Performance Report Guidelines

for the Cement Companies Using Coal
&
Stevedoring Companies Handling Coal

February 2016

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BACKGROUND

As a response to a severe energy crisis, the Egyptian Cabinet Issued on April 2, 2014 a decree allowing the use of coal in Egyptian Cement Industry and Power generation.On April 19, 2015 the Executive Regulations of law 4/1994 on the Environment was amended by the Prime Minister's Decree no. 964/ 2015. The amended Regulations included the standards and conditions for using, storing and handling coal.

Under The Part entitled “General conditions and regulations for use and handling of coal and Petcoke”, the license to use or handle coal is issued by the relevant ministry after approval of EEAA on the Environmental Impact assessment study presented by the company…. The license is renewed every two years after approval of EEAA on the Performance Report Presented by the company. The Minister of Environment is to issue a decree for establishing a committee that will receive and check the information in the report and will include environmental experts, representatives relevant to the activity at hand (industry, stevedoring), representative of civil society. The review of information may include field visits.

The decree was issued in December 2015, however the actual nomination of members is yet to be performed.

The current study financed by GIZwill identify the main issues that need to be reported in the Performance Report and that could entail revoking of the license and other non-compliance issues that would require submission of a compliance action plan.

Part 1. Cement Plants

1. GENERAL INFORMATION ABOUT THE FACILITY

The report should start with general information about the facility as in the following table:

Factory Details

Factory name:	
Address:	
Governate:	
Chairman	
Factory manager:	
Total manpower (permanent and temporary)	
Industrial sector:	
Working hours (no of shifts/d, hours/shift, daysly)	
Design production capacity:	
Industrial Site Area (m^2):	
Surrounding Area:	
Year established:	
EIA approval date	
Starting date for use of coal	

Contact Details

Factory phone no:	***Fax:***
e-mail:	***Web page:***
Contact Person:	***Position:***
Phone:	***e-mail***

2. INPUT / OUTPUTS

The inputs and output amounts will be used to check the specific energy consumption per ton of clinker which is used to calculate the required amount of coal.

Specific raw material, water and by-pass dust also need to be calculated and compared to international benchmarks

Raw materials, t/y	Current Consumption, t/y

Utilities	Usage	Consumption, m3/y	Source
Water	Domestic		
	Cooling		
	Process		
	Other		
	Type	**Consumption**	
Primary Fuel	Mazot (fuel oil), t/y		
	Solar (diesel oil), t/y		
	Natural gas, m3/y		
	Coal t/y		
	Pet coke t/y		
	AFR 1		
	AFR 2		
	AFR 3		
	…..		
	Source	**Consumption**	
Electricity	National GridkWh/y		
	Self-generatedkWh/y		

Products/waste	Actual Average Production, t/y
Clinker	
Cement	
By-pass dust	
CKD	

The company is requested to attach an analysis of the coal and petcoke.

3. EMISSIONS AND COMPLIANCE STATUS

3.1 STACK EMISSIONS

Cement plants are required by law to perform stack emission analysis every 3 months for heavy metals, dioxins and furans which means that the performance report will include 4 sets of results of analysis. Since the law requires yearly reporting of emissions in the environmental register, the other parameters will be measured on yearly basis or reported from the continuous monitoring equipment as maximum daily average.

The results should be annexed to the report.

The following Emission Limit Values apply as per decree 964/2015:

Pollutant	**Concentration (mg/standard m^3)[a]**
Total Suspended Particulates	30[c,d] for stacks of new kilns operated after the enforcement of this decision
	50[b,c,d] for stacks of kilns operated before enforcement of this decision
Total Suspended Particulatesfrom cooler and cement and coal mills	30[d,e] for equipment operated after enforcement of this decision 50[d,e]for equipment operated before enforcement of this decision
Sulfur dioxide (SO2)	400[d,h]
Nitrogen oxides (NOx)	600[d] for existing kilns before enforcement of this decision 450[d]for new kilns after enforcement of this decision
Total Organic Carbon (TOC)	10 [d]
Hydrogen chloride (HCl)	10 [d]
Hydrogen fluoride (HF)	1[d]
Dioxins/ Furans	0.1[f] Nano grams / m^3
Mercury vapors	0.05[g]
Cadmium+ Thallium	0.05[g]
Antimony + Arsenic+ lead+ chromium + Cobalt + Copper + Nickel + Vanadium	0.5[g]

a) Daily average unless otherwise specified at standard conditions (10% oxygen, T=273K, P=1atm)
b) ELV 100 mg/Sm^3 as15 min average for kilns operated before August 28,2011 and 50 mg/Sm^3 as 15 min average for kilns operated fromAugust 28,2011 to date of enforcement of this decisionprovided submittal of Compliance Action Plan with a maximum implementation period of 5 years
c) Reduced to 10 in case of co-incineration of hazardous waste in excess of 40% of thermal energy requirement.
d) Continuous monitoring
e) Daily average unless otherwise specified at standard conditions (T=273K, P=1atm)
f) Sample collected for a period not less than 6 h and not exceeding 8 h and analysis performed every 3 months
g) Sample collected for a period not less than 30 min and not exceeding 8 h and analysis performed every 3 months
h) Reduced to 50 in case of co-incineration of waste in excess of 40% of thermal energy requirement.

The following template for reporting results should be used:

Stack ID:				
Volumetric Flow (m3/y) = -----		**Stack height = --- ---**		
Temperature of Exhaust = ------		**% Oxygen = -------**		
Parameter	**Measured Concentration (mg/m^3)**	**Concentration (dry, mg/st. m^3)**	**Pollution load (t/y)**	**Law limit (ppm or mg/m^3)**
TSP				
SO_2				
NO_x				
TOC				
HCl				
HF				
Dioxins & Furans				
Mercury				
Heavy Metals				
Heavy Metals				
Heavy Metals				
Heavy Metals				
Heavy Metals				
Heavy Metals				
Heavy Metals				
Heavy Metals				
Heavy Metals				

To obtain the concentration on a dry basis and at standard conditions the following equation applies:

$$Conc_{St} = Conc_{measurd} \, X \, \frac{21 - \%O\ st}{21 - \%\ O_{meas}} \, X \, \frac{T_{meas\,K}}{273} \, X \, \frac{1}{P_{meas}} \, X \, \frac{100}{100 - \%\ Humidity_{meas}}$$

As the law specifies limits for the allowed loads of pollutants summation of loads of pollutants from all stacks should be performed and compared to limits specified in Annex 6 (1) of Executive regulation of law 4/1994 as amended by decree 1095 /2011.

Parameter	**Σ Pollution loads, kg/h**	**Law limit, kg/h**
TSP		**3**
SO_2		**30**
NO_x		**30**
HCl		**1.5**
Mercury		**2.5**

3.2 AMBIENT AIR QUALITY

The new regulation requires continuous monitoring of Particulates at the fence of the plant and under the prevailing wind. The ambient air quality is regulated as follows:

Pollutant	Area	Maximum Allowable Concentration, µg/m^3			
		1 h	8h	24 h	1 y
Total Particulates, PM	Residential	-	-	230	125
	Industrial	-	-	230	125
PM10	Residential	-	-	150	70
	Industrial	-	-	150	70

Ambient air concentrations should be reported on the basis of 24 h basis for both PM and PM10. The reported values should be the maximum daily average per week.

3.3 WORK ENVIRONMENT

Although Environmental Law 4/1994 and its executive regulations covers the main workplace standards, Labor law 12/1962 is the one that regulates workplace quality. Dust Particulate Matter (PM) having particle size ≥ 10 µm should not exceed 10 mg/m^{3}whereas Particulates with particle size < 10 µm (PM10) should not exceed 3 mg/m^3; however in the case of coal dust particles Labor Law specifies a limit of 0.9 mg/m^3 for 8h exposure. This limit applies in areas where coal is used (process area).

The following table presents the template for reporting workplace quality.

Noise						
Location	**Average level (db)**			**Law limits (db)**		
Dust (Tsp, PM10), Coal dust						
Location	**Concentration (mg/m^3) 8h average**			**Law limits**		
	TSP	**PM10**	**Coal dust**	**TSP**	**PM10**	**Coal dust**
Gases and vapors						
Location	**Pollutant**	**Concentration mg/m^3 8h average**		**Law limits mg/m^3**		

3.4 WASTEWATER (END-OF-PIPE)

The main source of wastewater in Cement plants domestic. However, is some areas there may not be a connection to the public sewer system. It is import to specify how the company deals with this issue. The receiving water body should be specified and a simple description of the available treatment unit provided. The following table is to be filled.

Indicators	*Discharge(m^3/y)	Concentration (ppm)	Pollution load (t/y)	Law limits
pH				
BOD				
COD				
TSS				
Heavy metal				
Others				

4. COMPLIANCE ISSUES RELATED TO COAL HANDLING

4.1. STORAGE

The following issues should be reported (photos are encouraged):

Open storage yard:

- Height of pile (compressed or not) in open storage yard
- Monitoring equipment (CO detectors and infrared equipment)
- Fogging equipment
- Height of wind breaker

Storage at operation zone next to kiln

- Enclosed storage– type of storage
- Dust abatement equipment (bag filters on storage enclosure or silo)
- CO monitoring in Coal silos

4.2. HANDLING AND USE

- Transportation from open yard to process area
- Belt conveyors enclosed (partially/completely)
- Loading/unloading equipment
- Type of gas used for pneumatic transport (type of control)

4.3. CONTRACTED STEVEDORING AND TRUCKING COMPANIES

The new executive regulation states that cement companies will be responsible for coal transportation through the following:

- Contract stevedoring companies that have acquired an approval on a compliance action plan or environmental impact assessment study issued by EEAA.
- Contract trucking companies that have an environmental approval from EEAA.

Date of coal shipment	Amount of coal	Name of stevedoring Co	Name of trucking Co

5. INVENTORY OF COAL AND ALTERNATIVE FUEL

Since the Cabinet Decree specifies that only Cement Plants and Power Plants are allowed to use Coal as fuel, there was a concern that coal may find its way to the market. It is therefore important to perform an inventory on Coal.

The restriction on coal/petcoke starts from the EIA approval where the amount of coal/petcoke is specified on the basis of the maximum production capacity of the plant. It is assumed that 5% of the thermal energy requirement will be provided by Fuel oil or Diesel for start-up purposes and 95% by Coal/Petcoke.

Another restrictive measure is the requirement of an approval to import and unload coal at the ports. The EIA approval for Cement plants using coal is the only document required by relevant administrative authorities to allow coal import.

The coal must be bought by the cement plant and unloaded on its behalf by stevedoring companies. Unloading will not take place unless information about the type and amount of coal is specified.

The Executive regulation states that cement companies in Egypt are allowed to trade between them on condition that any acquired coal will be subtracted from their quota. This trade information will be included in the inventory as well as the residual amount of coal at the company's storage yard.

5.1 FUEL MIX

A number of cement companies have licenses to burn. The following table presents the type and amounts of AFR hazardous and non-hazardous used by the company.

Type of fuel, t/y	Calorific value	Thermal Energy	%of total Energy required
Coal			
Petcoke			
Fuel Oil (Mazout)			
Diesel (solar)			
RDF			
Sewage sludge			
Used oil			
Mud drillings			
Agricultural waste			
Hazardous waste			
…….			

5.2 AMOUNT OF COAL AND RDF

By the end of each year as specified by the ER, the following table should be filled by the Company and checked against information at EEAA.

Coal shipments			
Date of shipment	Amount of shipment	Stevedoring Co	Transport company
Total			
Inventory			
Period	Coal consumed	Coal stored in storage area	Coal stored in operation area
After first year			
After second year			
Coal Trading			
Amount of coal	Sold/bought (S/B)	Date	Company involved
Benchmarks			
Coal consumption/t clinker	Other Fuel Cons/t clinker	RDF cons/tc	Total thermal energy cons/tclinker
After first year			
After second year			

5.3 USE OF HAZARDOUS OR NON-HAZARDOUS WASTEAS ALTERNATIVE FUEL/RM

In case the plant is using wastes as alternative fuel/raw material the following information should be included

Type of waste	Amount	Source	EIA approval date

The company is requested to attach to the report its Quality Assurance / Quality Control measures:

- RDF composition in terms of type of waste (leather, plastic..)
- RDF calorific value
- % of RDF rejected (out-of-spec)
- Hazardous/ non-hazardous waste composition in terms of major pollutants (S, Cl, HM, ….)
- Sampling protocol used

6. CO_2 EMISSIONS

6.1 INCREASE IN CO_2 EMISSIONS FROM EXISTING PLANTS

For the case of existing Cement plants, CO2 emissions when Mazotis burned was selected as baseline for calculating increase in CO_2 emissions due to the use of coal. Most of CO_2 emissions comes from the calcination process, however this amount is generated whether Mazot is burned or Coal. The amount of CO_2 that needs to be calculated is the difference between that emitted when Coal is used and that emitted when Mazot is used.

The calculation is based on values of Emission Factors from IPCC. These values are:

Fuel Used	EF t CO2/TJ
Mazot	77.4
Coal	94.6
Petcoke	97.5
AFR 1	
AFR 2	
AFR 3	
AFR	

However, companies are allowed to make their own analysis of the carbon content of the Pet coke or coal according to sampling and analysis methods agreed upon with EEAA.

Sample calculation

A plant producing 1,500,000 t clinker/y requiring 3820 MJ/t clinker: for a fuel Mix of 60% Coal, 35% petcoke and 5% mazot. CO2 emissions for a total energy requirement of 5730 TJ/y is calculated as follows:

Fuel Mix	Required energy, TJ/y	t CO2/y
Mazot	5730*5% = 286.5	286.5 * 77.4 = 22,175.1
Coal	5730*60% = 3438	3438 * 94.6 = 325,234.8
Petcoke	5730*35% = 2005.5	2005.5 * 97.5 = 195,536.25
SubTotal	542,946.15	
Fuel	Required energy, TJ/y	t CO2/y
100% Mazot	5730	5730 * 77.4 = 443,502
CO2 increase over Mazot	99,444.17	

6.2 INCREASE IN CO_2 EMISSIONS DUE TO NEW PLANTS

Calculation of CO2 emissions for new plants including CO2 from calcination is given below. However the baseline for estimating the increase in CO2 for new plants has not yet been decided.

Estimating emissions generally involves two emission factors: an emission factor for clinker production and an emission factor for Cement Kiln Dust and By-pass dust (CKD/BPD) production. The emission factor for CKD is usually considered zero as this is mainly raw material dust and is mostly recycled to the kiln.

The by-pass dust undergoes calcination before being discharged; therefore CO_2 emitted during its calcination has to be accounted for and added to the clinker emissions estimate. The recommended method to estimate the additional CO2 emissions from the BPD is to multiply an emission factor by the amount of BPD.

a) EF clinker = fraction CaO in clinker* (44.01 g/mole CO2 / 56.08 g/mole CaO)

   The fraction of lime in clinker is usually 64.6 percent

   EF clinker = 0.646 * 0.785 = 0.507

   CO_2 emissions from clinker production = EF clinker * Amount of clinker /y

b) CO2 from BPD = CO2 from clinker production * BPDt/y / Clinker t/y
c) Total CO2 = EF clinker * Amount of clinker + (EF clinker * Amount of clinker) * BPD / Clinker

   = EF Clinker * Amount of clinker * (Amount of clinker + BPD)/ clinker

   = [EF clinker * CORR] * Amount of clinker per year

Where CORR is the BPDcorrection factor = (BPD + Clinker)/clinker

Sample calculation

New cement plant with clinker production of 1,500,000 t/y and specific energy consumption of 3820 MJ/t clinker with a fuel mix of 95% Coal and 5% Mazot and BPD rate of 49,500 t/y :

$$\text{CORR} = \frac{495{,}000+1{,}500{,}000}{1{,}500{,}000} = 1.33$$

CO_2 emissions from calcination = 0.507 * 1.33 * 1,500,000 = 1,011,465 t/y

CO_2 emissions from fuel = $(3820 * 10^{-6})$ * 1,500,000 * (0.05 * 77.4 + 0.95 * 94.6) = 537,130 t/y

Total CO_2emissions = 1,548,595 t/y

6.3 CO_2 EMISSIONS FROM RDF BURNING

The combustion of MSW is associated with the production/release of about 0.7 to 1.2 t CO2. Although this carbon dioxide is directly released into the atmosphere and thus makes a real contribution to the greenhouse effect, only the climate-relevant CO2 emissions from fossil sources are considered for the purposes of a global analysis. Since municipal waste is a heterogeneous mixture of wastes, in terms of sources of CO2 a distinction is drawn between carbon of biogenic and carbon of fossil origin. In the literature, the proportion of CO2 assumed

to be of fossil origin (e.g. plastics) and consequently to be considered as climate-relevant, is given as 33 to 50 percent.

Assuming that carbon dioxide emissions from MSW combustion average 1 t/t of waste, then of these CO2 emissions 0.33 - 0.50 t are of fossil and 0.67 - 0.50 t are of biogenic origin.

However, companies should provide the composition of the used RDF as percentage of different types of wastes and calculate CO2 emissions in a more rigorous way.

The fossil carbon content for each type of waste can be obtained from the following table:

DEFAULT DRY MATTER CONTENT, DOC CONTENT, TOTAL CARBON CONTENT AND FOSSIL CARBON FRACTION OF DIFFERENT MSW COMPONENTS

MSW component	Dry matter content in % of wet weight [1]	DOC content in % of wet waste		DOC content in % of dry waste		Total carbon content in % of dry weight		Fossil carbon fraction in % of total carbon	
	Default	Default	Range	Default	Range [2]	Default	Range	Default	Range
Paper/cardboard	90	40	36 - 45	44	40 - 50	46	42 - 50	1	0 - 5
Textiles [3]	80	24	20 - 40	30	25 - 50	50	25 - 50	20	0 - 50
Food waste	40	15	8 - 20	38	20 - 50	38	20 - 50	-	-
Wood	85 [4]	43	39 - 46	50	46 - 54	50	46 - 54	-	-
Garden and Park waste	40	20	18 - 22	49	45 - 55	49	45 - 55	0	0
Nappies	40	24	18 - 32	60	44 - 80	70	54 - 90	10	10
Rubber and Leather	84	(39) [5]	(39) [5]	(47) [5]	(47) [5]	67	67	20	20
Plastics	100	-	-	-	-	75	67 - 85	100	95 - 100
Metal [6]	100	-	-	-	-	NA	NA	NA	NA
Glass [6]	100	-	-	-	-	NA	NA	NA	NA
Other, inert waste	90	-	-	-	-	3	0 - 5	100	50 - 100

[1] The moisture content given here applies to the specific waste types before they enter the collection and treatment. In samples taken from collected waste or from e.g., SWDS the moisture content of each waste type will vary by moisture of co-existing waste and weather during handling.

[2] The range refers to the minimum and maximum data reported by Dehoust *et al.*, 2002; Gangdonggu, 1997; Guendehou, 2004; JESC, 2001; Jager and Blok, 1993; Würdinger *et al.*, 1997; and Zeschmar-Lahl, 2002.

[3] 40 percent of textile are assumed to be synthetic (default). Expert judgement by the authors.

[4] This value is for wood products at the end of life. Typical dry matter content of wood at the time of harvest (that is for garden and park waste) is 40 percent. Expert judgement by the authors.

[5] Natural rubbers would likely not degrade under anaerobic condition at SWDS (Tsuchii et al., 1985; Rose and Steinbüchel, 2005).

[6] Metal and glass contain some carbon of fossil origin. Combustion of significant amounts of glass or metal is not common.

The following equation can be used to calculate CO2 emissions from non-biogenic origin for each type of waste then summing up all the amounts:

CO2 for each fraction:

$$CO_2 emission(t/yr) = IW \times CCW \times FCF \times EF \times 44/12$$

Where

IW = Amount of incinerated wastefractionin t/y

CCW = Fraction of C content in fossil based waste fraction

FCF = Fraction of fossil carbon in waste fraction

EF = burn out efficiency of incinerator (0.95)

Total CO_2 emissions (t/y) = Σ CO_2 for each fraction

The above information is obtained from the ultimate and proximate analysis of the waste.

Sample calculation:

Waste analysis by type of waste (wt%)

Assuming IW = 1t of waste

Type of waste fraction	% of waste	Total Carbon content, % CCW	Fossil C fraction of total C, % FCF	Fossil C amount, t
Plastics	47.9	75	100	0.359
Textiles	4.1	50	20	0.0035
Paper and cardboard	44.5	46	1	0.002
Leather and rubber	1.4	67	20	0.001876
Wood	2.1	50	0	0
				0.368

CO2 emissions = 1 * 0.368 * 0.95 * (44/12) = 1.28 tCO2

Assuming NCV for RDF = 15000 * 10^{-6} TJ/t

Energy generated by 1t of RDF = 15000 * 10^{-6}TJ

CO2 emissions = 1.28/ (15000 * 10^{-6}) = **85.3 tCO2/TJ**

6.4 USE OFRDF IN FUEL MIX TO REDUCE CO_2 EMISSIONS

Sample calculationBy recalculating with a fuel mix with 20% RDF:

A plant producing 1,500,000 t clinker/y requiring 3820 MJ/t clinker: for a fuel Mix of 40%% Coal, 35% petcoke, 20% RDF and 5% mazot. CO2 emissions for a total energy requirement of 5730 TJ/y is calculated as follows:

Fuel Mix	Required energy, TJ/y	t CO2/y
Mazot	5730*5% = 286.5	286.5 * 77.4 = 22,175.1
Coal	5730*40% = 2292	2292 * 94.6 = 216,823.2
Petcoke	5730*35% = 2005.5	2005.5 * 97.5 = 195,536.25
AFR	5730*20% = 1146	1146 *85.3 = 97,753.8
SubTotal	532,288	
Fuel	Required energy, TJ/y	t CO2/y

100% Mazot	5730	5730 * 77.4 = 443,502
CO2 to be decrease	88,786	

Note: In case of Agricultural waste CO2 emissions = 0

Contribution of the 20% RDF to the decrease in CO2 emissions=

99,444.17– 88,786 = 10,658 t CO2/y

7. CO2 REDUCTION MEASURES

According to the executive regulations, the company is required toimplement measures to reduce CO_2 emissions.

7.1 ENERGY EFFICIENCY

The amount of CO2 emissions is directly related to the thermal energy requirement per ton of clinker and the amount of clinker.

So far the average thermal consumption in Egypt is around 3900 MJ/kg – about 30% abobe BAT.

All should be put on place to reduce this global thermal consumption by about 20% within the next 3 to 5 years

Specific energy consumption can be reduced through a number of Energy Efficiency measures such as:

- Reduction of by-pass: The amount of by-pass increases as Chlorides increase in raw material. There is no incentive for cement plants to reduce the amount of CKD as they allowed to dump it in landfills. If CO2 emission reduction is enforced the companies can adopt measures for CKD reduction.
- False air is caused by leaks which haveseveral sources: man holes, check holes, down pipe, roof, and at kiln inlets (flap gate, sleep ring seal). False air causes increase of energy since it will consume thermal energy to heat from ambient to operation temperature and consequently coal consumption increases.Also electricity consumption of motor fan will also increase. To recognize the presence of false air the volumetric flow rate of kiln gases per ton of clinker should be compared to international benchmarks 2300 m^3/t clinker.

Monthly reporting of specific thermal energy and gas volume should be performed:

Month	Clinker production, t/m	Specific Energy consumption, kJ/t c	Specific gas volume, Nm3/t c
1			
2			
3			
….			

7.2 CARBON CREDITS

If the company is not able to reduce the excess amount of CO2 emissions due to the use of coal, carbon credits should be bought preferably from local market. Companies are requested to include the following:

- Amount of carbon credits purchased
- Origin of such credits
- Proof of purchase from a UNFCC registered project

7.3 ALTERNATIVE FUEL

As shown in section 6, a 20% RDF of the assumed composition will not me enough to make significant decrease in CO_2 emissions, however the company may choose to burn agricultural waste in this case the reduction should be calculated taking into account that CO2 emissions from agricultural waste is 0.

8. VIOLATIONS AND PENALTIES

In this part the company is requested to report violations detected during EEAA inspections and penalties that were paid, as well as the non-compliance issues and their rectification.

Type of violation	Date	Non-compliance issue	Applied measure to comply	Compliance date	Cost of measure

9. MONITORING METHODOLOGY

The monitoring procedures are described in the table below:

Parameter	**Quantity of Fossil or alternative fuel**
Parameter units	Mass or volume units
Description:	Quantity of alternative fuel or less carbon intensive fossil fuel, fossil fuel, used in the project plant in year *y*
Source of data:	Measurements
Measurement procedures	Use mass or volume meters. The consistency of metered fuel consumption quantities should be cross-checked by an annual energy balance that is based on purchased quantities and stock changes.
Monitoring frequency:	Recorded continuously and aggregated at least annually
QA/QC procedures:	According to ISO 9000 or similar quality systems
Parameter	**Emission Factor (EF)**

Parameter Units	t CO2/GJ
Description:	Weighted average CO2 emission factor for alternative or less carbon intensive fuels and fossil fuel
Source of data:	(a)Values provided by the fuel supplier (b) Measurements by plant management if (a) not available (c) IPCC default values (Chapter 1 Volume 2 – Energy, 2006 IPCC guidelines)
QA/QC procedures:	According to ISO 9000 or similar quality systems
Monitoring Frequency	For (a) and (b): the CO_2 emission factor should be obtained for each fuel delivery, from which weighted average annual values should be calculated.

Parameter	**Net Calorific Value (NCV)**
Parameter Units	GJ/ mass or volume units
Description:	Weighted average NCV of the alternative fuel or less carbon intensive fueltypes
Source of data:	(a)Values provided by the fuel supplier (b) Measurements by plant management if (a) not available (c) IPCC default values (Chapter 1 Volume 2 – Energy, 2006 IPCC guidelines)
QA/QC procedures:	According to ISO 9000 or similar quality systems
Monitoring Frequency	For (a) and (b): the CO_2 emission factor should be obtained for each fuel delivery, from which weighted average annual values should be calculated

Part 2.Stevedoring Companies

1. GENERAL INFORMATION ABOUT THE COMPANY

AFR

Company Name	
Port name	
Type of Unloading (sea port/Nile port)	***Off-shore or dockside***
Type of environmental study	***CAP/EIA***
Date of approval	

Contact Details

Company phone no:	***Fax:***
e-mail:	***Web page:***
Contact Person:	***Position:***
Phone:	***e-mail***

2. COMPLIANCE STATUSFOR UNLOADING

Stevedoring companies handling coal or petcoke are required to obtain an environmental approval pending on either a Compliance Action Plan (CAP) for existing companies handling dirty bulk or an Environmental Impact Assessment study (EIA) for companies new in this field.

Although the approval is obtained once, it could be revoked for environmental non-compliance issues. The companies should submit a Performance Report every year to assess their environmental performance. Every two years, the Technical Committee formed by a Ministerial Decree for reviewing Performance Reports will assess the performance on the basis of two consecutive reports and come to a decision.

2.1 EQUIPMENT USED FOR UPLOAD AND UNLOAD SHIPS

Companies that apply for off-shore unloading approvals are requested to get an approval for dockside unloading as well since off-shore unloading is performed as an exception in situations where the waiting line for dockside unloading is too long or the water depth cannot accommodate the ship hull-down. In this case an Environmental Impact Assessment (EIA) is required.

Companies applying for dockside unloading approvals will submit an EIA if they are just starting the business of dirty bulk unloading. Companies that have been unloading dirty and have a permit for this activity issued from the port authority will submit a compliance action plan.

Approvals for both casesinclude a list of equipment to be used and their specifications. The following table should be filled,

Equipment as per approval	No	Specs	Presence	If No, State the reason
Hoppers			Y/N	
Cranes			Y/N	
Fogging machine			Y/N	
Grabs			Y/N	
----			Y/N	

2.2 POLLUTION ABATEMENT MEASURES

Use of Heavy Duty Polyethylene fabric to cover the distance between the dock and the ship	To prevent water pollution	Y/N
Use of fogging machine during unloading	To prevent coal dust emissions	Y/N
Use of looms to clean the water from coal dust	To clean-up water	Y/N
Use of fogging machine on coal loaded on trucks	To prevent hot spot formation	Y/N
Clean-up the dock after unloading	Housekeeping	Y/N
Unloading directly on trucks or belt conveyors	Minimize air emissions due to reloading onto trucks	Y/N
Use of fogging machine on coal in storage areas	To prevent hot spot formation	Y/N
Enclosed belt conveyors	To prevent air emissions	Y/N

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3. COMPLIANCE STATUS OF STORAGE IN PORTS

Storage in ports can be in open areas or closed storage.

Reporting Compliance of open storage					
Height of compressed coal pile < 9m		To minimize hot spot formation			Y/N
Height of uncompressed coal pile< 5m		To minimize hot spot formation			Y/N
Use of fogging machine		To extinguish hot spots			Y/N
Reporting Compliance of closed storage					
CO monitoring		Early detection of hot spots			Y/N
Proper Ventilation		Reduce air pollutant concentration			Y/N
Use of Bag filter		To minimize air emissions			Y/N
Reporting Storage period (should not exceed one month)					
Date of unloading for shipment 1	------	Starting date of storage		End date of storage	-----
Date of unloading for shipment 2	------	Starting date of storage		End date of storage	-----
Date of unloading for shipment 3	------	Starting date of storage		End date of storage	-----

4. VIOLATIONS AND PENALTIES

In this part the company is requested to report violations detected during EEAA inspections and penalties that were paid, as well as the non-compliance issues and their rectification.

Type of violation	Date	Non-compliance issue	Applied measure to comply	Compliance date	Cost of measure

5. TRANSPORTATION BY TRUCK

Trucking companies are requested to obtain an environmental approval from the relevant RBO. The approval is issued on the basis of a written and signed commitment that the company will abide by the requirements of EEAA in transporting coal. Any stevedoring company that will be contracting a trucking company has to make sure that it has an environmental approval.

Name of trucking company	Contract date	End user of coal