.26	710.25	229.77						16768.29
A. Fuel combustion (sectoral approach)	14930.29	422.54	229.39						15582.21
1. Energy industries	5054.87	4.06	12.92						5071.84
2. Manufacturing industries and construction	2998.35	4.71	8.41						3011.48
3. Transport	3620.09	33.32	72.27						3725.69
4. Other sectors	3256.98	380.45	135.78						3773.20
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	897.98	287.71	0.39						1186.08
1. Solid fuels	NO	22.77	NO,NA						22.77
2. Oil and natural gas	897.98	264.95	0.39						1163.31
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1706.66	5.36	665.28	49.77	NO	11.57	NO	NO	2438.65
A. Mineral industry	844.58								844.58
B. Chemical industry	712.81	5.04	631.91	NO	NO	NO	NO	NO	1349.76
C. Metal industry	19.30	0.32	NO	NO	NO	NO	NO	NO	19.62
D. Non-energy products from fuels and solvent use	129.97	NA	NA						129.97
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				49.77	NO	NO	NO	NO	49.77
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.57	NO	NO	44.95
H. Other	NA	NA	NA						NA
3. Agriculture	52.44	1629.29	1284.64						2966.37
A. Enteric fermentation		1320.86							1320.86
B. Manure management		308.43	214.07						522.50
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1070.57						1070.57
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8829.62	16.53	43.95						-8769.14
A. Forest land	-9220.07	15.14	9.99						-9194.94
B. Cropland	227.97	NO	2.75						230.72
C. Grassland	-104.82	1.39	1.51						-101.92
D. Wetlands	43.22	NO	4.52						47.74
E. Settlements	218.74	NO	25.18						243.92
F. Other land	NO	NO	NO						NO
G. Harvested wood products	5.35								5.35
H. Other	NO	NO	NO						NO
5. Waste	0.54	682.67	68.72						751.93
A. Solid waste disposal	NA,NO	452.53							452.53
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.54	NA,NO	0.01						0.54
D. Waste water treatment and discharge		230.14	68.72						298.86
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	314.02	0.44	1.27						315.74
Aviation	223.16	0.23	0.56						223.96
Navigation	90.86	0.21	0.71						91.78
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5801.38								5801.38
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									22925.24
Total CO_2 equivalent emissions with land use, land-use change and forestry									14156.10
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 A5.2-9: GHG emission in Croatia, 1997

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 1997
Submission 2017 v4
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)]	10361.35	2996.34	2481.13	71.93	NO	11.43	NO	NO	15922.18
1. Energy	16704.89	676.89	226.29						17608.07
A. Fuel combustion (sectoral approach)	15858.22	395.32	225.90						16479.44
1. Energy industries	5557.44	4.47	15.14						5577.04
2. Manufacturing industries and construction	3026.43	5.13	8.98						3040.54
3. Transport	3965.98	35.31	83.18						4084.47
4. Other sectors	3308.37	350.42	118.60						3777.39
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	846.67	281.56	0.39						1128.63
1. Solid fuels	NO	16.65	NO,NA						16.65
2. Oil and natural gas	846.67	264.91	0.39						1111.97
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1891.37	5.70	698.63	71.93	NO	11.43	NO	NO	2679.06
A. Mineral industry	954.10								954.10
B. Chemical industry	756.12	4.96	665.26	NO	NO	NO	NO	NO	1426.34
C. Metal industry	40.11	0.74	NO	NO	NO	NO	NO	NO	40.85
D. Non-energy products from fuels and solvent use	141.04	NA	NA						141.04
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				71.93	NO	NO	NO	NO	71.93
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.43	NO	NO	44.80
H. Other	NA	NA	NA						NA
3. Agriculture	68.39	1582.96	1442.02						3093.36
A. Enteric fermentation		1272.13							1272.13
B. Manure management		310.83	206.97						517.80
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1235.05						1235.05
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8305.12	17.63	44.90						-8242.59
A. Forest land	-8636.10	16.28	10.73						-8609.10
B. Cropland	245.03	NO	2.63						247.66
C. Grassland	-114.53	1.35	1.47						-111.71
D. Wetlands	43.23	NO	4.52						47.75
E. Settlements	220.07	NO	25.55						245.62
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-62.82								-62.82
H. Other	NO	NO	NO						NO
5. Waste	1.82	713.17	69.29						784.28
A. Solid waste disposal	NA,NO	478.90							478.90
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	1.82	NA,NO	0.03						1.86
D. Waste water treatment and discharge		234.27	69.26						303.53
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	310.14	0.42	1.17						311.73
Aviation	235.74	0.25	0.59						236.57
Navigation	74.41	0.17	0.58						75.16
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5428.42								5428.42
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24164.77
Total CO_2 equivalent emissions with land use, land-use change and forestry									15922.18
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 2017 v4
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)]	11167.51	2992.38	2148.10	101.88	NO	11.99	NO	NO	16421.86
1. Energy	17546.74	664.38	209.96						18421.08
A. Fuel combustion (sectoral approach)	16792.20	399.23	209.59						17401.01
1. Energy industries	6212.63	5.18	16.82						6234.63
2. Manufacturing industries and construction	3313.18	5.14	9.16						3327.47
3. Transport	4098.64	36.21	58.51						4193.36
4. Other sectors	3167.75	352.70	125.11						3645.55
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	754.55	265.15	0.37						1020.07
1. Solid fuels	NO	17.44	NO,NA						17.44
2. Oil and natural gas	754.55	247.71	0.37						1002.62
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1777.70	5.05	534.20	101.88	NO	11.99	NO	NO	2430.82
A. Mineral industry	1027.37								1027.37
B. Chemical industry	606.29	4.67	500.83	NO	NO	NO	NO	NO	1111.79
C. Metal industry	28.85	0.38	NO	NO	NO	NO	NO	NO	29.22
D. Non-energy products from fuels and solvent use	115.19	NA	NA						115.19
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				101.88	NO	NO	NO	NO	101.88
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.99	NO	NO	45.37
H. Other	NA	NA	NA						NA
3. Agriculture	44.25	1544.37	1271.48						2860.10
A. Enteric fermentation		1230.16							1230.16
B. Manure management		314.21	199.90						514.12
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1071.58						1071.58
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8204.88	45.11	64.97						-8094.80
A. Forest land	-8444.86	39.83	26.26						-8378.78
B. Cropland	257.78	NO	2.50						260.29
C. Grassland	-119.82	5.29	5.75						-108.78
D. Wetlands	43.25	NO	4.52						47.77
E. Settlements	223.95	NO	25.93						249.87
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-165.16								-165.16
H. Other	NO	NO	NO						NO
5. Waste	3.70	733.47	67.49						804.66
A. Solid waste disposal	NA,NO	506.52							506.52
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	3.70	NA,NO	0.06						3.76
D. Waste water treatment and discharge		226.95	67.42						294.38
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	0.46	1.28						338.18
Aviation	254.59	0.27	0.64						255.50
Navigation	81.85	0.19	0.64						82.68
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5442.75								5442.75
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									24516.66
Total CO_2 equivalent emissions with land use, land-use change and forestry									16421.86
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 A5.2-11: GHG emission in Croatia, 1999

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

Inventory 1999
Submission 2017 v4
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)]	11582.04	2952.33	2338.07	122.08	NO	11.99	NO	NO	17006.52
1. Energy	18065.30	640.80	264.32						18970.42
A. Fuel combustion (sectoral approach)	17327.30	393.95	263.98						17985.23
1. Energy industries	6439.06	5.45	17.42						6461.94
2. Manufacturing industries and construction	2980.25	4.26	7.69						2992.21
3. Transport	4329.03	36.91	103.63						4469.57
4. Other sectors	3578.95	347.33	135.23						4061.51
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	738.00	246.85	0.34						985.19
1. Solid fuels	NO	5.25	NO,NA						5.25
2. Oil and natural gas	738.00	241.59	0.34						979.93
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2095.48	5.14	623.78	122.08	NO	11.99	NO	NO	2858.48
A. Mineral industry	1284.91								1284.91
B. Chemical industry	722.89	4.71	590.41	NO	NO	NO	NO	NO	1318.01
C. Metal industry	26.86	0.42	NO	NO	NO	NO	NO	NO	27.28
D. Non-energy products from fuels and solvent use	60.83	NA	NA						60.83
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				122.08	NO	NO	NO	NO	122.08
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.99	NO	NO	45.37
H. Other	NA	NA	NA						NA
3. Agriculture	50.49	1527.90	1339.52						2917.90
A. Enteric fermentation		1194.57							1194.57
B. Manure management		333.33	201.64						534.97
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1137.88						1137.88
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8633.61	5.91	37.80						-8589.90
A. Forest land	-8840.26	4.26	2.81						-8833.20
B. Cropland	245.25	NO	2.38						247.62
C. Grassland	-123.76	1.65	1.80						-120.31
D. Wetlands	43.26	NO	4.52						47.78
E. Settlements	227.60	NO	26.29						253.89
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-185.70								-185.70
H. Other	NO	NO	NO						NO
5. Waste	4.38	772.58	72.65						849.61
A. Solid waste disposal	NA,NO	538.62							538.62
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	4.38	NA,NO	0.08						4.46
D. Waste water treatment and discharge		233.96	72.58						306.54
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	311.54	0.41	1.14						313.09
Aviation	245.16	0.26	0.61						246.04
Navigation	66.37	0.15	0.53						67.05
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5257.71								5257.71
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25596.42
Total CO_2 equivalent emissions with land use, land-use change and forestry									17006.52
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 A5.2-12: GHG emission in Croatia, 2000

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 2000
Submission 2017 v4
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)]	12146.97	2984.76	2520.86	147.90	NO	11.62	NO	NO	17812.11
1. Energy	17485.25	591.18	274.34						18350.77
A. Fuel combustion (sectoral approach)	16692.57	352.94	274.02						17319.53
1. Energy industries	5816.84	3.94	18.63						5839.41
2. Manufacturing industries and construction	3103.13	4.44	8.05						3115.63
3. Transport	4354.24	35.65	109.50						4499.39
4. Other sectors	3418.37	308.91	137.84						3865.11
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	792.67	238.23	0.32						1031.23
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	792.67	238.23	0.32						1031.23
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2236.86	3.60	727.52	147.90	NO	11.62	NO	NO	3127.50
A. Mineral industry	1423.08								1423.08
B. Chemical industry	724.36	3.12	694.15	NO	NO	NO	NO	NO	1421.62
C. Metal industry	26.78	0.48	NO	NO	NO	NO	NO	NO	27.26
D. Non-energy products from fuels and solvent use	62.64	NA	NA						62.64
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				147.90	NO	NO	NO	NO	147.90
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.62	NO	NO	45.00
H. Other	NA	NA	NA						NA
3. Agriculture	60.87	1480.22	1346.87						2887.95
A. Enteric fermentation		1154.97							1154.97
B. Manure management		325.24	190.46						515.71
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1156.41						1156.41
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7642.15	96.91	102.09						-7443.15
A. Forest land	-7930.80	87.11	57.44						-7786.25
B. Cropland	305.15	NO	2.80						307.95
C. Grassland	-120.59	9.80	10.67						-100.12
D. Wetlands	43.27	NO	4.53						47.80
E. Settlements	230.85	NO	26.66						257.51
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-170.05								-170.05
H. Other	NO	NO	NO						NO
5. Waste	6.15	812.86	70.03						889.04
A. Solid waste disposal	NA,NO	570.36							570.36
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	6.15	NA,NO	0.11						6.26
D. Waste water treatment and discharge		242.50	69.92						312.42
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	0.34	0.95						260.08
Aviation	201.16	0.21	0.50						201.88
Navigation	57.62	0.13	0.45						58.21
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	4694.77								4694.77
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25255.27
Total CO_2 equivalent emissions with land use, land-use change and forestry									17812.11
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 A5.2-13: GHG emission in Croatia, 2001

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 2001
Submission 2017 v4
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)]	12934.15	2976.99	2450.71	161.46	NO	11.69	NO	NO	18535.01
1. Energy	18495.16	632.36	271.56						19399.08
A. Fuel combustion (sectoral approach)	17634.30	378.20	271.25						18283.76
1. Energy industries	6381.66	4.46	20.96						6407.08
2. Manufacturing industries and construction	3196.99	4.39	8.06						3209.43
3. Transport	4419.92	30.61	104.62						4555.15
4. Other sectors	3635.73	338.75	137.61						4112.10
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	860.87	254.15	0.31						1115.32
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	860.87	254.15	0.31						1115.32
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2349.17	3.69	615.94	161.46	NO	11.69	NO	NO	3141.95
A. Mineral industry	1643.76								1643.76
B. Chemical industry	633.80	3.67	582.57	NO	NO	NO	NO	NO	1220.03
C. Metal industry	6.56	0.02	NO	NO	NO	NO	NO	NO	6.58
D. Non-energy products from fuels and solvent use	65.06	NA	NA						65.06
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				161.46	NO	NO	NO	NO	161.46
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.69	NO	NO	45.07
H. Other	NA	NA	NA						NA
3. Agriculture	92.09	1490.38	1432.63						3015.10
A. Enteric fermentation		1155.36							1155.36
B. Manure management		335.02	190.95						525.97
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1241.67						1241.67
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8008.96	19.00	55.97						-7933.99
A. Forest land	-8500.02	16.02	10.56						-8473.43
B. Cropland	342.54	NO	3.23						345.77
C. Grassland	-180.92	2.98	3.24						-174.70
D. Wetlands	34.70	NO	4.32						39.02
E. Settlements	401.21	NO	34.62						435.83
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-106.47								-106.47
H. Other	NO	NO	NO						NO
5. Waste	6.68	831.58	74.61						912.87
A. Solid waste disposal	NA,NO	608.04							608.04
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	6.68	NA,NO	0.12						6.80
D. Waste water treatment and discharge		223.54	74.49						298.03
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	0.42	1.21						293.10
Aviation	201.16	0.21	0.50						201.88
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	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									26469.00
Total CO_2 equivalent emissions with land use, land-use change and forestry									18535.01
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 2017 v4
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)]	13827.85	2966.51	2349.19	185.34	NO	12.01	NO	NO	19340.90
1. Energy	19663.59	623.39	227.25						20514.22
A. Fuel combustion (sectoral approach)	18783.12	364.00	226.94						19374.05
1. Energy industries	7273.79	4.90	24.91						7303.60
2. Manufacturing industries and construction	3057.13	4.32	7.93						3069.38
3. Transport	4729.16	29.65	64.62						4823.43
4. Other sectors	3723.03	325.12	129.48						4177.63
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	880.47	259.39	0.31						1140.17
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	880.47	259.39	0.31						1140.17
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2283.00	3.42	600.22	185.34	NO	12.01	NO	NO	3083.99
A. Mineral industry	1638.10								1638.10
B. Chemical industry	562.20	3.41	566.85	NO	NO	NO	NO	NO	1132.46
C. Metal industry	5.86	0.01	NO	NO	NO	NO	NO	NO	5.86
D. Non-energy products from fuels and solvent use	76.85	NA	NA						76.85
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				185.34	NO	NO	NO	NO	185.34
G. Other product manufacture and use	NO	NO	33.38	NO	NO	12.01	NO	NO	45.39
H. Other	NA	NA	NA						NA
3. Agriculture	80.76	1457.76	1388.27						2926.78
A. Enteric fermentation		1121.42							1121.42
B. Manure management		336.34	183.69						520.03
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1204.58						1204.58
E. Prescribed burning of savannas		NA	NA						NA
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)]	-8203.27	6.39	54.89						-8141.99
A. Forest land	-8691.21	5.62	3.70						-8681.89
B. Cropland	325.41	NO	3.65						329.06
C. Grassland	-174.46	0.78	0.85						-172.83
D. Wetlands	33.12	NO	4.12						37.25
E. Settlements	465.18	NO	42.56						507.74
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-161.32								-161.32
H. Other	NO	NO	NO						NO
5. Waste	3.78	875.55	78.57						957.90
A. Solid waste disposal	NA,NO	651.26							651.26
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	3.78	NA,NO	0.07						3.85
D. Waste water treatment and discharge		224.29	78.51						302.79
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	0.37	1.05						264.02
Aviation	188.59	0.20	0.47						189.26
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	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									27482.89
Total CO_2 equivalent emissions with land use, land-use change and forestry									19340.90
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 2017 v4
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)]	15785.42	3110.54	2281.34	212.23	NO	12.28	NO	NO	21401.80
1. Energy	20998.81	674.14	241.73						21914.68
A. Fuel combustion (sectoral approach)	20162.49	413.37	241.44						20817.29
1. Energy industries	7946.52	5.84	25.93						7978.29
2. Manufacturing industries and construction	3136.78	4.94	8.93						3150.65
3. Transport	5126.60	28.54	66.84						5221.98
4. Other sectors	3952.60	374.04	139.74						4466.39
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	836.32	260.78	0.29						1097.38
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	836.32	260.78	0.29						1097.38
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2283.82	3.29	569.43	212.23	NO	12.28	NO	NO	3081.04
A. Mineral industry	1619.95								1619.95
B. Chemical industry	577.51	3.26	536.06	NO	NO	NO	NO	NO	1116.83
C. Metal industry	9.88	0.02	NO	NO	NO	NO	NO	NO	9.90
D. Non-energy products from fuels and solvent use	76.47	NA	NA						76.47
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				212.23	NO	NO	NO	NO	212.23
G. Other product manufacture and use	NO	NO	33.38	NO	NO	12.28	NO	NO	45.65
H. Other	NA	NA	NA						NA
3. Agriculture	71.79	1472.05	1306.06						2849.91
A. Enteric fermentation		1121.58							1121.58
B. Manure management		350.47	185.11						535.57
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1120.96						1120.96
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7569.81	39.55	86.10						-7444.15
A. Forest land	-8182.00	35.95	23.70						-8122.35
B. Cropland	312.81	NO	4.08						316.89
C. Grassland	-167.99	3.60	3.92						-160.46
D. Wetlands	31.55	NO	3.92						35.47
E. Settlements	526.79	NO	50.48						577.26
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-90.96								-90.96
H. Other	NO	NO	NO						NO
5. Waste	0.80	921.52	78.01						1000.33
A. Solid waste disposal	NA,NO	699.56							699.56
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.80	NA,NO	0.01						0.82
D. Waste water treatment and discharge		221.96	78.00						299.95
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	0.35	1.00						253.04
Aviation	182.30	0.19	0.46						182.95
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	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									28845.96
Total CO_2 equivalent emissions with land use, land-use change and forestry									21401.80
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 2017 v4
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)]	15400.73	3214.30	2523.11	240.33	NO	12.57	NO	NO	21391.03
1. Energy	20426.78	661.10	283.42						21371.30
A. Fuel combustion (sectoral approach)	19540.93	402.09	283.14						20226.16
1. Energy industries	6830.91	4.86	23.51						6859.28
2. Manufacturing industries and construction	3583.00	5.99	10.74						3599.72
3. Transport	5262.05	26.83	116.33						5405.21
4. Other sectors	3864.98	364.40	132.57						4361.95
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	885.85	259.01	0.28						1145.14
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	885.85	259.01	0.28						1145.14
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2502.16	3.93	685.03	240.33	NO	12.57	NO	NO	3444.02
A. Mineral industry	1731.21								1731.21
B. Chemical industry	664.88	3.93	651.66	NO	NO	NO	NO	NO	1320.47
C. Metal industry	15.36	NA,NO	NO	NO	NO	NO	NO	NO	15.36
D. Non-energy products from fuels and solvent use	90.71	NA	NA						90.71
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				240.33	NO	NO	NO	NO	240.33
G. Other product manufacture and use	NO	NO	33.38	NO	NO	12.57	NO	NO	45.94
H. Other	NA	NA	NA						NA
3. Agriculture	75.94	1570.21	1408.08						3054.24
A. Enteric fermentation		1193.74							1193.74
B. Manure management		376.47	196.57						573.04
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1211.52						1211.52
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7604.50	2.92	69.00						-7532.59
A. Forest land	-8257.43	1.95	1.29						-8254.20
B. Cropland	299.76	NO	4.51						304.27
C. Grassland	-161.53	0.97	1.05						-159.51
D. Wetlands	29.97	NO	3.72						33.69
E. Settlements	589.36	NO	58.43						647.79
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-104.64								-104.64
H. Other	NO	NO	NO						NO
5. Waste	0.35	976.14	77.58						1054.07
A. Solid waste disposal	NA,NO	746.36							746.36
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.35	NA,NO	0.00						0.35
D. Waste water treatment and discharge		229.78	77.57						307.35
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	0.39	1.10						285.92
Aviation	210.59	0.22	0.53						211.34
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	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									28923.62
Total CO_2 equivalent emissions with land use, land-use change and forestry									21391.03
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 A5.2-17: GHG emission in Croatia, 2005

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 2005
Submission 2017 v4
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)]	15643.28	3176.52	2484.82	265.80	NO	13.03	NO	NO	21583.46
1. Energy	20811.67	680.46	237.90						21730.04
A. Fuel combustion (sectoral approach)	19942.81	420.64	237.63						20601.08
1. Energy industries	6853.44	4.61	22.86						6880.91
2. Manufacturing industries and construction	3723.73	5.41	9.90						3739.05
3. Transport	5467.52	24.39	69.15						5561.06
4. Other sectors	3898.12	386.23	135.72						4420.06
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	868.86	259.83	0.27						1128.96
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	868.86	259.83	0.27						1128.96
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2554.55	3.96	670.31	265.80	NO	13.03	NO	NO	3507.64
A. Mineral industry	1785.37								1785.37
B. Chemical industry	664.65	3.96	636.93	NO	NO	NO	NO	NO	1305.53
C. Metal industry	11.81	NA,NO	NO	NO	NO	NO	NO	NO	11.81
D. Non-energy products from fuels and solvent use	92.72	NA	NA						92.72
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				265.80	NO	NO	NO	NO	265.80
G. Other product manufacture and use	NO	NO	33.38	NO	NO	13.03	NO	NO	46.40
H. Other	NA	NA	NA						NA
3. Agriculture	85.46	1525.08	1419.13						3029.67
A. Enteric fermentation		1169.47							1169.47
B. Manure management		355.60	182.82						538.43
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1236.30						1236.30
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7808.57	2.74	76.89						-7728.94
A. Forest land	-8319.86	2.16	1.43						-8316.27
B. Cropland	244.48	NO	4.94						249.42
C. Grassland	-109.47	0.57	0.62						-108.27
D. Wetlands	28.40	NO	3.52						31.92
E. Settlements	647.33	NO	66.38						713.72
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-299.45								-299.45
H. Other	NO	NO	NO						NO
5. Waste	0.16	964.29	80.60						1045.05
A. Solid waste disposal	NA,NO	735.33							735.33
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.16	NA,NO	0.00						0.16
D. Waste water treatment and discharge		228.96	80.60						309.55
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	0.45	1.27						339.28
Aviation	257.74	0.27	0.64						258.65
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	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									29312.39
Total CO_2 equivalent emissions with land use, land-use change and forestry									21583.46
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 2017 v4
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]	16077.79	3272.78	2435.43	292.57	NO	13.01	NO	NO	22091.59
1. Energy	20908.30	667.30	239.63						21815.23
A. Fuel combustion (sectoral approach)	20009.09	388.81	239.36						20637.26
1. Energy industries	6674.57	4.82	22.56						6701.94
2. Manufacturing industries and construction	3855.12	5.75	10.53						3871.40
3. Transport	5820.73	24.13	73.64						5918.51
4. Other sectors	3658.66	354.11	132.63						4145.40
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	899.21	278.50	0.27						1177.98
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	899.21	278.50	0.27						1177.98
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2695.23	3.85	662.88	292.57	NO	13.01	NO	NO	3667.54
A. Mineral industry	1917.28								1917.28
B. Chemical industry	662.17	3.85	629.50	NO	NO	NO	NO	NO	1295.53
C. Metal industry	13.85	NA,NO	NO	NO	NO	NO	NO	NO	13.85
D. Non-energy products from fuels and solvent use	101.93	NA	NA						101.93
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				292.57	NO	NO	NO	NO	292.57
G. Other product manufacture and use	NO	NO	33.38	NO	NO	13.01	NO	NO	46.38
H. Other	NA	NA	NA						NA
3. Agriculture	80.67	1533.17	1362.64						2976.48
A. Enteric fermentation		1145.74							1145.74
B. Manure management		387.44	186.63						574.06
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1176.01						1176.01
E. Prescribed burning of savannas		NA	NA						NA
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]	-7607.14	6.06	86.77						-7514.32
A. Forest land	-8158.05	5.46	3.60						-8148.99
B. Cropland	237.54	NO	4.86						242.40
C. Grassland	-134.06	0.60	0.65						-132.82
D. Wetlands	26.82	NO	3.32						30.14
E. Settlements	706.52	NO	74.34						780.86
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-285.91								-285.91
H. Other	NO	NO	NO						NO
5. Waste	0.74	1062.40	83.52						1146.66
A. Solid waste disposal	NA,NO	827.25							827.25
B. Biological treatment of solid waste		NO,NE,IE	NO,NE,IE						NO,NE,IE
C. Incineration and open burning of waste	0.74	NA,NO	0.01						0.75
D. Waste water treatment and discharge		235.15	83.51						318.65
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	0.42	1.14						327.21
Aviation	264.02	0.28	0.66						264.96
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	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									29605.91
Total CO_2 equivalent emissions with land use, land-use change and forestry									22091.59
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 A5.2-19: GHG emission in Croatia, 2007

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

Inventory 2007
Submission 2017 v4
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)]	17943.75	3309.04	2543.87	326.74	NO	13.05	NO	NO	24136.46
1. Energy	22159.97	664.94	246.24						23071.16
A. Fuel combustion (sectoral approach)	21290.36	375.42	245.98						21911.77
1. Energy industries	7868.62	5.57	27.11						7901.30
2. Manufacturing industries and construction	3853.05	5.80	10.51						3869.36
3. Transport	6241.46	23.33	77.86						6342.65
4. Other sectors	3327.24	340.71	130.51						3798.46
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	869.60	289.52	0.26						1159.39
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	869.60	289.52	0.26						1159.39
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2767.42	3.61	727.95	326.74	NO	13.05	NO	NO	3838.77
A. Mineral industry	1948.84								1948.84
B. Chemical industry	693.88	3.61	694.57	NO	NO	NO	NO	NO	1392.06
C. Metal industry	13.10	NA,NO	NO	NO	NO	NO	NO	NO	13.10
D. Non-energy products from fuels and solvent use	111.61	NA	NA						111.61
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				326.74	NO	NO	NO	NO	326.74
G. Other product manufacture and use	NO	NO	33.38	NO	NO	13.05	NO	NO	46.43
H. Other	NA	NA	NA						NA
3. Agriculture	89.32	1451.53	1379.50						2920.35
A. Enteric fermentation		1083.29							1083.29
B. Manure management		368.24	173.00						541.24
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1206.50						1206.50
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7073.61	31.76	104.78						-6937.07
A. Forest land	-7491.89	29.59	19.51						-7442.79
B. Cropland	133.43	NO	4.79						138.22
C. Grassland	-69.84	2.17	2.37						-65.30
D. Wetlands	24.81	NO	3.11						27.91
E. Settlements	615.48	NO	75.00						690.48
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-285.59								-285.59
H. Other	NO	NO	NO						NO
5. Waste	0.65	1157.20	85.40						1243.25
A. Solid waste disposal	NA,NO	914.38							914.38
B. Biological treatment of solid waste		1.10	0.78						1.88
C. Incineration and open burning of waste	0.65	NA,NO	0.01						0.66
D. Waste water treatment and discharge		241.72	84.61						326.33
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	0.46	1.29						354.80
Aviation	276.60	0.29	0.69						277.58
Navigation	76.45	0.17	0.59						77.22
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5323.07								5323.07
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									31073.53
Total CO_2 equivalent emissions with land use, land-use change and forestry									24136.46
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 2017 v4
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)]	16391.24	3320.24	2569.95	338.04	NO	11.98	NO	NO	22631.46
1. Energy	20984.97	651.62	242.40						21878.99
A. Fuel combustion (sectoral approach)	20214.14	373.98	242.15						20830.27
1. Energy industries	6820.96	4.79	24.21						6849.97
2. Manufacturing industries and construction	3872.78	5.59	10.17						3888.55
3. Transport	6078.62	21.64	72.87						6173.12
4. Other sectors	3441.78	341.95	134.90						3918.63
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	770.84	277.64	0.25						1048.73
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	770.84	277.64	0.25						1048.73
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2664.23	3.42	743.36	338.04	NO	11.98	NO	NO	3761.03
A. Mineral industry	1856.99								1856.99
B. Chemical industry	677.48	3.42	709.98	NO	NO	NO	NO	NO	1390.88
C. Metal industry	24.15	NA,NO	NO	NO	NO	NO	NO	NO	24.15
D. Non-energy products from fuels and solvent use	105.61	NA	NA						105.61
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				338.04	NO	NO	NO	NO	338.04
G. Other product manufacture and use	NO	NO	33.38	NO	NO	11.98	NO	NO	45.35
H. Other	NA	NA	NA						NA
3. Agriculture	96.60	1405.34	1407.48						2909.42
A. Enteric fermentation		1054.84							1054.84
B. Manure management		350.50	162.79						513.28
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1244.70						1244.70
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7355.24	9.58	90.03						-7255.63
A. Forest land	-7707.08	8.64	5.70						-7692.74
B. Cropland	130.99	NO	4.72						135.71
C. Grassland	-125.74	0.94	1.02						-123.78
D. Wetlands	23.15	NO	2.90						26.05
E. Settlements	619.39	NO	75.69						695.08
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-295.95								-295.95
H. Other	NO	NO	NO						NO
5. Waste	0.67	1250.28	86.68						1337.63
A. Solid waste disposal	NA,NO	1010.07							1010.07
B. Biological treatment of solid waste		1.07	0.77						1.84
C. Incineration and open burning of waste	0.67	NA,NO	0.01						0.68
D. Waste water treatment and discharge		239.14	85.91						325.05
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	0.49	1.31						386.76
Aviation	317.46	0.33	0.79						318.58
Navigation	67.50	0.15	0.52						68.17
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5298.85								5298.85
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									29887.08
Total CO_2 equivalent emissions with land use, land-use change and forestry									22631.46
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 2017 v4
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]	14575.57	3391.48	2336.38	341.35	0.26	8.03	NO	NO	20653.07
1. Energy	19811.20	655.98	236.64						20703.82
A. Fuel combustion (sectoral approach)	19104.53	386.39	236.41						19727.33
1. Energy industries	6403.19	4.77	21.01						6428.97
2. Manufacturing industries and construction	3157.36	5.28	9.34						3171.98
3. Transport	6089.63	20.34	72.38						6182.36
4. Other sectors	3454.34	356.00	133.68						3944.02
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	706.67	269.59	0.23						976.50
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	706.67	269.59	0.23						976.50
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2077.31	3.06	626.21	341.35	0.26	8.03	NO	NO	3056.21
A. Mineral industry	1460.61								1460.61
B. Chemical industry	524.80	3.06	593.37	NO	NO	NO	NO	NO	1121.23
C. Metal industry	11.56	NA,NO	NO	NO	NO	NO	NO	NO	11.56
D. Non-energy products from fuels and solvent use	80.35	NA	NA						80.35
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				341.35	0.26	NO	NO	NO	341.61
G. Other product manufacture and use	NO	NO	32.83	NO	NO	8.03	NO	NO	40.86
H. Other	NA	NA	NA						NA
3. Agriculture	76.96	1421.13	1298.17						2796.26
A. Enteric fermentation		1052.77							1052.77
B. Manure management		368.36	163.18						531.54
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1134.99						1134.99
E. Prescribed burning of savannas		NA	NA						NA
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]	-7390.06	5.10	87.20						-7297.77
A. Forest land	-7903.70	4.87	3.21						-7895.61
B. Cropland	66.87	NO	4.70						71.57
C. Grassland	-73.43	0.22	0.24						-72.96
D. Wetlands	21.49	NO	2.68						24.18
E. Settlements	663.70	NO	76.36						740.06
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-165.01								-165.01
H. Other	NO	NO	NO						NO
5. Waste	0.16	1306.22	88.16						1394.54
A. Solid waste disposal	NA,NO	1097.72							1097.72
B. Biological treatment of solid waste		0.90	0.64						1.54
C. Incineration and open burning of waste	0.16	NA,NO	NA,NO,IE						0.16
D. Waste water treatment and discharge		207.60	87.52						295.12
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	0.33	0.85						293.34
Aviation	270.31	0.28	0.68						271.27
Navigation	21.85	0.05	0.17						22.07
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5577.15								5577.15
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									27950.84
Total CO_2 equivalent emissions with land use, land-use change and forestry									20653.07
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 2017 v4
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)]	13952.66	3416.84	2407.81	378.87	0.03	8.95	NO	NO	20165.17
1. Energy	18987.46	681.19	235.22						19903.86
A. Fuel combustion (sectoral approach)	18312.02	410.80	235.00						18957.82
1. Energy industries	5925.02	4.34	21.72						5951.08
2. Manufacturing industries and construction	3015.80	5.21	9.09						3030.11
3. Transport	5865.04	18.26	68.97						5952.28
4. Other sectors	3506.16	382.98	135.21						4024.35
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	675.43	270.39	0.22						946.04
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	675.43	270.39	0.22						946.04
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	2128.20	2.91	796.30	378.87	0.03	8.95	NO	NO	3315.26
A. Mineral industry	1432.29								1432.29
B. Chemical industry	594.74	2.91	765.22	NO	NO	NO	NO	NO	1362.87
C. Metal industry	27.55	NA,NO	NO	NO	NO	NO	NO	NO	27.55
D. Non-energy products from fuels and solvent use	73.61	NA	NA						73.61
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				378.87	0.03	NO	NO	NO	378.91
G. Other product manufacture and use	NO	NO	31.08	NO	NO	8.95	NO	NO	40.03
H. Other	NA	NA	NA						NA
3. Agriculture	88.04	1422.38	1207.08						2717.50
A. Enteric fermentation		1057.12							1057.12
B. Manure management		365.26	159.53						524.79
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1047.55						1047.55
E. Prescribed burning of savannas		NA	NA						NA
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)]	-7251.08	1.76	85.48						-7163.84
A. Forest land	-7721.79	1.64	1.08						-7719.07
B. Cropland	136.31	NO	4.76						141.07
C. Grassland	-83.15	0.12	0.13						-82.91
D. Wetlands	19.84	NO	2.47						22.31
E. Settlements	635.15	NO	77.04						712.18
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-237.43								-237.43
H. Other	NO	NO	NO						NO
5. Waste	0.05	1308.60	83.74						1392.39
A. Solid waste disposal	NA,NO	1098.53							1098.53
B. Biological treatment of solid waste		0.97	0.69						1.66
C. Incineration and open burning of waste	0.05	NA,NO	NA,NO,IE						0.05
D. Waste water treatment and discharge		209.10	83.05						292.15
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	315.09	0.35	0.89						316.34
Aviation	295.46	0.31	0.74						296.50
Navigation	19.64	0.04	0.15						19.83
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5940.99								5940.99
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									27329.01
Total CO_2 equivalent emissions with land use, land-use change and forestry									20165.17
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 A5.2-23: GHG emission in Croatia, 2011

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 2011
Submission 2017 v4
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)]	14480.96	3403.08	2477.39	396.20	0.02	9.37	NO	NO	20767.01
1. Energy	18764.79	648.39	221.65						19634.83
A. Fuel combustion (sectoral approach)	18084.55	399.28	221.45						18705.28
1. Energy industries	6297.13	5.02	23.00						6325.15
2. Manufacturing industries and construction	2779.55	4.57	8.00						2792.12
3. Transport	5726.02	16.65	56.88						5799.55
4. Other sectors	3281.84	373.05	133.57						3788.46
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	680.24	249.11	0.20						929.55
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	680.24	249.11	0.20						929.55
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1889.39	1.94	786.76	396.20	0.02	9.37	NO	NO	3083.66
A. Mineral industry	1220.06								1220.06
B. Chemical industry	571.33	1.94	754.16	NO	NO	NO	NO	NO	1327.43
C. Metal industry	29.45	NA,NO	NO	NO	NO	NO	NO	NO	29.45
D. Non-energy products from fuels and solvent use	68.55	NA	NA						68.55
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				396.20	0.02	NO	NO	NO	396.21
G. Other product manufacture and use	NO	NO	32.60	NO	NO	9.37	NO	NO	41.96
H. Other	NA	NA	NA						NA
3. Agriculture	105.18	1394.68	1285.70						2785.56
A. Enteric fermentation		1040.66							1040.66
B. Manure management		354.03	150.33						504.36
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1135.37						1135.37
E. Prescribed burning of savannas		NA	NA						NA
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)]	-6278.44	18.63	98.16						-6161.65
A. Forest land	-6720.77	15.20	10.02						-6695.55
B. Cropland	108.64	NO	4.82						113.46
C. Grassland	-62.33	3.43	3.74						-55.16
D. Wetlands	18.17	NO	2.26						20.43
E. Settlements	637.48	NO	77.33						714.81
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-259.63								-259.63
H. Other	NO	NO	NO						NO
5. Waste	0.05	1339.44	85.13						1424.61
A. Solid waste disposal	NA,NO	1131.57							1131.57
B. Biological treatment of solid waste		1.01	0.72						1.73
C. Incineration and open burning of waste	0.05	NA,NO	NA,NO,IE						0.05
D. Waste water treatment and discharge		206.86	84.40						291.26
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	387.14	0.50	1.36						389.01
Aviation	311.17	0.33	0.78						312.28
Navigation	75.97	0.17	0.59						76.73
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5834.61								5834.61
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									26928.66
Total CO_2 equivalent emissions with land use, land-use change and forestry									20767.01
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 2017 v4
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]	13122.77	3350.06	2343.25	397.28	0.03	9.18	NO	NO	19222.55
1. Energy	17363.42	610.71	213.31						18187.43
A. Fuel combustion (sectoral approach)	16791.33	395.19	213.13						17399.64
1. Energy industries	5895.66	4.88	21.78						5922.32
2. Manufacturing industries and construction	2409.07	4.69	8.12						2421.88
3. Transport	5544.99	14.06	55.20						5614.24
4. Other sectors	2941.62	371.55	128.03						3441.19
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	572.09	215.52	0.18						787.79
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	572.09	215.52	0.18						787.79
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1707.69	0.15	694.87	397.28	0.03	9.18	NO	NO	2809.20
A. Mineral industry	1163.71								1163.71
B. Chemical industry	478.93	0.15	652.54	NO	NO	NO	NO	NO	1131.62
C. Metal industry	2.02	NA,NO	NO	NO	NO	NO	NO	NO	2.02
D. Non-energy products from fuels and solvent use	63.03	NA	NA						63.03
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				397.28	0.03	NO	NO	NO	397.31
G. Other product manufacture and use	NO	NO	42.33	NO	NO	9.18	NO	NO	51.50
H. Other	NA	NA	NA						NA
3. Agriculture	101.23	1365.05	1238.35						2704.64
A. Enteric fermentation		1024.33							1024.33
B. Manure management		340.73	146.24						486.97
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1092.11						1092.11
E. Prescribed burning of savannas		NA	NA						NA
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]	-6049.66	38.88	111.39						-5899.39
A. Forest land	-6470.73	36.09	23.80						-6410.84
B. Cropland	180.61	NO	4.87						185.49
C. Grassland	-99.16	2.79	3.04						-93.33
D. Wetlands	16.49	NO	2.05						18.54
E. Settlements	633.30	NO	77.64						710.94
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-310.18								-310.18
H. Other	NO	NO	NO						NO
5. Waste	0.08	1335.26	85.32						1420.67
A. Solid waste disposal	NA,NO	1140.22							1140.22
B. Biological treatment of solid waste		1.87	1.34						3.21
C. Incineration and open burning of waste	0.08	NA,NO	NA,NO,IE						0.08
D. Waste water treatment and discharge		193.18	83.99						277.17
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	330.03	0.35	0.83						331.20
Aviation	330.03	0.35	0.83						331.20
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6017.15								6017.15
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									25121.94
Total CO_2 equivalent emissions with land use, land-use change and forestry									19222.55
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 A5.2-25: GHG emission in Croatia, 2013

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

Inventory 2013
Submission 2017 v4
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]	11961.18	3269.50	1800.63	408.91	0.06	6.10	NO	NO	17446.38
1. Energy	16609.97	596.43	209.27						17415.67
A. Fuel combustion (sectoral approach)	16066.05	391.71	209.09						16666.85
1. Energy industries	5274.69	4.16	20.92						5299.77
2. Manufacturing industries and construction	2380.65	4.40	7.72						2392.78
3. Transport	5631.06	13.91	54.58						5699.55
4. Other sectors	2779.65	369.23	125.88						3274.76
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	543.92	204.72	0.18						748.82
1. Solid fuels	NO	NO	NO,NA						NO,NA
2. Oil and natural gas	543.92	204.72	0.18						748.82
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1840.82	0.15	282.52	408.91	0.06	6.10	NO	NO	2538.56
A. Mineral industry	1275.91								1275.91
B. Chemical industry	485.96	0.15	240.45	NO	NO	NO	NO	NO	726.56
C. Metal industry	16.88	NA,NO	NO	NO	NO	NO	NO	NO	16.88
D. Non-energy products from fuels and solvent use	62.06	NA	NA						62.06
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				408.91	0.06	NO	NO	NO	408.97
G. Other product manufacture and use	NO	NO	42.06	NO	NO	6.10	NO	NO	48.17
H. Other	NA	NA	NA						NA
3. Agriculture	74.61	1325.33	1137.04						2536.99
A. Enteric fermentation		996.04							996.04
B. Manure management		329.29	140.30						469.60
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	996.74						996.74
E. Prescribed burning of savannas		NA	NA						NA
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]	-6564.26	1.93	86.17						-6476.17
A. Forest land	-6829.76	1.46	0.96						-6827.34
B. Cropland	142.70	NO	4.92						147.62
C. Grassland	-64.21	0.47	0.51						-63.23
D. Wetlands	14.82	NO	1.83						16.66
E. Settlements	633.20	NO	77.94						711.14
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-461.02								-461.02
H. Other	NO	NO	NO						NO
5. Waste	0.04	1345.66	85.63						1431.33
A. Solid waste disposal	NA,NO	1142.37							1142.37
B. Biological treatment of solid waste		2.85	2.04						4.89
C. Incineration and open burning of waste	0.04	NA,NO	NA,NO,IE						0.04
D. Waste water treatment and discharge		200.44	83.59						284.03
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	366.52	0.38	0.90						367.80
Aviation	366.52	0.38	0.90						367.80
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5962.40								5962.40
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2 [3]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									23922.55
Total CO_2 equivalent emissions with land use, land-use change and forestry									17446.38
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 2017 v4
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)]	11160.90	3226.78	1709.90	413.60	0.06	6.81	NO	NO	16518.07
1. Energy	15725.63	536.38	197.82						16459.83
A. Fuel combustion (sectoral approach)	15200.29	345.17	197.65						15743.10
1. Energy industries	4769.85	3.23	17.95						4791.03
2. Manufacturing industries and construction	2324.33	3.84	6.79						2334.97
3. Transport	5575.58	12.77	54.14						5642.49
4. Other sectors	2530.53	325.33	118.76						2974.62
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	525.34	191.22	0.17						716.73
1. Solid fuels	NO	NO	NA,NO						NA,NO
2. Oil and natural gas	525.34	191.22	0.17						716.73
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1981.93	0.17	285.43	413.60	0.06	6.81	NO	NO	2688.00
A. Mineral industry	1360.19								1360.19
B. Chemical industry	534.35	0.17	266.39	NO	NO	NO	NO	NO	800.92
C. Metal industry	28.58	NA,NO	NO	NO	NO	NO	NO	NO	28.58
D. Non-energy products from fuels and solvent use	58.80	NA	NA						58.80
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				413.60	0.06	NO	NO	NO	413.66
G. Other product manufacture and use	NO	NO	19.03	NO	NO	6.81	NO	NO	25.85
H. Other	NA	NA	NA						NA
3. Agriculture	69.47	1301.04	1056.54						2427.05
A. Enteric fermentation		974.86							974.86
B. Manure management		326.18	136.72						462.90
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	919.82						919.82
E. Prescribed burning of savannas		NA	NA						NA
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)]	-6616.16	0.24	84.98						-6530.94
A. Forest land	-6552.22	0.22	0.14						-6551.85
B. Cropland	5.89	NO	4.96						10.85
C. Grassland	-56.58	0.03	0.03						-56.53
D. Wetlands	13.15	NO	1.62						14.77
E. Settlements	631.66	NO	78.23						709.89
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-658.07								-658.07
H. Other	NO	NO	NO						NO
5. Waste	0.04	1388.95	85.13						1474.13
A. Solid waste disposal	NA,NO	1178.42							1178.42
B. Biological treatment of solid waste		2.86	2.05						4.90
C. Incineration and open burning of waste	0.04	NA,NO	NA,NO,IE						0.04
D. Waste water treatment and discharge		207.67	83.09						290.76
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	368.10	0.71	0.91						369.73
Aviation	368.10	0.71	0.91						369.73
Navigation	NO	NO	NO						NO
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	5249.83								5249.83
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									23049.00
Total CO_2 equivalent emissions with land use, land-use change and forestry									16518.07
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 2017 v4
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)]	12829.66	3442.03	1820.81	419.89	0.03	5.26	NO	NO	18517.68
1. Energy	15924.56	595.07	208.40						16728.04
A. Fuel combustion (sectoral approach)	15597.65	392.91	208.21						16198.77
1. Energy industries	4771.67	4.13	19.62						4795.41
2. Manufacturing industries and construction	2222.70	3.33	5.98						2232.02
3. Transport	5883.52	12.41	55.89						5951.83
4. Other sectors	2719.76	373.03	126.72						3219.51
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	326.91	202.17	0.19						529.27
1. Solid fuels	NO	NO	NA,NO						NA,NO
2. Oil and natural gas	326.91	202.17	0.19						529.27
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1924.80	0.17	315.35	419.89	0.03	5.26	NO	NO	2665.51
A. Mineral industry	1313.14								1313.14
B. Chemical industry	537.04	0.17	311.55	NO	NO	NO	NO	NO	848.76
C. Metal industry	13.63	NA,NO	NO	NO	NO	NO	NO	NO	13.63
D. Non-energy products from fuels and solvent use	60.99	NA	NA						60.99
E. Electronic Industry				NO	NO	NO	NO	NO	NO
F. Product uses as ODS substitutes				419.89	0.03	NO	NO	NO	419.92
G. Other product manufacture and use	NO	NO	3.81	NO	NO	5.26	NO	NO	9.07
H. Other	NA	NA	NA						NA
3. Agriculture	69.34	1368.82	1117.17						2555.32
A. Enteric fermentation		1024.36							1024.36
B. Manure management		344.46	146.73						491.19
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	970.44						970.44
E. Prescribed burning of savannas		NA	NA						NA
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)]	-5089.09	11.39	93.23						-4984.46
A. Forest land	-5607.26	9.82	6.48						-5590.96
B. Cropland	106.06	NO	5.02						111.08
C. Grassland	-115.77	1.57	1.70						-112.50
D. Wetlands	11.48	NO	1.50						12.98
E. Settlements	642.59	NO	78.53						721.12
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-126.19								-126.19
H. Other	NO	NO	NO						NO
5. Waste	0.05	1466.58	86.65						1553.28
A. Solid waste disposal	NA,NO	1253.82							1253.82
B. Biological treatment of solid waste		6.16	4.41						10.57
C. Incineration and open burning of waste	0.05	NA,NO	NA,NO,IE						0.05
D. Waste water treatment and discharge		206.60	82.25						288.85
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	359.45	0.71	0.92						361.08
Aviation	354.08	0.70	0.87						355.65
Navigation	5.37	0.01	0.04						5.42
Multilateral operations	C	C	C						C
CO_2 emissions from biomass	6010.65								6010.65
CO_2 captured	NO								NO
Long-term storage of C in waste disposal sites	NE								NE
Indirect N_2O			NA,NO						
Indirect CO_2[(3)]	NA,NO								
Total CO_2 equivalent emissions without land use, land-use change and forestry									23502.15
Total CO_2 equivalent emissions with land use, land-use change and forestry									18517.68
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, CO2 emission factors and oxidation factors for 2015 (needed for monitoring and reporting on CO_2 emission)

Gorivo /Fuel		DOV/NCV		CO_2 Emisijski factor Emission factor (t CO_2/TJ)	Oksidacijski factor Oxidation factor (OF)
		Jedinica/Unit	2015		
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	Liquefield Petroleum	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 bituminouse coal *Industry*	GJ/t	26,7000	94,60	1
Kameni ugljen-*Termoelektrane*	Other bituminouse coal *Thermal power plant*	GJ/t	25,0000	94,60	1
Ugljen za proizvodnju koksa (koksni ugljen)	Coking coal	GJ/t	28,2000	94,60	1
Mrki ugljen (smeđi ugljen) *Industrija*	Sub bituminouse coal *Industry*	GJ/t	17,0000	96,10	1
Lignit	Lignite	GJ/t	10,5000	101,00	1
Briketi kamenog ugljena	Brown coal briquettes	GJ/t	20,7000	97,50	1
Koks	Coke oven coke	GJ/t	29,3100	107,00	1
Prirodni plin	Natural Gas	GJ/10^3m^3	34,6000	56,10	1
Gradski plin	Gas Works Gas	GJ/10^3m^3	17,1000	44,40	1
Koksni plin	Coke Oven Gas	GJ/10^3m^3	38,7000	44,40	1
Rafinerijski plin	Refinery Gas	GJ/t	42,6000	57,60	1

ANNEX 5-4: REPORTING ON CONSISTENCY OF THE REPORTED DATA ON AIR POLLUTANTS, FOR 2015.

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	Absolute difference in kt (1) 2	Relative difference in % (2) 3	Explanations for differences
Total (Net Emissions)		216.02	216.28	-0.26	0%	216.2797073	0.26	0%	In LRTAP report International aviation is reported in total
1. Energy	CO	215.31	215.57	-0.26	0.00	215.57	0.26	0.00	In LRTAP report International aviation is reported in total
A. Fuel combustion (sectoral appr	CO	194.57	194.83	-0.26	0.00	194.83	0.26	0.00	In LRTAP report International aviation is reported in total
1. Energy industries	CO	0.99	0.99	0.00	0.00	0.99	0.00	0.00	
2. Manufacturing industries and	CO	13.32	13.32	0.00	0.00	13.32	0.00	0.00	
3. Transport	CO	38.23	38.49	-0.26	-0.01	38.49	0.26	0.01	In LRTAP report International aviation is reported in total
4. Other sectors	CO	142.03	142.03	0.00	0.00	142.03	0.00	0.00	
5. Other	CO	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	CO	20.74	20.74	0.00	0.00	20.74	0.00	0.00	
1. Solid fuels	CO	NO	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	CO	20.74	20.74	0.00	0.00	20.74	0.00	0.00	
2. Industrial processes and product	CO	0.71		0.71	#DIV/0!	0.71	0.00	0.00	
A. Mineral industry	CO	NA,NO		NO	NO	0.00	NO	NO	
B. Chemical industry	CO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C. Metal industry	CO	0.25	0.25	0.00	0.00	0.25	0.00	0.00	
D. Non-energy products from fuel	CO	0.45	0.45	0.00	0.00	0.45	0.00	0.00	
G. Other product manufacture and	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 agricultural res	CO	NO	NO	NO	NO	NO	NO	NO	
J. Other	CO	NO	NO	NO	NO	NO	NO	NO	
5. Waste	CO	0.00		0.00	#DIV/0!	0.00	0.00	#DIV/0!	
A. Solid waste disposal	CO	NA,NO		NO	NO	0.00	NO	NO	
B. Biological treatment of solid wa	CO	NE,NA		NO	NO	0.00	NO	NO	
C. Incineration and open burning c	CO	0.00001	0.00076	0.00	-0.99	0.00	0.00	0.99	Data on Cremation are not included in GHG inventory
D. Wastewater treatment and disc	CO	NA,NO		NO	NO	0.00	NO	NO	
E. Other	CO	NO		NO	NO	0.00	NO	NO	
6. Other	CO	NO		NO	NO	0.00	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)		14.88	15.14	-0.26	-2%	14.88	0.26	1.77	In LRTAP report International aviation is reported in total country e
1. Energy	SO2	14.88	14.92	-0.04	0.00	14.88	0.26	1.76	In LRTAP report International aviation is reported in total country e
A. Fuel combustion (sectoral approach)	SO2	11.47	11.51	-0.04	0.00	11.47	0.26	2.29	In LRTAP report International aviation is reported in total country e
1. Energy industries	SO2	7.16	7.16	0.00	0.00	7.16	0.00	0.00	
2. Manufacturing industries and construction	SO2	2.99	2.99	0.00	0.00	2.99	0.00	0.00	
3. Transport	SO2	0.06	0.10	-0.04	-0.38	0.06	0.00	0.00	In LRTAP report International aviation is reported in total country e
4. Other sectors	SO2	1.26	1.26	0.00	0.00	1.26	0.00	0.00	
5. Other	SO2	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	SO2	3.41	3.41	0.00	0.00	3.41	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	3.41	3.41	0.00	0.00	3.41	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	NO	NO	NO	NO	NO	NO	
C. Metal industry	SO2	0.01	0.01	0.00	0.00	0.01	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	0.00		0.00	#DIV/0!	0.00	0.00	-35.19	Data on Cremation are not included in GHG inventory
A. Solid waste disposal	SO2			NO	NO		NO	NO	
B. Biological treatment of solid waste	SO2			NO	NO		NO	NO	
C. Incineration and open burning of waste	SO2	0.00003	0.00064	0.00	-0.96	0.00	0.00	2689.71	Data on Cremation are not included in GHG inventory
D. Wastewater treatment and discharge	SO2			NO	NO		NO	NO	
E. Other	SO2	NO		NO	NO	NO	NO	NO	
6. Other	SO2	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)		50.68	53.10	-2.42	-5%	53.10	-2.42	-5%	In LRTAP report International aviation is reported in total country emisisons while i
1. Energy		49.59	49.71	-0.12	0.00	49.71	-0.12	0.00	In LRTAP report International aviation is reported in total country emisisons while i
A. Fuel combustion (sectoral approach)	NOx	49.43	49.55	-0.12	0.00	49.55	-0.12	0.00	In LRTAP report International aviation is reported in total country emisisons while i
1. Energy industries	NOx	6.61	6.61	0.00	0.00	6.61	0.00	0.00	
2. Manufacturing industries and construction	NOx	7.01	7.01	0.00	0.00	7.01	0.00	0.00	
3. Transport	NOx	25.75	25.87	-0.12	0.00	25.87	-0.12	0.00	In LRTAP report International aviation is reported in total country emisisons while i
4. Other sectors	NOx	10.06	10.06	0.00	0.00	10.06	0.00	0.00	
5. Other	NOx	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	NOx	0.15	0.15	0.00	0.00	0.15	0.00	0.00	
1. Solid fuels	NOx	NA,NO	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	NOx	0.15	0.15	0.00	0.00	0.15	0.00	0.00	
2. Industrial processes and product use	NOx	1.10	1.10	0.00	0.00	1.10	0.00	0.00	
A. Mineral industry	NOx	NO	NO	NO	NO	NO	NO	NO	
B. Chemical industry	NOx	1.05	1.05	0.00	0.00	1.05	0.00	0.00	
C. Metal industry	NOx	0.02	0.02	0.00	0.00	0.02	0.00	0.00	
D. Non-energy products from fuels and solvent use	NOx	0.01	0.01	0.00	0.00	0.01	0.00	0.00	
G. Other product manufacture and use	NOx	NO	NO	NO	NO	NO	NO	NO	
H. Other	NOx		NE,NA	NO	NO	NE,NA	NO	NO	
3. Agriculture	NOx	0.00	2.29	-2.29	-1.00	2.29	-2.29	-1.00	The CRF software do not provide cells for entering SO2 emission
B. Manure management	NOx	0.00	0.01	2.28	328.98	0.01	-0.01	-1.00	The CRF software do not provide cells for entering SO2 emission
D. Agricultural soils	NOx	0.00	2.28	-2.28	-1.00	2.28	-2.28	-1.00	
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	0.00	NO	NO	NO	NO	NO	NO	
A. Solid waste disposal	NOx	NA,NO		NO	NO	0.00	NO	NO	
B. Biological treatment of solid waste	NOx	NA		NO	NO	0.00	NO	NO	
C. Incineration and open burning of waste	NOx	0.00012	0.00455	0.00	-0.97	0.00	0.00	-0.97	Data on Cremation are not included in GHG inventory
D. Wastewater treatment and discharge	NOx	NA,NO		NO	NO	0.00	NO	NO	
E. Other	NOx	NO		NO	NO	0.00	NO	NO	
6. Other	NOx	NO		NO	NO	0.00	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)		58.61	60.57	-1.95	-3%	60.57	-1.95	-3%	In LRTAP report International aviation is reported in total country emisisons while i
1. Energy	NMVOC	29.19	30.45	-1.26	-0.04	30.45	-1.26	-0.04	In LRTAP report International aviation is reported in total country emisisons while i
A. Fuel combustion (sectoral approach)	NMVOC	25.76	27.03	-1.26	-0.05	27.03	-1.26	-0.05	In LRTAP report International aviation is reported in total country emisisons while i
1. Energy industries	NMVOC	0.33	0.33	0.00	0.00	0.33	0.00	0.00	
2. Manufacturing industries and construction	NMVOC	1.36	1.36	0.00	0.00	1.36	0.00	0.00	
3. Transport	NMVOC	5.64	6.90	-1.26	-0.18	6.90	-1.26	-0.18	In LRTAP report International aviation is reported in total country emisisons while i
4. Other sectors	NMVOC	18.44	18.44	0.00	0.00	18.44	0.00	0.00	
5. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	NMVOC	3.43	3.43	0.00	0.00	3.43	0.00	0.00	
1. Solid fuels	NMVOC	NA,NO	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	NMVOC	3.43	3.43	0.00	0.00	3.43	0.00	0.00	
2. Industrial processes and product use	NMVOC	20.58	20.60	-0.02	0.00	20.60	-0.02	0.00	
A. Mineral industry	NMVOC	NO	NO	NO	NO	NO	NO	NO	
B. Chemical industry	NMVOC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C. Metal industry	NMVOC	0.01	0.01	0.00	0.00	0.01	0.00	0.00	
D. Non-energy products from fuels and solvent use	NMVOC	16.15	16.15	0.00	0.00	16.15	0.00	0.00	
G. Other product manufacture and use	NMVOC	NO	NO	NO	NO	NO	NO	NO	
H. Other	NMVOC	4.43	4.42	0.00	0.00	4.42	0.00	0.00	
3. Agriculture	NMVOC	6.72	7.39	-0.68	-0.09	7.39	-0.68	-0.09	Error occured will be corrected for next submission
B. Manure management	NMVOC	6.72	6.81	-0.09	-0.01	6.81	-0.09	-0.01	Error occured will be corrected for next submission
D. Agricultural soils	NMVOC	0.00	0.59	-0.59	-1.00	0.59	-0.59	-1.00	Error occured will be corrected for next submission
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	2.12	2.12	0.00	0.00	2.12	0.00	0.00	
A. Solid waste disposal	NMVOC	2.12	2.12	0.00	0.00	2.12	0.00	0.00	
B. Biological treatment of solid waste	NMVOC	NA		NO	NO	0.00	NO	NO	
C. Incineration and open burning of waste	NMVOC	0.00004	0.00011	0.00	-0.66	0.00	0.00	-0.66	Data on Cremation are not included in GHG inventory
D. Wastewater treatment and discharge	NMVOC	0.00		0.00	#DIV/0!	0.00	0.00	#DIV/0!	
E. Other	NMVOC	NO		NO	NO	0.00	NO	NO	
6. Other	NMVOC	NO		NO	NO	0.00	NO	NO	

ANNEX 5-5: REPORTING ON RECALCULATIONS OF THE 2015 AND 1990

Recalculated year	2014								
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**	11,006.97	11,160.90	153.9389694	1%	1%	1%	
1. Energy	**CO2**	15,557.53	15,725.63	168.0955731	2%	1%	1%	
A. Fuel combustion activities	**CO2**	15,032.19	15,200.29	168.095796	2%	1%	1%	
1. Energy industries	**CO2**	4,601.75	4,769.85	168.095796	2%	1%	1%	CO2 emisson from H2 production added
2. Manufacturing industries and construction	**CO2**	2,324.33	2,324.33	0	0%	0%	0%	
3. Transport	**CO2**	5,575.58	5,575.58	0	0%	0%	0%	
4. Other sectors	**CO2**	2,530.53	2,530.53	0	0%	0%	0%	
5. Other	**CO2**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CO2**	525.34	525.34	-0.000222947	0%	0%	0%	
1. Solid fuels	**CO2**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CO2**	525.34	525.34	-0.000222947	0%	0%	0%	data on oil transported was recalculated
C. CO2 transport and storage	**CO2**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CO2**	1,980.28	1,981.93	1.646691387	0%	0%	0%	
A. Mineral industry	**CO2**	1,359.22	1,360.19	0.9665925	0%	0%	0%	data on soda ash use was recalculated
B. Chemical industry	**CO2**	534.35	534.35	-0.00099821	0%	0%	0%	data on ethylene production was recalculated
C. Metal industry	**CO2**	27.90	28.58	0.680121443	0%	0%	0%	CO2 emission from limestone and dolomite use in steel production was recalculated
D. Non-energy products from fuels and solvent us	**CO2**	58.80	58.80	0.000975654	0%	0%	0%	data on urea based CC was recalculated
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**	69.47	69.47	0	0%	0%	0%	
A. Enteric fermentation	**CO2**	0.00		NO	NO	NO	NO	
B. Manure management	**CO2**	0.00		NO	NO	NO	NO	
C. Rice cultivation	**CO2**	0.00		NO	NO	NO	NO	
D. Agricultural soils	**CO2**	0.00		NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CO2**	0.00		NO	NO	NO	NO	
F. Field burning of agricultural residues	**CO2**	0.00		NO	NO	NO	NO	
G. Liming	**CO2**	19.99	19.99	0	0%	0%	0%	
H. Urea application	**CO2**	49.47	49.47	0	0%	0%	0%	
I. Other carbon-containing fertilizer	**CO2**	NA	NA	NO	NO	NO	NO	
J. Other	**CO2**	0.00	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CO2**	-6,600.36	-6,616.16	-15.80324107	0%	0%	0%	Changes in LUC matrix
A. Forestland	**CO2**	-6,549.57	-6,552.22	-2.64691397	0%	0%	0%	Changes in LUC matrix
B. Cropland	**CO2**	5.91	5.89	-0.018124723	0%	0%	0%	Changes in LUC matrix
C. Grassland	**CO2**	-56.58	-56.58	-3.94991E-11	0%	0%	0%	rounding the number of decimal places
D. Wetlands	**CO2**	13.15	13.15	1.12994E-11	0%	0%	0%	rounding the number of decimal places
E. Settlements	**CO2**	644.80	631.66	-13.13820238	0%	0%	0%	Changes in LUC matrix
F. Other land	**CO2**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CO2**	-658.07	-658.07	8.07177E-12	0%	0%	0%	
H. Other	**CO2**	NO	NO	NO	NO	NO	NO	
5. Waste	**CO2**	0.05	0.04	-5.4E-05	0%	0%	0%	
A. Solid waste disposal	**CO2**	NA,NO	NA,NO	NO	NO	NO	NO	
B. Biological treatment of solid waste	**CO2**	0.00		NO	NO	NO	NO	
C. Incineration and open burning of waste	**CO2**	0.05	0.04	-5.4E-05	0%	0%	0%	data on incineration of clinical waste was recalculated
D. Waste water treatment and discharge	**CO2**	0.00		NO	NO	NO	NO	
E. Other	**CO2**	NO	NO	NO	NO	NO	NO	

Recalculated year	2014
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**	3,080.66	3,226.78	146.1200347	5%	1%	1%	
1. Energy	**CH4**	550.31	536.38	-13.92550375	0%	0%	0%	
A. Fuel combustion activities	**CH4**	359.03	345.17	-13.86400546	0%	0%	0%	
1. Energy industries	**CH4**	15.71	3.23	-12.47760503	0%	0%	0%	
2. Manufacturing industries and construction	**CH4**	3.84	3.84	0	0%	0%	0%	
3. Transport	**CH4**	13.02	12.77	-0.248317732	0%	0%	0%	
4. Other sectors	**CH4**	326.46	325.33	-1.138082693	0%	0%	0%	Technical correction
5. Other	**CH4**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CH4**	191.28	191.22	-0.061498298	0%	0%	0%	
1. Solid fuels	**CH4**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CH4**	191.28	191.22	-0.061498298	0%	0%	0%	
C. CO2 transport and storage	**CH4**	NO		NO	NO	NO	NO	
2. Industrial processes and product use	**CH4**	0.17	0.17	-4.3275E-05	0%	0%	0%	
A. Mineral industry	**CH4**	0.00		NO	NO	NO	NO	
B. Chemical industry	**CH4**	0.17	0.17	-4.3275E-05	0%	0%	0%	data on ethylene production was recalculated
C. Metal industry	**CH4**	NA,NO	NA,NO	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**	1,129.11	1,301.04	171.9232103	5%	1%	1%	
A. Enteric fermentation	**CH4**	953.84	974.86	21.02100329	1%	0%	0%	
B. Manure management	**CH4**	175.28	326.18	150.902207	5%	1%	1%	Technical correction
C. Rice cultivation	**CH4**	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	**CH4**	NA	NA	NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CH4**	0.00	NA	NO	NO	NO	NO	
F. Field burning of agricultural residues	**CH4**	NO	NO	NO	NO	NO	NO	
G. Liming	**CH4**	0.00		NO	NO	NO	NO	
H. Urea application	**CH4**	0.00		NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**CH4**	0.00		NO	NO	NO	NO	
J. Other	**CH4**	0.00	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CH4**	0.25	0.24	-0.007878765	0%	0%	0%	
A. Forestland	**CH4**	0.22	0.22	0	0%	0%	0%	
B. Cropland	**CH4**	NA,NO	NO	NO	NO	NO	NO	
C. Grassland	**CH4**	0.03	0.03	-0.007878765	0%	0%	0%	
D. Wetlands	**CH4**	NA,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**	0.00		NO	NO	NO	NO	
H. Other	**CH4**	NO	NO	NO	NO	NO	NO	
5. Waste	**CH4**	1,400.82	1,388.95	-11.86974978	0%	0%	0%	
A. Solid waste disposal	**CH4**	1,189.42	1,178.42	-10.99990528	0%	0%	0%	data on amount of CH4 flared was recalculated
B. Biological treatment of solid waste	**CH4**	3.73	2.86	-0.869844496	0%	0%	0%	CH4 emission from anaerobic digestion of organic waste in biogas facilities not included in this category
C. Incineration and open burning of waste	**CH4**	NA,NO	NA,NO	NO	NO	NO	NO	
D. Waste water treatment and discharge	**CH4**	207.67	207.67	0	0%	0%	0%	
E. Other	**CH4**	NO	NO	NO	NO	NO	NO	

Recalculated year	2014								
Greenhouse gas	N2O	***Note: Replicate table below if more gases need reporting.***							
GREENHOUSE GAS SOURCE AND SINK CATEGORI	**Gas**	**Previous**	**Latest**	**Difference (CO**	**Difference(1)**	**Impact of**	**Impact of**		**Explanation for recalculations**
Total National Emissions and Removals	**N2O**	1,706.46	1,709.90	3.441534789	0%	0%	0%		
1. Energy	**N2O**	133.60	197.82	64.21387296	2%	0%	0%		
A. Fuel combustion activities	**N2O**	133.43	197.65	64.21387296	2%	0%	0%		
1. Energy industries	**N2O**	17.86	17.95	0.089291528	0%	0%	0%		
2. Manufacturing industries and construction	**N2O**	6.79	6.79	0	0%	0%	0%		
3. Transport	**N2O**	54.95	54.14	-0.806440699	0%	0%	0%		
4. Other sectors	**N2O**	53.83	118.76	64.93102213	2%	0%	0%		Technical correction
5. Other	**N2O**	NO	NO	NO	NO	NO	NO		
B. Fugitive Emissions from Fuels	**N2O**	0.17	0.17	0	0%	0%	0%		
1. Solid fuels	**N2O**	NA,NO	NA,NO	NO	NO	NO	NO		
2. Oil and natural gas	**N2O**	0.17	0.17	0	0%	0%	0%		
C. CO2 transport and storage	**N2O**	NO		NO	NO	NO	NO		
2. Industrial processes and product use	**N2O**	301.20	285.43	-15.77354975	0%	0%	0%		
A. Mineral industry	**N2O**	0.00		NO	NO	NO	NO		
B. Chemical industry	**N2O**	266.39	266.39	0	0%	0%	0%		
C. Metal industry	**N2O**	NO	NO	NO	NO	NO	NO		
D. Non-energy products from fuels and solvent us	**N2O**	NA	NA	NO	NO	NO	NO		
G. Other product manufacture and use	**N2O**	0.12	0.06	-0.052931375	0%	0%	0%		data on quantity of N2O used for anaesthesia was recalculated
H. Other	**N2O**	NA	NA	NO	NO	NO	NO		
3. Agriculture	**N2O**	1,101.53	1,056.54	-44.99021358	-1%	0%	0%		Emissions were recalculated for the year 2014 for dairy and mature non-dairy cattle categories due to a correction of error in calculation.
A. Enteric fermentation	**N2O**	0.00		NO	NO	NO	NO		
B. Manure management	**N2O**	136.72	136.72	-1.12056E-05	0%	0%	0%		
C. Rice cultivation	**N2O**	0.00		NO	NO	NO	NO		
D. Agricultural soils	**N2O**	964.81	919.82	-44.99020238	-1%	0%	0%		Technical correction
E. Prescribed burning of savannahs	**N2O**	0.00	NA	NO	NO	NO	NO		
F. Field burning of agricultural residues	**N2O**	NO	NO	NO	NO	NO	NO		
G. Liming	**N2O**	0.00		NO	NO	NO	NO		
H. Urea application	**N2O**	0.00		NO	NO	NO	NO		
I. Other carbon-containing fertilizer	**N2O**	0.00		NO	NO	NO	NO		
J. Other	**N2O**	0.00	NO	NO	NO	NO	NO		
4. Land use, land-use change and forestry (net) (4)	**N2O**	84.99	84.98	-0.008574835	0%	0%	0%		Changes in LUC matrix
A. Forestland	**N2O**	0.14	0.14	0	0%	0%	0%		
B. Cropland	**N2O**	4.96	4.96	7.4202E-10	0%	0%	0%		rounding the number of decimal places
C. Grassland	**N2O**	0.04	0.03	-0.008574837	0%	0%	0%		Changes in LUC matrix
D. Wetlands	**N2O**	1.62	1.62	9.983E-10	0%	0%	0%		rounding the number of decimal places
E. Settlements	**N2O**	78.23	78.23	-1.49001E-10	0%	0%	0%		rounding the number of decimal places
F. Other land	**N2O**	NO	NO	NO	NO	NO	NO		
G. Harvested wood products	**N2O**	0.00		NO	NO	NO	NO		
H. Other	**N2O**	NO	NO	NO	NO	NO	NO		
5. Waste	**N2O**	85.13	85.13	0	0%	0%	0%		
A. Solid waste disposal	**N2O**	0.00		NO	NO	NO	NO		
B. Biological treatment of solid waste	**N2O**	2.05	2.05	0	0%	0%	0%		
C. Incineration and open burning of waste	**N2O**	NA,NO,IE	NA,NO,IE	NO	NO	NO	NO		
D. Waste water treatment and discharge	**N2O**	83.09	83.09	0	0%	0%	0%		
E. Other	**N2O**	NO	NO	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**	16,709.12	16,713.24	4.112890867	0%	0%	0%	
1. Energy	**CO2**	20,758.79	20,758.79	0	0%	0%	0%	
A. Fuel combustion activities	**CO2**	20,078.93	20,078.93	0	0%	0%	0%	
1. Energy industries	**CO2**	7,071.41	7,071.41	0	0%	0%	0%	
2. Manufacturing industries and construction	**CO2**	5,501.67	5,501.67	0	0%	0%	0%	
3. Transport	**CO2**	3,786.94	3,786.94	0	0%	0%	0%	
4. Other sectors	**CO2**	3,718.91	3,718.91	0	0%	0%	0%	
5. Other	**CO2**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CO2**	679.85	679.85	0	0%	0%	0%	
1. Solid fuels	**CO2**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CO2**	679.85	679.85	0	0%	0%	0%	
C. CO2 transport and storage	**CO2**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CO2**	2,580.73	2,580.73	0	0%	0%	0%	
A. Mineral industry	**CO2**	1,280.88	1,280.88	0	0%	0%	0%	
B. Chemical industry	**CO2**	771.87	771.87	0	0%	0%	0%	
C. Metal industry	**CO2**	338.56	338.56	0	0%	0%	0%	
D. Non-energy products from fuels and solvent use	**CO2**	189.43	189.43	0	0%	0%	0%	
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**	0.00		NO	NO	NO	NO	
B. Manure management	**CO2**	0.00		NO	NO	NO	NO	
C. Rice cultivation	**CO2**	0.00		NO	NO	NO	NO	
D. Agricultural soils	**CO2**	0.00		NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CO2**	0.00		NO	NO	NO	NO	
F. Field burning of agricultural residues	**CO2**	0.00		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**	0.00	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CO2**	-6,680.95	-6,676.84	4.112890867	0%	0%	0%	changes in LUC matrix
A. Forestland	**CO2**	-6,737.94	-6,733.83	4.112890867	0%	0%	0%	changes in LUC matrix
B. Cropland	**CO2**	238.78	238.78	-2.36184E-11	0%	0%	0%	rounding the number of decimal places
C. Grassland	**CO2**	-120.32	-120.32	3.73745E-12	0%	0%	0%	rounding the number of decimal places
D. Wetlands	**CO2**	43.07	43.07	-2.467E-11	0%	0%	0%	rounding the number of decimal places
E. Settlements	**CO2**	197.00	197.00	-5.19549E-11	0%	0%	0%	rounding the number of decimal places
F. Other land	**CO2**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CO2**	-301.54	-301.54	-1.13687E-12	0%	0%	0%	
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**	0.00		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**	0.00		NO	NO	NO	NO	
E. Other	**CO2**	NO	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)**	**recalculation on total emissions excluding LULUCF (2) %**	**recalculation on total emissions including LULUCF(3) %**	**Explanation for recalculations**
Total National Emissions and Removals	**CH4**	3,771.95	3,745.42	-26.52833324	-1%	0%	0%	
1. Energy	**CH4**	844.25	842.81	-1.438617603	0%	0%	0%	
A. Fuel combustion activities	**CH4**	415.35	413.91	-1.438617603	0%	0%	0%	
1. Energy industries	**CH4**	5.42	5.42	0	0%	0%	0%	
2. Manufacturing industries and construction	**CH4**	9.73	9.73	0	0%	0%	0%	
3. Transport	**CH4**	41.10	41.10	0	0%	0%	0%	
4. Other sectors	**CH4**	359.11	357.67	-1.438617602	0%	0%	0%	Technical correction
5. Other	**CH4**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CH4**	428.90	428.90	0	0%	0%	0%	
1. Solid fuels	**CH4**	59.64	59.64	0	0%	0%	0%	
2. Oil and natural gas	**CH4**	369.26	369.26	0	0%	0%	0%	
C. CO2 transport and storage	**CH4**	NO		NO	NO	NO	NO	
2. Industrial processes and product use	**CH4**	9.53	9.53	0	0%	0%	0%	
A. Mineral industry	**CH4**	0.00		NO	NO	NO	NO	
B. Chemical industry	**CH4**	5.63	5.63	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**	2,330.46	2,305.38	-25.08971564	-1%	0%	0%	
A. Enteric fermentation	**CH4**	1,977.59	1,977.59	0	0%	0%	0%	
B. Manure management	**CH4**	352.87	327.78	-25.08971564	-1%	0%	0%	Technical correction
C. Rice cultivation	**CH4**	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	**CH4**	NA	NA	NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CH4**	0.00	NA	NO	NO	NO	NO	
F. Field burning of agricultural residues	**CH4**	NO	NO	NO	NO	NO	NO	
G. Liming	**CH4**	0.00		NO	NO	NO	NO	
H. Urea application	**CH4**	0.00		NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**CH4**	0.00		NO	NO	NO	NO	
J. Other	**CH4**	0.00	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**	NA,NO	NO	NO	NO	NO	NO	
C. Grassland	**CH4**	0.11	0.11	0	0%	0%	0%	
D. Wetlands	**CH4**	NA,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**	0.00		NO	NO	NO	NO	
H. Other	**CH4**	NO	NO	NO	NO	NO	NO	
5. Waste	**CH4**	586.47	586.47	0	0%	0%	0%	
A. Solid waste disposal	**CH4**	348.61	348.61	0	0%	0%	0%	
B. Biological treatment of solid waste	**CH4**	IE,NE	NO,NE,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**	237.86	237.86	0	0%	0%	0%	
E. Other	**CH4**	NO	NO	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 (CO**	**Difference(1)**	**Impact of**	**Impact of**	**Explanation for recalculations**
Total National Emissions and Removals	**N2O**	2,825.03	2,800.63	-24.4046691	-1%	0%	0%	
1. Energy	**N2O**	147.35	230.24	82.89192114	2%	0%	0%	
A. Fuel combustion activities	**N2O**	146.66	229.55	82.89192114	2%	0%	0%	
1. Energy industries	**N2O**	17.49	17.49	0	0%	0%	0%	
2. Manufacturing industries and construction	**N2O**	17.64	17.64	0	0%	0%	0%	
3. Transport	**N2O**	53.07	53.07	0	0%	0%	0%	
4. Other sectors	**N2O**	58.46	141.35	82.89192114	2%	0%	0%	Technical correction
5. Other	**N2O**	NO	NO	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**	787.80	787.80	0	0%	0%	0%	
A. Mineral industry	**N2O**	0.00		NO	NO	NO	NO	
B. Chemical industry	**N2O**	754.43	754.43	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	0.11	0	0%	0%	0%	
H. Other	**N2O**	0.00	NA	NO	NO	NO	NO	
3. Agriculture	**N2O**	1,790.99	1,683.69	-107.2965902	-3%	0%	0%	
A. Enteric fermentation	**N2O**	0.00		NO	NO	NO	NO	
B. Manure management	**N2O**	323.85	323.85	0	0%	0%	0%	
C. Rice cultivation	**N2O**	0.00		NO	NO	NO	NO	
D. Agricultural soils	**N2O**	1,467.14	1,359.84	-107.2965902	-3%	0%	0%	Technical correction
E. Prescribed burning of savannahs	**N2O**	0.00	NA	NO	NO	NO	NO	
F. Field burning of agricultural residues	**N2O**	NO	NO	NO	NO	NO	NO	
G. Liming	**N2O**	0.00		NO	NO	NO	NO	
H. Urea application	**N2O**	0.00		NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**N2O**	0.00		NO	NO	NO	NO	
J. Other	**N2O**	0.00	NO	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**N2O**	31.89	31.89	-8.8804E-10	0%	0%	0%	rounding the number of decimal places
A. Forestland	**N2O**	0.74	0.74	0	0%	0%	0%	
B. Cropland	**N2O**	3.50	3.50	-2.7118E-10	0%	0%	0%	rounding the number of decimal places
C. Grassland	**N2O**	0.12	0.12	0	0%	0%	0%	
D. Wetlands	**N2O**	4.51	4.51	8.4334E-10	0%	0%	0%	rounding the number of decimal places
E. Settlements	**N2O**	23.02	23.02	-1.4602E-09	0%	0%	0%	rounding the number of decimal places
F. Other land	**N2O**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**N2O**	0.00		NO	NO	NO	NO	
H. Other	**N2O**	NO	NO	NO	NO	NO	NO	
5. Waste	**N2O**	67.01	67.01	0	0%	0%	0%	
A. Solid waste disposal	**N2O**	0.00		NO	NO	NO	NO	
B. Biological treatment of solid waste	**N2O**	IE,NE,NA	NO,NE,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**	67.00	67.00	0	0%	0%	0%	
E. Other	**N2O**	NO	NO	NO	NO	NO	NO	

Recalculated year	2014	
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**	582.77	413.60	-169.169	-29%	NO	-1%	Technical correction
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**	568.71	399.54	-169.169	-30%	NO	-1%	Technical correction
2.F.2. Foam blowing agents	**HFC**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	**HFC**	4.47	4.47	0	0%	NO	0%	
2.F.4. Aerosols	**HFC**	9.60	9.60	0	0%	NO	0%	
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	2014	
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**	0.06	0.06	0	0%	NO	0%	
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**	0.06	0.06	0	0%	NO	0%	
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	2014	
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	-1.2218E-06	0%	NO	0%	data on total charge of SF6 and leakage was recalculated
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	-1.2218E-06	0%	NO	0%	data on total charge of SF6 and leakage was recalculated
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**	0.000458337	0.000458337	0	0%	NO	NO	New EF from IPCC 2006 guidelines and new categories
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	0.000458337	0.000458337	0	0%	NO	NO	New EF from IPCC 2006 guidelines and new categories
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

Reporting year:	2013

Total emissions (CO2 -eq)

Category[1]	Gas	Greenhouse gas inventory emissions [kt	Verified emissions under Directive 2003/87/EC [kt	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	23,890.87	8,785.79	0.37	
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	18,494.03	8,545.51	0.46	

CO2 emissions

Category[1]		Greenhouse gas inventory emissions [kt	Verified emissions under Directive 2003/87/EC [kt	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	14,974.20	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	9,343.14	7,259.43	77.70%	
1.A.1 Energy industries	CO2	5,274.69	4,918.89	93.25%	In inventory dana from ETS are not used for emission
1.A.1.a Public electricity and heat production	CO2	3,650.70	3,493.80	95.70%	
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	2,380.65	2,340.54	98.32%	
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
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	96.50	931.73	965.50%	In Inventory emissions from Construction sector are
1.A.2.g Other	CO2	1,451.29	NO	NO	In Inventory emissions from Construction sector are
1.A.3. Transport	CO2	5,631.06	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	1,143.88	NO	NO	
1.A.4.a Commercial / Institutional	CO2	508.91	NO	NO	
1.A.4.c Agriculture/ Forestry / Fisheries	CO2	634.97	NO	NO	
1.B Fugitive emissions from Fuels	CO2	543.92	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	1,275.91	1,270.28	99.56%	
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	31.15	5.12	16.45%	
2.B Chemical industry	CO2	485.96	0.00	NO	
2.B.1. Ammonia production	CO2	485.96		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	0.00		NO	
2.C Metal production	CO2	16.88	15.80	93.57%	
2.C.1. Iron and steel production	CO2	16.88	15.80	93.57%	
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	Verified emissions under Directive 2003/87/EC [kt	Ratio in % (Verified emissions/ inventory emissions)[3]	Comment[2]
2.B.2. Nitric acid production	N2O	240.2719999	240.27	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	

PFC 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.C.3 Aluminium production	PFC	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	23,018.28	8,387.46	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	17,746.34	8,121.27	0.46	

CO2 emissions					
Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	12,669.75	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	7,094.18	6,751.28	95.17%	
1.A.1 Energy industries	CO2	4,769.85	4,276.80	89.66%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	3,075.64	2,969.30	96.54%	
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	94.73	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	1,396.07	988.94	70.84%	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	5,575.58	27.24	0.49%	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,530.53	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	525.34	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	1,360.19	1,354.10	99.55%	
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	33.13	10.98	NO	
2.B Chemical industry	CO2	534.35	NO	NO	
2.B.1. Ammonia production	CO2	534.35	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	28.58	15.89	55.58%	
2.C.1. Iron and steel production	CO2	28.58	15.89	55.58%	
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]	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	266.1946001	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	

PFC 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.C.3 Aluminium production	PFC	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	23,471.09	8,386.21	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	17,887.95	8,074.87	0.45	

CO2 emissions

Category[1]		Greenhouse gas inventory emissions [kt CO2eq][3]	emissions under Directive 2003/87/EC [kt	(Verified emissions/ inventory emissions)[3]	Comment[2]
1.A Fuel combustion activities, total	CO2	12,877.90	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,994.37	6,652.45	95.11%	
1.A.1 Energy industries	CO2	4,771.67	4,293.86	89.99%	In inventory dana from ETS are not used for emission calculation
1.A.1.a Public electricity and heat production	CO2	3,148.82	2,969.98	94.32%	
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	81.73	2,280.65	2790.53%	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	1,363.40	NO	NO	In Inventory emissions from Construction sector are calculated under 1A2gv sector. In ETS are calculated under 1a2f
1.A.3. Transport	CO2	5,883.52	NO	NO	
1.A.3.e Other transportation (pipeline transport)	CO2	NO	NO	NO	
1.A.4 Other sectors	CO2	2,719.76	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	326.91	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	1,313.14	1,306.39	99.49%	
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	39.82	33.07	83.05%	
2.B Chemical industry	CO2	537.04	102.48	NO	
2.B.1. Ammonia production	CO2	537.04	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	13.63	13.55	99.40%	
2.C.1. Iron and steel production	CO2	13.63	13.55	99.40%	
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]	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	311.348	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	

PFC 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.C.3 Aluminium production	PFC	NO	NO	NO	

ANNEX 5-7: REPORTING ON MAJOR CHANGES TO METHODOOGICAL DESCRIPTIONS

Reporting year:	2015		
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	DESCRIPTION OF METHODS Please **mark the relevant cell** where the latest NIR includes major changes in methodological descriptions compared to the NIR of the previous year	RECALCULATIONS Please **mark the relevant cell** where this is also reflected in recalculations compared to the previous years' CRF	REFERENCE If the cell is marked please provide a reference to the relevant section or pages in the NIR and if applicable some more detailed information such as the sub-category or gas concerned for which the description was changed.
Total (Net Emissions)			
1. Energy			
A. Fuel Combustion (sectoral approach)			
1. Energy industries			
2. Manufacturing industries and construction			
3. Transport			
4. Other sector	1A4c Agriculture/ forestry/fishing, CH4, N2O	1A4c Agriculture/ forestry/fishing, CH4, N2O	*Table 2.7-1: Technical correction overview, page 35*
5. Other			
B. Fugitive emissions from fuels			
1. Solid fuels			
2. Oil and natural gas and other emissions from energy production			
C. CO2 transport and storage			

Reporting year:	2015		
GREENHOUSE GAS SOURCE AND SINK CATEGORIES	DESCRIPTION OF METHODS Please **mark the relevant cell** where the latest NIR includes major changes in methodological descriptions compared to the NIR of the previous year	RECALCULATIONS Please **mark the relevant cell** where this is also reflected in recalculations compared to the previous years' CRF	REFERENCE If the cell is marked please provide a reference to the relevant section or pages in the NIR and if applicable some more detailed information such as the sub-category or gas concerned for which the description was changed.
2. Industrial processes and product use			
A. Mineral industry			
B. Chemical industry			
C. Metal industry			
D. Non-energy products from fuels and solvent use	2.D.1 Lubricant use, 2.D.2 Paraffin wax use, CO2	2.D.1 Lubricant use, CO2	NIR 2017, Chapters 4.5.1 and 4.5.2 Activity data for lubricant use have been separated by data for paraffin wax use that is in line with 2006 IPCC Guidelines.
E. Electronic industry			
F. Product uses as substitutes for ODS	2F1 Refrigeration and air conditioning, HFCs	2F1 Refrigeration and air conditioning, HFCs	*Table 2.7-1: Technical correction overview, page 35*
G. Other product manufacture and use			
H. Other			

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	DESCRIPTION OF METHODS	RECALCULATIONS	REFERENCE
	Please **mark the relevant cell** where the latest NIR includes major changes in methodological descriptions compared to the NIR of the previous year	Please **mark the relevant cell** where this is also reflected in recalculations compared to the previous years' CRF	If the cell is marked please provide a reference to the relevant section or pages in the NIR and if applicable some more detailed information such as the sub-category or gas concerned for which the description was changed.
3. Agriculture			
A. Enteric fermentation			
B. Manure management	3B Manure management, CH4	3B Manure management, CH4	*Table 2.7-1: Technical correction overview, page 35*
C. Rice cultivation			
D. Agricultural soils	3D1 Direct N2O emissions from managed	3D1 Direct N2O emissions from managed	*Table 2.7-1: Technical correction overview, page 35*
E. Prescribed burning of savannahs			
F. Field burning of agricultural residues			
G. Liming			
H. Urea application			
I. Other carbon containing fertilisers			
J. Other			
4. Land use, land-use change and forestry			
A. Forest land			
B. Cropland			
C. Grassland			
D. Wetlands			
E. Settlements			
F. Other land			
G. Harvested wood products			
H. Other			

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	DESCRIPTION OF METHODS	RECALCULATIONS	REFERENCE
	Please **mark the relevant cell** where the latest NIR includes major changes in methodological descriptions compared to the NIR of the previous year	Please **mark the relevant cell** where this is also reflected in recalculations compared to the previous years' CRF	If the cell is marked please provide a reference to the relevant section or pages in the NIR and if applicable some more detailed information such as the sub-category or gas concerned for which the description was changed.
5. Waste			
A. Solid waste disposal			
B. Biological treatment of solid waste	5.B Biological treatment of solid waste	5.B.2 Anaerobic digestion at biogas facilities	NIR 2017, Chapter 7.3. Emissions from anaerobic digestion of organic waste at biogas facilities are included in the Energy sector, because methane is used for electricity generation. Correct notation keys have been included in the CRF for entire period in which electricity was generated (2009 – 2015).
C. Incineration and open burning of waste			
D. Wastewater treatment and discharge			
E. Other			
6. Other (as specified in Summary 1.A)			
KP LULUCF			
Article 3.3 activities			
Afforestation/reforestation			
Deforestation			
Article 3.4 activities			
Forest management			
Cropland management (if elected)			
Grazing land management (if elected)			
Revegetation (if elected)			
Wetland drainage and rewetting (if elected)			

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