ANNEXES TO THE NATIONAL INVENTORY REPORT

June, 2016

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	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

*NO - source categories not occur in Croatia

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	0.112	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%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	0.035	71%
2.A.1 Cement Production	CO_2	1,085.790	0.035	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	80%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	0.019	82%
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%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	0.012	88%
3.B Manure Management	CH_4	352.871	0.011	89%
5.A Solid Waste Disposal	CH_4	348.607	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	94%
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%
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%

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.001	100%
2.G Other Product Manufacture and Use	N_2O	33.376	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%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	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%
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.4 Other Sectors - Liquid Fuels	N_2O	5.259	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%

Tier 1 Analysis - Level Assessment				
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
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		**31,204.631**		

Table A1.3-2: Key categories analysis – Level Assessment - Tier 1 (Excluding LULUCF) - 2014

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.233	23%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.094	33%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.060	39%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.056	44%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.053	50%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.052	55%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.052	60%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.050	65%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.042	69%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.042	73%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.039	77%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.032	80%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.025	83%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.023	85%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.021	87%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.018	89%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.014	91%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.012	92%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.010	93%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.009	94%
3.B Manure Management	CH_4	352.871	175.276	0.008	94%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.006	95%
3.B Manure Management	N_2O	323.845	136.722	0.006	96%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.006	96%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.004	97%
2.A.2 Lime Production	CO_2	153.440	71.488	0.003	97%
1.A.3.c Railways	CO_2	140.079	67.094	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.003	97%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.003	98%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.002	98%
3.H Urea Application	CO_2	50.020	49.473	0.002	98%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.002	99%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.002	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.002	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.001	99%
2.A.3 Glass Production	CO_2	35.871	30.483	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.001	99%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.001	99%
3.G Liming	CO_2	0.000	19.994	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.001	100%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.001	100%

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2014) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.000	100%
1.A.3.c Railways	N_2O	13.248	7.717	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.075	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	100%

Tier 1 Analysis - Level Assessment					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2014) Estimate (Gg eq-CO2)**	**Level Assessment**	**Cumulative Total (%)**
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	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	0.002	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	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		**31,204.631**	**22,898.878**		

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	6,699.308	0.172	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	68%
2.C.3 Aluminium Production	PFCs	1,240.239	0.032	72%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	0.028	74%
2.A.1 Cement Production	CO_2	1,085.790	0.028	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	0.013	85%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.013	87%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	0.009	88%
3.B Manure Management	CH_4	352.871	0.009	89%
5.A Solid Waste Disposal	CH_4	348.607	0.009	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	93%
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	94%
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	95%
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	96%
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	98%
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%
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%
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%

Tier 1 Analysis - Level Assessment Including LULUCF				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
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%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	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%
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.4 Other Sectors - Liquid Fuels	N_2O	5.259	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%
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	CH_4	0.000	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 (%)**
Fuels				
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		**38,880.538**		

Table A1.3-4: Key categories analysis – Level Assessment - Tier 1 (Including LULUCF) – 2014

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
4.A.1 Forest Land Remaining Forest Land	CO_2	6,699.308	6,322.821	0.204	20%
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.173	38%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.069	45%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.044	49%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.041	53%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.040	57%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.038	61%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.038	65%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.037	69%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.031	72%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.031	75%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.029	78%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.024	80%
4.G Harvested Wood Products	CO_2	301.544	658.066	0.021	82%
4.E.2 Land Converted to Settlements	CO_2	197.001	644.800	0.021	84%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.018	86%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.017	88%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.016	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.014	91%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.010	92%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.009	93%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.008	93%
4.A.2 Land Converted to Forest Land	CO_2	38.633	226.748	0.007	94%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.007	95%
3.B Manure Management	CH_4	352.871	175.276	0.006	95%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.005	96%
3.B Manure Management	N_2O	323.845	136.722	0.004	96%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.004	97%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	84.810	0.003	97%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.003	97%
2.A.2 Lime Production	CO_2	153.440	71.488	0.002	97%
1.A.3.c Railways	CO_2	140.079	67.094	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.002	98%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.002	98%
4.C.2 Land Converted to Grassland	CO_2	122.386	58.653	0.002	98%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.002	98%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.002	98%
3.H Urea Application	CO_2	50.020	49.473	0.002	99%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.001	99%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.001	99%
2.A.3 Glass Production	CO_2	35.871	30.483	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.001	99%

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.001	99%
3.G Liming	CO_2	0.000	19.994	0.001	99%
4.B.2 Land Converted to Cropland	CO_2	23.651	17.522	0.001	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.000	100%
4.D.2 Land Converted to Wetlands	CO_2	43.067	13.152	0.000	100%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.000	100%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	11.613	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.000	100%
1.A.3.c Railways	N_2O	13.248	7.717	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	100%

Tier 1 Analysis - Level Assessment Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Level Assessment	Cumulative Total (%)
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.252	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.180	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.075	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	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	0.002	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	100%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	100%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	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		**38,880.538**	**30,939.564**		

Table A1.3-5: Key categories analysis – Trend Assessment - Tier 1 (Excluding LULUCF) – 2014

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Trend Assessment	% Contribution to trend	Cumulative Total (%)
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.165	0.175	17%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.131	0.139	31%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.101	0.107	42%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.056	0.059	48%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.054	0.057	54%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.049	0.052	59%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.049	0.052	64%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.039	0.041	68%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.037	0.040	72%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.034	0.036	76%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.030	0.031	79%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.025	0.027	82%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.022	0.024	84%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.019	0.020	86%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.017	0.018	88%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.002	0.010	0.010	89%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.008	0.008	90%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.008	0.008	90%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.007	0.007	91%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.006	0.007	92%
3.B Manure Management	N_2O	323.845	136.722	0.006	0.006	92%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0.005	0.006	93%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.005	0.005	94%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.005	0.005	94%
3.B Manure Management	CH_4	352.871	175.276	0.005	0.005	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.005	0.005	95%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.005	0.005	96%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.005	0.005	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.004	0.004	97%
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	71.488	0.002	0.003	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.002	0.002	97%
1.A.3.c Railways	CO_2	140.079	67.094	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.002	0.002	98%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.002	0.002	98%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.002	0.002	98%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.002	0.002	99%

Tier 1 Analysis - Trend Assessment						
IPCC Source/Sink Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Trend Assessment	% Contribution to trend	Cumulative Total (%)
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.002	0.002	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.001	0.001	99%
3.G Liming	CO_2	0.000	19.994	0.001	0.001	99%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.001	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.001	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.001	0.001	99%
3.H Urea Application	CO_2	50.020	49.473	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.001	0.001	99%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.001	0.001	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.001	0.001	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.000	0.001	100%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.483	0.000	0.000	100%
2.B.8 Petrochemical and Carbon Black Production	CH_4	5.493	0.000	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	7.717	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	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 (2014) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	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.c Railways	CH_4	0.174	0.075	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	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		**31,204.631**	**22,898.878**			

Table A1.3-6: Key categories analysis – Trend Assessment - Tier 1 (Including LULUCF) – 2014

Tier 1 Analysis - Trend Assessment Including LULUCF						
IPCC Source/Sink Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Trend Assessment	% Contribution to trend	Cumulative Total (%)
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.104	0.134	13%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.101	0.130	26%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.067	0.087	35%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,699.308	6,322.821	0.040	0.052	40%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.040	0.052	45%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.038	0.049	50%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.037	0.048	55%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.033	0.042	59%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.032	0.041	63%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.031	0.040	67%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.025	0.032	71%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.023	0.030	74%
4.E.2 Land Converted to Settlements	CO_2	197.001	644.800	0.020	0.026	76%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.017	0.022	78%
4.G Harvested Wood Products	CO_2	301.544	658.066	0.017	0.022	81%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.016	0.021	83%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.015	0.019	85%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.014	0.017	86%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.008	0.010	87%
4.A.2 Land Converted to Forest Land	CO_2	38.633	226.748	0.008	0.010	88%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.002	0.007	0.009	89%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	11.613	0.006	0.008	90%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.006	0.008	91%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.006	0.007	92%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.005	0.007	92%
3.B Manure Management	N_2O	323.845	136.722	0.005	0.006	93%
3.B Manure Management	CH_4	352.871	175.276	0.004	0.006	93%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.004	0.005	94%
2.C.3 Aluminium Production	CO_2	118.797	0.000	0.004	0.005	94%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.004	0.005	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.004	0.005	95%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.003	0.004	96%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.003	0.004	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.002	0.003	96%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	84.810	0.002	0.003	97%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.002	0.003	97%
2.A.2 Lime Production	CO_2	153.440	71.488	0.002	0.003	97%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.000	0.002	0.002	98%
1.A.3.c Railways	CO_2	140.079	67.094	0.002	0.002	98%

Tier 1 Analysis - Trend Assessment Including LULUCF						
IPCC Source/Sink Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2014) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
4.C.2 Land Converted to Grassland	CO_2	122.386	58.653	0.002	0.002	98%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.001	0.002	98%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.001	0.002	98%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.001	0.001	98%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.001	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.001	0.001	99%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.001	0.001	99%
4.D.2 Land Converted to Wetlands	CO_2	43.067	13.152	0.001	0.001	99%
3.G Liming	CO_2	0.000	19.994	0.001	0.001	99%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.001	0.001	99%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.001	0.001	99%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.000	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.000	0.001	99%
3.H Urea Application	CO_2	50.020	49.473	0.000	0.001	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.000	0.001	100%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.000	0.000	100%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	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	1.934	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	0.000	100%
2.C.2 Ferroalloys Production	CH_4	3.899	0.000	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	7.717	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.483	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	0.000	100%
4.B.2 Land Converted to Cropland	CO_2	23.651	17.522	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 (2014) Estimate (Gg eq-CO2)**	**Trend Assessment**	**% Contribution to trend**	**Cumulative Total (%)**
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.252	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.180	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	0.000	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.075	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	0.014	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		**38,880.538**	**30,939.564**			

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	363.871	0.188	19%
3.A Enteric Fermentation	CH_4	1,977.594	0.085	27%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.071	34%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	0.055	40%
5.A Solid Waste Disposal	CH_4	348.607	0.045	44%
1.A.3.b Road Transportation	CO_2	3,505.875	0.041	48%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	0.040	53%
2.C.3 Aluminium Production	PFCs	1,240.239	0.040	56%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	0.033	60%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	0.029	63%
1.A.4 Other Sectors - Biomass	CH_4	316.275	0.026	65%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	0.026	68%
2.B.2 Nitric Acid Production	N_2O	754.265	0.025	70%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	0.022	73%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	0.020	75%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	0.020	77%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	0.019	79%
1.A.4 Other Sectors - Biomass	N_2O	50.267	0.017	80%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	0.017	82%
3.B Manure Management	N_2O	323.845	0.016	84%
1.A.3.b Road Transportation	N_2O	38.685	0.013	85%
3.B Manure Management	CH_4	352.871	0.013	86%
5.D Wastewater Treatment and Discharge	CH_4	237.864	0.013	88%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	0.012	89%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.011	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	92%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	0.007	93%
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	94%
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	95%
3.H Urea Application	CO_2	50.020	0.005	96%
1.A.3.c Railways	N_2O	13.248	0.005	96%
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	97%
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	98%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	0.002	98%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	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%
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	99%
2.A.2 Lime Production	CO_2	153.440	0.001	99%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	0.001	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%
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	99%
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	99%
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	99%
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	99%
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%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	0.000	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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		**31,204.631**		

Table A1.3-8: Key categories analysis – Level Assessment - Tier 2 (Excluding LULUCF) – 2014

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2014) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.165	17%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.164	33%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.088	42%
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.083	50%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.047	55%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.041	59%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.040	63%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.035	66%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.033	70%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.027	72%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.023	75%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.021	77%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.020	79%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.020	81%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.018	83%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.018	84%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.015	86%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.014	87%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.014	89%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.013	90%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.010	91%
3.B Manure Management	N_2O	323.845	136.722	0.008	92%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.008	93%
3.B Manure Management	CH_4	352.871	175.276	0.007	93%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.007	94%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.006	94%
3.H Urea Application	CO_2	50.020	49.473	0.006	95%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.005	96%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.005	96%
1.A.3.c Railways	N_2O	13.248	7.717	0.003	96%
3.G Liming	CO_2	0.000	19.994	0.003	97%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.003	97%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.003	97%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.002	98%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.002	98%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.002	98%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.001	98%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.001	98%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.001	99%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.001	99%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.001	99%
1.A.3.c Railways	CO_2	140.079	67.094	0.001	99%

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2014) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.001	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.001	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.000	99%
2.A.2 Lime Production	CO_2	153.440	71.488	0.000	99%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.000	99%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	99%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	99%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	99%
2.A.3 Glass Production	CO_2	35.871	30.483	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	99%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	0.000	99%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	99%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	99%
1.A.3.c Railways	CH_4	0.174	0.075	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	99%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	99%
1.A.3.a Domestic Aviation	CH_4	0.001	0.005	0.000	100%

Tier 2 Analysis - Level Assessment - Excluding LULUCF					
IPCC Source Categories	**Direct GHG**	**Base Year (1990) Estimate (Gg eq-CO2)**	**Last Year (2014) Estimate (Gg eq-CO2)**	**Level Assessment Tier 2**	**Cumulative Total (%)**
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.002	0.000	99%
1.B.2.c. Venting and flaring	CO_2	0.002	0.000	0.000	99%
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	99%
2.C.2 Ferroalloys Production	CO_2	173.798	0.000	0.000	99%
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	99%
2.C.3 Aluminium Production	PFCs	1,240.239	0.000	0.000	99%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	0.000	100%
TOTAL		**31,204.631**	**22,898.878**		

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	6,699.308	0.487	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	363.871	0.060	61%
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	70%
4.C.2 Land Converted to Grassland	CO_2	122.386	0.023	72%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	0.023	75%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	0.018	76%
4.B.2 Land Converted to Cropland	CO_2	23.651	0.017	78%
4.G Harvested Wood Products	CO_2	301.544	0.016	80%
5.A Solid Waste Disposal	CH_4	348.607	0.014	81%
1.A.3.b Road Transportation	CO_2	3,505.875	0.013	82%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	0.013	84%
2.C.3 Aluminium Production	PFCs	1,240.239	0.013	85%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	0.011	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	89%
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.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	0.006	92%
1.B.1 Fugitive emissions from Solid Fuels	CH_4	59.644	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	93%
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	94%
1.A.3.b Road Transportation	N_2O	38.685	0.004	95%
3.B Manure Management	CH_4	352.871	0.004	95%
5.D Wastewater Treatment and Discharge	CH_4	237.864	0.004	96%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	0.004	96%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	0.004	96%
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	0.002	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%
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%

Tier 2 Analysis - Level Assessment - Including LULUCF				
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
2.C.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.4 Other Sectors - Liquid Fuels	N_2O	5.259	0.001	99%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	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	7.770	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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
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	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil	CH_4	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 (%)**
Fuels				
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	99%
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%
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	99%
TOTAL		**38,880.538**		

Table A1.3-10: Key categories analysis – Level Assessment - Tier 2 (Including LULUCF) – 2014

Tier 2 Analysis - Level Assessment - Including LULUCF					
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Level Assessment Tier 2	Cumulative Total (%)
4.A.1 Forest Land Remaining Forest Land	CO_2	6,699.308	6,322.821	0.495	49%
4.B.1 Cropland Remaining Cropland	CO_2	215.132	11.613	0.060	55%
4.E.2 Land Converted to Settlements	CO_2	197.001	644.800	0.052	61%
4.G Harvested Wood Products	CO_2	301.544	658.066	0.047	65%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.041	69%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.040	73%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	84.810	0.036	77%
4.A.2 Land Converted to Forest Land	CO_2	38.633	226.748	0.028	80%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.022	82%
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.020	84%
4.B.2 Land Converted to Cropland	CO_2	23.651	17.522	0.017	86%
4.C.2 Land Converted to Grassland	CO_2	122.386	58.653	0.016	87%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.012	89%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.010	90%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.010	91%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.009	91%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.008	92%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.007	93%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.006	93%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.005	94%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.005	94%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.005	95%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.004	95%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.004	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.004	96%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.004	97%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.003	97%
4.D.2 Land Converted to Wetlands	CO_2	43.067	13.152	0.003	97%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.002	98%
3.B Manure Management	N_2O	323.845	136.722	0.002	98%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.002	98%
3.B Manure Management	CH_4	352.871	175.276	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.002	98%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.002	99%
3.H Urea Application	CO_2	50.020	49.473	0.001	99%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.001	99%
1.A.3.c Railways	N_2O	13.248	7.717	0.001	99%
3.G Liming	CO_2	0.000	19.994	0.001	99%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.001	99%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.001	99%

2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.000	99%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	100%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	100%
1.A.3.c Railways	CO_2	140.079	67.094	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.000	100%
2.A.2 Lime Production	CO_2	153.440	71.488	0.000	100%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.000	100%
4.C.1 Grassland Remaining Grassland	CO_2	2.069	2.069	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.180	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.252	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.483	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	100%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	100%

1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	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	0.075	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	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	0.002	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		**38,880.538**	**30,939.564**		

Table A1.3-11: Key categories analysis – Trend Assessment - Tier 2 (Excluding LULUCF) – 2014

Tier 2 Analysis - Trend Assessment Excluding LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.035	0.242	24%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.013	0.088	33%
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.012	0.081	41%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.009	0.063	47%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.007	0.049	52%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.006	0.041	57%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.006	0.041	61%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.006	0.040	65%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.005	0.036	68%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.004	0.024	71%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.004	0.024	73%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.003	0.019	75%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.003	0.018	77%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.003	0.018	79%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.002	0.002	0.015	80%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.002	0.015	82%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.002	0.014	83%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.002	0.012	84%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.002	0.012	85%
3.B Manure Management	N_2O	323.845	136.722	0.002	0.012	87%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.002	0.012	88%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.002	0.011	89%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.002	0.011	90%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.001	0.009	91%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.001	0.008	92%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.001	0.007	92%
3.G Liming	CO_2	0.000	19.994	0.001	0.006	93%
3.B Manure Management	CH_4	352.871	175.276	0.001	0.006	94%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.001	0.005	94%
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.001	0.005	95%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.001	0.004	95%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.001	0.004	95%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.001	0.003	96%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.000	0.003	96%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.000	0.003	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.000	0.003	97%
3.H Urea Application	CO_2	50.020	49.473	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 (2014) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.000	0.003	97%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.000	0.002	97%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	0.002	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.000	0.002	98%
1.A.3.c Railways	N_2O	13.248	7.717	0.000	0.002	98%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.000	0.001	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	0.001	98%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	0.001	98%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	0.001	99%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	0.001	99%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.000	0.001	99%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.000	0.001	99%
1.A.3.c Railways	CO_2	140.079	67.094	0.000	0.001	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	0.001	99%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.000	0.001	99%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.000	0.001	99%
2.A.2 Lime Production	CO_2	153.440	71.488	0.000	0.000	99%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	0.000	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	0.000	99%
1.A.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	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.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	0.000	0.000	100%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	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 (2014) Estimate (Gg eq-CO2)**	**Trend Assessment Tier 2**	**% Contribution to Trend**	**Cumulative Total (%)**
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	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	0.319	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.483	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	0.000	100%
2.B.1 Ammonia Production	CH_4	0.137	0.168	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.075	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	CO_2	0.536	0.045	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	N_2O	0.007	0.000	0	0.000	100%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.000	0.000	100%
TOTAL		**31,204.631**	**22,898.878**			

Table A1.3-12: Key categories analysis – Trend Assessment - Tier 2 (Including LULUCF) – 2014

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
4.B.1 Cropland Remaining Cropland	CO_2	215.132	11.613	0.624	0.700	70%
4.A.1 Forest Land Remaining Forest Land	CO_2	6,699.308	6,322.821	0.059	0.066	77%
4.E.2 Land Converted to Settlements	CO_2	197.001	644.800	0.030	0.033	80%
5.A Solid Waste Disposal	CH_4	348.607	1,189.419	0.024	0.026	83%
4.G Harvested Wood Products	CO_2	301.544	658.066	0.023	0.026	85%
4(III).Direct N2O emissions from N mineralization/immobilization	N_2O	31.027	84.810	0.020	0.022	87%
4.A.2 Land Converted to Forest Land	CO_2	38.633	226.748	0.018	0.021	89%
2.F.1 Refrigeration and Air conditioning	Aggregate F-gases	0.000	568.772	0.009	0.010	90%
4.C.2 Land Converted to Grassland	CO_2	122.386	58.653	0.008	0.009	91%
1.A.3.b Road Transportation	CO_2	3,505.875	5,341.614	0.007	0.008	92%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	4,615.029	1,185.549	0.007	0.008	93%
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	363.871	235.658	0.007	0.008	94%
3.A Enteric Fermentation	CH_4	1,977.594	953.838	0.005	0.006	94%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	0.005	0.005	95%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	220.600	49.639	0.005	0.005	95%
4.D.2 Land Converted to Wetlands	CO_2	43.067	13.152	0.003	0.004	96%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	0.003	0.003	96%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	522.064	490.621	0.003	0.003	96%
1.A.4 Other Sectors - Liquid Fuels	CO_2	2,450.466	1,147.894	0.002	0.003	97%
1.A.4 Other Sectors - Gaseous Fuels	CO_2	744.057	1,371.278	0.002	0.003	97%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	0.002	0.002	97%
2.B.8 Petrochemical and Carbon Black Production	CO_2	219.763	0.002	0.002	0.002	97%
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CO_2	157.786	34.717	0.002	0.002	97%
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	1,103.271	729.152	0.002	0.002	98%
2.D Non-energy Products from Fuels and Solvent Use	CO_2	189.428	58.800	0.001	0.002	98%
3.B Manure Management	N_2O	323.845	136.722	0.001	0.002	98%
1.A.4 Other Sectors - Biomass	CH_4	316.275	318.952	0.001	0.002	98%
1.A.3.b Road Transportation	N_2O	38.685	45.882	0.001	0.001	98%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	0.001	0.001	98%
1.A.4 Other Sectors - Solid Fuels	CO_2	524.388	11.362	0.001	0.001	99%
4.B.2 Land Converted to Cropland	CO_2	23.651	17.522	0.001	0.001	99%
5.D Wastewater Treatment and Discharge	N_2O	67.000	83.089	0.001	0.001	99%
1.A.4 Other Sectors - Biomass	N_2O	50.267	50.624	0.001	0.001	99%
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	148.067	141.613	0.001	0.001	99%
3.B Manure Management	CH_4	352.871	175.276	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	0.001	0.001	99%
3.G Liming	CO_2	0.000	19.994	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	0.001	0.001	99%

Tier 2 Analysis - Trend Assessment Including LULUCF						
IPCC Source Categories	Direct GHG	Base Year (1990) Estimate (Gg eq-CO2)	Last Year (2014) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
1.A.4 Other Sectors - Solid Fuels	CH_4	33.392	0.837	0.001	0.001	99%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	0.000	0.001	99%
2.A.1 Cement Production	CO_2	1,085.790	1,225.087	0.000	0.000	99%
1.A.3.b Road Transportation	CH_4	40.611	12.616	0.000	0.000	99%
2.B.2 Nitric Acid Production	N_2O	754.265	266.195	0.000	0.000	99%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	0.000	0.000	100%
2.F.4 Aerosols	Aggregate F-gases	0.000	9.595	0.000	0.000	100%
2.G Other Product Manufacture and Use	N_2O	33.376	34.807	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	0.000	0.000	100%
1.A.3.c Railways	N_2O	13.248	7.717	0.000	0.000	100%
5.D Wastewater Treatment and Discharge	CH_4	237.864	207.670	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	CH_4	0.000	3.729	0.000	0.000	100%
3.H Urea Application	CO_2	50.020	49.473	0.000	0.000	100%
4(V) Biomass Burning	N_2O	0.858	0.180	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2	0.000	60.761	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	0.000	0.000	100%
4(V) Biomass Burning	CH_4	1.230	0.252	0.000	0.000	100%
1.A.4 Other Sectors - Solid Fuels	N_2O	2.377	0.051	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	N_2O	5.259	2.414	0.000	0.000	100%
1.A.3.c Railways	CO_2	140.079	67.094	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	N_2O	4.291	1.945	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O	0.000	1.445	0.000	0.000	100%
5.B Biological Treatment of Soild Waste	N_2O	0.000	2.045	0.000	0.000	100%
2.B.1 Ammonia Production	CO_2	552.104	534.353	0.000	0.000	100%
2.F.3 Fire Protection	Aggregate F-gases	0.000	4.466	0.000	0.000	100%
2.A.4 Other Process Uses of Carbonates	CO_2	5.775	32.162	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CO_2	134.383	136.403	0.000	0.000	100%
1.A.3.a Domestic Aviation	CO_2	6.601	30.467	0.000	0.000	100%
2.A.2 Lime Production	CO_2	153.440	71.488	0.000	0.000	100%
2.G Other Product Manufacture and Use	Aggregate F-gases	10.450	6.842	0.000	0.000	100%
1.A.4 Other Sectors - Liquid Fuels	CH_4	7.770	3.618	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	N_2O	0.000	0.506	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.4 Other Sectors - Gaseous Fuels	CH_4	1.670	3.056	0.000	0.000	100%
2.C.1 Iron and Steel Production	CO_2	45.970	27.904	0.000	0.000	100%
1.A.4 Other Sectors - Gaseous Fuels	N_2O	0.559	0.736	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	N_2O	1.079	1.097	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries	N_2O	0.876	0.471	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 (2014) Estimate (Gg eq-CO2)	Trend Assessment Tier 2	% Contribution to Trend	Cumulative Total (%)
and Construction - Gaseous Fuels						
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	CH_4	2.700	1.223	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4	0.000	0.915	0.000	0.000	100%
1.B.2.c. Venting and flaring	CH_4	0.590	0.026	0.000	0.000	100%
1.A.3.a Domestic Aviation	N_2O	0.055	0.255	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	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.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	N_2O	0.064	0.014	0.000	0.000	100%
1.B.2.c. Venting and flaring	N_2O	0.630	0.160	0.000	0.000	100%
5.C Incineration and Open Burning of Waste	CO_2	0.536	0.045	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CH_4	0.000	0.319	0.000	0.000	100%
2.B.1 Ammonia Production	N_2O	0.163	0.200	0.000	0.000	100%
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	0.000	0.000	100%
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	0.000	0.000	100%
2.A.3 Glass Production	CO_2	35.871	30.483	0.000	0.000	100%
1.A.3.d Domestic Navigation - Liquid Fuels	CH_4	0.317	0.322	0.000	0.000	100%
1.A.3.c Railways	CH_4	0.174	0.075	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	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		**38,880.538**	**30,939.564**			

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 - 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.2 Ferroalloys Production	CO_2	Yes	L1e		
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.D.2 Land Converted to Wetlands	CO_2	Yes		L2i	
4.E.2 Land Converted to Settlements	CO_2	Yes		L1i, L2i	
4.G Harvested Wood Products	CO_2	Yes		L1i, L2i	
5. Waste					
5.A Solid Waste Disposal	CH_4	Yes	L1e, L2e	L1i, L2i	
5.D Wastewater Treatment and Discharge	CH_4	Yes	L1e, L2e	L1i	

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

Table A1.3-14: Source Analysis Summary (Croatian Inventory, 2014)

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, 2016)							
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	T1i	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CO_2	Yes	L1e, L2e	T1e, T2e	L1i	T1i	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	Yes	L1e, L2e	T1e, T2e	L1i	T1i	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	Yes	L1e, L2e	T1e,	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	
1.A.3.b Road Transportation	CO_2	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i	
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		
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	
1.A.4 Other Sectors - Liquid Fuels	CO_2	Yes	L1e, L2e	T1e, T2e	L1i	T1i	
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		T1e, T2e		T1i	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	CH_4	Yes		T1e, T2e		T1i	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CH_4	Yes	L1e, L2e	T2e			
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	CO_2	Yes	L1e, L2e	T1e, T2e	L1i, L2i		
2. Industrial processes and product use							
2.A.1 Cement Production	CO_2	Yes	L1e	T1e	L1i	T1i	
2.B.1 Ammonia Production	CO_2	Yes	L1e	T1e	L1i	T1i	
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	
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	F-gases	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i, T2i	
3. Agriculture							
3.A Enteric Fermentation	CH_4	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i	
3.B Manure Management	CH_4	Yes	L1e	T1e	L1i	T1i	
3.B Manure Management	N_2O	Yes		T1e, T2e		T1i	
3.D.1 Direct N2O Emissions From Managed Soils	N_2O	Yes	L1e, L2e		L1i	T1i	
3.D.2 Indirect N2O Emissions From Managed Soils	N_2O	Yes	L1e, L2e	T2e	L1i, L2i		
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		
4.C.2 Land Converted to Grassland	CO_2	Yes			L2i		
4.E.2 Land Converted to Settlements	CO_2	Yes			L1i, L2i	T1i, T2i	
4.G Harvested Wood Products	CO_2	Yes			L1i, L2i	T1i, T2i	
5. Waste							
5.A Solid Waste Disposal	CH_4	Yes	L1e, L2e	T1e, T2e	L1i, L2i	T1i, T2i	

Tier 1 and Tier 2 Analysis - Source Analysis Summary (Croatian Inventory, 2016)							
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	CH_4	Yes	L1e, L2e		L1i		
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) and 2000 IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (2000 GPG).

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. For categories of other sectors PDFs were defined only for activity data (AD) and emission factors (EF), 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 six sectors according to modus how the inventory work is organized (Energy, Industrial Processes, Solvent 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 2014 was estimated at 22,898.88 Gg CO_2-eq.

The estimate of CO_2-eq emissions in 1990 was estimated at 31,204.63 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 2014 (23,202.99 Gg CO_2-eq) according to simulation varies between 22,170.65 Gg CO_2-eq (2.5% percentile) and 24,357.86 Gg CO_2-eq (97.5% percentile).

Figure A2.1-1: Distribution of total CO_2 emission for year 2014 excluding LULUCF

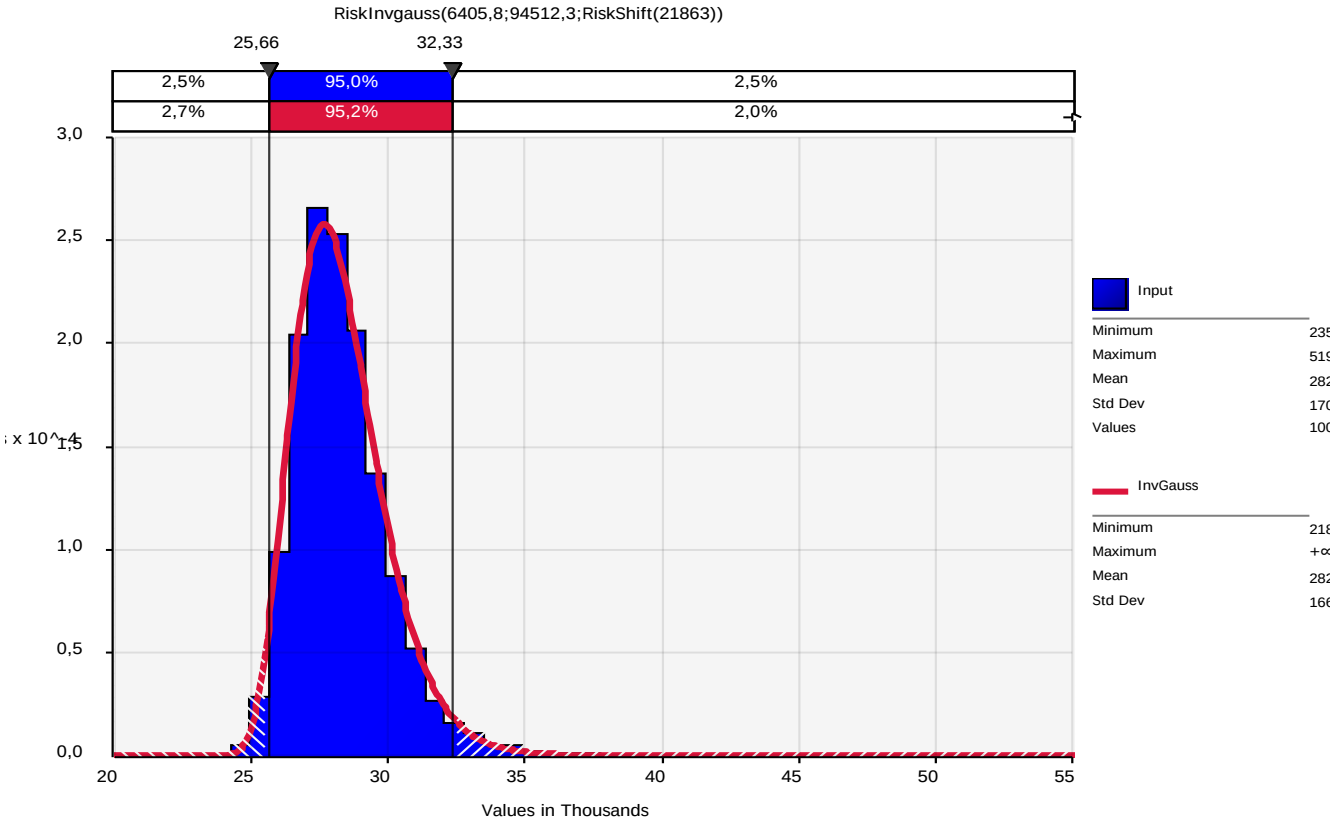

Figure A2.1-1 shows the distribution of total CO_2 emission for year 2014 with a corresponding probability density function (red line) that best matches the simulation results.

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 (31,599.48 Gg CO_2-eq) varies between 30,423.12 Gg CO_2-eq (2.5% percentile) and 32,879.68 Gg CO_2-eq (97.5% percentile).

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

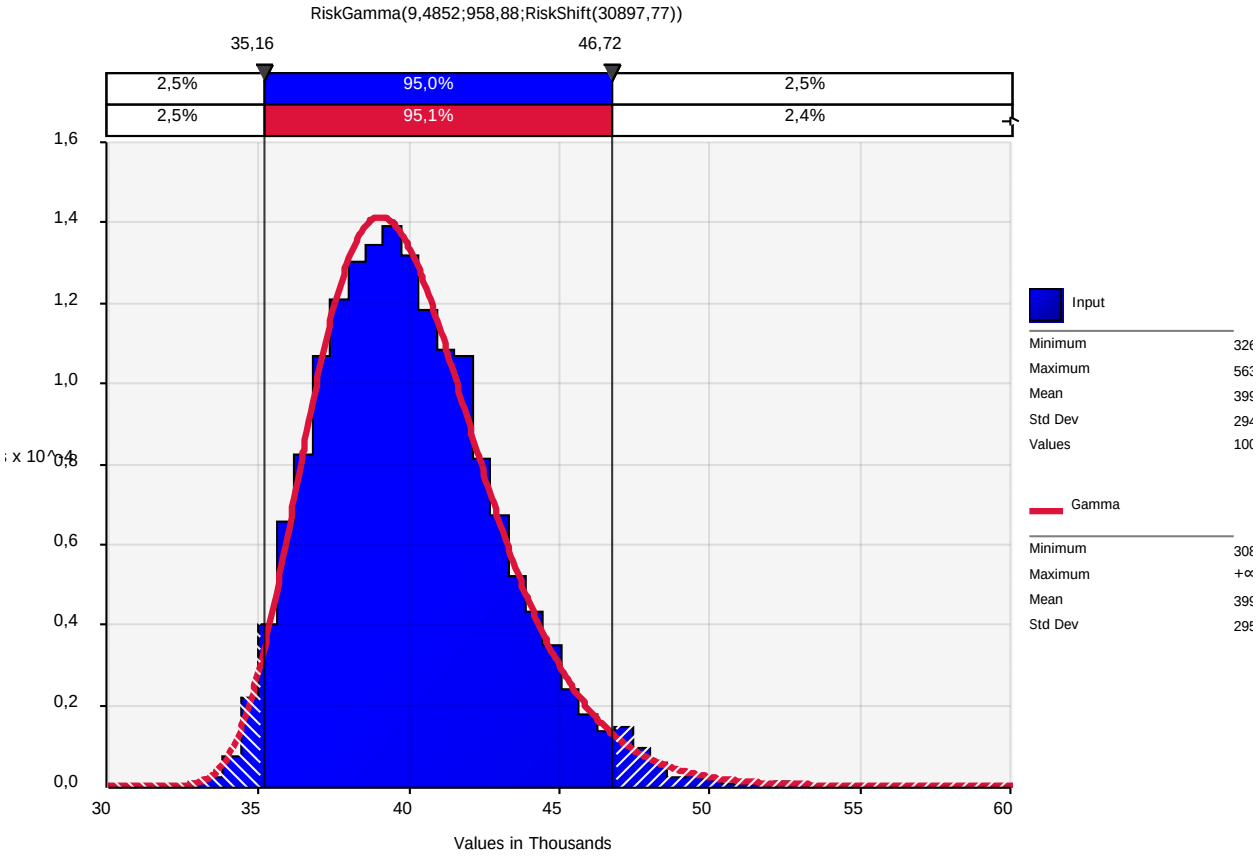

Figure A2.1-2 shows the distribution of total CO_2 emission for year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

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 -26.62%, simulated trend is -26.54% and the 95% probability range of the trend is -30.95% (2,5% percentile) to -21.92% (97.5% percentile).

Figure A2.1-3: Distribution of trend for year 2014 with the respect to year 1990

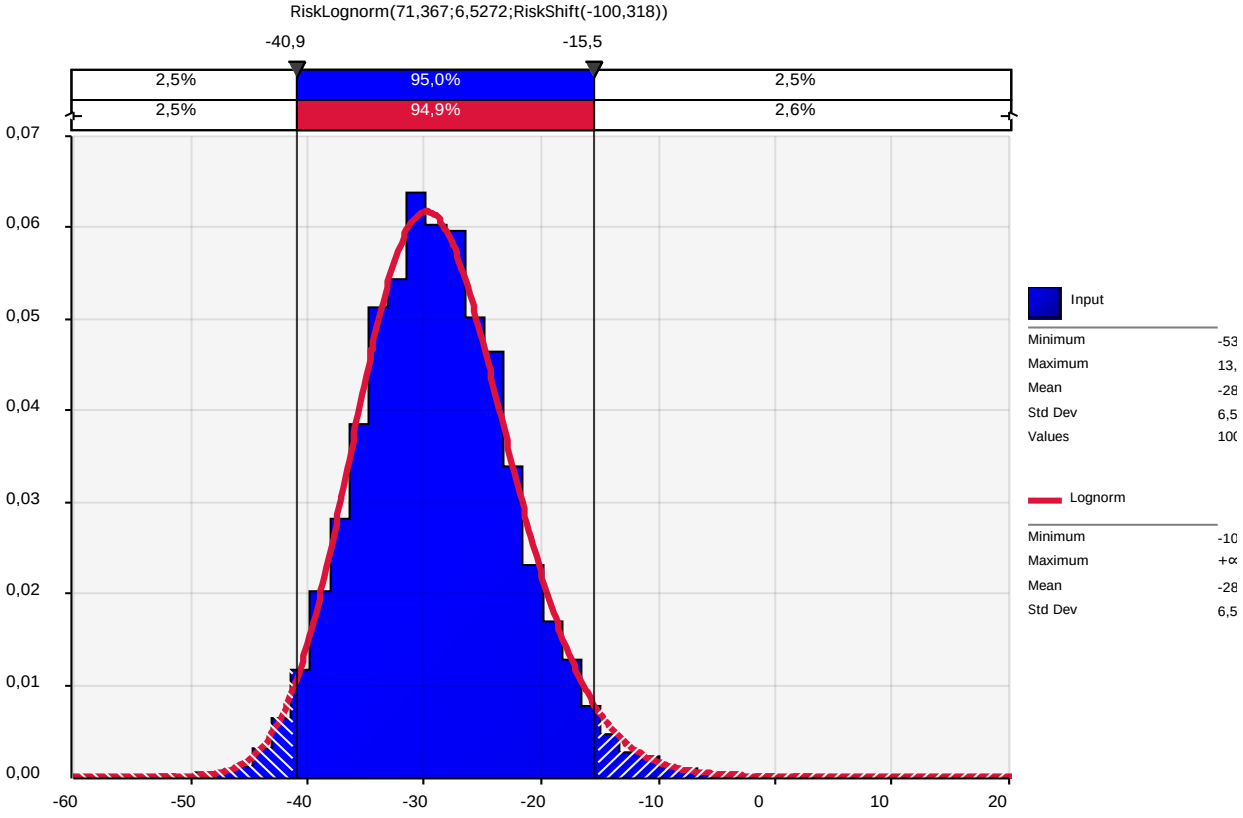

Figure A2.1-3: shows the distribution of trend for year 2014 respect to year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

A.5.1.5. Uncertainty in the emissions including LULUCF

The estimate of CO_2-eq emissions in 2014 was estimated at 16,383.76 Gg CO_2-eq.

The estimate of CO_2-eq emissions in 1990 was estimated at 24,556.79 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 2014 (20,687.92 Gg CO_2-eq) according to simulation varies between 14,313.38 Gg CO_2-eq (2.5% percentile) and 27,021.86 Gg CO_2-eq (97.5% percentile).

Figure A2.1-4: Distribution of total CO_2 emission for year 2014 including LULUCF

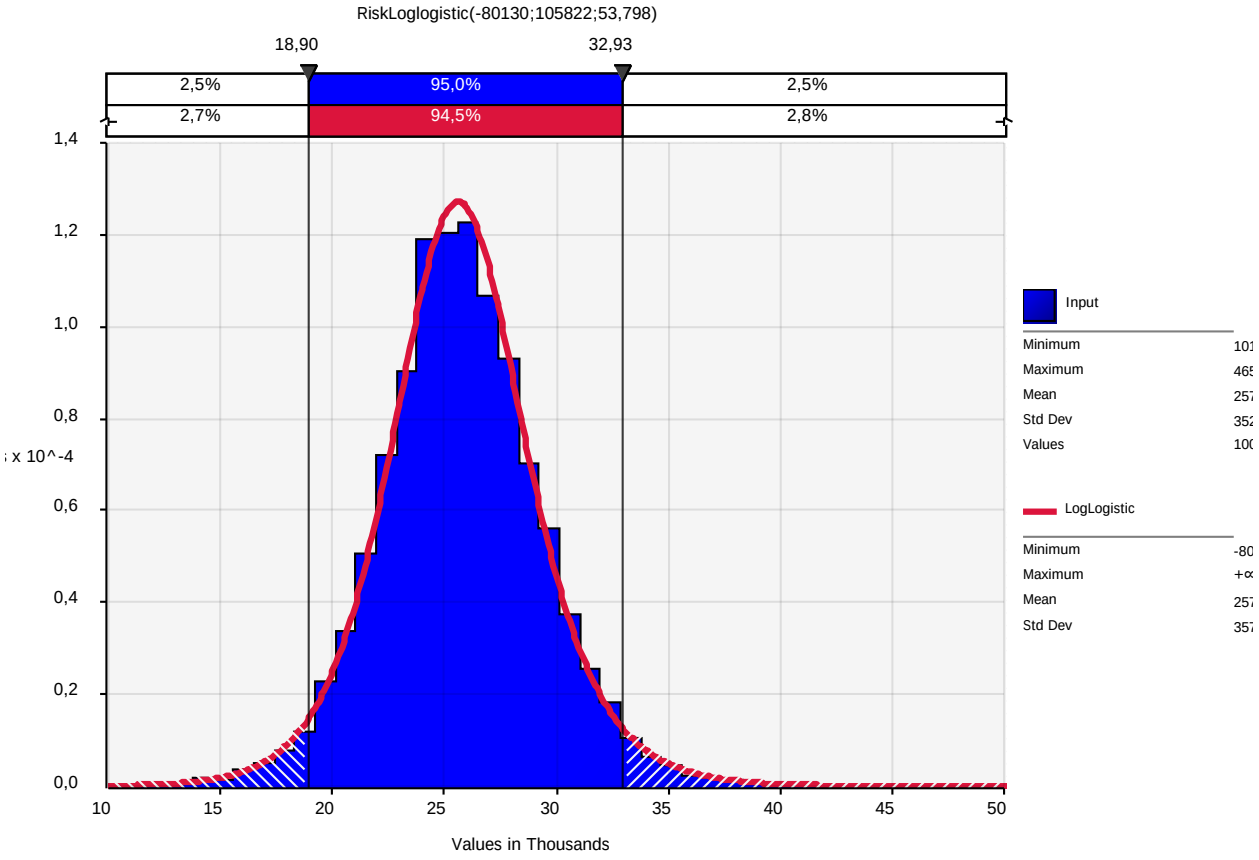

Figure A2.1-4 shows the distribution of total CO_2 emission including LULUCF for year 2014 with a corresponding probability density function (red line) that best matches the simulation results.

Monte Carlo analysis shows that with a certainty of 95% we can say that the total simulated emissions of all categories including LULUCF for the year 1990 (28,467.78 Gg CO_2-eq) varies between 22,275.49 Gg CO_2-eq (2.5% percentile) and 34,682.93 Gg CO_2-eq (97.5% percentile).

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

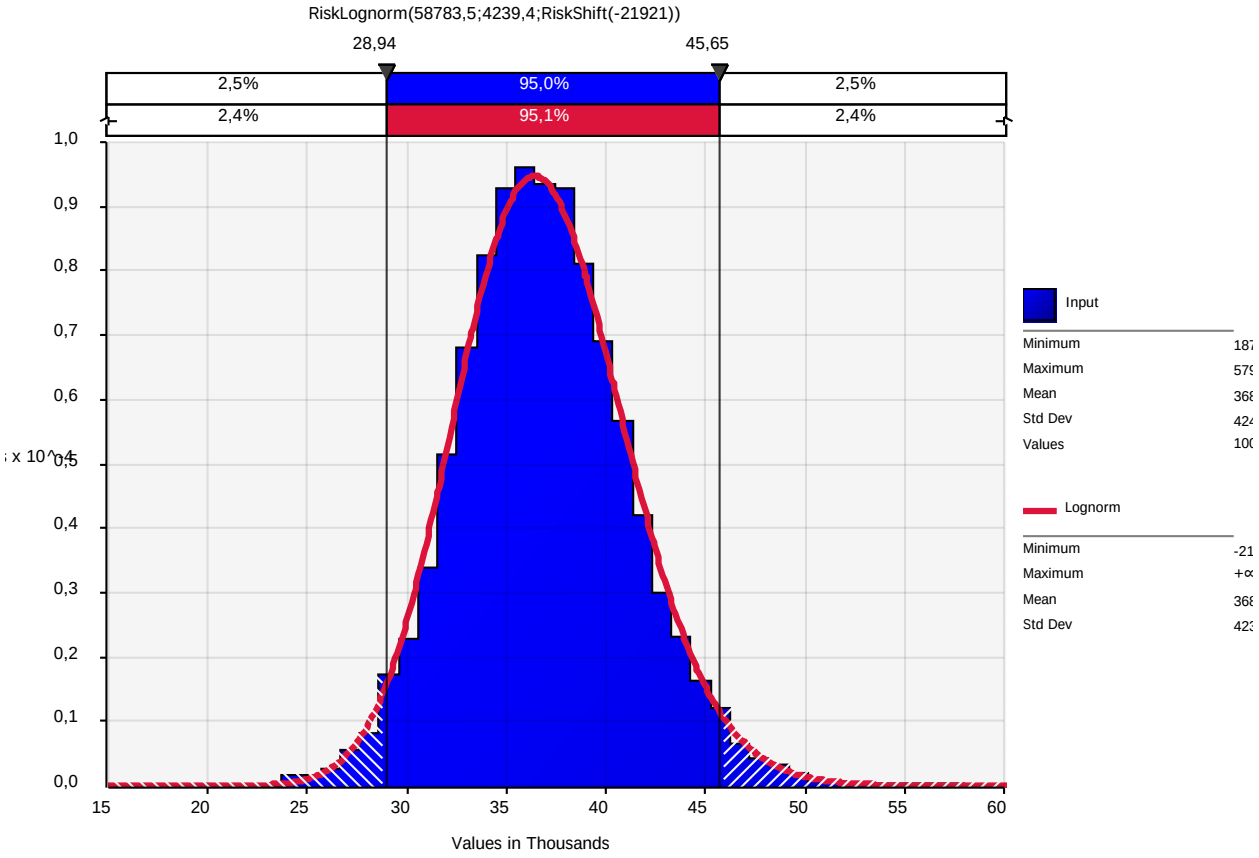

Figure A2.1-5 shows the distribution of total CO_2 emission for year 1990 with a corresponding probability density function (red line) that best matches the simulation results.

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 -33.28%, simulated trend is -26.42% and the 95% probability range of the trend is -51.83% (2,5% percentile) to 4.43% (97.5% percentile), so the uncertainty introduced in trend varies from -18.54% to 37.71% with respect to the base year emissions.

Figure A2.1-6: Distribution of trend for year 2014 with the respect to year 1990 including LULUCF

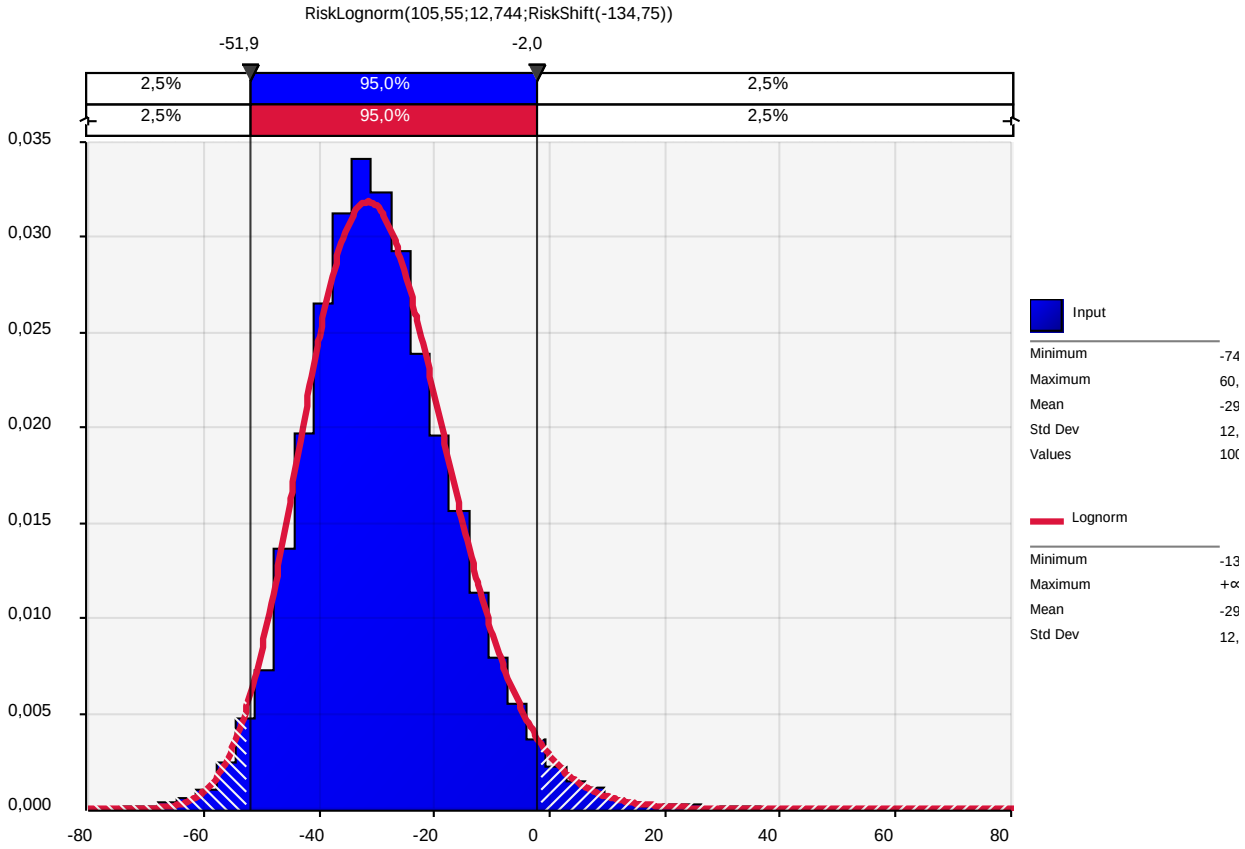

Figure A2.1-6: shows the distribution of trend for year 2014 respect to year 1990 with a corresponding probability density function (red line) that best matches the simulation results, including LULUCF.

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 year 2013 (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 BY	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	1,185.549	-5	5	-5	5	-7.04	7.05	0.000182	-74.31	-2.46	2.71	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	CH_4	3.702	0.725	-5	5	-50	50	-50.13	50.42	0.000000	-80.42	-10.74	23.92	
1.A.1 Fuel combustion - Energy Industries - Liquid Fuels	N_2O	8.920	1.682	-5	5	-200	200	-91.81	209.10	0.000000	-81.15	-17.65	264.17	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CO_2	603.361	2,141.703	-5	5	-5	5	-6.96	7.13	0.000600	254.96	-33.98	37.37	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	CH_4	0.159	0.566	-5	5	-50	50	-49.87	50.45	0.000000	254.96	-194.11	440.04	
1.A.1 Fuel combustion - Energy Industries - Solid Fuels	N_2O	2.851	10.120	-5	5	-200	200	-91.71	208.25	0.000007	254.96	-332.36	5219.48	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CO_2	1,853.020	1,274.500	-5	5	-5	5	-6.82	7.18	0.000209	-31.22	-6.48	7.16	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	CH_4	1.555	13.501	-5	5	-50	50	-50.13	50.46	0.000001	768.40	-479.34	1049.20	
1.A.1 Fuel combustion - Energy Industries - Gaseous Fuels	N_2O	5.715	4.614	-5	5	-200	200	-91.61	207.86	0.000001	-19.26	-75.57	1245.90	
1.A.1 Fuel combustion - Energy Industries - Biomass	CH_4		0.915	-5	5	-50	50	-50.42	50.34	0.000000				2
1.A.1 Fuel combustion - Energy Industries - Biomass	N_2O		1.445	-5	5	-200	200	-91.72	207.72	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CO_2	2,158.014	956.714	-5	5	-5	5	-7.02	7.05	0.000118	-55.67	-4.39	4.66	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	CH_4	2.096	0.823	-5	5	-50	50	-49.97	50.70	0.000000	-60.76	-21.39	48.91	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Liquid Fuels	N_2O	4.973	1.938	-5	5	-200	200	-91.71	208.73	0.000000	-61.03	-36.52	592.80	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CO_2	1,702.511	420.956	-5	5	-5	5	-7.00	7.15	0.000023	-75.27	-2.37	2.63	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	CH_4	4.196	1.082	-5	5	-50	50	-50.31	50.30	0.000000	-74.22	-14.18	31.64	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Solid Fuels	N_2O	7.502	1.934	-5	5	-200	200	-91.79	208.57	0.000000	-74.22	-24.14	388.43	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CO_2	1,641.149	885.900	-5	5	-5	5	-7.01	7.03	0.000100	-46.02	-5.13	5.74	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	CH_4	0.735	0.395	-5	5	-50	50	-49.88	50.88	0.000000	-46.26	-29.61	65.41	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Gaseous Fuels	N_2O	0.876	0.471	-5	5	-200	200	-91.57	207.95	0.000000	-46.26	-50.40	776.15	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	CO_2		60.761	-5	5	-5	5	-6.85	7.30	0.000000				2

1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	**CH_4**		**0.319**	-5	5	-50	50	-49.93	50.58	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Other Fossil Fuels	**N_2O**		**0.506**	-5	5	-200	200	-91.65	205.88	0.000000				2
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	**CH_4**	**2.700**	**1.223**	-5	5	-50	50	-49.79	50.25	0.000000	-54.69	-25.05	54.36	
1.A.2 Fuel combustion - Manufacturing Industries and Construction - Biomass	**N_2O**	**4.291**	**1.945**	-5	5	-200	200	-91.81	207.91	0.000000	-54.69	-42.48	700.45	
1.A.3.a Domestic Aviation	**CO_2**	**6.601**	**30.467**	-5	5	-5	5	-7.11	7.18	0.000000	361.54	-43.94	48.62	
1.A.3.a Domestic Aviation	**CH_4**	**0.001**	**0.005**	-5	5	-50	50	-50.08	50.17	0.000000	361.87	-254.94	572.45	
1.A.3.a Domestic Aviation	**N_2O**	**0.055**	**0.255**	-5	5	-200	200	-91.60	208.85	0.000000	361.87	-434.98	6633.36	
1.A.3.b Road Transportation	**CO_2**	**3,505.875**	**5,341.614**	-5	5	-5	5	-6.98	7.18	0.003655	52.36	-14.71	16.08	
1.A.3.b Road Transportation	**CH_4**	**40.611**	**12.616**	-5	5	-50	50	-50.05	50.61	0.000001	-68.93	-17.02	38.35	
1.A.3.b Road Transportation	**N_2O**	**38.685**	**45.882**	-5	5	-200	200	-91.63	205.82	0.000136	18.60	-111.40	1805.02	
1.A.3.c Railways	**CO_2**	**140.079**	**67.094**	-5	5	-5	5	-6.99	7.24	0.000001	-52.10	-4.53	5.11	
1.A.3.c Railways	**CH_4**	**0.174**	**0.075**	-5	5	-50	50	-49.95	50.75	0.000000	-56.88	-23.67	51.36	
1.A.3.c Railways	**N_2O**	**13.248**	**7.717**	-5	5	-200	200	-91.83	207.84	0.000004	-41.75	-54.77	855.00	
1.A.3.d Domestic Navigation - Liquid Fuels	**CO_2**	**134.383**	**136.403**	-5	5	-5	5	-7.06	7.06	0.000002	1.50	-9.69	10.84	
1.A.3.d Domestic Navigation - Liquid Fuels	**CH_4**	**0.317**	**0.322**	-5	5	-50	50	-49.91	50.52	0.000000	1.70	-55.95	127.63	
1.A.3.d Domestic Navigation - Liquid Fuels	**N_2O**	**1.079**	**1.097**	-5	5	-200	200	-91.71	206.39	0.000000	1.70	-95.27	1614.06	
1.A.4 Other Sectors - Liquid Fuels	**CO_2**	**2,450.466**	**1,147.894**	-5	5	-5	5	-7.00	7.22	0.000170	-53.16	-4.40	4.84	
1.A.4 Other Sectors - Liquid Fuels	**CH_4**	**7.770**	**3.618**	-5	5	-50	50	-50.06	50.29	0.000000	-53.44	-25.41	55.90	
1.A.4 Other Sectors - Liquid Fuels	**N_2O**	**5.259**	**2.414**	-5	5	-200	200	-91.67	208.61	0.000000	-54.09	-43.05	712.75	
1.A.4 Other Sectors - Solid Fuels	**CO_2**	**524.388**	**11.362**	-5	5	-5	5	-6.96	7.09	0.000000	-97.83	-0.20	0.23	
1.A.4 Other Sectors - Solid Fuels	**CH_4**	**33.392**	**0.837**	-5	5	-50	50	-50.06	50.69	0.000000	-97.49	-1.40	3.08	
1.A.4 Other Sectors - Solid Fuels	**N_2O**	**2.377**	**0.051**	-5	5	-200	200	-91.70	207.59	0.000000	-97.85	-2.01	32.30	
1.A.4 Other Sectors - Gaseous Fuels	**CO_2**	**744.057**	**1,371.278**	-5	5	-5	5	-6.95	7.18	0.000244	84.30	-17.56	19.80	
1.A.4 Other Sectors - Gaseous Fuels	**CH_4**	**1.670**	**3.056**	-5	5	-50	50	-49.96	50.51	0.000000	83.02	-98.92	219.09	
1.A.4 Other Sectors - Gaseous Fuels	**N_2O**	**0.559**	**0.736**	-5	5	-200	200	-91.76	207.15	0.000000	31.66	-123.55	2028.26	
1.A.4 Other Sectors - Biomass	**CH_4**	**316.275**	**318.952**	-5	5	-50	50	-50.28	50.26	0.000662	0.85	-55.18	125.13	
1.A.4 Other Sectors - Biomass	**N_2O**	**50.267**	**50.624**	-5	5	-200	200	-91.61	207.23	0.000165	0.71	-94.32	1518.39	
1.B.1 Fugitive emissions from Solid Fuels	**CH_4**	**59.644**												2
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**CO_2**	**157.786**	**34.717**											
1. Exploration	CO_2	28.536	6.278	-5	5	-50	50	-50.08	50.42	0.000000	-78.00	-12.19	27.14	
2. Production(7)	CO_2	129.245	28.436	-5	5	-50	50	-50.39	50.45	0.000005	-78.00	-12.09	27.53	
3. Transport	CO_2	0.006	0.003	-5	5	-50	50	-49.88	50.77	0.000000	-44.11	-30.62	67.33	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**CH_4**	**220.600**	**49.639**											
1. Exploration	CH_4	15.205	3.345	-5	5	-100	100	-84.23	101.27	0.000000	-78.00	-18.93	129.42	
2. Production(7)	CH_4	199.531	43.899	-5	5	-100	100	-84.33	101.14	0.000044	-78.00	-18.74	133.81	
3. Transport	CH_4	1.516	0.847	-5	5	-100	100	-84.31	100.79	0.000000	-44.11	-47.94	357.88	
4. Refining/storage	CH_4	4.348	1.547	-5	5	-100	100	-84.12	99.92	0.000000	-64.41	-30.22	202.35	
1.B.2.a Fugitive Emissions from Fuels - Oil and Natural Gas - Oil	**N_2O**	**0.064**	**0.014**	-5	5	-10	1000	-9.63	1003.37	0.000000	-78.00	-18.37	110.10	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	**CO_2**	**522.064**	**490.621**											
1. Exploration	CO_2	18.043	15.901	-5	5	-50	50	-49.91	49.49	0.000002	-11.87	-49.83	99.74	
2. Production(7)	CO_2	418.423	399.263	-5	5	-100	100	-84.33	101.44	0.003628	-4.58	-81.45	585.26	

3. Processing	CO_2	85.568	75.411	-5	5	-100	100	-84.19	100.58	0.000130	-11.87	-75.41	494.52	
4. Transmission and storage	CO_2	0.011	0.010	-5	5	-100	100	-84.27	101.22	0.000000	-9.04	-77.55	533.76	
5. Distribution	CO_2	0.019	0.036	-5	5	-20	500	-20.22	498.87	0.000000	86.03	-141.34	603.84	
1.B.2.b Fugitive Emissions from Fuels - Oil and Natural Gas - Natural Gas	**CH_4**	**148.067**	**141.613**											
1. Exploration	CH_4	9.614	8.473	-5	5	-100	100	-84.17	101.04	0.000002	-11.87	-75.50	554.53	
2. Production(7)	CH_4	66.445	58.558	-5	5	-100	100	-84.20	100.17	0.000078	-11.87	-75.18	535.42	
3. Processing	CH_4	29.338	25.856	-5	5	-100	100	-84.25	100.89	0.000015	-11.87	-74.84	497.99	
4. Transmission and storage	CH_4	32.239	29.323	-5	5	-100	100	-84.31	101.44	0.000020	-9.04	-77.64	538.90	
5. Distribution	CH_4	10.431	19.404	-5	5	-20	500	-20.14	503.00	0.000071	86.03	-141.27	603.45	
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	-84.22	100.81	0.000000	-95.62	-3.75	26.47	
1.B.2.c. Venting and flaring	**CH_4**	**0.590**	**0.026**											
1. Venting - Oil	CH_4	0.590	0.026	-5	5	-100	100	-84.37	100.98	0.000000	-95.62	-3.71	25.18	
1.B.2.c. Venting and flaring	**N_2O**	**0.630**	**0.160**											
2. Flaring - Oil	N_2O	0.598	0.132	-5	5	-100	100	-84.28	101.65	0.000000	-78.00	-18.80	130.14	
2. Flaring - Gas	N_2O	0.032	0.028	-5	5	-100	100	-84.18	100.36	0.000000	-11.87	-75.78	506.07	
2.A.1 Cement Production	**CO_2**	**1,085.790**	**1,225.087**	-2	2	-2	2	-2.75	2.90	0.000031	12.83	-4.41	4.54	
2.A.2 Lime Production	**CO_2**	**153.440**	**71.488**	-2	2	-2	2	-2.82	2.84	0.000000	-53.41	-1.84	1.91	
2.A.3 Glass Production	**CO_2**	**35.871**	**30.483**	-2	2	-2	2	-2.79	2.83	0.000000	-15.02	-3.36	3.46	
2.A.4 Other Process Uses of Carbonates	**CO_2**	**5.775**	**32.162**											
2.A.4.a Ceramics	CO_2	5.775	27.040	-7.5	7.5	-5	5	-9.00	9.15	0.000000	368.26	-55.69	63.79	
2.A.4.b Other uses of Soda Ash	CO_2		5.122	-7.5	7.5	-5	5	-8.88	9.11	0.000000				
2.B.1 Ammonia Production	**CO_2**	**552.104**	**534.353**	-2	2	-2	2	-2.85	2.85	0.000006	-3.22	-3.75	3.90	5
2.B.1 Ammonia Production	**CH_4**	**0.137**	**0.168**	-5	5	-50	50	-50.09	50.50	0.000000	22.66	-67.49	151.50	
2.B.1 Ammonia Production	**N_2O**	**0.163**	**0.200**	-5	5	-200	200	-91.84	209.40	0.000000	22.66	-115.56	1900.00	
2.B.2 Nitric Acid Production	**N_2O**	**754.265**	**266.195**	-2	2	-2	2	-2.87	2.85	0.000001	-64.71	-6.02	9.02	
2.B.8 Petrochemical and Carbon Black Production	**CO_2**	**219.763**	**0.002**											
2.B.8.a Methanol	CO_2		0.001	-7.5	7.5	-30	30	-30.61	31.27	0.000000				2
2.B.8.b Ethylene	CO_2	125.652	0.001	-7.5	7.5	-30	30	-30.31	31.36	0.000000	-100.00	0.00	0.00	
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	-30.84	31.44	0.000000				2
2.B.8.b Ethylene	CH_4	5.447	0.000	-7.5	7.5	-30	30	-30.82	31.16	0.000000	-100.00	0.00	0.00	
2.B.8.f Carbon Black	CH_4	0.046												2
2.C.1 Iron and Steel Production	**CO_2**	**45.970**	**27.904**											
2.C.1.a Steel	CO_2	45.970	27.904	-5	5	-5	5	-7.13	7.18	0.000000	-39.30	-8.78	10.69	
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**	**58.800**											
2.D Non-energy Products from Fuels and Solvent Use\2.D.1 Lubricant Use	CO_2	95.419	18.081	-5	5	-50	50	-50.17	50.12	0.000002	-81.05	-10.44	23.58	

2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Solvent use	CO_2	93.994	35.355	NA	NA	-50	50	-40.77	58.50	0.000008	-62.39	-19.02	38.10	4
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\Road paving with asphalt	CO_2	0.005	0.021	-10	10	-50	50	-49.89	52.16	0.000000	289.50	-215.33	486.78	
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Other\Urea based CC	CO_2		5.339	-5	5	-5	5	-7.03	7.17	0.000000				
2.D Non-energy Products from Fuels and Solvent Use\2.D.3 Other\ Asphalt roofing	CO_2	0.009	0.005	-10	10	-50	50	-50.19	51.79	0.000000	-46.64	-29.54	66.23	
2.F.1 Refrigeration and Air conditioning	**Aggregate F-gases**		**568.772**											
2.F.1.a Commercial Refrigeration\HFC-143a	HFC-143a		86.293	-50	50	-50	50	-63.06	78.61	0.000098				2
2.F.1.a Commercial Refrigeration\HFC-125	HFC-125		57.173	-50	50	-50	50	-61.80	79.85	0.000043				2
2.F.1.a Commercial Refrigeration\HFC-134a	HFC-134a		2.124	-50	50	-50	50	-62.01	79.68	0.000000				2
2.F.1.b Domestic Refrigeration\HFC-134a	HFC-134a		0.399	-50	50	-50	50	-62.65	81.31	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-23	HFC-23		0.321	-50	50	-50	50	-62.10	78.41	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-134a	HFC-134a		5.592	-50	50	-50	50	-62.89	79.75	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-125	HFC-125		20.020	-50	50	-50	50	-62.84	79.88	0.000005				2
2.F.1.c Industrial Refrigeration\HFC-143a	HFC-143a		0.715	-50	50	-50	50	-62.23	80.85	0.000000				2
2.F.1.c Industrial Refrigeration\HFC-32	HFC-32		3.651	-50	50	-50	50	-61.53	80.49	0.000000				2
2.F.1.c Industrial Refrigeration\C2F6	PFC-116		0.060	-50	50	-50	50	-61.63	80.31	0.000000				2
2.F.1.d Transport Refrigeration\HFC-134a	HFC-134a		211.461	-50	50	-50	50	-62.20	79.02	0.000596				2
2.F.1.e Mobile Air-Conditioning\HFC-134a	HFC-134a		156.371	-50	50	-50	50	-62.09	80.56	0.000325				2
2.F.1.f Stationary Air-Conditioning\HFC-32	HFC-32		3.128	-50	50	-50	50	-62.13	81.54	0.000000				2
2.F.1.f Stationary Air-Conditioning\HFC-125	HFC-125		16.669	-50	50	-50	50	-62.31	79.37	0.000004				2
2.F.1.f Stationary Air-Conditioning\HFC-134a	HFC-134a		4.796	-50	50	-50	50	-61.72	79.48	0.000000				2
2.F.3 Fire Protection	**Aggregate F-gases**		**4.466**											
2.F.3 Fire Protection\HFC-125	HFC-125		0.476	-50	50	-50	50	-63.51	80.12	0.000000				2
2.F.3 Fire Protection\HFC-227ea	HFC-227ea		3.362	-50	50	-50	50	-62.82	79.24	0.000000				2
2.F.3 Fire Protection\HFC-236fa	HFC-236fa		0.628	-50	50	-50	50	-63.21	80.02	0.000000				2
2.F.4 Aerosols	**Aggregate F-gases**		**9.595**											
2.F.4 Aerosols\2.F.4.a Metered Dose Inhalers\HFC-134a	HFC-134a		9.595	-50	50	-50	50	-62.56	79.98	0.000001				2
2.G Other Product Manufacture and Use	**N_2O**	**33.376**	**34.807**											
2.G.3 N2O from Product Uses\2.G.3.a Medical Applications	N_2O	32.780	34.807	-50	50	-50	50	-62.16	81.87	0.000016	6.18	1760.33	17800.14	
2.G.3 N2O from Product Uses\2.G.3.b Other\Propellant for pressure and aerosol products	N_2O	0.596												2
2.G Other Product Manufacture and Use	**Aggregate F-gases**	**10.450**	**6.842**											
2.G.1 Electrical Equipment\SF6	SF_6	10.450	6.842	-50	50	-50	50	-96.29	-81.88	0.000000	-34.53			
3.A Enteric Fermentation	**CH_4**	**1,977.594**	**953.838**											
Mature dairy cattle	CH_4	1,330.509	470.737	-30	30	-20	20	-34.36	38.09	0.000747	-64.62	-14.24	23.96	
Other mature cattle	CH_4	100.769	67.202	-10	10	-20	20	-22.03	22.93	0.000006	-33.31	-18.49	26.09	
Growing cattle	CH_4	389.275	260.047	-10	10	-20	20	-21.73	22.99	0.000088	-33.20	-18.15	25.51	
Sheep	CH_4	93.875	119.159	-10	10	-20	20	-21.55	23.29	0.000018	26.93	-34.92	46.73	
Market swine	CH_4	14.066	14.925	-10	10	-20	20	-21.78	22.76	0.000000	6.11	-29.03	39.41	
Breeding swine	CH_4	5.800	4.127	-10	10	-20	20	-21.94	22.47	0.000000	-28.85	-19.69	27.46	

Goats	CH_4	21.500	7.587	-10	10	-20	20	-22.00	22.81	0.000000	-64.71	-9.64	13.40	
Horses	CH_4	17.550	9.515	-30	30	-20	20	-34.60	37.77	0.000000	-45.78	-22.53	37.87	
Mules and Asses	CH_4	4.250	0.540	-30	30	-20	20	-34.15	38.61	0.000000	-87.30	-5.14	8.59	
3.B Manure Management	**CH_4**	**352.871**	**175.276**											
Mature dairy cattle	CH_4	205.986	75.559	-30	30	-20	20	-34.19	37.65	0.000019	-63.32	-15.14	25.78	
Other mature cattle	CH_4	9.584	9.155	-10	10	-20	20	-21.92	23.22	0.000000	-4.48	-26.26	36.01	
Growing cattle	CH_4	63.848	44.267	-10	10	-20	20	-21.73	23.22	0.000003	-30.67	-18.70	26.35	
Sheep	CH_4	2.215	1.784	-10	10	-20	20	-21.74	23.14	0.000000	-19.46	-21.98	30.73	
Market swine	CH_4	36.332	27.855	-10	10	-20	20	-21.72	23.38	0.000001	-23.33	-21.10	29.32	
Breeding swine	CH_4	22.759	11.701	-10	10	-20	20	-21.50	22.78	0.000000	-48.59	-14.31	19.21	
Goats	CH_4	0.529	0.187	-10	10	-20	20	-21.53	23.08	0.000000	-64.71	-9.70	13.15	
Horses	CH_4	1.292	0.700	-30	30	-20	20	-33.83	38.72	0.000000	-45.78	-22.09	37.72	
Mules and Asses	CH_4	0.563	0.072	-30	30	-20	20	-33.78	39.13	0.000000	-87.30	-5.23	8.99	
Poultry	CH_4	9.762	3.996	-10	10	-20	20	-21.45	22.77	0.000000	-59.07	-11.43	15.33	
3.B Manure Management	**N_2O**	**323.845**	**136.722**											
Mature dairy cattle	N_2O	56.942	14.617	-30	30	-50	100	-54.27	111.18	0.000004	-74.33	-16.96	49.74	
Other mature cattle	N_2O	4.558	2.997	-10	10	-50	100	-50.54	99.54	0.000000	-34.24	-41.06	111.54	
Growing cattle	N_2O	30.363	14.493	-10	10	-50	100	-50.86	101.22	0.000003	-52.27	-30.03	80.44	
Sheep	N_2O	2.165	2.003	-10	10	-50	100	-50.48	100.69	0.000000	-7.49	-57.75	155.01	
Market swine	N_2O	6.349	1.051	-10	10	-50	100	-50.02	101.90	0.000000	-83.45	-10.34	28.05	
Breeding swine	N_2O	10.580	1.656	-10	10	-50	100	-50.69	101.74	0.000000	-84.35	-9.87	26.84	
Goats	N_2O	0.212	0.118	-10	10	-50	100	-50.67	100.56	0.000000	-44.38	-34.99	94.29	
Horses	N_2O	1.200	0.619	-30	30	-50	100	-53.92	113.10	0.000000	-48.39	-34.26	99.02	
Mules and Asses	N_2O	0.057	0.020	-30	30	-50	100	-54.42	108.03	0.000000	-63.87	-24.04	69.50	
Poultry	N_2O	19.668	7.224	-10	10	-50	100	-50.43	101.05	0.000001	-63.27	-23.14	63.78	
Indirect N2O emission	*N_2O*	*191.752*	*91.922*											
Total N volatilised as NH3 and NOX	N_2O	191.752	91.922	-10	10	-30	30	-30.77	31.48	0.000022	-52.06	-18.14	27.83	
3.D.1 Direct N2O Emissions From Managed Soils	**N_2O**	**1,103.271**	**729.152**											
Inorganic N fertilizers	N_2O	503.002	377.940	-20	20	-30	30	-34.32	38.42	0.000485	-24.86	-30.70	52.88	
Organic N fertilizers	N_2O	296.946	154.483	-10	10	-30	30	-30.69	32.41	0.000062	-47.98	-19.17	30.89	
Urine and dung deposited by grazing animals	N_2O	105.742	36.598	-10	10	-50	50	-50.49	51.14	0.000009	-65.39	-19.13	43.64	
Crop residues	N_2O	187.207	149.893	-20	20	-30	30	-34.34	39.17	0.000077	-19.93	-32.68	57.07	
Mineralization/immobilization associated with loss/gain of soil organic matter	N_2O	0.314	0.177	-20	20	-30	30	-34.17	38.43	0.000000	-43.57	-22.94	40.21	
Cultivation of organic soils	N_2O	10.061	10.061	-10	10	-500	500	-89.02	551.36	0.000030	0.00	-95.66	2095.92	
3.D.2 Indirect N2O Emissions From Managed Soils	**N_2O**	**363.871**	**235.658**											
Atmospheric deposition	N_2O	124.749	75.000	-20	20	-250	250	-91.94	268.67	0.000531	-39.88	-56.64	993.38	
Nitrogen leaching and run-off	N_2O	239.122	160.659	-20	20	-400	400	-90.32	442.06	0.005326	-32.81	-63.94	1338.25	
3.G Liming	**CO_2**		**19.994**	-50	50	-50	50	-61.93	78.77	0.000005				
3.H Urea Application	**CO_2**	**50.020**	**49.473**	-20	20	-50	50	-51.74	56.82	0.000018	-1.09	-55.78	132.98	
4.A.1 Forest Land Remaining Forest Land	**CO_2**	**- 6,699.308**	**- 6,322.821**					-46.10	146.85	0.904055	-5.62	-826.58	828.13	1, 3
4.A.2 Land Converted to Forest Land	**CO_2**	**- 38.633**	**- 226.748**					-231.34	183.80	0.005383	486.93	-1834.84	3595.73	1, 3
4.B.1 Cropland Remaining Cropland	**CO_2**	**215.132**	**- 11.613**					-9515.26	9632.03	0.030098	-105.40	-1150.86	1237.58	1, 3
4.B.2 Land Converted to Cropland	**CO_2**	**23.651**	**17.522**					-1841.59	1756.41	0.002416	-25.92	-1383.59	1255.85	1, 3
4.C.1 Grassland Remaining Grassland	**CO_2**	**2.069**	**2.069**					-95.81	95.62	0.000000	0.00	-148.90	411.35	1, 3
4.C.2 Land Converted to Grassland	**CO_2**	**- 122.386**	**- 58.653**					-474.03	522.41	0.002074	-52.08	-961.00	946.22	1, 3
4.D.2 Land Converted to Wetlands	**CO_2**	**43.067**	**13.152**					-187.52	394.93	0.000036	-69.46	-164.93	215.77	1, 3

4.E.2 Land Converted to Settlements	**CO_2**	**197.001**	**644.800**					-92.94	150.06	0.014951	227.31	-316.72	1054.91	1, 3
4.G Harvested Wood Products	**CO_2**	**- 301.544**	**- 658.066**					-85.80	135.21	0.000642	118.23	-435.22	-139.26	1, 3
4(III).Direct N2O emissions from N mineralization/immobilization	**N_2O**	**31.027**	**84.810**					-804.12	625.58	0.008926	173.34	-1820.77	1337.75	1, 3
4(V) Biomass Burning	**CH_4**	**1.230**	**0.252**					-100.29	558.24	0.000000	-79.55	-29.10	256.45	1, 3
4(V) Biomass Burning	**N_2O**	**0.858**	**0.180**					-354.40	929.19	0.000000	-79.00	60.27	345.51	1, 3
5.A Solid Waste Disposal	**CH_4**	**348.607**	**1,189.419**											
5.A.1 Managed Waste Disposal Sites\5.A.1.a Anaerobic	CH_4	17.258	929.234	-50	50	-50	50	-62.14	80.33	0.011480	5284.44	-3625.19	10841.95	
5.A.2 Unmanaged Waste Disposal Sites	CH_4	331.349	260.184	-50	50	-50	50	-61.16	76.97	0.000873	-21.48	-52.91	162.97	
5.B Biological Treatment of Soild Waste	**CH_4**		**3.729**											
5.B Biological Treatment of Soild Waste\5.B.1 Composting	CH_4		2.859	-50	50	-100	100	-85.72	132.11	0.000000				2
5.B Biological Treatment of Soild Waste\5.B.2 Anaerobic Digestion at Biogas Facilities	CH_4		0.870	-50	50	-400	400	-91.33	483.98	0.000000				2
5.B Biological Treatment of Soild Waste	**N_2O**		**2.045**											
5.B Biological Treatment of Soild Waste\5.B.1 Composting	N_2O		2.045	-50	50	-110	110	-88.09	142.23	0.000000				2
5.C Incineration and Open Burning of Waste	**CO_2**	**0.536**	**0.045**											
5.C.1 Waste Incineration\5.C.1.2 Non-biogenic\5.C.1.2.b Other\Clinical Waste	CO_2	0.123	0.045	-50	50	-30	30	-54.20	62.63	0.000000	-63.47	-21.95	53.90	
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**	**207.670**											
5.D.1 Domestic wastewater	CH_4	141.221	111.038	-30	30	-30	30	-39.66	45.51	0.000057	-21.37	-36.25	65.06	
5.D.2 Industrial wastewater	CH_4	96.643	96.633	-30	30	-30	30	-38.61	45.59	0.000043	-0.01	-45.79	84.68	
5.D Wastewater Treatment and Discharge	**N_2O**	**67.000**	**83.089**											
5.D.1 Domestic wastewater	N_2O	67.000	83.089	-50	50	-50	50	-62.08	80.25	0.000091	24.01	-83.62	254.32	
TOTAL	**CO_2eq**	**24,556.797**	**16,383.763**					**-12.64**	**64.93**	**1.000000**	**-33.28**	**-18.54**	**37.71**	

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
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
Fuel oil	1000 t	570.40	327.80	283.40	284.00	15.10	58.50	60.10	18.90	1.60
Light heating oil	1000 t	0.30	24.10	0.20	3.00	0.90	0.90	1.20	0.90	1.00
Natural gas	1000000 m3	201.70	114.10	155.80	36.30	24.00	27.00	14.00	2.70	0.60
Coke oven gas	1000000 m3	24.50								
Biogas	PJ				0.11	0.02	0.00	0.01	0.17	0.39
Other biomass	PJ					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
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
NCV for light heating oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	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
NCV for other biomass										
EMISSION FACTORS		1990	1995	2000	2005	2010	2011	2012	2013	2014
EF CO2 t/TJ	t/TJ									
EF CO2 -Hard coal	t/TJ	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - Gas coke	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - Biogass	t/TJ	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
EF CO2 - Other biomass	t/TJ	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EF CH4 kg/TJ	kg/TJ									
EF CH4 -Hard coal	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Fuel oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
EF N2O kg/TJ	kg/TJ									
EF N2O -Hard coal	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - Fuel oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O - Gas coke	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Biogass	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Other biomass	kg/TJ	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

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

ACTIVITY DATA		1990	1995	2000	2005	2010	2011	2012	2013	2014
Fuel consumption	**UNIT**									TJ
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
Light heating oil	1000 t	0.00	0.90	0.90	1.50	0.10	0.00	0.60	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
Coke oven gas	1000000 m3									
Biogas	PJ				0.00	0.14	0.17	0.34	0.41	0.48
Other biomass	TJ					1.90	803.20	1003.50	1146.10	1190.30
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
NCV for fuel oil	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
NCV for light heating oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	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
NCV for other biomass		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EMISSION FACTORS		1990	1995	2000	2005	2010	2011	2012	2013	2014
EF CO2 t/TJ	t/TJ									
EF CO2 -Hard coal	t/TJ	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - Gas coke	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - Biogass	t/TJ	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
EF CO2 - Other biomass	t/TJ	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EF CH4 kg/TJ	kg/TJ									
EF CH4 -Hard coal	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Fuel oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	3.67	2.20	2.73	2.87	3.67	3.58	3.51	3.24	43.46
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
EF N2O kg/TJ	kg/TJ									
EF N2O -Hard coal	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - Fuel oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O - Gas coke	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Biogass	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Other biomass	kg/TJ	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

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

ACTIVITY DATA		1990	1995	2000	2005	2010	2011	2012	2013	2014
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
Light heating oil	1000 t	0.00	6.00	4.40	6.70	4.90	5.30	3.10	3.70	3.10
Natural gas	1000000 m3	0.00	36.20	53.00	71.30	86.50	76.00	76.60	85.90	71.60
Coke oven gas	1000000 m3									
Biogas	PJ					0.00	0.00	0.00	0.00	0.00
Other biomass	PJ					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
NCV for light heating oil	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
NCV for natural gas	MJ/m3	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	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
NCV for other biomass	TJ/PJ					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
EF CO2 t/TJ	t/TJ									
EF CO2 -Hard coal	t/TJ	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60	94.60
EF CO2 - Fuel oil	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - Light heating oil	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - Natural gas	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - Gas coke	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 -Biogas	t/TJ	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
EF CO2 - Other biomass	t/TJ	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
EF CO2 - Gas works gas	t/TJ	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - LPG	t/TJ	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CH4 kg/TJ	kg/TJ									
EF CH4 -Hard coal	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Fuel oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Light heating oil	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Gas coke	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Biogass	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - Other biomass	kg/TJ	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00
EF CH4 - Gas works gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - LPG	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O kg/TJ	kg/TJ									
EF N2O -Hard coal	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - Fuel oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Light heating oil	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - Natural gas	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF N2O - Gas coke	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Biogass	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - Other biomass	kg/TJ	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
EF N2O - Gas works gas	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - LPG	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10

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

Refining - transformation		1990	1995	2000	2005	2010	2011	2012	2013	2014
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
NCV for fuel oil (MJ/kg)	MJ/kg	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	1000 t	0.00	0.00	0.00	9.50	0.00	0.00	2.70	1.50	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
Petroleum coke (1000 t)	1000 t	0.00	0.00	0.00	70.70	55.90	43.90	54.50	40.80	25.30
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
Refinery gas (1000 t)	1000 t	58.40	27.70	40.70	241.10	161.50	267.10	293.80	175.40	276.20
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
Natural gas (1000000 m3)	1000 t	7.30	7.10	0.20	1.20	16.60	82.40	4.90	150.90	140.60
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
Total fuel cunsumption (TJ)	TJ	**12,215.86**	**9,604.69**	**9,756.35**	**24,596.44**	**19,959.77**	**25,024.84**	**21,658.63**	**18,890.73**	**21,466.33**
Emission factors										
EF CO2 - fuel oil (t/TJ)	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	t/TJ	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - petroleum coke (t/T	t/TJ	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - refinery gas (t/TJ)	t/TJ	57.60	57.60	57.60	57.60	57.60	57.60	57.60	57.60	57.60
EF CO2 - natural gas (t/TJ)	t/TJ	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	Gg	**884.06**	**711.62**	**715.86**	**1,729.54**	**1,428.85**	**1,660.67**	**1,453.44**	**1,229.54**	**1,348.12**
EF CH4 - fuel oil (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - LPG (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - petroleum coke (kg	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - refinery gas (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - natural gas (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	Mg	**30.48**	**25.64**	**25.30**	**45.01**	**39.60**	**40.80**	**33.98**	**27.60**	**29.57**
EF N2O - fuel oil (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - LPG (kg/TJ)	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - petroleum coke (kg	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - refinery gas (kg/TJ)	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - natural gas (kg/TJ)	kg/TJ	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	Mg	**5.79**	**4.97**	**4.86**	**10.63**	**9.33**	**8.35**	**7.61**	**5.84**	**5.27**

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
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**
Emissions									
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	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
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	**85.40**	**0.32**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	**1.92**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	**0.19**	**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
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
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	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**
Emissions									
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 Emission (Gg)	**784.00**	**392.66**	**292.46**	**352.16**	**461.02**	**298.13**	**218.21**	**229.27**	**178.00**
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	**13.95**	**7.05**	**5.72**	**6.67**	**8.22**	**5.31**	**3.89**	**4.09**	**3.17**
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	**1.40**	**0.71**	**0.66**	**0.74**	**0.82**	**0.53**	**0.39**	**0.41**	**0.32**

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
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
NCV for biogas (TJ/TJ)								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**
Emissions									
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas coke (t/TJ)	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - light heating oil (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
EF CO2 - other kp (t/TJ)	71.15	71.15	71.15	71.15	71.15	71.15	71.15	71.15	71.15
EF CO2 - biogas (t/TJ)	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60	54.60
CO2 Emission (Gg)	**3.93**	**3.36**	**2.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EF CH4 - LPG (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - gas coke (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - light heating oil (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - natural gas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - other kp (kg/TJ)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - biogas (kg/TJ)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
CH4 Emission (Mg)	**0.12**	**0.09**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas coke (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - light heating oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - biogas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O Emission (Mg)	**0.02**	**0.01**	**0.01**	**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
Anthracite	10^3 t		0	0.6	1.6	0.2	1.3	1.5
Coking coal (kameni ugljen)	10^3 t	0	1	0	0	0.3	0.2	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0
Lignite	10^3 t	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
Wood	10^3 m^3			0.8	0.7	0.5	0.3	0.3
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0.6	0
Coke oven coke	10^3 t	5.2	4.3	3.7	2	1.6	2.5	2.5
Liquified petroleum gas	10^3 t	1.7	4.2	1.4	2.1	2.8	3.8	2.2
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							0
Diesel	10^3 t		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
Residual fuel oil	10^3 t	1.3	2.7	1.2	1	1.3	1.1	1.4
Petroleum coke	10^3 t	0	0	0.7	0	0.2	0	0.3
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^3 m^3	0	0.031	0	0	0	0	0

1A2b Non-Ferrous metals								
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014
Anthracite	10^3 t		0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0
Lignite	10^3 t	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
Wood	10^3 m^3			0.6	0.6	0.5	0.4	0.4
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0
Coke oven coke	10^3 t	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
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							0.6
Diesel	10^3 t		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
Residual fuel oil	10^3 t	0.5	4	1.2	1.4	0	0.0	0
Petroleum coke	10^3 t	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	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
Anthracite	10^3 t		0.2	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	1.2	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0
Lignite	10^3 t	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
Wood	10^3 m^3			0.1	0.1	0.1	0	0
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0
Coke oven coke	10^3 t	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
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							1.4
Diesel	10^3 t		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
Residual fuel oil	10^3 t	99.7	73	3.6	4.9	1.3	1.1	3
Petroleum coke	10^3 t	0	0.7	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	0	0	0	0	0	0	0

1A2d Pulp, paper and print

Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014
Anthracite	10^3 t		0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	0	0	0
Lignite	10^3 t	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
Wood	10^3 m^3			13.2	0	0	0	0
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	169.4	151.8	193.2	422.6	145.9301546	5.5
Coke oven coke	10^3 t	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
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							0
Diesel	10^3 t		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
Residual fuel oil	10^3 t	9.2	11.9	9.5	7.1	4.3	3.5	1.2
Petroleum coke	10^3 t	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	0	0.031	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
Anthracite	10^3 t		0	0.7	0.5	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	1.2	0.9
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	39.2	47.7	39.9	41	35.7	35.7	35
Lignite	10^3 t	18.1	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
Wood	10^3 m^3			0.5	0.7	1.4	4.2	10.6
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	9.37	0
Coke oven coke	10^3 t	4.8	9.6	6.4	6.4	7	3	5.2
Liquified petroleum gas	10^3 t	0.6	1.6	1.3	1.5	1.2	1.4	1.5
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							0
Diesel	10^3 t		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
Residual fuel oil	10^3 t	29.1	32.4	22.9	23.6	12.2	9.8	7.7
Petroleum coke	10^3 t	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	0.1	0.1099	0	0	0	0	0

1A2f Non-Metalic Minerals								
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014
Anthracite	10^3 t		0.1	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0	0	0	0	1	0	0
Lignite	10^3 t	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
Wood	10^3 m^3			0	0	0	0	0
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	0	0	0	0	0	0
Coke oven coke	10^3 t	7.6	7.7	0.1	0	0	0	0
Liquified petroleum gas	10^3 t	2.8	2.2	0.2	0.2	0.1	0.2	0.2
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							0
Diesel	10^3 t		0.1	0	0	0	0	0
Gas/Diesel oil	10^3 t	0.3	2.7	0	0.1	0	0	0
Residual fuel oil	10^3 t	2.2	3.8	2.2	1.8	1.8	0.1	0
Petroleum coke	10^3 t	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	2.5	0.923	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
Anthracite	10^3 t		0	0	0	0	1.3	0
Coking coal (kameni ugljen)	10^3 t	68.8	168.3	193.4	162	145.9	120.7	106.6
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	3	5	1.1	18.4	0	4.5	1.5
Lignite	10^3 t	2	0	0	0	0	1.3	0
Natural gas	10^6 m^3	195.9	124.4	76.4	67.6	54.1	39.3	36.3
Wood	10^3 m^3			0.3	0.2	0.5	0.2	0.7
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	0	0	370.6	213.6	361.4	391.6	12.1
Coke oven coke	10^3 t	0	0	17.3	18.7	19.5	19.4	21.3
Liquified petroleum gas	10^3 t	4.1	4.6	3.2	2.8	3.1	2.7	2.4
Motor Gasoline	10^3 t			0	0	0	0	0
Petroleum	10^3 t							0
Diesel	10^3 t		15	14.3	13.5	12	12.3	11.6
Gas/Diesel oil	10^3 t	24.9	7	4.3	3.5	3.1	2.6	2.5
Residual fuel oil	10^3 t	160.9	53.1	7.3	5.6	5.5	4.4	4.9
Petroleum coke	10^3 t	16.3	171.6	115.3	93.3	93.7	146.4	154.7
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	0.1	0	0	0	0	0	0
Other fosil fuels	TJ			319.1	179.4	340.6	366.2	424.9

1A2g viii Other industry (analiza industrije+Opća potrošnja-Građevinarstvo)								
Fuel consumption	Unit	2001	2005	2010	2011	2012	2013	2014
Anthracite	10^3 t		0	0	0	0	0	0
Coking coal (kameni ugljen)	10^3 t	0	0	0	0	0	0	0
Sub-Bituminous Coal (Mrki ugljen)	10^3 t	0.1	4.2	0	0	0	0	0
Lignite	10^3 t	0.1	0.2	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
Wood	10^3 m^3			39.4	44.5	45.6	44.4	35.3
Biogas	TJ			0	0	0	0	0
Wood waste	TJ	1979.4	2087.5	1456.677	1232.8	1306.1	1260.09985	1188
Coke oven coke	10^3 t	0.7	1	0.1	0.1	0	0	0
Liquified petroleum gas	10^3 t	4.4	8	6.8	5.5	5.8	5.5	5.7
Motor Gasoline	10^3 t	7.8	6.9	5.1	4.7	4.2	4.1	4.1
Petroleum	10^3 t							0
Diesel	10^3 t	68	110.6	102.2	98.3	90	87.4	78.6
Gas/Diesel oil	10^3 t	8.2	23	12.2	11.6	10.7	9.8	8.4
Residual fuel oil	10^3 t	22.6	17.7	8.4	5.8	5.7	3.6	3.3
Petroleum coke	10^3 t	0	0	0	0	0	0	0
Refinery gas	10^3 t	0	0	0	0	0	0	0
Other oil derivates	10^3 t			0	0	0	0	0
Gas works gas	10^6 m^3	4.2	2.456	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
Motor gasoline	10^3 t	0.2	8.5	7.6	6.9	5.1	4.7	4.2	4.1	4.1
Diesel	10^3 t	137.1	43.6	66.1	125.7	116.5	111.8	102	99.7	90.2

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
Anthracite	MJ/kg		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
Sub-Bituminous Coal (Mrki ugljen)	MJ/kg	18.2	18.5	17.6	17.1	17.8	16.74	16.89
Lignite	MJ/kg	12.2	12.1				10.5	0
Natural gas	MJ/m3	34.0	34.0	34.0	34.0	34.0	34.0	34.6
Wood	MJ/m3	9.0	9.0	9.0	9.0	9.0	9.0	9
Biogas	TJ/TJ	1.0	1.0	1.0	1.0	1.0	1.0	1
Wood waste	TJ/TJ	1.0	1.0	1.0	1.0	1.0	1.0	1
Coke oven coke	MJ/kg	29.3	29.3	29.3	29.3	29.3	29.3	29.31
Liquified petroleum gas	MJ/kg	46.9	46.9	46.9	46.9	46.9	46.9	46.89
Motor Gasoline	MJ/kg	44.6	44.6	44.6	44.6	44.6	44.6	44.59
Petroleum	MJ/kg							43.96
Diesel	MJ/kg	42.7	42.7	42.7	42.7	42.7	42.7	42.71
Gas/Diesel oil	MJ/kg	42.7	42.7	42.7	42.7	42.7	42.7	42.71
Residual fuel oil	MJ/kg	40.2	40.2	40.2	40.2	40.2	40.2	40.19
Petroleum coke	MJ/kg	31.0	31.0	31.0	31.0	31.0	31.0	31
Refinery gas	MJ/kg							0
Other oil derivates	MJ/kg							0
Gas works gas	MJ/m3	19.5	21.47					0
Other fosil fuels	TJ/TJ	1.0	1.0	1.0	1.0	1.0	1.0	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	2000	2005	2010	2011	2012	2013	2014
Fuel consumption										
Aviation gasoline	1000 t	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
NCV for gasoline	MJ/kg	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59	44.59
Jet kerosene	1000 t	2.00	7.00	8.00	11.00	9.00	10.00	9.00	9.00	8.70
NCV for jet kerosene	MJ/kg	44.00	43.96	43.96	43.96	43.96	43.96	43.96	43.96	43.96
Motor gasoline	1000 t	0.10	0.30	0.10						
NCV motor gasoline	MJ/kg	44.59	44.59	44.59						
Total fuel cunsumption	TJ	**92.46**	**321.10**	**356.14**	**528.15**	**440.23**	**484.19**	**440.23**	**440.23**	**427.04**
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
EF CO2 - jet kerosene	t/TJ	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
CO2 Emission	Gg	**6.60**	**22.93**	**25.45**	**37.70**	**31.41**	**34.55**	**31.41**	**31.41**	**30.47**
EF CH4 - gasoline	kg/TJ	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
EF CH4 - motor gasoline	kg/TJ	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CH4 Emission	Mg	**0.05**	**0.16**	**0.18**	**0.26**	**0.22**	**0.24**	**0.22**	**0.22**	**0.21**
EF N2O - gasoline	kg/TJ	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
EF N2O - motor gasoline	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
N2O Emission	Mg	**0.18**	**0.64**	**0.71**	**1.06**	**0.88**	**0.97**	**0.88**	**0.88**	**0.85**

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

1A3bi	CARS		1990	1995	2000	2005	2010	2011	2012	2013	2014
	FUEL CONSUMPTION										
	Gasoline	t	722.22	527.60	715.13	669.21	593.09	580.87	543.86	532.17	488.51
	Diesel oil	t	36.02	127.46	184.56	402.78	521.75	532.96	597.51	526.04	654.53
	LPG	t	#DIV/0!	13.70	9.80	22.10	58.70	43.10	54.80	56.30	60.40
	CNG	106 m3					0.04	0.02	0.03	0.06	0.35
	Biodiesel	t									
	NCV										
	Gasoline	MJ/kg	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
	LPG	MJ/kg	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
	Biodiesel	MJ/kg									
	EF CO2										
	EF CO2 - gasoline (t/TJ)	t/TJ	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

1A3bii	LIGHT DUTY TRUCKS		1990	1995	2000	2005	2010	2011	2012	2013	2014
	FUEL CONSUMPTION										
	Gasoline	t	28.85449	21.88328	32.40326	11.55513	15.37146	14.31864	10.34877	9.6404377	8.887008
	Diesel oil	t	87.87363	99.68984	158.7776	284.7596	259.2275	249.7932	229.3378	218.40757	164.94157
	LPG	t	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
	Diesel oil	MJ/kg	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
	CNG	MJ/106m3	34	34	34	34	34	34	34	34	34
	Biodiesel	MJ/kg									
	EF CO2										
	EF CO2 - gasoline (t/TJ)	t/TJ	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3	69.3
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

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

1A3bii	HEAVY DUTY TRUCKS+BUSSES		1990	1995	2000	2005	2010	2011	2012	2013	2014
	FUEL CONSUMPTION										
	Gasoline	t	2.2670	1.2115	1.2417	1.2738	1.0036	0.7868	0.6257	0.5699	0.4401
	Diesel oil	t	242.3113	183.2491	214.4574	268.0618	319.0264	303.9509	238.7474	357.8500	300.7254
	LPG	t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	CNG	106 m3					2.5619	0.7806	0.9672	1.8356	3.5457
	Biodiesel	t									
	NCV										
	Gasoline	MJ/kg	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
	LPG	MJ/kg	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
	Biodiesel	MJ/kg	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
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

1A3bi	MOTORCYCLES		1990	1995	2000	2005	2010	2011	2012	2013	2014
	FUEL CONSUMPTION										
	Gasoline	t	6.163	7.205	15.429	11.461	27.137	26.027	23.369	22.315	23.259
	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
	Diesel oil	MJ/kg	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
	CNG	MJ/106m3	34	34	34	34	34	34	34	34	34
	Biodiesel	MJ/kg	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
	EF CO2 - diesel (t/TJ)	t/TJ	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1	74.1
	EF CO2 -LPG (t/TJ)	t/TJ	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1	63.1
	EF CO2 - CNG(t/TJ)	t/TJ	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1	56.1
	EF CO2 - Biodiesel (t/TJ)	t/TJ	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8	70.8

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

		1990	1995	2000	2005	2010	2011	2012	2013	2014
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
NCV for diesel (MJ/kg)	MJ/kg	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel oil (1000 t)	1000 t	0.20	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**
Emissions										
EF CO2 - gasoline (t/TJ)	t/TJ	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - diesel (t/TJ)	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - fuel oil (t/TJ)	t/TJ	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - light heating oil (t/T	t/TJ	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
EF CO2 - brown coal (t/TJ)	t/TJ	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10	96.10
EF CO2 - lignite (t/TJ)	t/TJ	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00	107.00
EF CO2 - jet kerosene (t/TJ)	t/TJ	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50	71.50
EF CO2 - petroleum (t/TJ)	t/TJ									
CO2 Emission (Gg)	Gg	**140.08**	**107.21**	**86.39**	**96.53**	**90.20**	**83.55**	**78.49**	**74.06**	**67.09**
EF CH4 - gasoline (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
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
EF CH4 - fuel oil (kg/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - light heating oil (kg/	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - brown coal (kg/TJ)	kg/TJ	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
EF CH4 - lignite (kg/TJ)	kg/TJ	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EF CH4 - jet kerosene (t/TJ)	kg/TJ	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EF CH4 - petroleum (t/TJ)	kg/TJ									
CH4 Emission (Mg)	Mg	**6.97**	**5.84**	**3.87**	**4.32**	**4.04**	**3.74**	**3.52**	**3.32**	**3.01**
EF N2O - gasoline (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - diesel (kg/TJ)	kg/TJ	28.60	28.60	28.60	28.60	28.60	28.60	28.60	28.60	28.60
EF N2O - fuel oil (kg/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - light heating oil (kg/	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - brown coal (kg/TJ)	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - lignite (kg/TJ)	kg/TJ	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EF N2O - jet kerosene (t/TJ)	kg/TJ	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - petroleum (t/TJ)	kg/TJ									
N2O Emission (Mg)	Mg	**44.46**	**37.58**	**33.23**	**37.26**	**34.81**	**32.25**	**30.29**	**28.58**	**25.90**

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

National navigation		1990	1995	2000	2005	2010	2011	2012	2013	2014
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
NCV for diesel (MJ/kg)		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**
Emissions										
EF CO2 - gasoline (t/TJ)		69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - 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 - light heating oil (t/TJ)		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**
EF CH4 - gasoline (kg/TJ)		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
EF CH4 - fuel oil (kg/TJ)		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
CH4 Emission (Mg)		**12.67**	**9.32**	**8.17**	**9.51**	**10.97**	**11.09**	**10.55**	**11.51**	**13.00**
EF N2O - gasoline (kg/TJ)		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
EF N2O - fuel oil (kg/TJ)		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
N2O Emission (Mg)		**3.48**	**2.53**	**2.33**	**2.72**	**3.13**	**3.17**	**3.01**	**3.29**	**3.62**

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

Commercial/Institutional	1990	1995	2000	2005	2010	2011	2012	2013	2014
Fuel consumption									
Petroleum (1000 t)	3.80	0.20							
NCV for jet kerosene (MJ/kg)	43.94								
Light heating oil (1000 t)	90.30	106.30	120.50	131.60	73.80	64.80	50.00	44.20	36.10
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	2.50	3.90	6.60	8.00	9.70	9.50	4.60	3.20
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	4.30	13.80	13.90	20.10	12.90	13.70	12.10	12.10	12.10
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	12.70	9.50	0.20	2.20	5.20	4.90	0.50	0.10
NCV for brown coal (MJ/kg)	16.74	17.30	17.80	18.50	17.60	17.10	17.80	18.00	16.89
Lignite (1000 t)	40.00	1.60	1.20	0.60	0.30	0.10			0.10
NCV for lignite (MJ/kg)	10.90	10.10	12.00	12.10	11.60	11.60	11.60		10.50
Briquettes (1000 t)	2.90								
NCV for briquettes (MJ/kg)	16.74								
Gas work gas (1000000 m3)	4.90	1.43	1.50	3.43	2.84	2.49	1.87	1.49	1.14
NCV for gas work gas (MJ/m3)	15.82	15.91	19.49	21.47	18.72	17.20	17.20	17.10	17.10
Natural gas (1000000 m3)	124.30	132.60	98.20	151.20	192.70	173.50	162.00	166.00	159.80
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	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	0.00	129.80	157.85	140.00	143.00	177.98
Bio gass (TJ)					102.26	110.60	86.07	75.83	103.20
Total fuel cunsumption (TJ)	**12,190.91**	**10,069.37**	**9,506.60**	**12,053.87**	**10,957.70**	**10,100.13**	**8,938.16**	**8,540.32**	**8,070.23**
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**	**661.70**	**640.93**	**789.25**	**690.73**	**641.00**	**562.78**	**529.07**	**496.89**
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**	**74.66**	**74.97**	**89.75**	**110.66**	**113.30**	**99.01**	**95.31**	**101.22**
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**	**3.66**	**3.86**	**4.16**	**3.40**	**3.33**	**2.82**	**2.46**	**2.34**

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

Residential	1990	1995	2000	2005	2010	2011	2012	2013	2014
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
NCV for gasoline (MJ/kg)	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
Light heating oil (1000 t)	215.90	198.60	231.50	252.80	138.80	122.00	94.50	83.50	68.30
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)	48.70	6.50	8.10	15.40	10.40	11.90	12.30	7.10	5.10
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	97.90	57.30	51.90	60.90	72.20	74.40	56.90	54.20	47.40
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)	123.10	11.10	12.00	14.00	6.10	2.30	4.10	2.60	2.00
NCV for brown coal (MJ/kg)	16.74	17.30	17.80	18.50	17.60	17.10	17.80	18.00	16.89
Lignite (1000 t)	207.30	10.80	15.00	11.70	9.40	9.00	4.80	11.50	7.40
NCV for lignite (MJ/kg)	10.90	10.10	12.00	12.10	11.60	11.60	10.70	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
NCV for gas work gas (MJ/m3)	15.82	15.91	19.49	21.47	17.20	17.20	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
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.60
Solid Biomass-Wood (TJ)	42,170.00	44,091.00	39,690.00	49,824.00	49,539.00	48,344.00	48,329.00	48,003.00	42,254.00
Charcoal (TJ)	0.00	0.00	0.00	0.00	154.00	139.26	83.74	139.00	139.89
Total fuel cunsumption (TJ)	**70,745.62**	**69,669.53**	**70,417.32**	**88,506.38**	**85,088.66**	**81,086.47**	**77,614.69**	**75,511.96**	**66,345.20**
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**
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)-mrki	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 -hard coal (t/TJ)-kameni	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
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 work gas (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
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
EF CO2 - Charcoal (t/TJ)	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00	112.00
CO2 Emission (Gg)	**6,751.88**	**6,571.14**	**6,393.72**	**7,997.56**	**7,703.87**	**7,398.41**	**7,172.20**	**7,027.67**	**6,173.41**
EF CH4 - gasoline (kg/TJ)	**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
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)	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
EF CH4 - hard coal (kg/TJ)	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
EF CH4 - briquettes (kg/TJ)	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
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 -solid biomass wood (kg/T	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
CH4 Emission (Mg)	**14,155.26**	**13,491.21**	**12,230.86**	**15,317.89**	**15,167.07**	**14,766.96**	**14,724.27**	**14,636.06**	**12,874.15**
EF N2O - gasoline (kg/TJ)	**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
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 - hard coal (kg/TJ)	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
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)	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
EF N2O - solid biomass wood (kg/	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
N2O Emission (Mg)	**183.95**	**184.33**	**168.07**	**209.94**	**205.70**	**200.15**	**199.05**	**197.23**	**173.47**

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

Agriculture/forestry/fishing	1990	1995	2000	2005	2010	2011	2012	2013	2014
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
NCV for diesel (MJ/kg)	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71	42.71
Fuel consumption - mobile (TJ)	9,938.74	6,799.60	10,147.90	8,430.95	8,546.27	8,550.54	7,956.87	7,781.76	7,781.76
Fuel oil (1000 t)	12.30	6.20	13.40	4.70	4.40	4.40	4.10	3.50	2.50
NCV for fuel oil (MJ/kg)	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19	40.19
LPG (1000 t)	4.40	3.20	2.60	2.70	2.70	2.70	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
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
NCV for natural gas (MJ/m3)	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.60
Fuel consumption - stationary (TJ)	1,550.65	926.23	1,153.46	1,104.30	1,058.24	1,034.44	985.80	971.89	968.52
Total fuel cunsumption (TJ)	**11,489.39**	**7,725.83**	**11,301.36**	**9,535.25**	**9,604.51**	**9,584.98**	**8,942.68**	**8,753.65**	**8,750.28**
Agriculture/forestry/fishing									
Emissions									
EF CO2 - gasoline (t/TJ)	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30	69.30
EF CO2 - other kerosene (t/TJ)	71.90	71.90	71.90	71.90	71.90	71.90	71.90	71.90	71.90
EF CO2 - diesel (t/TJ)	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10	74.10
CO2 emission (Gg) - mobile	**736.45**	**503.84**	**751.96**	**624.73**	**633.28**	**633.60**	**589.60**	**576.63**	**576.63**
EF CO2 - fuel oil (t/TJ)	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40	77.40
EF CO2 - LPG (t/TJ)	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10	63.10
EF CO2 - gas work gas (t/TJ)	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40	44.40
EF CO2 - natural gas (t/TJ)	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10	56.10
CO2 emission (Gg) - stationary	**98.97**	**58.32**	**77.03**	**66.86**	**64.02**	**62.68**	**59.63**	**58.34**	**57.29**
Total CO2 emission (Gg)	**835.42**	**562.16**	**828.99**	**691.59**	**697.30**	**696.28**	**649.24**	**634.97**	**633.92**
EF CH4 - gasoline (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - other kerosene (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
CH4 emission (Mg) - mobile	**99.39**	**68.00**	**101.48**	**84.31**	**85.46**	**85.51**	**79.57**	**77.82**	**77.82**
EF CH4 - fuel oil (kg/TJ)	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
EF CH4 - LPG (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - gas work gas (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
EF CH4 - natural gas (kg/TJ)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
CH4 emission (Mg) - stationary	**10.22**	**5.88**	**8.46**	**6.47**	**6.18**	**6.06**	**5.75**	**5.56**	**5.34**
Total CH4 emission (Mg)	**109.61**	**73.87**	**109.94**	**90.78**	**91.64**	**91.56**	**85.32**	**83.38**	**83.16**
EF N2O - gasoline (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - other kerosene (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
N2O emission (Mg) - mobile	**5.96**	**4.08**	**6.09**	**5.06**	**5.13**	**5.13**	**4.77**	**4.67**	**4.67**
EF N2O - fuel oil (kg/TJ)	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
EF N2O - LPG (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - gas work gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
EF N2O - natural gas (kg/TJ)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
N2O emission (Mg) - stationary	**0.40**	**0.22**	**0.38**	**0.20**	**0.19**	**0.19**	**0.18**	**0.17**	**0.15**
Total N2O emission (Mg)	**6.37**	**4.30**	**6.47**	**5.26**	**5.32**	**5.32**	**4.96**	**4.84**	**4.82**

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
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
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
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
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
Well Testing	Gg/10^3 m^3 total oil production	Flaring and Venting	1.B.2.a.ii	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03	9.00E-03
Well Servicing	Gg/10^3 m^3 total oil production	Flaring and Venting	1.B.2.a.ii	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06	1.90E-06
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
Well Testing	Gg/10^3 m^3 total oil production	Flaring and Venting	1.B.2.a.ii	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05	5.10E-05
Well Servicing	Gg/10^3 m^3 total oil production	Flaring and Venting	1.B.2.a.ii	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04	1.10E-04
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
Well Testing	Gg/10^3 m^3 total oil production	Flaring and Venting	1.B.2.a.ii	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08	6.80E-08
Well Servicing	Gg/10^3 m^3 total oil production	Flaring and Venting	1.B.2.a.ii	ND	ND	ND	ND	ND	ND	ND	ND	ND
2. Production	**Unit**	**Emission source**	**IPCC Code**									
ACTIVITY DATA												
Conventional oil	10^3 m^3 total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	3135.12	1744.53	1411.51	1100.00	837.67	772.56	697.56	698.49	689.77
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
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
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
Conventional oil	Gg/10^3 m^3 total oil production	Venting	1.B.2.a.i	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05	9.50E-05
Conventional oil	Gg/10^3 m^3 total oil production	Flaring	1.B.2.a.ii	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02	4.10E-02
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
Conventional oil	Gg/10^3 m^3 total oil production	Venting	1.B.2.a.i	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04	7.20E-04
Conventional oil	Gg/10^3 m^3 total oil production	Flaring	1.B.2.a.ii	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05
N2O												
Conventional oil	Gg/10^3 m^3 total oil production	Fugitives (Onshore)	1.B.2.a.iii.2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conventional oil	Gg/10^3 m^3 total oil production	Venting	1.B.2.a.i	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conventional oil	Gg/10^3 m^3 total oil production	Flaring	1.B.2.a.ii	6.4E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07
3. Transport	**Unit**	**Emission source**	**IPCC Code**									
ACTIVITY DATA												
Pipelines	10^3 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	6275.87
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
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
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
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	2838.84
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
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
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

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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
Transmission	Gg/10^6 m^3 marketable gas	Venting	1.B.2.b.i	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06	3.10E-06
Storage	Gg/10^6 m^3 marketable gas	All	1.B.2.b.iii.4	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07	1.10E-07
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
Transmission	Gg/10^6 m^3 marketable gas	Venting	1.B.2.b.i	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04	1.82E-04
Storage	Gg/10^6 m^3 marketable gas	All	1.B.2.b.iii.4	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05	2.50E-05
5. Distribution of I	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
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
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

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
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
EMISSION FACTOR												
N2O												
Conventional oil	Gg/10^3 m^3 total oil production	Flaring	1.B.2.a.ii	6.4E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07	6.40E-07
3. Transport	Unit	mission sourc	IPCC Code									
ACTIVITY DATA												
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	41.30
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
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
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

1. B. 2. c. 2 ii Venting anf Flaring - Gas				1990	1995	2000	2005	2010	2011	2012	2013	2014
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
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
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
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
4. Transmission and storage	Unit	ssion sou	IPCC Code									
ACTIVITY DATA												
Transmission	10^6 m^3 marketable gas	Fugitives	1.B.2.b.iii.4	2686.6	2367.9	2704.8	2909.9	3241.5	3165	2971.7	2809.9	2443.6
EMISSION FACTOR												
N2O												
Transmission	Gg/10^6 m^3 marketable gas	Fugitives	1.B.2.b.iii.4	NA	NA	NA	NA	NA	NA	NA	NA	NA
5. Distribution of Natural Gas	Unit	ssion sou	IPCC Code									
ACTIVITY DATA												
Gas distribution	10^6 m^3 of utility sales (consumption of natural gas in 1A4-Other sectors)	All	1.B.2.a.iii.5	379.3	529.4	609.3	862.2	944.6	865.2	812.9	788.3	705.6
EMISSION FACTOR												
N2O												
Gas distribution	Gg/10^6 m^3 of utility sales	All	1.B.2.a.iii.5	ND	ND	ND	ND	ND	ND	ND	ND	ND

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

Table A4-1: National Energy balance for 2014, 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					593.2	1747.0
Import	2.2	959.4	36.4	7.5	1851.2	1132.6
Export	0.7	12.6				433.9
Import-processing						
Export-processing						
Stock change		79.7	2.2		-3.0	-2.1
Bunkers						
Energy supplied	**1.5**	**1026.5**	**38.6**	**7.5**	**2441.4**	**2443.6**
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		919.0				0.6
public cogeneration plants						352.1
public heating plants						71.6
industrial cogeneration plants			35.0			307.3
– in rafineries						68.0
– in gas production						44.1
Industrial heating plants						52.8
Petroleum refineries					2388.7	86.6
NGL-plant					52.7	3.7
Coke plant						
Gas works						1.1
Total transformation sector		**919.0**	**35.0**		**2441.4**	**875.8**
Energy sector own use						
Oil and gas extraction						44.3
Coal production						
Electric energy supply industry						
hydro power plants						
thermal power plants						
public cogeneration plants						
industrial cogeneration plants						
Wind power						
Petroleum refineries						72.6
NGL-plant						3.3
Gas works						
Total energy sector own use						**120.2**
Losses						**29.0**
Final energy demand	**1.5**	**107.5**	**3.6**	**7.5**	**0.0**	**1418.6**
Non energy use						**500.7**
Energy sector						
Petrochemical industry						500.7
Other industry						
Construction						
Transport						
Agriculture						
Energy consumption	**1.5**	**107.5**	**3.6**	**7.5**	**0.0**	**917.9**
Industry	**1.5**	**107.5**	**1.5**			**208.4**
Iron and steel	1.5					14.6
Non-ferrous metals						1.1
Non-metallic minerals						44.9
Chemical						9.7
Construction materials		106.6	1.5			36.3
Pulp and paper						5.7
Food production		0.9				61.5
Not elsewhere specified						34.6
Transport						**3.9**
Rail						
Road						0.2
Air						
– international						
– domestic						
Sea and River						
Public transport						3.7
Not elsewhere specified						
Other sectors			**2.1**	**7.5**		**705.6**
Households			2.0	7.4		524.1
Services			0.1	0.1		159.8
Agriculture						21.7
Construction						

Table A4-1: National Energy balance for 2014, 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	88988.4	5302.2	7119.6	728.0	446.3	60519.0	34.7	9945.7
Import		17.3					0.2	328.4
Export		659.5					1.5	5995.7
Import-processing								
Export-processing								
Stock change								-402.7
Bunkers								
Energy supplied	**88988.4**	**4660.0**	**7119.6**	**728.0**	**446.3**	**60519.0**	**33.4**	**3875.7**
Production								
hydro power plants								
– small HPP								
Wind power plants								
Solar power plants								
Geothermal power plants								
thermal power plants								
public cogeneration plants								
public heating plants								
industrial cogeneration plants								
– in rafineries								
– in gas production								
Industrial heating plants								
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total production								
Transformation sector								
hydro power plants	88988.4							
– small HPP	1283.5							
Wind power plants			7119.6					
Solar power plants				343.3				
Geothermal power plants								
thermal power plants						23315.0		
public cogeneration plants						25160.0		1190.3
public heating plants								
industrial cogeneration plants						5924.0		
– in rafineries								
– in gas production								
Industrial heating plants								1135.2
Petroleum refineries								
NGL-plant								
Coke plant								
Gas works								
Total transformation sector	**88988.4**		**7119.6**	**343.3**		**54399.0**		**2325.5**
Energy sector own use								
Oil and gas extraction								
Coal production								
Electric energy supply industry								
hydro power plants								
thermal power plants								
public cogeneration plants								
industrial cogeneration plants								
Wind power								
Petroleum refineries								
NGL-plant								
Gas works								
Total energy sector own use								
Losses						**6120.0**		
Final energy demand		**4660.0**		**384.7**	**446.3**		**33.4**	**1550.2**
Non energy use								
Energy sector								
Petrochemical industry								
Other industry								
Construction								
Transport								
Agriculture								
Energy consumption		**4660.0**		**384.7**	**446.3**		**33.4**	**1550.2**
Industry		**47.3**						**495.3**
Iron and steel		0.3						
Non-ferrous metals		0.4						
Non-metallic minerals								
Chemical								
Construction materials		0.7						437.0
Pulp and paper								
Food production		10.6						
Not elsewhere specified		35.3						58.3
Transport							**33.4**	
Rail								
Road							32.8	
Air								
– international								
– domestic								
Sea and River								
Public transport							0.6	
Not elsewhere specified								
Other sectors		**4612.7**		**384.7**	**446.3**			**1054.9**
Households		4602.0		384.7				991.6
Services		10.7			276.8			63.3
Agriculture					169.5			
Construction								

Table A4-1: National Energy balance for 2014, natural units, cont.

ENERGY BALANCE 2014 *natural units*	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
	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		225.3	805.0			105.8	951.1	112.5	26.4	397.2
Import	27.6	43.4	141.5	0.5	2.2	26.9	989.7	29.5	1.4	28.8
Export	0.9	131.8	427.7			4.1	487.9	40.4	26.2	309.0
Import-processing										
Export-processing										
Stock change	2.3	2.0	13.9			-4.5	-7.8	40.2	-0.2	46.4
Bunkers										
Energy supplied	**29.0**	**138.9**	**532.7**	**0.5**	**2.2**	**124.1**	**1445.1**	**141.8**	**1.4**	**163.4**
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		189.0	805.0			105.8	951.1	112.5	26.4	397.2
NGL-plant		36.3								
Coke plant										
Gas works										
Total production		**225.3**	**805.0**			**105.8**	**951.1**	**112.5**	**26.4**	**397.2**
Transformation sector										
hydro power plants										
– small HPP										
Wind power plants										
Solar power plants										
Geothermal power plants										
thermal power plants								1.0		1.6
public cogeneration plants										26.8
public heating plants								3.1		2.9
industrial cogeneration plants										52.3
– in rafineries										49.3
– in gas production										
Industrial heating plants								0.4		6.8
Petroleum refineries										
NGL-plant										
Coke plant										
Gas works										
Total transformation sector								**4.5**		**90.4**
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										51.5
NGL-plant										
Gas works										
Total energy sector own use										**51.5**
Losses										
Final energy demand	**29.0**	**138.9**	**532.7**	**0.5**	**2.2**	**124.1**	**1445.1**	**137.3**	**1.4**	**21.5**
Non energy use										
Energy sector										
Petrochemical industry										
Other industry										
Construction										
Transport										
Agriculture										
Energy consumption	**29.0**	**138.9**	**532.7**	**0.5**	**2.2**	**124.1**	**1445.1**	**137.3**	**1.4**	**21.5**
Industry	**29.0**	**14.6**			**2.0**		**11.6**	**15.4**	**1.4**	**10.3**
Iron and steel	2.5	2.2						0.5		0.7
Non-ferrous metals		4.2			0.6			0.7		
Non-metallic minerals		0.2								
Chemical		0.2			1.4			0.5		
Construction materials	21.3	2.4					11.6	2.5		4.9
Pulp and paper		0.1								
Food production	5.2	1.5						8.5	1.4	3.6
Not elsewhere specified		3.8						2.7		1.1
Transport		**60.4**	**521.1**	**0.5**		**124.1**	**1183.4**	**1.1**		**0.4**
Rail							21.2			
Road		60.4	521.1				1097.3			
Air				0.5		124.1				
– international				0.1		115.4				
– domestic				0.4		8.7				
Sea and River							42.0	1.1		0.4
Public transport							22.9			
Not elsewhere specified										
Other sectors		**63.9**	**11.6**		**0.2**		**250.1**	**120.8**		**10.8**
Households		47.4			0.2			68.3		5.1
Services		12.1						36.1		3.2
Agriculture		2.5	7.5				171.5	10.7		2.5
Construction		1.9	4.1				78.6	5.7		

Table A4-1: National Energy balance for 2014, 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	50.9		2.6	12.9		34.7		8.9
Import		2.9	111.2	26.8	7.1	164.7		
Export	36.8	0.1	0.4	10.1	0.1	28.4		44.7
Import-processing								
Export-processing								
Stock change	5.6		1.9	0.2		9.3		38.0
Bunkers								
Energy supplied	**19.7**	**2.8**	**115.3**	**29.8**	**7.0**	**180.3**		**2.2**
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	33.1		2.6	12.9		34.7		8.9
NGL-plant	17.8							
Coke plant								
Gas works								
Total production	**50.9**		**2.6**	**12.9**		**34.7**		**8.9**
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	19.7							
NGL-plant								
Coke plant								
Gas works								
Total transformation sector	**19.7**							
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						25.3		
NGL-plant								
Gas works								
Total energy sector own use						**25.3**		
Losses								
Final energy demand	**0.0**	**2.8**	**115.3**	**29.8**	**7.0**	**155.0**		**2.2**
Non energy use		**2.8**	**115.3**	**29.8**	**7.0**			**2.2**
Energy sector				1.9				
Petrochemical industry								
Other industry		2.8	10.5	5.7	7.0			2.2
Construction			104.8	1.2				
Transport				19.6				
Agriculture				1.4				
Energy consumption	**0.0**					**155.0**		**0.0**
Industry						**155.0**		
Iron and steel						0.3		
Non-ferrous metals								
Non-metallic minerals								
Chemical								
Construction materials						154.7		
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 2014, natural units, cont.

ENERGY BALANCE 2014 natural units	Refinery gas	Refinery semiproducts	Aditives	Gas works gas	Electricity	Steam and hot water	Industrial waste, non renewable
	10^3 t	10^3 t	10^3 t	10^3 m^3	GWh	TJ	TJ
Production	276.2			2207.9	13553.8	23298.3	424.9
Import		444.1	57.8		6777.1		
Export					2824.2		
Import-processing							
Export-processing							
Stock change		9.0	-0.1				
Bunkers							
Energy supplied	**276.2**	**453.1**	**57.7**	**2207.9**	**17506.7**	**23298.3**	**424.9**
Production							
hydro power plants					9124.3		
– small HPP					131.6		
Wind power plants					730.0		
Solar power plants					35.2		
Geothermal power plants							
thermal power plants					2374.3		
public cogeneration plants					951.8	8014.3	
public heating plants						2112.6	
industrial cogeneration plants					338.2	10002.9	
– in rafineries					109.0	3487.4	
– in gas production					62.5	930.3	
Industrial heating plants						2640.3	
Petroleum refineries	276.2						
NGL-plant							
Coke plant							
Gas works				2207.9			
Total production	**276.2**			**2207.9**	**13553.8**	**22770.1**	
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	10.6						
– in rafineries	10.6						
– in gas production							
Industrial heating plants							
Petroleum refineries		453.1	57.7				
NGL-plant							
Coke plant							
Gas works							
Total transformation sector	**10.6**	**453.1**	**57.7**				
Energy sector own use							
Oil and gas extraction					103.6	685.5	
Coal production						56.8	
Electric energy supply industry					26.9		
hydro power plants					206.5		
thermal power plants					228.9		
public cogeneration plants					107.2	573.4	
industrial cogeneration plants							
Wind power					3.0		
Petroleum refineries	265.6				240.9	3487.4	
NGL-plant					10.8	244.8	
Gas works							
Total energy sector own use	**265.6**				**927.8**	**5047.9**	
Losses				**13.3**	**1763.5**	**1415.4**	
Final energy demand	**0.0**		**0.0**	**2194.6**	**14815.4**	**16835.0**	**424.9**
Non energy use							
Energy sector							
Petrochemical industry							
Other industry							
Construction							
Transport							
Agriculture							
Energy consumption	**0.0**		**0.0**	**2194.6**	**14815.4**	**16835.0**	**424.9**
Industry					**3219.1**	**9975.1**	**424.9**
Iron and steel					355.6	52.1	
Non-ferrous metals					78.9		
Non-metallic minerals					126.9	107.1	
Chemical					276.1	4116.9	
Construction materials					465.2		424.9
Pulp and paper					167.7	821.2	
Food production					690.2	3066.6	
Not elsewhere specified					1058.5	1811.2	
Transport					**275.0**		
Rail					144.6		
Road							
Air					22.4		
– international							
– domestic					22.4		
Sea and River					21.2		
Public transport					61.8		
Not elsewhere specified					25.0		
Other sectors				**2194.6**	**11321.3**	**6859.9**	
Households				1058.9	5628.8	5315.7	
Services				1135.7	5549.2	1322.0	
Agriculture					62.6	222.2	
Construction					80.7		

Table A4-2: National Energy balance for 2014, energy units

PJ	Anthracite	Hard coal	Brown coal	Lignite	Crude oil	Natural gas
Production	-	-	-	-	25.38	60.518
Import	0.06	23.79	0.61	0.08	79.05	39.188
Export	0.02	0.31	-	-	-	15.013
Import-processing	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-
Stock change	-	1.98	0.04	-	- 0.13	- 0.073
Bunkers	-	-	-	-	-	-
Energy supplied	**0.04**	**25.46**	**0.65**	**0.08**	**104.30**	**84.62**
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	**0.04**	**25.46**	**0.65**	**0.08**	**104.30**	**84.62**
Transformation sector	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-
– small HPP	-	-	-	-	-	-
Wind power plants	-	-	-	-	-	-
Solar power plants	-	-	-	-	-	-
Geothermal power plants	-	-	-	-	-	-
thermal power plants	-	22.64	-	-	-	0.02
public cogeneration plants	-	-	-	-	-	12.18
public heating plants	-	-	-	-	-	2.48
industrial cogeneration plants	-	-	0.59	-	-	10.63
– in rafineries	-	-	-	-	-	2.35
– in gas production	-	-	-	-	-	1.53
Industrial heating plants	-	-	-	-	-	1.83
Petroleum refineries	-	-	-	-	102.00	3.00
NGL-plant	-	-	-	-	2.30	0.20
Coke plant	-	-	-	-	-	-
Gas works	-	-	-	-	-	0.04
Total transformation sector	**-**	**22.64**	**0.59**	**-**	**104.30**	**30.37**
Energy sector own use	-	-	-	-	-	-
Oil and gas extraction	-	-	-	-	-	1.53
Coal production	-	-	-	-	-	-
Electric energy supply industry	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	-
public cogeneration plants	-	-	-	-	-	-
industrial cogeneration plants	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-
Petroleum refineries	-	-	-	-	-	2.51
NGL-plant	-	-	-	-	-	0.11
Gas works	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**4.16**
Losses	-	-	-	-	-	1.00
Final energy demand	**0.04**	**2.82**	**0.06**	**0.08**	**0.00**	**49.08**
Non energy use	**-**	**-**	**-**	**-**	**-**	**17.32**
Energy sector	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	17.32
Other industry	-	-	-	-	-	-
Construction	-	-	-	-	-	-
Transport	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-
Energy consumption	**0.04**	**2.82**	**0.06**	**0.08**	**0.00**	**31.76**
Industry	**0.04**	**2.82**	**0.03**	**-**	**-**	**7.21**
Iron and steel	0.04	-	-	-	-	0.51
Non-ferrous metals	-	-	-	-	-	0.04
Non-metallic minerals	-	-	-	-	-	1.55
Chemical	-	-	-	-	-	0.34
Construction materials	-	2.79	0.03	-	-	1.26
Pulp and paper	-	-	-	-	-	0.20
Food production	-	0.02	-	-	-	2.13
Not elsewhere specified	-	-	-	-	-	1.20
Transport	**-**	**-**	**-**	**-**	**-**	**0.13**
Rail	-	-	-	-	-	-
Road	-	-	-	-	-	0.01
Air	-	-	-	-	-	-
– international	-	-	-	-	-	-
– domestic	-	-	-	-	-	-
Sea and River	-	-	-	-	-	-
Public transport	-	-	-	-	-	0.13
Not elsewhere specified	-	-	-	-	-	-
Other sectors	**-**	**-**	**0.04**	**0.08**	**-**	**24.41**
Households	-	-	0.03	0.08	-	18.13
Services	-	-	0.00	0.00	-	5.53
Agriculture	-	-	-	-	-	0.75
Construction	-	-	-	-	-	-

Table A4-2: National Energy balance for 2014, energy units, cont.

PJ	Hydro energy	Fuel wood	Wind energy	Solar energy	Geothermal energy	Landfill gas	Biofuels	Other biomass
Production	88.99	47.720	7.120	0.728	0.446	1.0961	1.301	9.946
Import	-	0.16	-	-	-	-	0.01	0.33
Export	-	5.94	-	-	-	-	0.06	6.00
Import-processing	-	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-	-
Stock change	-	-	-	-	-	-	-	- 0.40
Bunkers	-	-	-	-	-	-	-	-
Energy supplied	**88.99**	**41.94**	**7.12**	**0.73**	**0.45**	**1.0961**	**1.25**	**3.88**
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	**88.99**	**41.94**	**7.12**	**0.73**	**0.45**	**1.0961**	**1.25**	**3.88**
Transformation sector	-	-	-	-	-	-	-	-
hydro power plants	88.99	-	-	-	-	-	-	-
– small HPP	1.28	-	-	-	-	-	-	-
Wind power plants	-	-	7.12	-	-	-	-	-
Solar power plants	-	-	-	0.34	-	-	-	-
Geothermal power plants	-	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	0.3890	-	-
public cogeneration plants	-	-	-	-	-	0.4823	-	1.19
public heating plants	-	-	-	-	-	-	-	-
industrial cogeneration plants	-	-	-	-	-	0.1205	-	-
– in rafineries	-	-	-	-	-	-	-	-
– in gas production	-	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-	-	1.14
Petroleum refineries	-	-	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total transformation sector	**88.99**	**-**	**7.12**	**0.34**	**-**	**0.9917**	**-**	**2.33**
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	-	-	-	-	-	0.1044	-	-
Final energy demand	**-**	**41.94**	**-**	**0.38**	**0.45**	**-**	**1.25**	**1.55**
Non energy use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Energy sector	-	-	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-	-
Other industry	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-
Energy consumption	**-**	**41.94**	**-**	**0.38**	**0.45**	**-**	**1.25**	**1.55**
Industry	**-**	**0.43**	**-**	**-**	**-**	**-**	**-**	**0.50**
Iron and steel	-	0.00	-	-	-	-	-	-
Non-ferrous metals	-	0.00	-	-	-	-	-	-
Non-metallic minerals	-	-	-	-	-	-	-	-
Chemical	-	-	-	-	-	-	-	-
Construction materials	-	0.01	-	-	-	-	-	0.44
Pulp and paper	-	-	-	-	-	-	-	-
Food production	-	0.10	-	-	-	-	-	-
Not elsewhere specified	-	0.32	-	-	-	-	-	0.06
Transport	**-**	**-**	**-**	**-**	**-**	**-**	**1.25**	**-**
Rail	-	-	-	-	-	-	-	-
Road	-	-	-	-	-	-	1.23	-
Air	-	-	-	-	-	-	-	-
– international	-	-	-	-	-	-	-	-
– domestic	-	-	-	-	-	-	-	-
Sea and River	-	-	-	-	-	-	-	-
Public transport	-	-	-	-	-	-	0.02	-
Not elsewhere specified	-	-	-	-	-	-	-	-
Other sectors	**-**	**41.51**	**-**	**0.38**	**0.45**	**-**	**-**	**1.05**
Households	-	41.42	-	0.38	-	-	-	0.99
Services	-	0.10	-	-	0.28	-	-	0.06
Agriculture	-	-	-	-	0.17	-	-	-
Construction	-	-	-	-	-	-	-	-

Table A4-2: National Energy balance for 2014, 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	0.81	2.04	6.31	0.02	0.10	1.18	42.27	1.26	0.06	1.16
Export	0.03	6.18	19.07	-	-	0.18	20.84	1.73	1.05	12.42
Import-processing	-	-	-	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-	-	-	-
Stock change	0.07	0.09	0.62	-	-	- 0.20	- 0.33	1.72	- 0.01	1.86
Bunkers	-	-	-	-	-	-	-	-	-	-
Energy supplied	**0.85**	**- 4.05**	**- 12.14**	**0.02**	**0.10**	**0.80**	**21.10**	**1.25**	**- 1.00**	**- 9.40**
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	-	8.86	35.89	-	-	4.65	40.62	4.80	1.06	15.96
NGL-plant	-	1.70	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-
Total production	**-**	**10.56**	**35.89**	**-**	**-**	**4.65**	**40.62**	**4.80**	**1.06**	**15.96**
Gross production	**0.85**	**6.51**	**23.75**	**0.02**	**0.10**	**5.46**	**61.72**	**6.06**	**0.06**	**6.57**
Transformation sector	-	-	-	-	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-	-	-	-	-
– small HPP	-	-	-	-	-	-	-	-	-	-
Wind power plants	-	-	-	-	-	-	-	-	-	-
Solar power plants	-	-	-	-	-	-	-	-	-	-
Geothermal power plants	-	-	-	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	-	-	0.04	-	0.06
public cogeneration plants	-	-	-	-	-	-	-	-	-	1.08
public heating plants	-	-	-	-	-	-	-	0.13	-	0.12
industrial cogeneration plants	-	-	-	-	-	-	-	-	-	2.10
– in rafineries	-	-	-	-	-	-	-	-	-	1.98
– in gas production	-	-	-	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-	-	0.02	-	0.27
Petroleum refineries	-	-	-	-	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-
Total transformation sector	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.19**	**-**	**3.63**
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	-	-	-	-	-	-	-	-	-	2.07
NGL-plant	-	-	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.07**
Losses	-	-	-	-	-	-	-	-	-	-
Final energy demand	**0.85**	**6.51**	**23.75**	**0.02**	**0.10**	**5.46**	**61.72**	**5.86**	**0.06**	**0.86**
Non energy use	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Energy sector	-	-	-	-	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-	-	-	-
Other industry	-	-	-	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-	-	-	-
Energy consumption	**0.85**	**6.51**	**23.75**	**0.02**	**0.10**	**5.46**	**61.72**	**5.86**	**0.06**	**0.86**
Industry	**0.85**	**0.68**	**-**	**-**	**0.09**	**-**	**0.50**	**0.66**	**0.06**	**0.41**
Iron and steel	0.07	0.10	-	-	-	-	-	0.02	-	0.03
Non-ferrous metals	-	0.20	-	-	0.03	-	-	0.03	-	-
Non-metallic minerals	-	0.01	-	-	-	-	-	-	-	-
Chemical	-	0.01	-	-	0.06	-	-	0.02	-	-
Construction materials	0.62	0.11	-	-	-	-	0.50	0.11	-	0.20
Pulp and paper	-	0.00	-	-	-	-	-	-	-	-
Food production	0.15	0.07	-	-	-	-	-	0.36	0.06	0.14
Not elsewhere specified	-	0.18	-	-	-	-	-	0.12	-	0.04
Transport	**-**	**2.83**	**23.24**	**0.02**	**-**	**5.46**	**50.54**	**0.05**	**-**	**0.02**
Rail	-	-	-	-	-	-	0.91	-	-	-
Road	-	2.83	23.24	-	-	-	46.87	-	-	-
Air	-	-	-	0.02	-	5.46	-	-	-	-
– international	-	-	-	0.00	-	5.07	-	-	-	-
– domestic	-	-	-	0.02	-	0.38	-	-	-	-
Sea and River	-	-	-	-	-	-	1.79	0.05	-	0.02
Public transport	-	-	-	-	-	-	0.98	-	-	-
Not elsewhere specified	-	-	-	-	-	-	-	-	-	-
Other sectors	**-**	**3.00**	**0.52**	**-**	**0.01**	**-**	**10.68**	**5.16**	**-**	**0.43**
Households	-	2.22	-	-	0.01	-	-	2.92	-	0.20
Services	-	0.57	-	-	-	-	-	1.54	-	0.13
Agriculture	-	0.12	0.33	-	-	-	7.32	0.46	-	0.10
Construction	-	0.09	0.18	-	-	-	3.36	0.24	-	-

Table A4-2: National Energy balance for 2014, energy units, cont.

PJ	Naphta	White spirit	Bitumen	Other oils	Lubricants	Petroleum coke	Etan	Other derivates
Production	-	-	-	-	-	-	-	-
Import	-	0.10	3.73	0.90	0.24	5.11	-	-
Export	1.64	0.00	0.01	0.34	0.00	0.88	-	1.80
Import-processing	-	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-	-
Stock change	0.25	-	0.06	0.01	-	0.29	-	1.53
Bunkers	-	-	-	-	-	-	-	-
Energy supplied	**- 1.39**	**0.09**	**3.78**	**0.57**	**0.23**	**4.51**	**-**	**- 0.27**
Production	-	-	-	-	-	-	-	-
hydro power plants	-	-	-	-	-	-	-	-
– small HPP	-	-	-	-	-	-	-	-
Wind power plants	-	-	-	-	-	-	-	-
Solar power plants	-	-	-	-	-	-	-	-
Geothermal power plants	-	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	-	-	-	-
public cogeneration plants	-	-	-	-	-	-	-	-
public heating plants	-	-	-	-	-	-	-	-
industrial cogeneration plants	-	-	-	-	-	-	-	-
– in rafineries	-	-	-	-	-	-	-	-
– in gas production	-	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-	-	-
Petroleum refineries	1.48	-	0.09	0.43	-	1.08	-	0.36
NGL-plant	0.79	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total production	**2.27**	**-**	**0.09**	**0.43**	**-**	**1.08**	**-**	**0.36**
Gross production	**0.88**	**0.09**	**3.86**	**1.00**	**0.23**	**5.59**	**-**	**0.09**
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	0.88	-	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total transformation sector	**0.88**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
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	-	-	-	-	-	0.78	-	-
NGL-plant	-	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-	-
Total energy sector own use	**-**	**-**	**-**	**-**	**-**	**0.78**	**-**	**-**
Losses	-	-	-	-	-	-	-	-
Final energy demand	**0.00**	**0.09**	**3.86**	**1.00**	**0.23**	**4.81**	**-**	**0.09**
Non energy use	**-**	**0.09**	**3.86**	**1.00**	**0.23**	**-**	**-**	**0.09**
Energy sector	-	-	-	0.06	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-	-
Other industry	-	0.09	0.35	0.19	0.23	-	-	0.09
Construction	-	-	3.51	0.04	-	-	-	-
Transport	-	-	-	0.66	-	-	-	-
Agriculture	-	-	-	0.05	-	-	-	-
Energy consumption	**0.00**	**-**	**-**	**-**	**-**	**4.81**	**-**	**- 0.00**
Industry	**-**	**-**	**-**	**-**	**-**	**4.81**	**-**	**-**
Iron and steel	-	-	-	-	-	0.01	-	-
Non-ferrous metals	-	-	-	-	-	-	-	-
Non-metallic minerals	-	-	-	-	-	-	-	-
Chemical	-	-	-	-	-	-	-	-
Construction materials	-	-	-	-	-	4.80	-	-
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 2014, energy units, cont.

PJ	Refinery gas	Refinery semiproducts	Aditives	Gas works gas	Electricity	Steam and hot water	Industrial waste, non renewable
Production	-	-	-	-	-	0.53	0.42
Import	-	18.96	2.47	-	24.40	-	-
Export	-	-	-	-	10.17	-	-
Import-processing	-	-	-	-	-	-	-
Export-processing	-	-	-	-	-	-	-
Stock change	-	0.38	- 0.00	-	-	-	-
Bunkers	-	-	-	-	-	-	-
Energy supplied	**-**	**19.35**	**2.46**	**-**	**14.23**	**0.53**	**0.42**
Production	-	-	-	-	-	-	-
hydro power plants	-	-	-	-	32.85	-	-
– small HPP	-	-	-	-	0.47	-	-
Wind power plants	-	-	-	-	2.63	-	-
Solar power plants	-	-	-	-	0.13	-	-
Geothermal power plants	-	-	-	-	-	-	-
thermal power plants	-	-	-	-	8.55	-	-
public cogeneration plants	-	-	-	-	3.43	8.01	-
public heating plants	-	-	-	-	-	2.11	-
industrial cogeneration plants	-	-	-	-	1.22	10.00	-
– in rafineries	-	-	-	-	0.39	3.49	-
– in gas production	-	-	-	-	0.23	0.93	-
Industrial heating plants	-	-	-	-	-	2.64	-
Petroleum refineries	11.77	-	-	-	-	-	-
NGL-plant	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-
Gas works	-	-	-	0.04	-	-	-
Total production	**11.77**	**-**	**-**	**0.04**	**48.79**	**22.77**	**-**
Gross production	**11.77**	**19.35**	**2.46**	**0.04**	**63.02**	**23.30**	**0.42**
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	0.45	-	-	-	-	-	-
– in rafineries	0.45	-	-	-	-	-	-
– in gas production	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	-	-	-
Petroleum refineries	-	19.35	2.46	-	-	-	-
NGL-plant	-	-	-	-	-	-	-
Coke plant	-	-	-	-	-	-	-
Gas works	-	-	-	-	-	-	-
Total transformation sector	**0.45**	**19.35**	**2.46**	**-**	**-**	**-**	**-**
Energy sector own use	-	-	-	-	-	-	-
Oil and gas extraction	-	-	-	-	0.37	0.69	-
Coal production	-	-	-	-	-	0.06	-
Electric energy supply industry	-	-	-	-	0.10	-	-
hydro power plants	-	-	-	-	0.74	-	-
thermal power plants	-	-	-	-	0.82	-	-
public cogeneration plants	-	-	-	-	0.39	0.57	-
industrial cogeneration plants	-	-	-	-	-	-	-
Industrial heating plants	-	-	-	-	0.01	-	-
Petroleum refineries	11.31	-	-	-	0.87	3.49	-
NGL-plant	-	-	-	-	0.04	0.24	-
Gas works	-	-	-	-	-	-	-
Total energy sector own use	**11.31**	**-**	**-**	**-**	**3.34**	**5.05**	**-**
Losses	-	-	-	0.00	6.35	1.42	-
Final energy demand	**- 0.00**	**-**	**- 0.00**	**0.04**	**53.34**	**16.84**	**0.42**
Non energy use	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Energy sector	-	-	-	-	-	-	-
Petrochemical industry	-	-	-	-	-	-	-
Other industry	-	-	-	-	-	-	-
Construction	-	-	-	-	-	-	-
Transport	-	-	-	-	-	-	-
Agriculture	-	-	-	-	-	-	-
Energy consumption	**- 0.00**	**-**	**- 0.00**	**0.04**	**53.34**	**16.84**	**0.42**
Industry	**-**	**-**	**-**	**-**	**11.59**	**9.98**	**0.42**
Iron and steel	-	-	-	-	1.28	0.05	-
Non-ferrous metals	-	-	-	-	0.28	-	-
Non-metallic minerals	-	-	-	-	0.46	0.11	-
Chemical	-	-	-	-	0.99	4.12	-
Construction materials	-	-	-	-	1.67	-	0.42
Pulp and paper	-	-	-	-	0.60	0.82	-
Food production	-	-	-	-	2.48	3.07	-
Not elsewhere specified	-	-	-	-	3.81	1.81	-
Transport	**-**	**-**	**-**	**-**	**0.99**	**-**	**-**
Rail	-	-	-	-	0.52	-	-
Road	-	-	-	-	-	-	-
Air	-	-	-	-	0.08	-	-
– international	-	-	-	-	-	-	-
– domestic	-	-	-	-	0.08	-	-
Sea and River	-	-	-	-	0.08	-	-
Public transport	-	-	-	-	0.22	-	-
Not elsewhere specified	-	-	-	-	0.09	-	-
Other sectors	**-**	**-**	**-**	**0.04**	**40.76**	**6.86**	**-**
Households	-	-	-	0.02	20.26	5.32	-
Services	-	-	-	0.02	19.98	1.32	-
Agriculture	-	-	-	-	0.23	0.22	-
Construction	-	-	-	-	0.29	-	-

ANNEX 5: ANY ADDITIONAL INFORMATION

ANNEX 5-1: ARCHIVING, INVENTORY DATA RECORD SHEET

INVENTORY DATA RECORD SHEET

Year: 2014

MODULE: WASTE	
SUBMODULE: SOLID WASTE DISPOSAL	
WORKSHEET: 5.A Solid waste disposal	**SHEET**: 2014
STEP: 1 to 4	**PAGE**: 1 to 2

DIRECT DATA SOURCE:

A. ACTIVITY DATA:

Environmental Pollution Register database and Landfill Inventory database *(*Croatian Agency for the Environment and Nature, CAEN).

Assessment of inappropriate activity data on quantities of MSW disposed to different types of SWDs - *Guidelines Development for starting implementation of Waste Management Plan in the Republic of Croatia,* EKONERG Ltd.

Quantities of MSW disposed to SWDSs:

Managed: 972.42 kt

Unmamaged – deep: 304.53 kt

Unmanaged – shallow: 71.63 kt

Country-specific methane correction factor (MCF): 0.923

Country-specific fraction of degradable organic carbon (DOC): 0.16

Recovered methane: 3.62 kt

B. METHODOLOGY/EMISSION FACTOR:

Publications:

IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme. Eggleston H.S.,Buendia L., Miwa K., Ngara T. and Tanabe K. (eds.). Published: IGES, Japan., Volume 5: Waste

Methodology: First Order Decay method (Tier 2)

Methane generation rate constant k=0.09

Fraction of DOC which really degrades: 0.5

Fraction of carbon released as methane: 0.5

ORIGINAL DATA SOURCE:

A. ACTIVITY DATA:

Environmental Pollution Register database and Landfill Inventory database, CAEN

METHOD:

bottom-up (see publications in original data source)

ADDITIONAL INTERCALCULATION:

Evaluation and compiling of data and adjusting to recommended Intergovernmental Panel on Climate Change (IPCC) methodology.

DATA ARCHIVATION:

Publications:

Fundurulja, D., Mužinić, M. (2000) *Estimation of the Quantities of Municipal Solid Waste in the Republic of Croatia in the period 1990 – 1998 and 1998 – 2010.*

Potočnik, V. (2000), Report: The basis for methane emission estimation in Croatia 1990-1998, B. Data on Municipal Solid Waste in Croatia 1990-1998

Environmental Pollution Register Database and Landfill Inventory Database, CAEN

MODULE: WASTE	
SUBMODULE: SOLID WASTE DISPOSAL	
WORKSHEET: 5.A Solid waste disposal	**SHEET**: 2014
STEP: 1 to 4	**PAGE**: 1 to 2

DATA GAPS:

MSW quantity estimation were in most cases gained by test weighing in order to estimate average volumes of waste delivered by vehicles and density of MSW.

National classification of SWDSs is different from IPCC classification.

Scarce data for DOC estimation.

SUGGESTION FOR THE FUTURE:

For the purposes of improvement activity data gathering from solid waste disposal activities it is necessary to improve quality of existing data:

- more accurate determination on waste quantities disposed to different types of SWDSs (managed, unmanaged deep and unmanaged shallow) – based on measurement and weighing or more accurate estimation;
- providing methodology to determine country-specific solid waste composition and periodic analysis of waste composition at major landfills. It is enabled through the project of the CAEN "Creating a uniform methodology for the analysis of the composition of solid waste, determine the average composition of solid waste in the Republic of Croatia and the projection of the amount of solid waste". Output of the project includes analysis and evaluation of the current situation, development of a uniform methodology for determining the composition of solid waste and research with the purpose of determining the composition of solid waste. The results of the project will be included in the next submission;
- modification of Environmental Pollution Register and Landfill Inventory database regarding to solid waste with additional information (provided on regular basis) on technical and environmental protection measures implemented at landfills, waste quantities disposed to different types of SWDS (managed, unmanaged deep and unmanaged shallow) and waste composition;
- to estimate the necessary data and detailed information on organic industrial waste (biodegradable industrial waste and sludge from wastewater treatment) disposed on SWDSs for entire period.

Adjustment of country-specific to IPCC SWDS classification for entire time series, in order to accurately estimate the MCF. Due to lack of adequate information, interpolation/extrapolation method has been applied for estimation of waste and landfills characteristics over a long period of time. It is necessary to improve the quality of existing data and to reconstruct historical data.

Research should be conducted in order to develop country-specific parameters for the first order decay method to increase the accuracy of the emission estimates.

More information for uncertainty estimation associated with activity data and emission factors is required, regarding more accurate and transparent uncertainty analysis.

NOTES:

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RESPONSIBILITY:

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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 2016 v3
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]	16709.12	3771.95	2825.03	NO	1240.24	10.45	NO	NO	24556.80
1. Energy	20758.79	844.25	147.35						21750.39
A. Fuel combustion (sectoral approach)	20078.93	415.35	146.66						20640.94
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	359.11	58.46						4136.48
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	2330.46	1790.99						4171.47
A. Enteric fermentation		1977.59							1977.59
B. Manure management		352.87	323.85						676.72
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1467.14						1467.14
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[1]	-6680.95	1.23	31.89						-6647.83
A. Forest land	-6737.94	1.12	0.74						-6736.08
B. Cropland	238.78	NA,NO	3.50						242.28
C. Grassland	-120.32	0.11	0.12						-120.09
D. Wetlands	43.07	NA,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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									31204.63
Total CO_2 equivalent emissions with land use, land-use change and forestry									24556.80
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									31204.63
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									24556.80

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 2016 v3
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]	9357.71	3629.10	2686.21	NO	850.75	10.33	NO	NO	16534.10
1. Energy	15252.77	793.10	134.72						16180.59
A. Fuel combustion (sectoral approach)	14586.28	442.84	134.22						15163.34
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	400.77	65.98						3529.03
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	2223.67	1758.33						4032.94
A. Enteric fermentation		1884.45							1884.45
B. Manure management		339.22	310.12						649.34
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1448.20						1448.20
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[1]	-7911.20	3.18	33.44						-7874.58
A. Forest land	-8525.40	3.00	1.98						-8520.41
B. Cropland	235.25	NA,NO	3.37						238.62
C. Grassland	-91.88	0.18	0.19						-91.51
D. Wetlands	43.14	NA,NO	4.51						47.65
E. Settlements	205.30	NO	23.38						228.68
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									
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									24408.68
Total CO_2 equivalent emissions with land use, land-use change and forestry									16534.10
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									24408.68
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									16534.10

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 2016 v3
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)]	8415.90	3242.49	2735.28	NO	NO	10.42	NO	NO	14404.08
1. Energy	14532.35	698.59	119.98						15350.91
A. Fuel combustion (sectoral approach)	13856.50	378.03	119.52						14354.05
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	340.35	56.85						2957.49
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	1907.22	1610.71						3583.44
A. Enteric fermentation		1616.74							1616.74
B. Manure management		290.47	254.54						545.01
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1356.18						1356.18
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8191.24	15.15	42.13						-8133.95
A. Forest land	-8908.42	13.64	9.00						-8885.78
B. Cropland	222.58	NA,NO	3.25						225.83
C. Grassland	-81.16	1.51	1.64						-78.01
D. Wetlands	43.16	NA,NO	4.51						47.67
E. Settlements	208.06	NO	23.74						231.79
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									22538.03
Total CO_2 equivalent emissions with land use, land-use change and forestry									14404.08
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									22538.03
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									14404.08

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 2016 v3
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)]	8350.20	3294.43	2361.59	NO	NO	10.53	NO	NO	14016.75
1. Energy	15321.31	728.81	132.61						16182.73
A. Fuel combustion (sectoral approach)	14434.43	394.50	132.15						14961.09
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	357.26	59.45						2965.00
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	1896.46	1424.25						3372.85
A. Enteric fermentation		1605.03							1605.03
B. Manure management		291.43	257.67						549.10
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1166.58						1166.58
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8731.03	34.39	55.09						-8641.55
A. Forest land	-9221.74	32.81	21.64						-9167.30
B. Cropland	210.23	NA,NO	3.13						213.35
C. Grassland	-84.74	1.58	1.72						-81.43
D. Wetlands	43.17	NA,NO	4.51						47.69
E. Settlements	210.81	NO	24.10						234.91
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		IE,NE	IE,NE,NA						IE,NA,NE
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)***									

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									22658.29
Total CO_2 equivalent emissions with land use, land-use change and forestry									14016.75
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									22658.29
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									14016.75

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 2016 v3
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]	7670.57	3045.85	2365.51	NO	NO	10.64	NO	NO	13092.58
1. Energy	14364.19	663.26	124.35						15151.80
A. Fuel combustion (sectoral approach)	13571.13	360.99	123.94						14056.05
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	323.33	54.35						3013.63
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	1714.44	1395.00						3157.01
A. Enteric fermentation		1442.05							1442.05
B. Manure management		272.39	237.33						509.72
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1157.67						1157.67
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[1]	-8671.61	11.51	39.92						-8620.18
A. Forest land	-9044.12	10.68	7.04						-9026.40
B. Cropland	225.81	NA,NO	3.00						228.81
C. Grassland	-93.18	0.82	0.90						-91.46
D. Wetlands	43.19	NA,NO	4.52						47.70
E. Settlements	213.11	NO	24.46						237.57
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		IE,NE	IE,NE,NA						IE,NA,NE
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)***									

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									21712.76
Total CO_2 equivalent emissions with land use, land-use change and forestry									13092.58
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									21712.76
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									13092.58

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 2016 v3
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)]	7817.79	2994.18	2285.74	57.28	NO	11.12	NO	NO	13166.12
1. Energy	15263.42	680.01	122.80						16066.24
A. Fuel combustion (sectoral approach)	14331.09	380.65	122.40						14834.14
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	340.99	57.30						3255.11
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	57.28	NO	11.12	NO	NO	2468.46
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				57.28	NO	NO	NO	NO	57.28
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	1633.64	1342.00						3021.94
A. Enteric fermentation		1376.67							1376.67
B. Manure management		256.97	223.41						480.38
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1118.59						1118.59
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-9175.01	7.54	37.41						-9130.05
A. Forest land	-9510.71	7.03	4.63						-9499.05
B. Cropland	231.04	NA,NO	2.88						233.92
C. Grassland	-99.43	0.52	0.56						-98.35
D. Wetlands	43.20	NA,NO	4.52						47.72
E. Settlements	216.48	NO	24.82						241.30
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									22296.17
Total CO_2 equivalent emissions with land use, land-use change and forestry									13166.12
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									22296.17
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									13166.12

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 2016 v3
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]	8644.07	2985.04	2278.86	80.07	NO	11.57	NO	NO	13999.62
1. Energy	15828.26	711.49	158.18						16697.94
A. Fuel combustion (sectoral approach)	14930.29	423.78	157.79						15511.86
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	381.69	64.19						3702.85
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	80.07	NO	11.57	NO	NO	2468.94
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				80.07	NO	NO	NO	NO	80.07
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	1568.99	1342.73						2964.16
A. Enteric fermentation		1320.86							1320.86
B. Manure management		248.13	214.07						462.20
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1128.65						1128.65
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[1]	-8943.82	16.53	43.95						-8883.34
A. Forest land	-9334.84	15.14	9.99						-9309.71
B. Cropland	227.97	NA,NO	2.75						230.72
C. Grassland	-104.82	1.39	1.51						-101.92
D. Wetlands	43.22	NA,NO	4.52						47.74
E. Settlements	219.30	NO	25.18						244.48
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		IE,NE	IE,NE,NA						IE,NA,NE
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)***									

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									22882.96
Total CO_2 equivalent emissions with land use, land-use change and forestry									13999.62
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									22882.96
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									13999.62

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 2016 v3
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)]	10236.54	2925.94	2478.83	106.14	NO	11.43	NO	NO	15758.88
1. Energy	16704.89	677.92	167.17						17549.98
A. Fuel combustion (sectoral approach)	15858.22	396.36	166.77						16421.35
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	351.45	59.48						3719.31
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	106.14	NO	11.43	NO	NO	2713.27
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				106.14	NO	NO	NO	NO	106.14
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	1511.52	1498.83						3078.74
A. Enteric fermentation		1272.13							1272.13
B. Manure management		239.39	206.97						446.36
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1291.86						1291.86
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8429.92	17.63	44.90						-8367.39
A. Forest land	-8761.54	16.28	10.73						-8734.53
B. Cropland	245.03	NA,NO	2.63						247.66
C. Grassland	-114.53	1.35	1.47						-111.71
D. Wetlands	43.23	NA,NO	4.52						47.75
E. Settlements	220.70	NO	25.55						246.25
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		IE,NE	IE,NE,NA						IE,NA,NE
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)***									

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									24126.27
Total CO_2 equivalent emissions with land use, land-use change and forestry									15758.88
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									24126.27
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									15758.88

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 2016 v3
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)]	10855.17	2911.76	2134.59	139.06	NO	11.99	NO	NO	16052.57
1. Energy	17546.74	665.53	144.35						18356.62
A. Fuel combustion (sectoral approach)	16792.20	400.38	143.98						17336.56
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	353.85	59.50						3581.09
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	139.06	NO	11.99	NO	NO	2468.00
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				139.06	NO	NO	NO	NO	139.06
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	1462.59	1323.58						2830.43
A. Enteric fermentation		1230.16							1230.16
B. Manure management		232.44	199.90						432.34
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1123.68						1123.68
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8517.22	45.11	64.97						-8407.14
A. Forest land	-8757.94	39.83	26.26						-8691.85
B. Cropland	257.78	NA,NO	2.50						260.29
C. Grassland	-119.82	5.29	5.75						-108.78
D. Wetlands	43.25	NA,NO	4.52						47.77
E. Settlements	224.68	NO	25.93						250.61
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									24459.71
Total CO_2 equivalent emissions with land use, land-use change and forestry									16052.57
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									24459.71
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									16052.57

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 2016 v3
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)]	11555.15	2853.50	2314.95	166.70	NO	11.99	NO	NO	16902.29
1. Energy	18065.30	642.13	188.23						18895.67
A. Fuel combustion (sectoral approach)	17327.30	395.28	187.89						17910.48
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	348.66	59.14						3986.76
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	166.70	NO	11.99	NO	NO	2903.10
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				166.70	NO	NO	NO	NO	166.70
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	1427.74	1392.48						2870.71
A. Enteric fermentation		1194.57							1194.57
B. Manure management		233.17	201.64						434.81
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1190.84						1190.84
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8660.50	5.91	37.80						-8616.79
A. Forest land	-8867.95	4.26	2.81						-8860.89
B. Cropland	245.25	NA,NO	2.38						247.62
C. Grassland	-123.76	1.65	1.80						-120.31
D. Wetlands	43.26	NA,NO	4.52						47.78
E. Settlements	228.39	NO	26.29						254.68
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									25519.08
Total CO_2 equivalent emissions with land use, land-use change and forestry									16902.29
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									25519.08
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									16902.29

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 2016 v3
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)]	11455.25	2882.25	2489.76	199.21	NO	11.62	NO	NO	17038.09
1. Energy	17485.25	592.66	189.67						18267.58
A. Fuel combustion (sectoral approach)	16692.57	354.43	189.34						17236.35
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	310.39	53.16						3781.92
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	199.21	NO	11.62	NO	NO	3178.81
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				199.21	NO	NO	NO	NO	199.21
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	1376.22	1400.45						2837.53
A. Enteric fermentation		1154.97							1154.97
B. Manure management		221.24	190.46						411.71
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1209.99						1209.99
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8333.87	96.91	102.09						-8134.87
A. Forest land	-8623.44	87.11	57.44						-8478.89
B. Cropland	305.15	NA,NO	2.80						307.95
C. Grassland	-120.59	9.80	10.67						-100.12
D. Wetlands	43.27	NA,NO	4.53						47.80
E. Settlements	231.77	NO	26.66						258.43
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									25172.96
Total CO_2 equivalent emissions with land use, land-use change and forestry									17038.09
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									25172.96
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									17038.09

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 2016 v3
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)]	12814.72	2863.14	2426.11	224.96	NO	11.69	NO	NO	18340.63
1. Energy	18495.16	633.75	192.05						19320.97
A. Fuel combustion (sectoral approach)	17634.30	379.60	191.75						18205.64
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	340.14	58.11						4033.98
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	224.96	NO	11.69	NO	NO	3205.45
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				224.96	NO	NO	NO	NO	224.96
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	1375.14	1487.53						2954.76
A. Enteric fermentation		1155.36							1155.36
B. Manure management		219.78	190.95						410.73
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1296.58						1296.58
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8128.39	19.00	55.97						-8053.42
A. Forest land	-8622.21	16.02	10.56						-8595.62
B. Cropland	342.54	NA,NO	3.23						345.77
C. Grassland	-180.92	2.98	3.24						-174.70
D. Wetlands	34.70	NA,NO	4.32						39.02
E. Settlements	403.97	NO	34.62						438.58
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									26394.05
Total CO_2 equivalent emissions with land use, land-use change and forestry									18340.63
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									26394.05
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									18340.63

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 2016 v3
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)]	13793.91	2844.70	2331.61	261.93	NO	12.01	NO	NO	19244.16
1. Energy	19663.59	624.67	153.83						20442.10
A. Fuel combustion (sectoral approach)	18783.12	365.28	153.53						19301.93
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	326.41	56.06						4105.51
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	261.93	NO	12.01	NO	NO	3160.58
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				261.93	NO	NO	NO	NO	261.93
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	1334.66	1444.10						2859.52
A. Enteric fermentation		1121.42							1121.42
B. Manure management		213.24	183.69						396.93
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1260.41						1260.41
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-8237.22	6.39	54.89						-8175.94
A. Forest land	-8729.90	5.62	3.70						-8720.58
B. Cropland	325.41	NA,NO	3.65						329.06
C. Grassland	-174.46	0.78	0.85						-172.83
D. Wetlands	33.12	NA,NO	4.12						37.25
E. Settlements	469.93	NO	42.56						512.48
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									
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									27420.10
Total CO_2 equivalent emissions with land use, land-use change and forestry									19244.16
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									27420.10
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									19244.16

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 2016 v3
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)]	15509.56	2976.42	2259.79	304.77	NO	12.28	NO	NO	21062.82
1. Energy	20998.81	675.47	165.89						21840.17
A. Fuel combustion (sectoral approach)	20162.49	414.69	165.60						20742.79
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	375.37	63.91						4391.88
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	304.77	NO	12.28	NO	NO	3173.58
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				304.77	NO	NO	NO	NO	304.77
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	1336.60	1360.35						2768.74
A. Enteric fermentation		1121.58							1121.58
B. Manure management		215.02	185.11						400.12
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1175.24						1175.24
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7845.66	39.55	86.10						-7720.01
A. Forest land	-8464.58	35.95	23.70						-8404.93
B. Cropland	312.81	NA,NO	4.08						316.89
C. Grassland	-167.99	3.60	3.92						-160.46
D. Wetlands	31.55	NA,NO	3.92						35.47
E. Settlements	533.51	NO	50.48						583.98
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									
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									28782.82
Total CO_2 equivalent emissions with land use, land-use change and forestry									21062.82
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									28782.82
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									21062.82

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 2016 v3
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)]	15399.84	3064.76	2517.45	347.89	NO	12.57	NO	NO	21342.51
1. Energy	20426.78	662.33	213.11						21302.22
A. Fuel combustion (sectoral approach)	19540.93	403.32	212.83						20157.08
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	365.64	62.26						4292.87
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	347.89	NO	12.57	NO	NO	3551.58
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				347.89	NO	NO	NO	NO	347.89
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	1419.44	1472.73						2968.12
A. Enteric fermentation		1193.74							1193.74
B. Manure management		225.71	196.57						422.27
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1276.17						1276.17
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7605.39	2.92	69.00						-7533.48
A. Forest land	-8267.10	1.95	1.29						-8263.86
B. Cropland	299.79	NA,NO	4.51						304.30
C. Grassland	-161.53	0.97	1.05						-159.51
D. Wetlands	29.97	NA,NO	3.72						33.69
E. Settlements	598.11	NO	58.43						656.53
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									
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									28875.98
Total CO_2 equivalent emissions with land use, land-use change and forestry									21342.51
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									28875.98
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									21342.51

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 2016 v3
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)]	15642.42	3032.20	2482.19	386.12	NO	13.03	NO	NO	21555.95
1. Energy	20811.67	681.70	167.55						21660.92
A. Fuel combustion (sectoral approach)	19942.81	421.87	167.29						20531.96
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	387.46	65.37						4350.95
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	386.12	NO	13.03	NO	NO	3627.96
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				386.12	NO	NO	NO	NO	386.12
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	1379.52	1486.84						2951.82
A. Enteric fermentation		1169.47							1169.47
B. Manure management		210.04	182.82						392.87
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1304.02						1304.02
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7809.43	2.74	76.89						-7729.80
A. Forest land	-8331.38	2.16	1.43						-8327.79
B. Cropland	244.50	NA,NO	4.94						249.44
C. Grassland	-109.47	0.57	0.62						-108.27
D. Wetlands	28.40	NA,NO	3.52						31.92
E. Settlements	657.97	NO	66.38						724.35
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									29285.75
Total CO_2 equivalent emissions with land use, land-use change and forestry									21555.95
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									29285.75
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									21555.95

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 2016 v3
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)]	16052.16	3106.65	2421.22	422.70	NO	13.01	NO	NO	22015.73
1. Energy	20908.30	668.57	167.11						21743.98
A. Fuel combustion (sectoral approach)	20009.09	390.08	166.84						20566.01
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	355.38	60.11						4074.15
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	422.70	NO	13.01	NO	NO	3797.67
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				422.70	NO	NO	NO	NO	422.70
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	1365.77	1420.94						2867.37
A. Enteric fermentation		1145.74							1145.74
B. Manure management		220.03	186.63						406.66
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1234.31						1234.31
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7632.78	6.06	86.77						-7539.95
A. Forest land	-8196.22	5.46	3.60						-8187.15
B. Cropland	237.56	NA,NO	4.86						242.42
C. Grassland	-134.06	0.60	0.65						-132.82
D. Wetlands	26.82	NA,NO	3.32						30.14
E. Settlements	719.03	NO	74.34						793.37
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		IE,NE	IE,NE,NA						IE,NA,NE
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)*									

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									29555.68
Total CO_2 equivalent emissions with land use, land-use change and forestry									22015.73
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									29555.68
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									22015.73

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 2016 v3
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)]	17661.22	3146.57	2524.95	469.51	NO	13.05	NO	NO	23815.30
1. Energy	22097.98	666.19	173.33						22937.50
A. Fuel combustion (sectoral approach)	21228.37	376.67	173.07						21778.11
1. Energy industries	7806.63	5.55	27.08						7839.25
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	341.99	57.63						3726.86
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	469.51	NO	13.05	NO	NO	3981.54
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				469.51	NO	NO	NO	NO	469.51
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	1287.80	1433.49						2810.61
A. Enteric fermentation		1083.29							1083.29
B. Manure management		204.51	173.00						377.52
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1260.48						1260.48
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7294.15	31.76	104.78						-7157.61
A. Forest land	-7725.19	29.59	19.51						-7676.08
B. Cropland	133.50	NA,NO	4.79						138.29
C. Grassland	-69.84	2.17	2.37						-65.30
D. Wetlands	24.81	NA,NO	3.11						27.91
E. Settlements	628.16	NO	75.00						703.16
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)***									

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									30972.91
Total CO_2 equivalent emissions with land use, land-use change and forestry									23815.30
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									30972.91
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									23815.30

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 2016 v3
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)]	16308.54	3162.98	2544.88	490.33	NO	11.98	NO	NO	22518.71
1. Energy	20953.88	652.96	165.16						21772.00
A. Fuel combustion (sectoral approach)	20183.04	375.32	164.91						20723.27
1. Energy industries	6789.87	4.78	24.20						6818.85
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	343.31	57.67						3842.76
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	490.33	NO	11.98	NO	NO	3913.32
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				490.33	NO	NO	NO	NO	490.33
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	1246.74	1459.65						2802.99
A. Enteric fermentation		1054.84							1054.84
B. Manure management		191.90	162.79						354.68
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1296.86						1296.86
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7406.85	9.58	90.03						-7307.24
A. Forest land	-7771.61	8.64	5.70						-7757.27
B. Cropland	131.10	NA,NO	4.72						135.82
C. Grassland	-125.74	0.94	1.02						-123.78
D. Wetlands	23.15	NA,NO	2.90						26.05
E. Settlements	632.21	NO	75.69						707.90
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)*									
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									29825.95
Total CO_2 equivalent emissions with land use, land-use change and forestry									22518.71
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									29825.95
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									22518.71

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 2016 v3
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)]	14555.04	3220.00	2311.85	495.65	0.26	8.03	NO	NO	20590.82
1. Energy	19811.20	657.28	162.77						20631.24
A. Fuel combustion (sectoral approach)	19104.53	387.69	162.53						19654.75
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	357.30	59.80						3871.44
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	495.65	0.26	8.03	NO	NO	3210.51
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				495.65	0.26	NO	NO	NO	495.90
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	1248.35	1347.52						2672.83
A. Enteric fermentation		1052.77							1052.77
B. Manure management		195.58	163.18						358.76
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1184.34						1184.34
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-7410.60	5.10	87.20						-7318.30
A. Forest land	-7937.68	4.87	3.21						-7929.59
B. Cropland	67.28	NA,NO	4.70						71.98
C. Grassland	-73.43	0.22	0.24						-72.96
D. Wetlands	21.49	NA,NO	2.68						24.18
E. Settlements	676.75	NO	76.36						753.10
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)*									

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									27909.13
Total CO_2 equivalent emissions with land use, land-use change and forestry									20590.82
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									27909.13
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									20590.82

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 2016 v3
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]	13937.95	3245.27	2385.55	543.95	0.03	8.95	NO	NO	20121.71
1. Energy	18967.43	682.43	163.90						19813.76
A. Fuel combustion (sectoral approach)	18292.00	412.04	163.68						18867.71
1. Energy industries	5904.99	4.33	21.71						5931.04
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	384.23	63.90						3954.29
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	543.95	0.03	8.95	NO	NO	3480.34
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				543.95	0.03	NO	NO	NO	543.99
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	1249.57	1256.14						2593.75
A. Enteric fermentation		1057.12							1057.12
B. Manure management		192.45	159.53						351.98
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1096.61						1096.61
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[1]	-7245.76	1.76	85.48						-7158.52
A. Forest land	-7729.63	1.64	1.08						-7726.91
B. Cropland	136.45	NA,NO	4.76						141.21
C. Grassland	-83.15	0.12	0.13						-82.91
D. Wetlands	19.84	NA,NO	2.47						22.31
E. Settlements	648.16	NO	77.04						725.20
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)*									
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									27280.23
Total CO_2 equivalent emissions with land use, land-use change and forestry									20121.71
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									27280.23
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									20121.71

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 2016 v3
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)]	14231.59	3248.94	2454.72	563.13	0.02	9.37	NO	NO	20507.77
1. Energy	18619.82	649.56	150.38						19419.76
A. Fuel combustion (sectoral approach)	17939.59	400.45	150.17						18490.21
1. Energy industries	6152.17	4.96	22.92						6180.05
2. Manufacturing industries and construction	2779.55	4.57	8.00						2792.12
3. Transport	5726.02	16.63	57.03						5799.68
4. Other sectors	3281.84	374.30	62.22						3718.36
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	563.13	0.02	9.37	NO	NO	3250.60
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				563.13	0.02	NO	NO	NO	563.15
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	1228.62	1334.29						2668.09
A. Enteric fermentation		1040.66							1040.66
B. Manure management		187.96	150.33						338.29
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1183.97						1183.97
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-6382.85	18.63	98.16						-6266.06
A. Forest land	-6838.31	15.20	10.02						-6813.09
B. Cropland	108.74	NA,NO	4.82						113.56
C. Grassland	-62.33	3.43	3.74						-55.16
D. Wetlands	18.17	NA,NO	2.26						20.43
E. Settlements	650.50	NO	77.33						727.83
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	1350.20	85.13						1435.38
A. Solid waste disposal	NA,NO	1142.34							1142.34
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)*									
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									26773.83
Total CO_2 equivalent emissions with land use, land-use change and forestry									20507.77
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									26773.83
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									20507.77

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 2016 v3
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]	12452.47	3206.03	2328.32	564.96	0.03	9.21	NO	NO	18561.01
1. Energy	16967.63	611.55	147.61						17726.79
A. Fuel combustion (sectoral approach)	16395.54	396.03	147.43						16939.00
1. Energy industries	5499.87	4.71	21.57						5526.15
2. Manufacturing industries and construction	2409.07	4.69	8.12						2421.88
3. Transport	5544.99	13.92	56.10						5615.00
4. Other sectors	2941.62	372.72	61.63						3375.97
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	1707.43	0.15	694.87	564.96	0.03	9.21	NO	NO	2976.65
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	1.76	NA,NO	NO	NO	NO	NO	NO	NO	1.76
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				564.96	0.03	NO	NO	NO	564.99
G. Other product manufacture and use	NO	NO	42.33	NO	NO	9.21	NO	NO	51.53
H. Other	NA	NA	NA						NA
3. Agriculture	101.23	1207.17	1289.12						2597.52
A. Enteric fermentation		1024.33							1024.33
B. Manure management		182.84	146.24						329.08
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1142.88						1142.88
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[1]	-6323.91	38.88	111.39						-6173.64
A. Forest land	-6758.12	36.09	23.80						-6698.23
B. Cropland	180.69	NA,NO	4.87						185.56
C. Grassland	-99.16	2.79	3.04						-93.33
D. Wetlands	16.49	NA,NO	2.05						18.54
E. Settlements	646.36	NO	77.64						724.00
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	1348.28	85.32						1433.69
A. Solid waste disposal	NA,NO	1153.24							1153.24
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)*									
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									24734.65
Total CO_2 equivalent emissions with land use, land-use change and forestry									18561.01
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									24734.65
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									18561.01

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 2016 v3
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)]	11801.37	3131.65	1783.57	577.71	0.06	6.15	NO	NO	17300.52
1. Energy	16444.79	597.37	145.13						17187.29
A. Fuel combustion (sectoral approach)	15900.87	392.65	144.95						16438.48
1. Energy industries	5109.51	4.09	20.83						5134.43
2. Manufacturing industries and construction	2380.65	4.40	7.72						2392.78
3. Transport	5631.06	13.79	55.45						5700.31
4. Other sectors	2779.65	370.37	60.95						3210.97
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	1840.05	0.15	282.52	577.71	0.06	6.15	NO	NO	2706.65
A. Mineral industry	1275.40								1275.40
B. Chemical industry	485.96	0.15	240.45	NO	NO	NO	NO	NO	726.56
C. Metal industry	16.63	NA,NO	NO	NO	NO	NO	NO	NO	16.63
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				577.71	0.06	NO	NO	NO	577.77
G. Other product manufacture and use	NO	NO	42.06	NO	NO	6.15	NO	NO	48.22
H. Other	NA	NA	NA						NA
3. Agriculture	74.61	1173.78	1184.12						2432.52
A. Enteric fermentation		996.04							996.04
B. Manure management		177.74	140.30						318.04
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	1043.82						1043.82
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-6558.13	1.93	86.17						-6470.03
A. Forest land	-6836.74	1.46	0.96						-6834.33
B. Cropland	142.72	NA,NO	4.92						147.64
C. Grassland	-64.21	0.47	0.51						-63.23
D. Wetlands	14.82	NA,NO	1.83						16.66
E. Settlements	646.30	NO	77.94						724.24
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	1358.42	85.63						1444.09
A. Solid waste disposal	NA,NO	1154.99							1154.99
B. Biological treatment of solid waste		2.99	2.04						5.03
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)***									

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									23770.55
Total CO_2 equivalent emissions with land use, land-use change and forestry									17300.52
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									23770.55
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									17300.52

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 2016 v3
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)]	11006.97	3080.66	1706.46	582.77	0.06	6.84	NO	NO	16383.76
1. Energy	15557.53	550.31	133.60						16241.44
A. Fuel combustion (sectoral approach)	15032.19	359.03	133.43						15524.65
1. Energy industries	4601.75	15.71	17.86						4635.32
2. Manufacturing industries and construction	2324.33	3.84	6.79						2334.97
3. Transport	5575.58	13.02	54.95						5643.55
4. Other sectors	2530.53	326.46	53.83						2910.82
5. Other	NO	NO	NO						NO
B. Fugitive emissions from fuels	525.34	191.28	0.17						716.79
1. Solid fuels	NO	NO	NA,NO						NA,NO
2. Oil and natural gas	525.34	191.28	0.17						716.79
C. CO_2 transport and storage	NO								NO
2. Industrial processes and product use	1980.28	0.17	301.20	582.77	0.06	6.84	NO	NO	2871.32
A. Mineral industry	1359.22								1359.22
B. Chemical industry	534.35	0.17	266.39	NO	NO	NO	NO	NO	800.92
C. Metal industry	27.90	NA,NO	NO	NO	NO	NO	NO	NO	27.90
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				582.77	0.06	NO	NO	NO	582.83
G. Other product manufacture and use	NO	NO	34.81	NO	NO	6.84	NO	NO	41.65
H. Other	NA	NA	NA						NA
3. Agriculture	69.47	1129.11	1101.53						2300.11
A. Enteric fermentation		953.84							953.84
B. Manure management		175.28	136.72						312.00
C. Rice cultivation		NO							NO
D. Agricultural soils		NA	964.81						964.81
E. Prescribed burning of savannas									
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									
4. Land use, land-use change and forestry[(1)]	-6600.36	0.25	84.99						-6515.12
A. Forest land	-6549.57	0.22	0.14						-6549.21
B. Cropland	5.91	NA,NO	4.96						10.87
C. Grassland	-56.58	0.03	0.04						-56.51
D. Wetlands	13.15	NA,NO	1.62						14.77
E. Settlements	644.80	NO	78.23						723.03
F. Other land	NO	NO	NO						NO
G. Harvested wood products	-658.07								-658.07
H. Other	NO	NO	NO						NO
5. Waste	0.05	1400.82	85.13						1486.00
A. Solid waste disposal	NA,NO	1189.42							1189.42
B. Biological treatment of solid waste		3.73	2.05						5.77
C. Incineration and open burning of waste	0.05	NA,NO	NA,NO,IE						0.05
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)*									

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									22898.88
Total CO_2 equivalent emissions with land use, land-use change and forestry									16383.76
Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry									22898.88
Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry									16383.76

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 1990 and 2014 (needed for monitoring and reporting on CO_2 emission)

Fuel		DOV		CO_2 Emission factor (t CO_2/TJ)	Oxidation factor (OF)
		Unit	2014		
Motorni benzin	Motor Gasoline	TJ/ kt	44,5900	69,30	1
Aviobenzin	Aviation Gasoline	TJ/ kt	44,5900	70,00	1
Kerozin (Mlazno gorivo)	Jet Kerosene	TJ/ kt	43,9600	71,50	1
Dizel i ekstra lako loživo ulje (plinsko ulje)	Gas/Diesel Oil	TJ/ kt	42,7100	74,10	1
Loživo ulje i srednje loživo ulje	Residual Fuel Oil	TJ/ kt	40,1900	77,40	1
Ukapljeni naftni plin	Liquefield Petroleum Gases	TJ/ kt	46,8900	63,10	1
Maziva	Lubricants	TJ/ kt	33,5000	73,30	1
Naftni koks	Petroleum Coke	TJ/ kt	31,0000	97,50	1
Petrolej	Petroleum	TJ/ kt	43,9600	73,30	1
Antracit	Anthracite	TJ/ kt	29,3100	98,30	1
Kameni ugljen-Industrija	*Other bituminouse coal Industry*	TJ/ kt	26,2000	94,60	1
Kameni ugljen-*Termoelektrane*	Other bituminouse coal *Thermal power plant*	TJ/ kt	24,6400	94,60	1
Ugljen za proizvodnju koksa (koksni ugljen)	Coking coal	TJ/ kt	28,2000	94,60	1
Mrki ugljen (smeđi ugljen) *Industrija*	Sub bituminouse coal *Industry*	TJ/ kt	16,8900	96,10	1
Lignit	Lignite	TJ/ kt	10,5000	101,00	1
Briketi kamenog ugljena	Brown coal briquettes	TJ/ kt	20,7000	97,50	1
Koks	Coke oven coke	TJ/ kt	29,3100	107,00	1
Prirodni plin	Natural Gas	TJ/$10^6 m^3$	34,6000	56,10	1
Gradski plin	Gas Works Gas	TJ/$10^6 m^3$	17,1000	44,40	1
Koksni plin	Coke Oven Gas	TJ/$10^6 m^3$	38,7000	44,40	1
Rafinerijski plin	Refinery Gas	TJ/ kt	42,6000	57,60	1

ANNEX 5-4: REPORTING ON CONSISTENCY OF THE REPORTED DATA ON AIR POLLUTANTS, FOR 2014.

Pollutant:	CO								
EMISSION CATEGORIES	Pollutant	Emissions in greenhouse gas (GHG) inventory (in kt)	Emissions reported under Directive 2001/81/EC (NEC) (in kt)	Absolute difference in kt (1)	Relative difference in % (2)	Emissions reported in the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP) inventory (in kt)	Absolute difference in kt (1) 2	Relative difference in % (2) 3	Explanations for differences
Total (Net Emissions)		202.79	203.04	-0.25	0%	203.04	0.25	0%	
1. Energy	CO	202.07	202.32	-0.25	0.00	202.32	0.25	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	CO	180.46	180.71	-0.25	0.00	180.71	0.25	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	CO	1.03	1.03	0.00	0.00	1.03	0.00	0.00	
2. Manufacturing industries and construction	CO	13.41	13.41	0.00	0.00	13.41	0.00	0.00	
3. Transport	CO	37.93	38.18	-0.25	-0.01	38.18	0.25	0.01	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	CO	128.09	128.09	0.00	0.00	128.09	0.00	0.00	
5. Other	CO	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	CO	21.61	21.61	0.00	0.00	21.61	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	21.61	21.61	0.00	0.00	21.61	0.00	0.00	
2. Industrial processes and product use	CO	0.72	0.72	0.00	NO	0.72	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 fuels and solvent use	CO	0.46	0.46	0.00	0.00	0.46	0.00	0.00	
G. Other product manufacture and use	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 residues	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 waste	CO	NE,NA		NO	NO	0.00	NO	NO	
C. Incineration and open burning of waste	CO	0.00001	0.00068	0.00	-0.99	0.00	0.00	0.99	Data on Cremation are not included in GHG inventory
D. Wastewater treatment and discharge	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)	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)		15.34	15.56	-0.22	-1%	15.34	0.25	166%	
1. Energy	SO2	15.34	15.38	-0.04	0.00	15.34	0.25	1.65	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	SO2	11.85	11.89	-0.04	0.00	11.85	0.25	2.14	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	SO2	7.78	7.78	0.00	0.00	7.78	0.00	0.00	
2. Manufacturing industries and construction	SO2	2.76	2.76	0.00	0.00	2.76	0.00	0.00	
3. Transport	SO2	0.07	0.11	-0.04	-0.35	0.07	0.00	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	SO2	1.23	1.23	0.00	0.00	1.23	0.00	0.00	
5. Other	SO2	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	SO2	3.49	3.49	0.00	0.00	3.49	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	3.49	3.49	0.00	0.00	3.49	0.00	0.00	
2. Industrial processes and product use	SO2	NO		NO	NO	NO		NO	
A. Mineral industry	SO2	0.00		0.00	#DIV/0!	0.00	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	0.00	NO	NO	NO	0.00	0.00	#DIV/0!	
G. Other product manufacture and use	SO2	NO	NO	NO	NO	NO	NO	NO	
H. Other	SO2	0.00	NE,NA	NO	NO	0.00	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	0.00		0.00	#DIV/0!	0.00	NO	NO	
B. Biological treatment of solid waste	SO2	0.00		0.00	#DIV/0!	0.00	NO	NO	
C. Incineration and open burning of waste	SO2	0.00003	0.00057	0.00	-0.95	0.00002758	0.00067242	2438.03	Data on Cremation are not included in GHG inventory
D. Wastewater treatment and discharge	SO2	0.00		0.00	#DIV/0!	0.00	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)		53.20	55.19	-2.00	-4%	55.19	-2.00	-4%	
1. Energy		52.11	52.24	-0.13	0.00	52.24	-0.13	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	NOx	52.00	52.13	-0.13	0.00	52.13	-0.13	0.00	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	NOx	7.18	7.18	0.00	0.00	7.18	0.00	0.00	
2. Manufacturing industries and construction	NOx	9.21	9.21	0.00	0.00	9.21	0.00	0.00	
3. Transport	NOx	25.77	25.90	-0.13	-0.01	25.90	-0.13	-0.01	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	NOx	9.84	9.84	0.00	0.00	9.84	0.00	0.00	
5. Other	NOx	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	NOx	0.12	0.12	0.00	0.00	0.12	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	0.12	0.12	0.00	0.00	0.12	0.00	0.00	
2. Industrial processes and product use	NOx	1.08	1.08	0.00	0.00	1.08	0.00	0.00	
A. Mineral industry	NOx	NO	NO	NO	NO	NO	NO	NO	
B. Chemical industry	NOx	1.03	1.03	0.00	0.00	1.03	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	0.02	0.02	0.00	0.00	0.02	0.00	0.00	
G. Other product manufacture and use	NOx	NO	NO	NO	NO	NO	NO	NO	
H. Other	NOx	0.00	NE,NA	NO	NO	NE,NA	NO	NO	
3. Agriculture	NOx	0.00	1.86	-1.86	-1.00	1.86	-1.86	-1.00	The CRF software do not provide cells for entering SO2 emission
B. Manure management	NOx	0.00	0.01	1.85	263.86	0.01	-0.01	-1.00	The CRF software do not provide cells for entering SO2 emission
D. Agricultural soils	NOx	0.00	1.85	-1.85	-1.00	1.85	-1.85	-1.00	The CRF software do not provide cells for entering SO2 emission
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	0.00408	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)		57.73	60.36	-2.63	-4%	60.36	-2.63	-4%	Error occured in Agriculture sector. It will be corrected for next submission
1. Energy	NMVOC	28.25	29.55	-1.30	-0.04	29.55	-1.30	-0.04	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
A. Fuel combustion (sectoral approach)	NMVOC	24.44	25.74	-1.30	-0.05	25.74	-1.30	-0.05	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
1. Energy industries	NMVOC	0.30	0.30	0.00	0.00	0.30	0.00	0.00	
2. Manufacturing industries and construction	NMVOC	1.75	1.75	0.00	0.00	1.75	0.00	0.00	
3. Transport	NMVOC	5.78	7.08	-1.30	-0.18	7.08	-1.30	-0.18	In LRTAP report International aviation is reported in total country emisisons while in GHG inventory those emissions are excluded
4. Other sectors	NMVOC	16.61	16.61	0.00	0.00	16.61	0.00	0.00	
5. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	NMVOC	3.81	3.81	0.00	0.00	3.81	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	3.81	3.81	0.00	0.00	3.81	0.00	0.00	
2. Industrial processes and product use	NMVOC	21.63	21.73	-0.11	0.00	21.73	-0.11	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	16.01	16.08	-0.07	0.00	16.08	-0.07	0.00	Energy balance was not available on time to include data on lubricante consumption in NIR.
G. Other product manufacture and use	NMVOC	NO	NO	NO	NO	NO	NO	NO	
H. Other	NMVOC	5.60	5.60	0.00	0.00	5.60	0.00	0.00	
3. Agriculture	NMVOC	7.04	7.04	0.00	0.00	7.04	0.00	0.00	
B. Manure management	NMVOC	6.48	6.48	0.00	0.00	6.48	0.00	0.00	
D. Agricultural soils	NMVOC	0.57	0.57	0.00	0.00	0.57	0.00	0.00	
F. Field burning of agricultural residues	NMVOC	NO	NO	NO	NO	NO	NO	NO	
J. Other	NMVOC	NO	NO	NO	NO	NO	NO	NO	
5. Waste	NMVOC	2.04	2.04	0.00	0.00	2.04	0.00	0.00	
A. Solid waste disposal	NMVOC	2.04	2.04	0.00	0.00	2.04	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	0.00010	0.00	-0.64	0.00	0.00	-0.64	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	NO	
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 2014 AND 1990

Recalculated year	2013							
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**	13,481.96	11,801.37	-1680.592635	-14%	-7%	-10%	
1. Energy	**CO2**	16,605.25	16,444.79	-160.4613088	-1%	-1%	-1%	
A. Fuel combustion activities	**CO2**	15,949.64	15,900.87	-48.76954733	0%	0%	0%	
1. Energy industries	**CO2**	5,109.51	5,109.51	0	0%	0%	0%	
2. Manufacturing industries and construction	**CO2**	2,380.65	2,380.65	0	0%	0%	0%	
3. Transport	**CO2**	5,679.83	5,631.06	-48.76954733	0%	0%	0%	1A3-NCV for LPG was corrected, 1A3a new AD
4. Other sectors	**CO2**	2,779.65	2,779.65	0	0%	0%	0%	new AD for biomass
5. Other	**CO2**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CO2**	655.61	543.92	-111.6917615	-1%	0%	-1%	Switch from EF for countries in transition to EF for developed countries, 1B2a.iii Oil – Refining and storage and 1B2b.i. Natural gas - Exploration emissions calculated in NIR
1. Solid fuels	**CO2**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CO2**	655.61	543.92	-111.6917615	-1%	0%	-1%	Switch from EF for countries in transition to EF for developed countries, 1B2a.iii Oil – Refining and storage and 1B2b.i. Natural gas - Exploration emissions calculated in NIR
C. CO2 transport and storage	**CO2**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CO2**	1,945.57	1,840.05	-105.5108355	-1%	0%	-1%	2A1 Cement production; 2A2 Lime production; 2A4a Other process of carbonates - New data have been included.
A. Mineral industry	**CO2**	1,291.40	1,275.40	-15.99844529	0%	0%	0%	
B. Chemical industry	**CO2**	485.96	485.96	0	0%	0%	0%	2C1a Steel production - New data for verified emission has been included.
C. Metal industry	**CO2**	16.60	16.63	0.026158862	0%	0%	0%	2D3 Solvent use - New data have been included.
D. Non-energy products from fuels and solvent use	**CO2**	151.60	62.06	-89.53854903	-1%	0%	-1%	lubricants and other subsector recalculation due to ESD recommendation
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**	69.99	74.61	4.624960233	0%	0%	0%	Tier 2 methodology for emission calculation of all cattle categorie
A. Enteric fermentation	**CO2**	0.00	0.00	0	0%	0%	0%	Tier 2 methodology for emission calculation of all cattle categorie
B. Manure management	**CO2**	0.00	0.00	0	0%	0%	0%	
C. Rice cultivation	**CO2**	0.00	0.00	0	0%	0%	0%	
D. Agricultural soils	**CO2**	0.00	0.00	0	0%	0%	0%	
E. Prescribed burning of savannahs	**CO2**	0.00	0.00	0	0%	0%	0%	
F. Field burning of agricultural residues	**CO2**	0.00	0.00	0	0%	0%	0%	
G. Liming	**CO2**	9.60	14.23	4.624960233	0%	0%	0%	
H. Urea application	**CO2**	60.39	60.39	0	0%	0%	0%	
I. Other carbon-containing fertilizer	**CO2**	NA	NA	NO	NO	NO	NO	
J. Other	**CO2**	0.00	0.00	0	0%	0%	0%	
4. Land use, land-use change and forestry (net) (4)	**CO2**	-5,138.88	-6,558.13	-1419.245451	-12%	-6%	-8%	2006 Guidelines application
A. Forestland	**CO2**	-5,491.49	-6,836.74	-1345.248013	-11%	-6%	-8%	2006 Guidelines application and use of new values for R factor. Corrections in biomass harvested due to management parctices. Detailed explanations will be provided in NIR 2016 Resubmission
B. Cropland	**CO2**	160.55	142.72	-17.83054029	0%	0%	0%	Changes in LUC matrix
C. Grassland	**CO2**	-103.50	-64.21	39.28876533	0%	0%	0%	Changes in LUC matrix
D. Wetlands	**CO2**	14.13	14.82	0.695474545	0%	0%	0%	Changes in LUC matrix
E. Settlements	**CO2**	545.56	646.30	100.7440378	1%	0%	1%	Changes in LUC matrix
F. Other land	**CO2**	NO	NO	NO	NO	NO	NO	Changes in LUC matrix
G. Harvested wood products	**CO2**	-264.12	-461.02	-196.8951756	-2%	-1%	-1%	Error in calculation corrected
H. Other	**CO2**	NO	NO	NO	NO	NO	NO	
5. Waste	**CO2**	0.04	0.04	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	0.00	0	0%	0%	0%	
C. Incineration and open burning of waste	**CO2**	0.04	0.04	0	0%	0%	0%	
D. Waste water treatment and discharge	**CO2**	0.00	0.00	0	0%	0%	0%	
E. Other	**CO2**	NO	NO	NO	NO	NO	NO	

Recalculated year	2013
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**	3,582.93	3,131.65	-451.277017	-14%	-2%	-3%	
1. Energy	**CH4**	1,410.99	597.37	-813.6208842	-26%	-3%	-5%	
A. Fuel combustion activities	**CH4**	153.31	392.65	239.3423757	8%	1%	1%	
1. Energy industries	**CH4**	3.21	4.09	0.874056037	0%	0%	0%	1A1c-Error in biomass consumption was corrected
2. Manufacturing industries and construction	**CH4**	4.40	4.40	0	0%	0%	0%	
3. Transport	**CH4**	13.81	13.79	-0.012680309	0%	0%	0%	New AD
4. Other sectors	**CH4**	131.89	370.37	238.481	8%	1%	1%	New AD
5. Other	**CH4**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CH4**	1,257.68	204.72	-1052.96326	-34%	-4%	-6%	Switch from EF for countries in transition to EF for developed countries
1. Solid fuels	**CH4**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CH4**	1,257.68	204.72	-1052.96326	-34%	-4%	-6%	Switch from EF for countries in transition to EF for developed countries
C. CO2 transport and storage	**CH4**	NO	0.00	NO	NO	NO	NO	
2. Industrial processes and product use	**CH4**	0.15	0.15	0	0%	0%	0%	
A. Mineral industry	**CH4**	0.00	0.00	0	0%	0%	0%	
B. Chemical industry	**CH4**	0.15	0.15	0	0%	0%	0%	
C. Metal industry	**CH4**	NA,NO	NA,NO	NO	NO	NO	NO	
D. Non-energy products from fuels and solvent us	**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**	1,017.63	1,173.78	156.1457447	5%	1%	1%	Tier 2 methodology for emission calculation of all cattle categorie
A. Enteric fermentation	**CH4**	839.85	996.04	156.1909548	5%	1%	1%	Emissions were recalculated for the entire due to further improvents in Tier 2 methodology for emission calculation of all cattle categories (improvements in digestibility, met
B. Manure management	**CH4**	177.79	177.74	-0.045210175	0%	0%	0%	Error corrected
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	0.00	0	0%	0%	0%	
F. Field burning of agricultural residues	**CH4**	NO	NO	NO	NO	NO	NO	
G. Liming	**CH4**	0.00	0.00	0	0%	0%	0%	
H. Urea application	**CH4**	0.00	0.00	0	0%	0%	0%	
I. Other carbon-containing fertilizer	**CH4**	0.00	0.00	0	0%	0%	0%	
J. Other	**CH4**	0.00	0.00	0	0%	0%	0%	
4. Land use, land-use change and forestry (net) (4)	**CH4**	1.93	1.93	0	0%	0%	0%	
A. Forestland	**CH4**	1.46	1.46	0	0%	0%	0%	
B. Cropland	**CH4**	NA,NO	NA,NO	NO	NO	NO	NO	
C. Grassland	**CH4**	0.47	0.47	0	0%	0%	0%	
D. Wetlands	**CH4**	NA,NO	NA,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	0.00	0	0%	0%	0%	
H. Other	**CH4**	NO	NO	NO	NO	NO	NO	
5. Waste	**CH4**	1,152.22	1,358.42	206.1981225	7%	1%	1%	5A Solid waste disposal; 5B Biological treatment of solid waste - New data have been included.
A. Solid waste disposal	**CH4**	947.21	1,154.99	207.7793297	7%	1%	1%	5A Solid waste disposal - New value for methane generation rate constant (k) has been included.
B. Biological treatment of solid waste	**CH4**	4.58	2.99	-1.58120718	0%	0%	0%	5B1 Composting; 5B2 Anaerobic digestion at biogas facilities - AD and EF have been corrected.
C. Incineration and open burning of waste	**CH4**	NA,NO	NA,NO	NO	NO	NO	NO	
D. Waste water treatment and discharge	**CH4**	200.44	200.44	0	0%	0%	0%	
E. Other	**CH4**	NO	NO	NO	NO	NO	NO	

Recalculated year	2013							
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**	1,718.35	1,783.57	65.22708028	2%	0%	0%	
1. Energy	**N2O**	106.46	145.13	38.66803797	1%	0%	0%	
A. Fuel combustion activities	**N2O**	106.34	144.95	38.61235906	1%	0%	0%	
1. Energy industries	**N2O**	19.45	20.83	1.383412596	0%	0%	0%	1A1c-Error in biomass consumption was corrected
2. Manufacturing industries and construction	**N2O**	7.72	7.72	0	0%	0%	0%	
3. Transport	**N2O**	56.06	55.45	-0.604597132	0%	0%	0%	New AD
4. Other sectors	**N2O**	23.12	60.95	37.8335436	1%	0%	0%	New AD
5. Other	**N2O**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**N2O**	0.12	0.18	0.055678904	0%	0%	0%	Switch from EF for countries in transition to EF for developed countries
1. Solid fuels	**N2O**	NO,NA	NO,NA	NO	NO	NO	NO	
2. Oil and natural gas	**N2O**	0.12	0.18	0.055678904	0%	0%	0%	Switch from EF for countries in transition to EF for developed countries
C. CO2 transport and storage	**N2O**	NO	0.00	NO	NO	NO	NO	
2. Industrial processes and product use	**N2O**	282.52	282.52	-0.002718058	0%	0%	0%	
A. Mineral industry	**N2O**	0.00	0.00	0	0%	0%	0%	
B. Chemical industry	**N2O**	240.46	240.45	-0.002718058	0%	0%	0%	2B2 Nitric acid production - New data for verified emission has been included.
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**	0.14	0.14	0	0%	0%	0%	
H. Other	**N2O**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**N2O**	1,230.33	1,184.12	-46.20644973	-1%	0%	0%	Emissions were recalculateddue to replacing FAO activity data on harvested area of crops with national sources (CBS) and updating the AD on crop yield with new CBS values. In addition, FSOM emissions are now reported under this category.
A. Enteric fermentation	**N2O**	0.00	0.00	0	0%	0%	0%	
B. Manure management	**N2O**	140.63	140.30	-0.329550519	0%	0%	0%	Error corrected
C. Rice cultivation	**N2O**	0.00	0.00	0	0%	0%	0%	
D. Agricultural soils	**N2O**	1,089.70	1,043.82	-45.87689921	-1%	0%	0%	Emissions were recalculateddue to replacing FAO activity data on harvested area of crops with national sources (CBS) and updating the AD on crop yield with new CBS values. In addition, FSOM emissions are now reported under this category.
E. Prescribed burning of savannahs	**N2O**	0.00	0.00	0	0%	0%	0%	
F. Field burning of agricultural residues	**N2O**	NO	NO	NO	NO	NO	NO	
G. Liming	**N2O**	0.00	0.00	0	0%	0%	0%	
H. Urea application	**N2O**	0.00	0.00	0	0%	0%	0%	
I. Other carbon-containing fertilizer	**N2O**	0.00	0.00	0	0%	0%	0%	
J. Other	**N2O**	0.00	0.00	0	0%	0%	0%	
4. Land use, land-use change and forestry (net) (4)	**N2O**	11.77	86.17	74.40009981	2%	0%	0%	Error in calculation corrected
A. Forestland	**N2O**	0.96	0.96	0	0%	0%	0%	
B. Cropland	**N2O**	10.30	4.92	-5.377179871	0%	0%	0%	Error in calculation corrected
C. Grassland	**N2O**	0.51	0.51	0	0%	0%	0%	
D. Wetlands	**N2O**	NA,NO	1.83	NO	NO	NO	NO	
E. Settlements	**N2O**	NO	77.94	NO	NO	NO	NO	
F. Other land	**N2O**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**N2O**	0.00	0.00	0	0%	0%	0%	
H. Other	**N2O**	NO	NO	NO	NO	NO	NO	
5. Waste	**N2O**	87.26	85.63	-1.63188972	0%	0%	0%	5B1 Composting - AD and EF have been corrected.
A. Solid waste disposal	**N2O**	0.00	0.00	0	0%	0%	0%	
B. Biological treatment of solid waste	**N2O**	3.67	2.04	-1.63188972	0%	0%	0%	5B1 Composting - AD and EF have been corrected.
C. Incineration and open burning of waste	**N2O**	NA,NO	NA,NO,IE	NO	NO	NO	NO	
D. Waste water treatment and discharge	**N2O**	83.59	83.59	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**	18,530.88	16,709.12	-1821.750643	-11%	-6%	-7%	
1. Energy	**CO2**	21,219.16	20,758.79	-460.3762985	-3%	-1%	-2%	New AD provided, Switch from EF for countries in transition to EF for developed countries
A. Fuel combustion activities	**CO2**	20,248.04	20,078.93	-169.1071005	-1%	-1%	-1%	
1. Energy industries	**CO2**	7,166.75	7,071.41	-95.3439426	-1%	0%	0%	
2. Manufacturing industries and construction	**CO2**	5,501.67	5,501.67	0	0%	0%	0%	
3. Transport	**CO2**	3,936.62	3,786.94	-149.6857168	-1%	0%	-1%	New AD provided
4. Other sectors	**CO2**	3,642.99	3,718.91	75.9225589	0%	0%	0%	New AD provided
5. Other	**CO2**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CO2**	971.12	679.85	-291.2691979	-2%	-1%	-1%	2016
1. Solid fuels	**CO2**	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas	**CO2**	971.12	679.85	-291.2691979	-2%	-1%	-1%	Switch from EF for countries in transition to EF for developed countries; 1B2a.iii Oil – Refining and storage and 1B2b.i. Natural gas - Exploration emissions calculated in NIR
C. CO2 transport and storage	**CO2**	NO	NO	NO	NO	NO	NO	
2. Industrial processes and product use	**CO2**	2,804.58	2,580.73	-223.8465798	-1%	-1%	-1%	
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 us	**CO2**	413.27	189.43	-223.8465798	-1%	-1%	-1%	2D3 Solvent use - New data have been included.
G. Other product manufacture and use	**CO2**	NO	NO	NO	NO	NO	NO	
H. Other	**CO2**	NA	NA	NO	NO	NO	NO	
3. Agriculture	**CO2**	50.02	50.02	0	0%	0%	0%	
A. Enteric fermentation	**CO2**	NO	0.00	NO	NO	NO	NO	
B. Manure management	**CO2**	NO	0.00	NO	NO	NO	NO	
C. Rice cultivation	**CO2**	NO	0.00	NO	NO	NO	NO	
D. Agricultural soils	**CO2**	NO	0.00	NO	NO	NO	NO	
E. Prescribed burning of savannahs	**CO2**	NO	0.00	NO	NO	NO	NO	
F. Field burning of agricultural residues	**CO2**	NO	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**	NO	0.00	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**CO2**	-5,543.42	-6,680.95	-1137.527765	-7%	-4%	-5%	2006 Guidelines application
A. Forestland	**CO2**	-5,628.11	-6,737.94	-1109.829753	-7%	-4%	-5%	2006 Guidelines application and use of new values for R factor. Corrections in biomass harvested due to management parctices. Detailed explanations will be provided in NIR 2016 Resubmission
B. Cropland	**CO2**	217.98	238.78	20.80610062	0%	0%	0%	Changes in LUC matrix
C. Grassland	**CO2**	-103.97	-120.32	-16.34510858	0%	0%	0%	Changes in LUC matrix
D. Wetlands	**CO2**	30.00	43.07	13.07006772	0%	0%	0%	Changes in LUC matrix
E. Settlements	**CO2**	240.31	197.00	-43.30846352	0%	0%	0%	Changes in LUC matrix
F. Other land	**CO2**	NO	NO	NO	NO	NO	NO	Changes in LUC matrix
G. Harvested wood products	**CO2**	-299.62	-301.54	-1.920607746	0%	0%	0%	Error in calculation corrected
H. Other	**CO2**	NO	NO	NO	NO	NO	NO	
5. Waste	**CO2**	0.54	0.54	0	0%	0%	0%	
A. Solid waste disposal	**CO2**	NA,NO	NA,NO	NO	NO	NO	NO	
B. Biological treatment of solid waste	**CO2**	NO	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**	NO	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**	6,954.12	3,771.95	-3182.168522	-84%	-10%	-13%	
1. Energy	**CH4**	3,562.67	844.25	-2718.420098	-72%	-9%	-11%	New AD provided, Switch from EF for countries in transition to EF for developed countries; 1B2a.iii Oil – Refining and storage and 1B2b.i. Natural gas - Exploration emissions calculated in NIR 2016
A. Fuel combustion activities	**CH4**	242.03	415.35	173.3179956	5%	1%	1%	
1. Energy industries	**CH4**	5.41	5.42	0.0059535	0%	0%	0%	
2. Manufacturing industries and construction	**CH4**	9.73	9.73	0	0%	0%	0%	
3. Transport	**CH4**	41.13	41.10	-0.026167117	0%	0%	0%	New AD provided
4. Other sectors	**CH4**	185.77	359.11	173.3382093	5%	1%	1%	New AD provided
5. Other	**CH4**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**CH4**	3,320.64	428.90	-2891.738093	-77%	-9%	-12%	2016
1. Solid fuels	**CH4**	59.64	59.64	0	0%	0%	0%	
2. Oil and natural gas	**CH4**	3,260.99	369.26	-2891.738093	-77%	-9%	-12%	Switch from EF for countries in transition to EF for developed countries; 1B2a.iii Oil – Refining and storage and 1B2b.i. Natural gas - Exploration emissions calculated in NIR
C. CO2 transport and storage	**CH4**	NO	0.00	NO	NO	NO	NO	
2. Industrial processes and product use	**CH4**	9.53	9.53	0	0%	0%	0%	
A. Mineral industry	**CH4**	NO	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 us	**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**	2,853.98	2,330.46	-523.5182893	-14%	-2%	-2%	Emissions were recalculated for the entire due to further improvents in Tier 2 methodology for emission calculation of all cattle categories (improvements in digestibility, methane conversion factors and milk yield parameters.)
A. Enteric fermentation	**CH4**	2,501.11	1,977.59	-523.5182893	-14%	-2%	-2%	Emissions were recalculated for the entire due to further improvents in Tier 2 methodology for emission calculation of all cattle categories (improvements in digestibility, methane conversion factors and milk yield parameters.)
B. Manure management	**CH4**	352.87	352.87	0	0%	0%	0%	
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**	NO	0.00	NO	NO	NO	NO	
F. Field burning of agricultural residues	**CH4**	NO	NO	NO	NO	NO	NO	
G. Liming	**CH4**	NO	0.00	NO	NO	NO	NO	
H. Urea application	**CH4**	NO	0.00	NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**CH4**	NO	0.00	NO	NO	NO	NO	
J. Other	**CH4**	NO	0.00	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	NA,NO	NO	NO	NO	NO	
C. Grassland	**CH4**	0.11	0.11	0	0%	0%	0%	
D. Wetlands	**CH4**	NA,NO	NA,NO	NO	NO	NO	NO	
E. Settlements	**CH4**	NO	NO	NO	NO	NO	NO	
F. Other land	**CH4**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**CH4**	NO	0.00	NO	NO	NO	NO	
H. Other	**CH4**	NO	NO	NO	NO	NO	NO	
5. Waste	**CH4**	526.70	586.47	59.76986477	2%	0%	0%	5A Solid waste disposal - New value for methane generation rate constant (k) has been included.
A. Solid waste disposal	**CH4**	288.84	348.61	59.76986477	2%	0%	0%	5A Solid waste disposal - New value for methane generation rate constant (k) has been included.
B. Biological treatment of solid waste	**CH4**	IE,NE	IE,NE	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**	2,843.63	2,825.03	-18.59446376	0%	0%	0%	
1. Energy	**N2O**	120.79	147.35	26.55692648	1%	0%	0%	
A. Fuel combustion activities	**N2O**	120.25	146.66	26.40917849	1%	0%	0%	
1. Energy industries	**N2O**	17.38	17.49	0.102536078	0%	0%	0%	
2. Manufacturing industries and construction	**N2O**	17.64	17.64	0	0%	0%	0%	
3. Transport	**N2O**	54.31	53.07	-1.24764812	0%	0%	0%	New AD provided
4. Other sectors	**N2O**	30.91	58.46	27.55429054	1%	0%	0%	New AD provided
5. Other	**N2O**	NO	NO	NO	NO	NO	NO	
B. Fugitive Emissions from Fuels	**N2O**	0.55	0.69	0.147747988	0%	0%	0%	Switch from EF for countries in transition to EF for developed countries; 1B2a.iii Oil – Refining and storage and 1B2b.i. Natural gas - Exploration emissions calculated in NIR
1. Solid fuels	**N2O**	NO,NA	NO,NA	NO	NO	NO	NO	
2. Oil and natural gas	**N2O**	0.55	0.69	0.147747988	0%	0%	0%	2016
C. CO2 transport and storage	**N2O**	NO	0.00	NO	NO	NO	NO	
2. Industrial processes and product use	**N2O**	787.80	787.80	0	0%	0%	0%	
A. Mineral industry	**N2O**	NO	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**	NO	NA	NO	NO	NO	NO	
3. Agriculture	**N2O**	1,862.50	1,790.99	-71.51145842	-2%	0%	0%	Emissions were recalculated due to replacing FAO activity data on harvested area of crops with national sources (CBS) and updating the AD on crop yield with new CBS values. In addition, FSOM emissions are now reported under this category.
A. Enteric fermentation	**N2O**	NO	0.00	NO	NO	NO	NO	
B. Manure management	**N2O**	323.85	323.85	0	0%	0%	0%	
C. Rice cultivation	**N2O**	NO	0.00	NO	NO	NO	NO	
D. Agricultural soils	**N2O**	1,538.65	1,467.14	-71.51145842	-2%	0%	0%	Emissions were recalculated due to replacing FAO activity data on harvested area of crops with national sources (CBS) and updating the AD on crop yield with new CBS values. In addition, FSOM emissions are now reported under this category.
E. Prescribed burning of savannahs	**N2O**	NO	0.00	NO	NO	NO	NO	
F. Field burning of agricultural residues	**N2O**	NO	NO	NO	NO	NO	NO	
G. Liming	**N2O**	NO	0.00	NO	NO	NO	NO	
H. Urea application	**N2O**	NO	0.00	NO	NO	NO	NO	
I. Other carbon-containing fertilizer	**N2O**	NO	0.00	NO	NO	NO	NO	
J. Other	**N2O**	NO	0.00	NO	NO	NO	NO	
4. Land use, land-use change and forestry (net) (4)	**N2O**	5.53	31.89	26.36006818	1%	0%	0%	Error in calculation corrected
A. Forestland	**N2O**	0.74	0.74	0	0%	0%	0%	
B. Cropland	**N2O**	4.67	3.50	-1.167645079	0%	0%	0%	Error in calculation corrected
C. Grassland	**N2O**	0.12	0.12	0	0%	0%	0%	
D. Wetlands	**N2O**	NA,NO	4.51	NO	NO	NO	NO	
E. Settlements	**N2O**	NO	23.02	NO	NO	NO	NO	
F. Other land	**N2O**	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	**N2O**	NO	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**	NO	0.00	NO	NO	NO	NO	
B. Biological treatment of solid waste	**N2O**	IE,NE,NA	IE,NE,NA	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	2013
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**	577.71	577.71	0	0%	0%	0%	
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**	564.29	564.29	0	0%	0%	0%	
2.F.2. Foam blowing agents	**HFC**	NO	NO	NO	NO	NO	NO	
2.F.3. Fire protection	**HFC**	4.27	4.27	0	0%	0%	0%	
2.F.4. Aerosols	**HFC**	9.15	9.15	0	0%	0%	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	2013
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%	0%	0%	New EF from IPCC 2006 guidelines and new categories
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	New EF from IPCC 2006 guidelines and new categories
2.F.1. Refrigeration and air conditioning	**PFC**	0.06	0.06	0	0%	0%	0%	New EF from IPCC 2006 guidelines and new categories
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	2013
Greenhouse gas	SF6

Note: Replicate table below if more gases need reporting.

GREENHOUSE GAS SOURCE AND SINK CATEGORI	Gas (PFC, HFC, NF3, SF6, HFC-PFC Mix)	Previous submission (CO2-eq, kt)	Latest submission (CO2-eq, kt)	Difference (CO2-eq, kt)	Difference(1) %	Impact of recalculation on total emissions excluding LULUCF (2) %	Impact of recalculation on total emissions including LULUCF(3) %	Explanation for recalculations
F-gases: Total actual Emissions	**SF6**	0.00	0.00	-0.00001872	-6%	0%	0%	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**	0.00	0.00	-0.00001872	-6%	0%	0%	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	

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	New EF from IPCC 2006 guidelines and new categories
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	New EF from IPCC 2006 guidelines and new categories
2.F.1. Refrigeration and air conditioning	**PFC**	NO	NO	NO	NO	NO	NO	New EF from IPCC 2006 guidelines and new categories
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**	10.95424235	10.4500722	-0.50417015	-5%	0%	0%	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	10.95424235	10.4500722	-0.50417015	-5%	0%	0%	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 (	23,738.88	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 (	18,328.09	8,545.51	0.47	

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	14,809.02	NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	9,177.96	7,259.43	79.10%	
1.A.1 Energy industries	CO2	5,109.51	4,918.89	96.27%	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	1,229.54	1,328.74	108.07%	
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	1,275.40	1,270.28	99.60%	
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	30.64	5.12	16.72%	
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	16.63	15.80	94.99%	
2.C.1. Iron and steel production	CO2	16.63	15.80	94.99%	
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	

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	22,868.15	8,387.46	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	22,868.15	8,387.46	0.37	

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		NA	NA	
1.A Fuel combustion activities, stationary combustion [4]	CO2	6,926.08	6,751.28	97.48%	
1.A.1 Energy industries	CO2	4,601.75	4,276.80	92.94%	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	1,348.12	1,210.10	89.76%	
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	1,359.22	1,354.10	99.62%	
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	32.16	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	0.00	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	27.90	15.89	56.93%	
2.C.1. Iron and steel production	CO2	27.90	15.89	56.93%	
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	

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

Reporting year:	2014		
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	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	3.2.4.5.	1A1ai and 1A1aii	In sectors 1A1ai and 1A1aii consumption of biogas was incorrectly calculated. Consumption of biogas was reported in PJ instead in TJ, so emission od CO_2, CH_4 and N_2O were underestimated. This error is corrected for the whole historical trend
2. Manufacturing industries and construction			
3. Transport	3.2.6.5.	1.A.3.a. and 1.A.3.b	actual consumptions of fuels on domestic and international routes were determnined for the whole period from 1990 to 2013. In Road transport sector two recalculations were performed. Wrong net calorific value for LPG was used for the whole time series. Consumption of CNG was double counted
4. Other sector	3.2.7.5.	1.A.4.	actual consumptions of biomass fuels in households and services were determnined
5. Other			
B. Fugitive emissions from fuels			
1. Solid fuels			
2. Oil and natural gas and other emissions from energy production	3.3.2.5.	Table 1.B.2.	Oil were not calculated because CH4 emission factor was not available for developing and countries in transition (in table 4.2.5, EF for CH4 for Oil Refining is specified as ND). Recommendation of ESD review team which recommended usage of CH4 EF for developed countries (2.18·10-05 Gg per 103 m3 oil refined) was adopted
C. CO2 transport and storage			

Reporting year:	2014		
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	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	4.2.2.5., 4.2.4.5.	2.A.2. Lime production, 2.A.4. Other process uses of carbonates	Recalculations were performed for 2012 and 2013 because emissions from the production of sugar for 2012 and 2013 are no longer included in this sub-sector but in the Energy sector, in line with requirements of the EU ETS in the verified reports for the combustion. Recalculation was performed for the year 2013 because new data for limestone and dolomite use for
B. Chemical industry	4.3.2.5.	2.B.2. Nitric acid	Recalculation was performed for the year 2013 because new data for verified N2O emission for 2013 were provided.
C. Metal industry	4.4.1.5.	2.C.1. Iron and steel production	Recalculation was performed for the year 2013 because new data for steel production and verified CO2 emission for 2013 were provided.
D. Non-energy products from fuels and solvent use	4.5.1.5., 4.5.2.5.	2.D.1. Lubricant use, 2.D.4. Other	For submission on May 2016 recalculations were performed for entire period 1990 - 2014. According to the TERT recommendation during step 2 of ESD review, CO2 emissions from lubricants and paraffin wax use (categories 2.D.1 and 2.D.2) have been recalculated using data on the non-energy use of lubricants and data on the use of paraffin waxes only. In the previous report (submission on 15 March 2016) activity data contains data on naphtha, bitumen, LPG and ethane, which are not in line with 2006 IPCC Guidelines, Volume 3, Chapters 5.2 and 5.3. In addition, activity data are provided in kt of lubricants/parafin wax in the CRF (in the previous report activity data have been provided in TJ). For submission on May 2016 recalculations were performed for entire period 1990 - 2014 for category Solvent use. According to the TERT recommendation during step 2 of ESD review, CO2 emissions have been recalculated using the default fossil carbon content fraction of NMVOC that amounts 60 percent by mass, proposed by 2006 IPCC Guidelines, Volume 3, p. 5.17. In the previous report (submission on 15 March 2016) value of conversion factor C/NMVOC amounted to 0.8 according to the
E. Electronic industry			
F. Product uses as substitutes for ODS	4.7.1.5.	2.F.1. Refrigeration and air conditioning	Recalculations were performed in categories 2.F.1.b and 2.F.1.c for the period 2009 - 2014. In the 2015 submission, PFC emissions were reported in the domestic refrigeration subcategory (2.F.1.b). According to the TERT recommendation during step 1 of ESD review, these types of refrigerants are not used for the servicing of domestic refrigeration equipment and therefore PFC emissions have been introduced in the industrial refrigeration subcategory (2.F.1.c).
G. Other product manufacture and use	4.8.1.5.	2.G.1. Electrical equipment	Recalculation was performed for the year 2013 because new data on total charge of SF6 and leakage and maintenance loses for 2013 were provided.

Reporting year:	2014		
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	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.
3. Agriculture			
A. Enteric fermentation	Chapter 5.2. Enteric fermentation- domestic livestock, **5.2.5** -	**3.A**	Emissions were recalculated for the entire 1990-2014 period due to further improvents in Tier 2 methodology for emission calculation of all cattle categories.
B. Manure management	Chapter 5.3. Manure management, **5.3.2.5** - recalculations	**3.B.2** - N2O emissions (Manure management)	Emissions were recalculated for dairy and mature cows, sheep, swine categories, horses, mules&asses and poultry (years 1994, 1997, 2000, 2003, 2012) and for goats (years 1997, 2000, 2003, 2011-2013) due to correction of emission parameter errors and other issues detected during QA procedure (double counting of sheep under poultry category, improved data and minor error correction on AWMS % disposition).
C. Rice cultivation			
D. Agricultural soils	Chapter 5.5 Agricultural soils, 5.5.1. - Direct N2O Emissions from Managed soils, **5.5.1.5**. - recalculations, Chapter 5.5 Agricultural soils, 5.5.2. - Indirect N2O	**3.D.1** - Direct N2O Emissions from Managed soils (Agricultural soils); 3.D.2 - Indirect N2O Emissions from Managed soils	Due to replacement of FAO activity data on harvested area of crops with national sources and updating the AD on crop yield, emissions were recalculated for for the entire 1990-2013 period. Emissions from all sources from managed soils were recalculated for the entire 1990-2013 period due to AD changes and improvements made in sources: Manure Management – N2O Emissions (CRF 3.B.2.) and Direct N2O Emissions from Managed Soils (CRF 3.D.1.)
E. Prescribed burning of savannahs			
F. Field burning of agricultural residues			
G. Liming	Chapter 5.8 Liming, **5.8.5** - recalculations	**3.G** - Liming	emissions were recalculated for the entire category and period in which liming practice exists in Croatia (2005-2014). Recalculations are performed due to the new activity data on areas on which lime was applied.
H. Urea application			
I. Other carbon containing fertilisers			
J. Other			
4. Land use, land-use change and forestry			
A. Forest land	6.4.5		2006 Guidelines application and use of new values for R factor. Corrections in biomass harvested due to management parctices. Detailed explanations will be provided in NIR 2016 Resubmission
B. Cropland	6.5.5		Changes in LUC matrix.
C. Grassland	6.6.5		Changes in LUC matrix.
D. Wetlands	6.7.5		Changes in LUC matrix.
E. Settlements	6.8.5		Changes in LUC matrix.
F. Other land			
G. Harvested wood products			
H. Other			

Reporting year:	2014		
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	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.
5. Waste			
A. Solid waste disposal	7.2.5.	5.A.1 Managed waste disposal sites, 5.A.2. Unmanaged waste disposal sites	Recalculations were performed for the period 1990 - 2013. According to the TERT recommendation during ESD review in 2015, IPCC default value for methane generation rate constant (k = 0.09) for Climate zone Boreal and Temperate/Wet, proposed by 2006 IPCC Guidelines, has been used in CH4 emission calculation for entire reporting period (instead of k = 0.05 for Climate zone Boreal and Temperate/Dry in the previous report). In addition, DOCf = 0.5 was taken into account for CH4 emissions estimation for entire reporting period (instead of value 0.55 in the previous report). Recalculations were performed for the period 1990 - 2013. According to the TERT recommendation during ESD review in 2015, IPCC default value for methane generation rate constant (k = 0.09) for Climate zone Boreal and Temperate/Wet, proposed by 2006 IPCC Guidelines, has been used in CH4 emission calculation for entire reporting period (instead of k = 0.05 for Climate zone Boreal and Temperate/Dry in the previous report). In addition, DOCf = 0.5 was taken into account for CH4 emissions estimation for entire reporting period (instead of value 0.55 in the previous report).
B. Biological treatment of solid waste	7.3.5.	5.B.1. Composting, 5.B.2. Anaerobic digestion at biogas facilities	Recalculations were performed for the period 2007 - 2013. According to the TERT recommendation during ESD review in 2015, data for municipal solid waste (dry weight) are included for the period 2007 – 2013, data for industrial waste (dry weight), sludge (dry weight) and other organic waste (dry weight) are included for 2013. In addition, IPCC default emission factor for N2O emission calculation has been corrected according to 2006 IPCC Guidelines (version of July 2015). Recalculations were performed for the year 2013. According to the TERT recommendation during ESD review in 2015, data for municipal solid waste (dry weight), industrial waste (dry weight), sludge (dry weight) and other organic waste (dry weight) are included for 2013. In addition, IPCC default emission factor for CH4 emission calculation has been corrected according to 2006 IPCC Guidelines (version of July 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	11.3.1.6	4(KP-I)A.1 AR, 4(KP-I)A.2	BEF, R, CF, updated AD
Afforestation/reforestation			
Deforestation			
Article 3.4 activities	11.3.1.6	4(KP-I)B.1 FM, 4(KP-II)3	BEF, R, CF, updated AD; EF, updated AD
Forest management			
Cropland management (if elected)			
Grazing land management (if elected)			
Revegetation (if elected)			
Wetland drainage and rewetting (if elected)			

REFERENCES

Energy sector

1. Central Bureau of Statistics (2014) Statistical Yearbook – for period from 1990 till 2012, Zagreb
2. Croatian Environment Agency (2016) Republic of Croatia Informative Inventory Report for 2014, under Convention on Long-range Transboundary Air Pollution (CLRTAP), EKONERG Ltd., Zagreb
3. FCCC/IRR/2008/HRV Report of the review of the initial report of Croatia, 26 August 2009
4. FCCC/ARR/2008/HRV Report of the initial review of the greenhouse gas inventories of Croatia submitted in 2007 and 2008, 5 November 2009 (advance version)
5. FCCC/ARR/2009/HRV Report of the individual review of the greenhouse gas inventory of Croatia submitted in 2009 Centralized Review Report
6. FCCC/ARR/2010/HRV Report of the individual review of the annual submission of Croatia submitted in 2010, 20 January 2011
7. FCCC/ARR/2012/HRV Report of the individual review of the annual submission of Croatia submitted in 2012, 8 February 2013
8. FCCC/ARR/2012/HRV Report of the individual review of the annual submission of Croatia submitted in 2014, 7 May 2015
9. EEA (2000) COPERT IV Computer Programme to Calculate Emissions from Road Transport, Denmark
10. INA (2012) Data about natural gas scrubbing in Central Gas Station MOLVE and sulphur content in liquid fossil fuels, INA – Oil and Gas Company, data sent by fax or by mail
11. INA (2013) Data about number of active wells, INA – Oil and Gas Company, data sent by mail
12. IPCC/UNEP/WMO (2006) IPCC Guidelines for National Greenhouse Inventories, Volume 2, Energy, Japan

13. IPCC (2000) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, Japan
14. IPCC/UNEP/OECD/IEA (1997) Greenhouse Gas Inventory – Workbook, Revised 1996 IPCC Guidelines for National Greenhouse Inventories, Volume 2, United Kingdom
15. IPCC/UNEP/OECD/IEA (1997) Greenhouse Gas Inventory – Reference Manual, Revised 1996 IPCC Guidelines for National Greenhouse Inventories, Volume 3, United Kingdom
16. Ministry of Economy, Labour and Entrepreneurship (2012) Energy in Croatia 2012, Annual Energy Report, Energy Institute "Hrvoje Požar", Zagreb
17. Ministry of Environmental and Nature Protection (2015) National Inventory Report 2015, Croatian greenhouse gas inventory for the period 1990 – 2013, EKONERG, Zagreb
18. Ministry of Environmental and Nature Protection (2010) Fifth National Communication of the Republic of Croatia under the United Nations Framework Convention on Climate Change (UNFCCC), Zagreb
19. Ministry of Environmental and Nature Protection (2006) Second, Third and Fourth National Communication of the Republic of Croatia under the United Nations Framework Convention on Climate Change (UNFCCC), Zagreb
20. Ministry of Interior (2012) Motor Vehicle Databases for 1990-2012, data on CD
21. Vuk B. National Energy Balances–for period from 1990 till 2013, Energy Institute Hrvoje Požar, Zagreb
22. Vuk B. Industry analysis balance–for period from 2001 till 2012, Energy Institute Hrvoje Požar, Zagreb
23. EUROSTAT energy balance for Croatia for 2014

Industrial processes and product use

24. Central Bureau of Statistics, Department of Manufacturing and Mining, Annual PRODCOM results (1990 - 2014), Zagreb
25. Central Bureau of Statistics, Statistical Yearbooks (1990 - 2014), Zagreb

26. CROATIA CEMENT g.i.u (2007) Report: Activity data for CO2 emission calculations from Portland cement production, in the framework of study Croatian Cement Industry and Climate Change, EKONERG Ltd., Zagreb
27. Croatian Environment Agency (2016) Republic of Croatia Informative Inventory Report for LRTAP Convention for the Year 2014 Submission to the Convention on Long-range Transboundary Air Pollution, EKONERG Ltd., Zagreb
28. FCCC/ARR/2014/HRV Report on the individual review of the annual submission of Croatia submitted in 2014, 15 June 2015
29. IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme. Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds.). Published: IGES, Japan., Volume 2: Energy
30. IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme. Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds.). Published: IGES, Japan., Volume 3: Industrial Processes and Product Use
31. ISTRA CEMENT Ltd. (2008) Report: Activity data for CO_2 emission calculations from Portland and Aluminate cement production, in the framework of survey Programme of Reduction of CO_2 Emission in Istra Cement Ltd., EKONERG Ltd., Zagreb
32. Ministry of Environmental and Nature Protection (2015) National Inventory Report 2015, Croatian greenhouse gas inventory for the period 1990 – 2013, EKONERG, Zagreb
33. Ministry of Environmental and Nature Protection (2014) Sixth National Communication and First Biennial Report of the Republic of Croatia under the United Nations Framework Convention on Climate Change (UNFCCC), Zagreb
34. Ministry of Environmental and Nature Protection (2015) Second Biennial Report of the Republic of Croatia under the UN Framework Convention on Climate Change, Zagreb
35. PROMINS g.i.u (2008) Report: Activity data for CO_2 emission calculations from lime production, in the framework of study Croatian Lime Industry and Climate Change, EKONERG Ltd., Zagreb

Agriculture

36. Bašić, F., O. Nestroy, I. Kisić, A. Butorac, M. Mesić (1988) Protection from erosion – the key role of soil cultivation in present and changed climate conditions, Croatian Academy of Sciences and Arts – Scientific conference with international participation "The adjustment of agriculture and forestry to climate and its changes", pages 115-125, Zagreb
37. Butorac, A., (1963) Thermal condition of soil and the most characteristic temperature thresholds for certain sites in main agricultural regions of Croatia, Agricultural Gazette 12/63
38. Central Bureau of Statistics, Statistical Yearbooks (1990-2011), Zagreb
39. Croatian Environment Agency (2012) Republic of Croatia Informative Inventory Report for LRTAP Convention for the Year 2011 Submission to the Convention on Long-range Transboundary Air Pollution, EKONERG Ltd., Zagreb
40. EMEP/CORINAIR Atmospheric Emission Inventory Guidebook 2007
41. IPCC/UNEP/OECD/IEA (1997) Greenhouse Gas Inventory Workbook, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2, United Kingdom
42. IPCC/UNEP/OECD/IEA (1997) Greenhouse Gas Inventory Reference Manual, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3, United Kingdom
43. FAO database www.fao.org
44. Ministry of Environmental and Nature Protection (2013) National Inventory Report 2013, Croatian greenhouse gas inventory for the period 1990 – 2011, EKONERG Ltd., Zagreb
45. Ministry of Environmental and Nature Protection (2010) Fifth National Communication of the Republic of Croatia under the United Nations Framework Convention on Climate Change (UNFCCC), Zagreb
46. Response of Croatia to Potential Problems and Further Questions from the ERT formulated in the course of the 2012 review of the greenhouse gas inventories of Croatia submitted in 2012

47. FCCC/ARR/2011/HRV Report of the individual review of the annual submission of Croatia submitted in 2012
48. Znaor, D. and Karoglan Todorović, S.,(2005) Analysis of yields, nitrogen content and N-fixation of Croatian agricultural production in 2002-2003, University of Essex, Colchester. Unpublished

LULUCF

49. Badjun, S. (1965) Physical and mechanical properties of Oakwood from forest district "Lubardenik" Lipovljani, Drvna industrija 16: 2-8.
50. Badjun, S. (1977) Comparative Wood Quality Appreciation, Drvna industrija 28: 125-131.
51. Croatian Bureau of Statistics (1999) Statistical Yearbook of the Republic of Croatia, Croatian Bureau of Statistics: 228
52. Croatian Bureau of Statistics (2011-2012) Statistical Yearbooks of the Republic of Croatia, Croatian Bureau of Statistics
53. Croatian Environment Agency (2013), http://www,azo,hr/CORINELandCover: 2-5
54. Croatian Forests (2006) Forest Management Area Plan of the Republic of Croatia 2006-2015, Public company "Croatian Forests"
55. Croatian Geological Institute (2012) Total nitrogen and organic carbon in soils of the Republic of Croatia, Croatian Environment Agency
56. Croatian Parliament (1993) Law on amendments to the Law on Forests Official Gazette No 76
57. Croatian Parliament (2009) Energy Development Strategy of the Republic of Croatia, Official Gazette No 130
58. Croatian Parliament (2012) Law on Energy, Official Gazette No 120
59. Environment Agency Austria (2012), National inventory report 2012, Submission under the UNFCCC and the Kyoto Protocol
http://unfccc,int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598,php
60. Government of the Republic of Croatia (1993) The Regulation on amendments to the Law on Forests, Official Gazette No 14

61. Government of the Republic of Croatia (2007) Tariff system for the production of electricity from renewable energy sources and cogeneration, Official Gazette No 33
62. Government of the Republic of Croatia (2013) Draft strategy for management and disposal of property of the Republic of Croatia 2013-2017, http://www.duudi.hr/wp-content/uploads/2013/04/nacrt-Strategije.pdf : 43,
63. Govorčin S., T. Sinković, J. Trajković, B. Šefc (2011) Structural, technical and usable properties of some commercial wood species, Academy of Forestry Sciences: 647.
64. Horvat, I. (1957) Investigations on technical properties of Slavonian Oakwood, Šumarski list 81: 321-360.
65. Horvat, I. (1958) Investigations on technical properties of fir-wood (Abies Alba Mill,) from Gorski kotar, Drvna industrija 9: 2-10.
66. Horvat, I. (1969) Some physical and mechanical properties of beechwood from Gorski kotar Žumberak, Petrova gora, Senjsko bilo and Velebit, Drvna industrija 20: 183-194.
67. Janeš,D., G. Kovač, V. Grgesina, D. Pleskalt (2014): Identifying areas affected by fires according to requirements of Article 3.3 and 3.4 of the Kyoto Protocol
68. Ministry of Economy (2006) Amendments to the plan of development, construction and modernization of gas transportation system in the Republic of Croatia from 2002 to 2011 - The second investment cycle 2007 – 2011, http://www.plinacro.hr/default.aspx?id=44
69. Ministry of Regional Development, Forestry and Water management (2006) Regulations on the procedure for granting funds from fees for the use of beneficial functions of forests for work performed in private forests, Official Gazette No 66
70. Ministry of Regional Development, Forestry and Water management (2008) Ordinance on amendments to the Ordinance on the Register of forest owners, Official Gazette No 84
71. Ministry of Regional Development, Forestry and Water management (2010) Forest Resources Assessment Croatia 2010 (FRA 2010)
72. Republic of Bulgaria, Ministry of Environment and Water, Executive Environment Agency (2012), National inventory report 2012, Submission under the UNFCCC and the Kyoto Protocol,

http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598.php

73. Section of Forestry and Wood Industry Association of Engineers and Technicians People's Republic of Croatia (1949), Small Forestry-technical Manual: 215
74. Sinković, T. (1991) Some physical properties of fir-wood from Gorski kotar, Drvna industrija 42: 17-21.
75. Sinković, T., S. Govorčin, T. Sedlar (2011) Comparison of Physical Properties of Untreated and Heat treated Beech and Hornbeam, Drvna industrija 62: 283-290.
76. Štajduhar, F. (1972) A contribution to Physical and mechanical properties investigation of Beechwood in Croatia, Drvna industrija 23: 43-59.
77. The Intergovernmental Panel on Climate Change (IPCC, 2003), Good Practice Guidelines for Land Use, Land-Use Change and Forestry, Institute for Global Environmental Strategies (IGES)

Waste

78. Central Bureau of Statistics, Statistical Yearbooks (1990 - 2014)
79. Croatian Agency for the Environment and Nature, Cadastre of Waste - Municipal Solid Waste, Reports 2006 - 2014, Zagreb
80. Croatian Agency for the Environment and Nature (2016) Republic of Croatia Informative Inventory Report for LRTAP Convention for the Year 2014 Submission to the Convention on Long-range Transboundary Air Pollution, EKONERG Ltd., Zagreb
81. Croatian Water Ltd. (2015) Report: Data for methane emission calculations from domestic and commercial wastewater, Zagreb
82. Diaz, L.F. et al. (1996) Solid Waste Management for Economically Developing Countries, ISWA
83. Government of the Republic of Croatia (2005) Croatian Waste Management Strategy
84. FAOSTAT: Statistical Database, http://www.fao.org
85. FCCC/ARR/2014/HRV Report on the individual review of the annual submission of Croatia submitted in 2014, 15 June 2015

86. Fundurulja, D., Mužinić, M. (2000) Estimation of the Quantities of Municipal Solid Waste in the Republic of Croatia in the period 1990 – 1998 and 1998 – 2010, Zagreb
87. IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme. Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds.). Published: IGES, Japan., Volume 2: Energy
88. IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme. Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (eds.). Published: IGES, Japan., Volume 5: Waste
89. Ministry of Environmental and Nature Protection (2000) Report of Environment Condition
90. Ministry of Environmental and Nature Protection (2006) Guidelines Development for starting implementation of Waste Management Plan in the Republic of Croatia, LIFE04 TCY/CRO/000028, EKONERG Ltd., Zagreb
91. Ministry of Environmental and Nature Protection (2015) National Inventory Report 2015, Croatian greenhouse gas inventory for the period 1990 – 2013, EKONERG Ltd., Zagreb
92. Ministry of Environmental and Nature Protection (2014) Sixth National Communication and First Biennial Report of the Republic of Croatia under the United Nations Framework Convention on Climate Change (UNFCCC), Zagreb
93. Ministry of Environmental and Nature Protection (2015) Second Biennial Report of the Republic of Croatia under the UN Framework Convention on Climate Change, Zagreb
94. Ministry of Environmental and Nature Protection (2007) Waste Management Plan in the Republic of Croatia (2007-2015), Zagreb
95. Potočnik, V. (2000) Report: The basis for methane emission estimation in Croatia 1990-1998, B. Data on Municipal Solid Waste in Croatia 1990-1998, Zagreb