

Annex 2.1 Detailed discussion on methodology and data for estimating CO₂ emissions from fossil fuel combustion – stationary combustion

Correspondence between Energy Balance and the CRF categories

The following sector allocation was applied in the calculation worksheets:

Table 2. 1 Correspondence between the IEA/EUROSTAT format energy balances and the CRF categories

IEA/EUROSTAT Energy Balance category	CRF category
SOLID FUELS	
Transformation sector	
Main Activity Producer Electricity Plants	1A1a
Main Activity Producer CHP Plants	1A1a
Main Activity Producer Heat Plants	1A1a
Autoproducer Electricity Plants	1A2f
Autoproducer CHP Plants	1A2f
Autoproducer Heat Plants	1A2f
Patent Fuel Plants (Transformation)	
Coke Ovens (Transformation)	
BKB Plants (Transformation)	
Gas Works (Transformation)	
Blast Furnaces (Transformation)	
Coal Liquefaction Plants (Transformation)	
For Blended Natural Gas	
Non-specified (Transformation)	
Energy sector	
Own Use in Electricity, CHP and Heat Plants	1A1a
Coal Mines	1A1c
Patent Fuel Plants (Energy)	1A1c
Coke Ovens (Energy)	1A1c
BKB Plants (Energy)	1A1c
Gas Works (Energy)	
Blast Furnaces (Energy)	1A2a
Petroleum Refineries	1A1b
Coal Liquefaction Plants (Energy)	
Non-specified (Energy)	1A1c

IEA/EUROSTAT Energy Balance category	CRF category
SOLID FUELS	
Industry sector	
Iron and Steel	1A2a
Chemical (including Petrochemical)	1A2c
Non-Ferrous Metals	1A2b
Non-Metallic Minerals	1A2f
Transport Equipment	1A2f
Machinery	1A2f
Mining and Quarrying	1A2f
Food, Beverages and Tobacco	1A2e
Paper, Pulp and Printing	1A2d
Wood and Wood Products	1A2f
Construction	1A2f
Textiles and Leather	1A2f
Non-specified (Industry)	1A2f
Other sectors	
Commercial and Public Services	1A4a
Residential	1A4b
Agriculture/Forestry	1A4c
Fishing	1A4c
Non-specified (Other)	1A5a

IEA/EUROSTAT Energy Balance category	CRF category
LIQUID FUELS	
Refinery Fuel	1A1b
Energy Use in Petrochemical Sector	1A2c
Transformation sector	
Main Activity Producer Electricity Plants	1A1a
Autoproducer Electricity Plants	1A2f
Main Activity Producer CHP Plants	1A1a
Autoproducer CHP Plants	1A2f
Main Activity Producer Heat Plants	1A1a
Autoproducer Heat Plants	1A2f
Gas Works (Transformation)	
For Blended Natural Gas	
Coke Ovens (Transformation)	
Blast Furnaces (Transformation)	
Petrochemical Industry	
Patent Fuel Plants (Transformation)	
Non-specified (Transformation)	
Energy sector	
Coal Mines	1A1c
Oil and Gas Extraction	1A1c
Coke Ovens (Energy)	1A1c
Blast Furnaces (Energy)	1A2a
Gas Works (Energy)	
Own Use in Electricity, CHP and Heat Plants	1A1a
Non-specified (Energy)	1A1c
Industry sector	
Iron and Steel	1A2a
Chemical (including Petrochemical)	1A2c
Non-Ferrous Metals	1A2b
Non-Metallic Minerals	1A2f
Transport Equipment	1A2f
Machinery	1A2f
Mining and Quarrying	1A2f
Food, Beverages and Tobacco	1A2e
Paper, Pulp and Printing	1A2d
Wood and Wood Products	1A2f
Construction	1A2f
Textiles and Leather	1A2f

IEA/EUROSTAT Energy Balance category	CRF category
LIQUID FUELS	
Non-specified (Industry)	1A2f
Other sectors	
Commercial and Public Services	1A4a
Residential	1A4b
Agriculture/Forestry	1A4c
Fishing	1A4c
Non-specified (Other)	1A5a

IEA/EUROSTAT Energy Balance category	CRF category
GASEOUS FUELS	
Transformation sector	
Main Activity Producer Electricity Plants	1A1a
Autoproducer Electricity Plants	1A2f
Main Activity Producer CHP Plants	1A1a
Autoproducer CHP Plants	1A2f
Main Activity Producer Heat Plants	1A1a
Autoproducer Heat Plants	1A2f
Gas Works (Transformation)	
Coke Ovens (Transformation)	
Blast Furnaces (Transformation)	
Gas-to-Liquids (GTL) Plants (Transformation)	
Non-specified (Transformation)	
Energy sector	
Coal Mines	1A1c
Oil and Gas Extraction	1A1c
Petroleum Refineries	1A1b
Coke Ovens (Energy)	1A1c
Blast Furnaces (Energy)	1A2a
Gas Works (Energy)	
Own Use in Electricity, CHP and Heat Plants	1A1a
Liquefaction (LNG) / Regasification Plants	
Gas-to-Liquids (GTL) Plants (Energy)	
Non-specified (Energy)	1A1c
Industry sector	
Iron and Steel	1A2a
Chemical (including Petrochemical)	1A2c
Non-Ferrous Metals	1A2b
Non-Metallic Minerals	1A2f
Transport Equipment	1A2f
Machinery	1A2f
Mining and Quarrying	1A2f
Food, Beverages and Tobacco	1A2e
Paper, Pulp and Printing	1A2d
Wood and Wood Products	1A2f
Construction	1A2f

IEA/EUROSTAT Energy Balance category	CRF category
GASEOUS FUELS	
Textiles and Leather	1A2f
Non-specified (Industry)	1A2f
Other sectors	
Commercial and Public Services	1A4a
Residential	1A4b
Agriculture/Forestry	1A4c
Fishing	1A4c
Non-specified (Other)	1A4c
Total Final Consumption (Non-Energy Use)	

IEA/EUROSTAT Energy Balance category	CRF category
Biomass and other fuels	
Transformation	
Main activity producer electricity plants	1A1a
Autoproducer electricity plants	1A2f
Main activity producer CHP plants	1A1a
Autoproducer CHP plants	1A2f
Main activity producer heat plants	1A1a
Autoproducer heat plants	1A2f
Heat pumps	
Electric boilers	
Chemical heat for electricity production	
Patent fuel plants	1A1c
Coke ovens	
Gas works	
Blast furnaces	1A2a
Petrochemical plants	
BKB plants	
Oil refineries	
Coal liquefaction plants	
Gas-to-liquids (GTL) plants	
For blended natural gas	
Charcoal production plants	
Non-specified (transformation)	
Energy industry own use	
Coal mines	1A1c
Oil and gas extraction	
Patent fuel plants	1A1c
Coke ovens	1A1c
Gas works	

IEA/EUROSTAT Energy Balance category	CRF category
Biomass and other fuels	
Gasification plants for biogas	
Blast furnaces	1A2a
BKB plants	1A1c
Oil refineries	
Coal liquefaction plants	
Liquefaction (LNG) / regasification plants	
Gas-to-liquids (GTL) plants	
Own use in electricity, CHP and heat plants	1A1a
Used for pumped storage	
Nuclear industry	
Charcoal production plants	
Non-specified (energy)	
Industry	
Iron and steel	1A2a
Chemical and petrochemical	1A2c
Non-ferrous metals	1A2b
Non-metallic minerals	1A2f
Transport equipment	1A2f
Machinery	1A2f
Mining and quarrying	1A2f
Food and tobacco	1A2e
Paper, pulp and print	1A2d
Wood and wood products	1A2f
Construction	1A2f
Textile and leather	1A2f
Non-specified (industry)	1A2f
Other	
Residential	1A4b

IEA/EUROSTAT Energy Balance category	CRF category
Biomass and other fuels	
Commercial and public services	1A4a
Agriculture/forestry	1A4c
Fishing	1A4c
Non-specified (other)	1A5a

For the sectoral approach were considered all fuels for which there was reported energy consumption. These fuels are as follows:

Solid fuels:

- anthracite;
- coking coal;
- other bituminous coal;
- sub-bituminous coal;
- lignite/brown coal;
- coke oven coke;
- patent fuel;
- BKB/PB;
- coke oven gas;
- blast furnace gas;
- peat.

Liquid fuels:

- crude Oil;
- refinery gas;
- LPG;
- motor gasoline;
- aviation gasoline;
- kerosene type jet fuel;
- transport diesel;
- residual fuel oil;

- petroleum coke;
- other products;
- natural gas liquids;
- naphtha;
- other kerosene;
- heating and other gasoil;
- white spirit and SBP.

Gaseous fuels:

- natural gas dry.

Other fuels:

- industrial wastes.

Biomass:

- solid biomass;
- Gas biomass.

The NCVs were provided in the energy balances (see the Annex 4.2).

For the solid fuels, the NCVs were applied to the appropriate sectors, according to the following allocation:

IEA/EUROSTAT Energy Balance Category	NCVs
Indigenous Production	
Underground Production	
Surface Production	
From Other Sources	
From Other Sources - Oil	
From Other Sources - Natural Gas	
From Other Sources - Renewables	
Total Imports (Balance)	

Total Exports (Balance)	
International Marine Bunkers	
Stock Changes (National Territory)	
Inland Consumption (Calculated)	
Statistical Differences	
Transformation Sector	
Main Activity Producer Electricity Plants	Used in Main Activity Plants (net)
Main Activity Producer CHP Plants	Used in Main Activity Plants (net)
Main Activity Producer Heat Plants	Used in Main Activity Plants (net)
Autoproducer Electricity Plants	Used in industry (net)
Autoproducer CHP Plants	Used in industry (net)
Autoproducer Heat Plants	Used in industry (net)
Patent Fuel Plants (Transformation)	
Coke Ovens (Transformation)	
BKB Plants (Transformation)	
Gas Works (Transformation)	
Blast Furnaces (Transformation)	
Coal Liquefaction Plants (Transformation)	
For Blended Natural Gas	
Non-specified (Transformation)	
Energy Sector	
Own Use in Electricity, CHP and Heat Plants	Used in Main Activity Plants (net)
Coal Mines	Production (net)
Patent Fuel Plants (Energy)	Production (net)
Coke Ovens (Energy)	Used in coke ovens (gross)
BKB Plants (Energy)	Production (net)
Gas Works (Energy)	
Blast Furnaces (Energy)	Used in blast furnaces (net)
Petroleum Refineries	Used in industry (net)
Coal Liquefaction Plants (Energy)	

Non-specified (Energy)	For Other Uses (net)
Distribution Losses	
Total Final Consumption	
Total Non-Energy Use	
Non-Energy Use	
Industry/Transformation/Energy	
Of which: Non-Energy Use- Chemical/Petrochem	
Non-Energy Use in Transport	
Non-Energy Use in Other Sectors	
Final Energy Consumption	
Industry Sector	
Iron and Steel	Used in industry (net)
Chemical (including Petrochemical)	Used in industry (net)
Non-Ferrous Metals	Used in industry (net)
Non-Metallic Minerals	Used in industry (net)
Transport Equipment	Used in industry (net)
Machinery	Used in industry (net)
Mining and Quarrying	Used in industry (net)
Food, Beverages and Tobacco	Used in industry (net)
Paper, Pulp and Printing	Used in industry (net)
Wood and Wood Products	Used in industry (net)
Construction	Used in industry (net)
Textiles and Leather	Used in industry (net)
Non-specified (Industry)	Used in industry (net)
Other Sectors	
Commercial and Public Services	For Other Uses (net)
Residential	For Other Uses (net)
Agriculture/Forestry	For Other Uses (net)
Fishing	For Other Uses (net)
Non-specified (Other)	For Other Uses (net)

The emission factors for the analyzed fuels were applied as default, using Tier 1 approach, according with the IPCC provision (IPCC 1996 Guidelines, Vol. II, Ch. 1, Table 1-2).

For the following fuels were applied country-specific emission factors, in order to use a Tier 2 approach:

- lignite;
- natural gas;
- refinery gas;
- other bituminous coal;
- coke oven coke;
- transport diesel;
- residual fuel oil;
- heating and other gasoil;
- petroleum coke;
- motor gasoline^{*};
- industrial wastes.

* For the motor gasoline fuel the country-specific emission factor was calculated based on the carbon content provided by the Romanian Ministry of Economy.

Based on EU-ETS reporting of the fuel consumption, estimated emissions and plant specific emission factors and using the methodology provided through the Study “Elaboration/ documentation of national emission factors/other parameters relevant to National Greenhouse Gas Inventory (NGHGI) Sectors Energy, Industrial Processes, Agriculture and Waste, values to allow for the higher tier calculation methods implementation” the country specific emission factors were calculated. The resulted values of the CS EFs are presented in the following table:

Table 2. 2 The determination of the country-specific CO₂ emission factors for stationary combustion, based on EU-ETS reporting

Lignite																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	287953.48	97.80	102.14	246127.88	94.23	98.87	257449.45	91.65	97.70	238482.43	89.04	96.55	93.38	98.96	293210.69	86.96	94.49
Total consum./WA EF	287953.48	97.80	102.14	246127.88	94.23	98.87	257449.45	91.65	97.70	238482.43	89.04	96.55	93.38	98.96	293210.69	86.96	94.49
Carbon content [t/TJ]			27.86			26.96			26.65			26.33		26.99			25.77

Natural gas																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	130182.27	54.56	55.21	122442.29	55.99	55.99	106474.52	55.65	55.66	87758.47	55.46	55.52	55.39	55.59	107093.73	55.49	55.49
1A1b	24917.25	54.16	54.64	23505.77	55.74	54.67	8911.51	56.61	56.60	13482.61	55.38	57.68	55.23	55.48	2527.45	55.67	55.65
1A1c	8802.84	56.74	57.02	6970.53	56.33	56.33	5908.98	56.56	56.57	8157.29	56.34	56.34	56.50	56.58	5757.28	56.36	56.36
1A2a	9495.49	55.13	55.40	8865.92	55.34	55.34	12566.23	52.57	55.17	7975.65	55.34	55.39	54.39	55.31	10167.15	55.41	55.43
1A2b	2296.33	55.05	55.33	1688.23	55.23	55.22	1427.02	56.10	56.14	7625.33	53.63	56.11	54.36	55.86	8125.29	55.89	55.89
1A2c	48829.94	54.95	55.08	62007.09	55.05	55.19	49497.72	54.82	54.86	14811.14	55.71	55.71	55.01	55.11	22228.99	55.49	55.51
1A2d	2227.36	54.81	55.08	2450.66	55.44	55.29	1564.17	55.31	55.31	1948.09	55.26	55.27	55.20	55.23	1629.39	55.34	55.34
1A2e	755.64	54.75	54.44	1677.58	55.29	55.29	1910.85	55.49	55.50	1613.42	55.19	55.19	55.26	55.22	2237.90	55.38	55.38
1A2f	8111.37	54.98	55.40	16184.36	55.15	55.16	12422.24	55.40	55.41	13586.45	55.53	55.47	55.29	55.35	13518.10	55.33	55.32
Total consum./WA EF	235618.49	54.73	55.20	245792.42	55.65	55.58	200683.24	55.31	55.49	156958.46	55.43	55.78	55.27	55.49	173285.29	55.52	55.52

Natural gas																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
Carbon content [t/TJ]			15.05			15.16			15.13			15.21		15.13			15.14

Refinery gas																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3452.43	55.33	55.33	55.33	55.33	3982.04	57.30	57.30
1A1b	15757.70	54.89	55.12	8546.89	56.92	54.05	6820.88	58.00	57.99	11788.05	57.59	58.03	56.53	56.16	9736.93	57.47	57.47
Total consum./WA EF	15757.70	54.89	55.12	8546.89	56.92	54.05	6820.88	58.00	57.99	15240.48	57.08	57.42	56.44	56.10	13718.97	57.42	57.42
Carbon content [t/TJ]			15.03			14.74			15.82			15.66		15.30			15.66

Other bituminous coal																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	3725.63	92.00	92.44	9287.90	89.22	91.12	3747.13	94.81	94.81	2538.18	97.44	97.83	91.92	92.97	6126.92	85.65	87.38
1A2f	2344.60	94.51	94.50	10185.64	97.28	97.28	9211.78	95.34	95.37	8506.84	96.92	94.00	96.37	95.56	8543.48	94.97	94.97

Other bituminous coal																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
Total consum./WA EF	6070.23	92.97	93.24	19473.54	93.43	94.34	12958.91	95.19	95.20	11045.02	97.04	94.88	94.64	94.55	14670.40	91.08	91.80
Carbon content [t/TJ]			25.43			25.73			25.96			25.88		25.79			25.04

Coke oven coke																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A2e	62.54	92.06	92.92	59.75	84.46	84.33	114.67	92.97	92.89	80.36	92.65	92.65	91.11	91.22	72.10	95.15	95.15
1A2f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1149.10	95.16	95.16
Total consum./WA EF	62.54	92.06	92.92	59.75	84.46	84.33	114.67	92.97	92.89	80.36	92.65	92.65	91.11	91.22	1221.20	95.16	95.16
Carbon content [t/TJ]			25.34			23.00			25.33			25.27		24.88			25.95

Transport diesel																	
Year	2007			2008			2009			2010			2007-2010				
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	0.14	73.25	74.00	13.98	77.53	72.07	21.16	74.22	74.04	12.79	73.29	72.75	74.93	73.12	15.37	72.92	72.92

Transport diesel																	
Year	2007			2008			2009			2010			2007-2010				
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1b	79.84	73.95	74.00	56.85	72.42	72.42	0.00	0.00	0.00	0.00	0.00	0.00	73.31	73.34	-	-	-
Total consum./WA EF	79.97	73.95	74.00	70.83	73.43	72.35	21.16	74.22	74.04	12.79	73.29	72.75	73.74	73.29	15.37	72.92	72.92
Carbon content [t/TJ]			20.18			19.73			20.19			19.84		19.99			19.89

Residual fuel oil																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	10436.38	77.73	78.42	7907.01	77.68	77.67	13350.49	77.73	77.69	6322.92	79.07	79.07	77.94	78.12	6422.52	79.33	79.33
1A1b	10467.17	78.15	78.45	8795.24	75.87	75.76	5931.30	78.46	78.42	4923.55	80.75	80.71	77.97	78.03	1708.26	80.27	80.27
1A2b	441.36	79.71	80.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.71	80.10	-	-	-
1A2d	126.83	85.98	86.40	240.45	84.59	84.86	0.00	0.00	0.00	0.00	0.00	0.00	85.07	85.39	-	-	-
1A2e	1813.26	78.95	79.29	491.29	78.54	78.54	378.97	80.42	80.38	226.07	75.07	75.07	78.77	78.98	106.02	76.95	76.95
1A2f	0.00	0.00	0.00	297.72	75.24	75.74	20.44	78.31	78.31	39.62	78.31	78.31	75.76	76.17	-	-	-
Total consum./WA EF	23285.01	78.09	78.58	17731.71	76.86	76.81	19681.21	78.00	77.97	11512.17	79.71	79.69	78.02	78.15	8236.80	79.49	79.49
Carbon content [t/TJ]			21.43			20.95			21.26			21.73		21.31			21.68

Heating and other gasoil																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	5.41	74.96	74.95	6.33	79.97	79.12	103.42	74.65	74.45	110.68	73.67	73.66	74.32	74.20	0.29	73.29	73.31
1A2e	3.59	73.46	73.73	1.74	73.17	73.30	0.00	0.00	0.00	0.87	73.71	73.30	73.41	73.55	-	-	-
Total consum./WA EF	9.00	74.36	74.46	8.06	78.50	77.87	103.42	74.65	74.45	111.55	73.67	73.66	74.30	74.19	0.29	73.29	73.31
Carbon content [t/TJ]			20.31			21.24			20.30			20.09		20.23			19.99

Petroleum coke																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]	EF Ox [t/TJ]	EF [t/TJ]	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A1a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1834.86	113.61	113.61
1A2f	0.00	0.00	0.00	12515.24	94.52	94.34	5935.62	91.85	91.85	4548.26	94.02	94.02	93.73	93.63	5283.08	93.25	93.25
Total consum./WA EF	0.00	0.00	0.00	12515.24	94.52	94.34	5935.62	91.85	91.85	4548.26	94.02	94.02	93.73	93.63	7117.93	98.50	98.50
Carbon content [t/TJ]			0.00			25.73			25.05			25.64		25.54			26.86

Industrial wastes																	
Year	2007			2008			2009			2010			2007-2010		2011		
Activity category	TJ	EF Ox	EF	TJ	EF Ox	EF	TJ	EF Ox	EF	TJ	EF Ox	EF	EF Ox	EF	Consum. [TJ]	EF Ox [t/TJ]	EF [t/TJ]
1A2f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2859.92	83.50	83.50
Total consum./WA EF	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2859.92	83.50	83.50
Carbon content [t/TJ]			-			-			-			-		-			22.77

Abbreviations used

EF Ox emission factor with oxidation included

EF emission factor without oxidation

WA EF weighted average of the emission factors