

Annex 8.1 - Explanations for the calculation of specific emission factor for each fuel and using calculation methods associated with the Tier 2 approach on the Sub-sectors Electricity and heat production, Manufacturing Ind. & Construction, Commercial/Institutional, Residential and Agriculture/Forestry/Fisheries-Energy Sector

Overview

To allow estimation of emissions associated the sub-sector "Electricity and Heat production ", “Manufacturing Ind. & Construction”, “Commercial/Institutional”, “Residential” and “Agriculture/Forestry/Fisheries” using the method / methods of calculation associated 2 level approach, NEPA has calculated values for the emission factor for each fuel of the table with values of emission factors.

The calculated values of emission factors were subsequently used by the NEPA in the calculation of CO₂ emissions for each fuel (natural gas, diesel oil, residual oil, lignit, coking coal and sub-bituminous coal).

Method of calculation

Was used the database from the EU-ETS : European Union- Emission Trading Scheme, which contains data from annual monitoring reports submitted by operators.

I created a new database that had the criteria of selection - the type of fuel used, type of production (electricity or heat), the sectoral approach.

In 2009 they were sent to the operators, to complete questionnaires containing data on fuel consumption, calculated emission factor, CO₂, N₂O and CH₄.

Centralized data were compared with statistical data. Differences greater than 10% of statistics and data from operators led us to expect completion of the study on national emission factors will provide explanations for these differences and values of emission factors for CH₄ and N₂O.

Completion of the study in late 2011 will enable use the activity data of study in INEGES 2012.

The action of collecting data from operators was repeated in 2010 and was continue in 2011.

Centralization of data over three years will be the basis of data for calculating national emission factor per fuel.

Data have been accumulated from 181 operators, of which 61 are industrial companies with various activities and 120 enterprises producing electricity or heat.

Using a weighted arithmetic average the results for each emission factor for each fuel separately.

Table-values calculated emission factors

	2008			2009			2010			IPCC
	EF	# companies in calculation	Share in total of this fuel (%)	EF	# companies in calculation	Share in total of this fuel (%)	EF	# companies in calculation	Share in total of this fuel (%)	default
Natural gas	55.71	74 from 181	40.88	55.49	74 from 181	40.88	55.46	74 from 181	40.88	56.1
Residual fuel Oil	77.52	53 from 181	29.28	77.98	53 from 181	29.28	77.35	53 from 181	29.28	77.3
Gas Diesel Oil	74.10	17 from 181	9.39	76.24	17 from 181	9.39				74.1
Lignite				97.83	11 from 181	6.08	98.32	11 from 181	6.08	101.2
Subbituminous coal				94.47	8 from 181	4.42	93.29	8 from 181	4.42	96.1
Coke oven coke				94.28	3 from 181	1.66	93.68	3 from 181	1.66	94.5

Table – average value for emissions factor/ type fuels

	2008	2009	2010	Average Value
Natural gas	55.71	55.49	55.46	55.56
Residual fuel Oil	77.52	77.98	77.35	77.62
Gas Diesel Oil	74.10	76.24		75.17
Lignite		97.83	98.32	98.07
Subbituminous coal		94.47	93.29	93.88
Coke oven coke		94.28	93.68	93.98

They used the consumption of fuel energy balance provided by INS.

Conclusions

These values were used in calculating the CO₂ emissions, using the calculation method/methods associated to the Tier 2 approach.

Within the revised 2011 National Greenhouse Gas Inventory, the relevant emissions will be calculated using Tier 2 calculation method/methods for CH₄ and N₂O emissions.