CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

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SECTION A. General description of project activity

A.1 Title of the project activity:

Emission reduction through a partial substitution of fossil fuel with bio-char in steel manufacturing with Electric Arc Furnace.

A.2. Description of the project activity:

There are two processes to make steel. One of them is to use iron ore as an iron source and to reduce it to metallic iron with a blast furnace or a direct reduction furnace. Another process uses steel scrap as an iron source and melts and refines it with an electric arc furnace (EAF). This EAF process is the main stream of practice in Indonesia and there are about 20 EAFs in operation in Indonesia. The EAF process uses not only electric power as an energy source but also auxiliary fuels to save electricity. The main auxiliary fuel is coke made from coal (or such similar low-volatile solid carbon materials as anthracite or petro-coke) and imported from China. About 4 million tonnes of steel is manufactured in Indonesia with the EAF process and the consumption of coke accounts for 800,000 tonnes per year. This in turn will emit CO2 into the atmosphere which is realized as contributing to the global warming effect.
This project will substitute coke with bio-char that is manufactured from coconut or oil palm kernel shells, that are wasted in agricultural plantation areas in Indonesia as well as in Malaysia. It is understood that CO2 that will be released from burning these shells will be considered as carbon neutral being part of the photosynthesis process during the formation of the shells by the plants.
The use of bio-char in this activity will not change the mode of operation of the steel manufacturing plant, since the physical property of the bio-char is very similar to coke. In particular the electricity consumption will remain the same as it is in the baseline activity.

In the following diagrams it is shown how the biomass residues at the site of the palm oil mill are produced, used, and wasted. This project will utilize the wasted portion of the biomass residues after it is carbonized to get rid of its volatile matters. The product of the carbonization process is called bio-char, to distinguish it from the biomass residues that comes directly out of the mill. This bio-char will be used to replace coke that is used in the baseline activity to supplement electric energy, and at the same time promotes steel making process.

Figure 1 describes the baseline activities, while Figure 2 describes the project activity indicated by the “dashed blue line”. This figure also indicates the relationship of the project activity with the baseline activities.

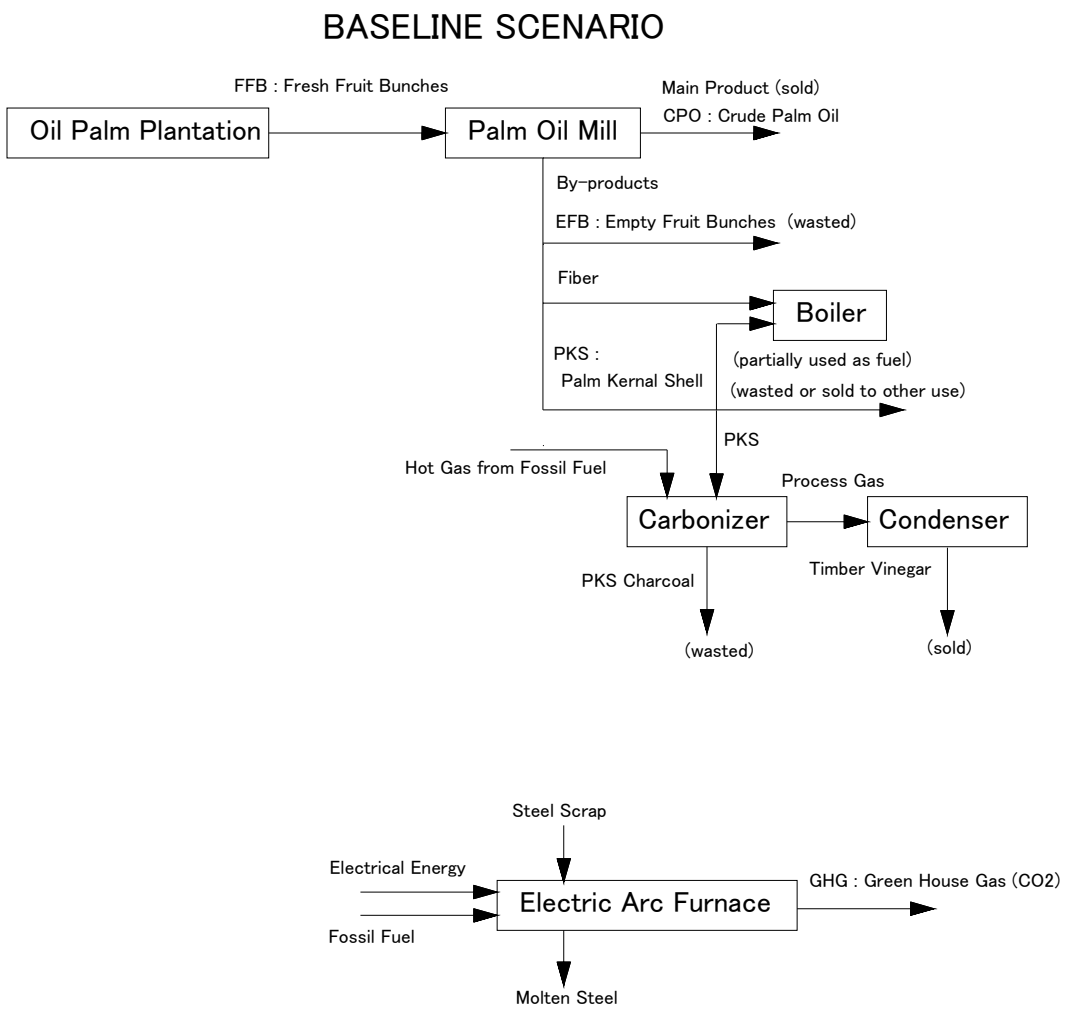
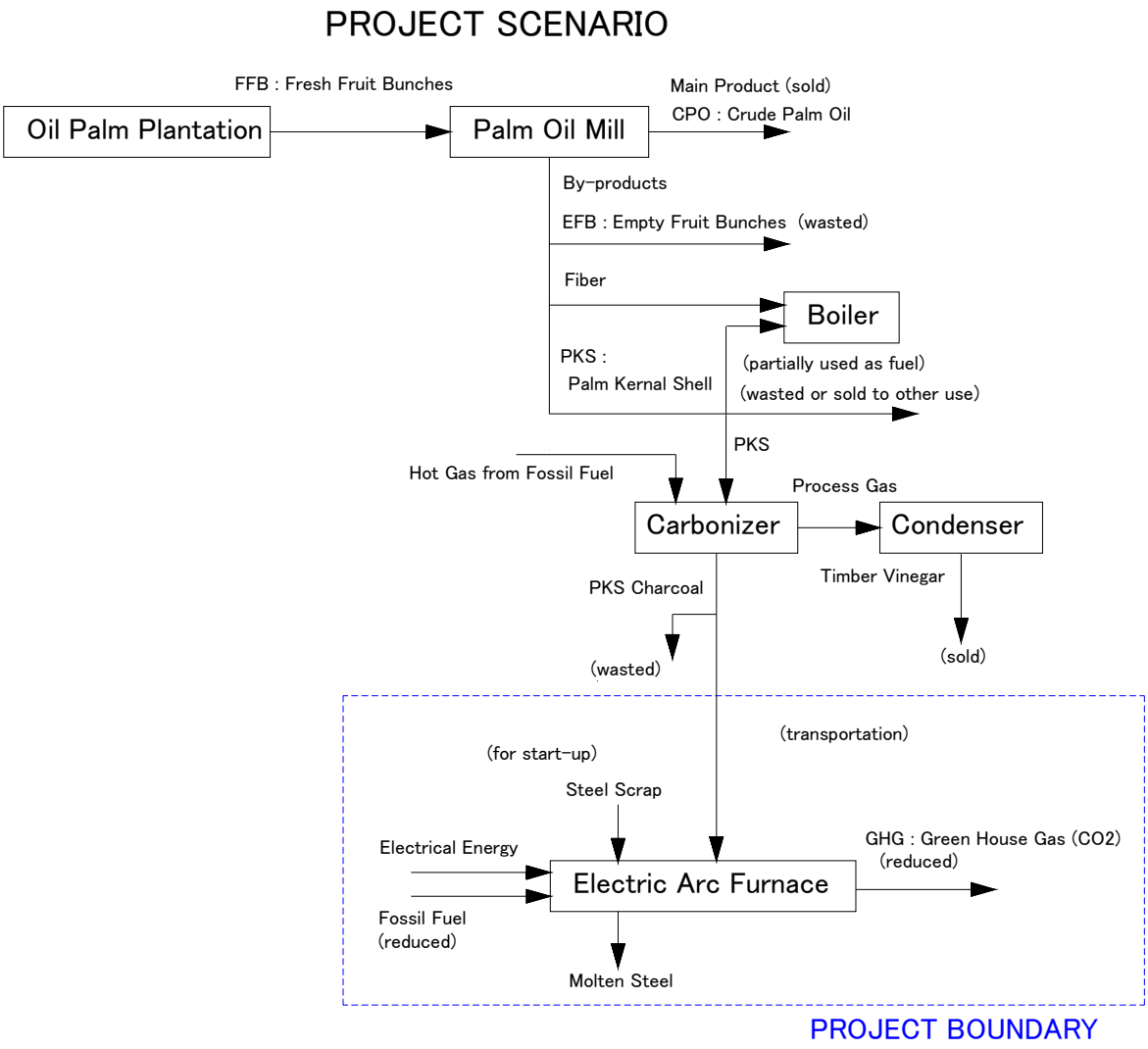

BASELINE SCENARIO
FFB : Fresh Fruit Bunches
Oil Palm Plantation
Palm Oil Mill
Main Product (sold)
CPO : Crude Palm Oil
By-products
EFB : Empty Fruit Bunches (wasted)
Fiber
Boiler
PKS :
Palm Kernal Shell
(partially used as fuel)
(wasted or sold to other use)
PKS
Hot Gas from Fossil Fuel
Process Gas
Carbonizer
Condenser
PKS Charcoal
Timber Vinegar
(wasted)
(sold)
Steel Scrap
Electrical Energy
Fossil Fuel
Electric Arc Furnace
GHG : Green House Gas (CO2)
Molten Steel

Figure-1

F


PROJECT SCENARIO
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PKS :
Palm Kernal Shell
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(wasted or sold to other use)
PKS
Hot Gas from Fossil Fuel
Process Gas
Carbonizer
Condenser
PKS Charcoal
Timber Vinegar
(wasted)
(sold)
(transportation)
(for start-up)
Steel Scrap
Electrical Energy
GHG : Green House Gas (CO2)
(reduced)
Electric Arc Furnace
Fossil Fuel
(reduced)
Molten Steel
PROJECT BOUNDARY

Figure-2

A.3. Project participants:

Participants to the project activity are the following:

Name of Party involved (host indicates a host Party)	Private and/or public entities Project participants	Kindly indicate if the Party involved wishes to be considered as project participants
Indonesia (host)	P.T. Master Steel MFG Co	No
Japan	JP Steel Plantech Co	No

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

Jln. Raya Bekasi, km.21, Pulogadung, Jakarta Timur, Jakarta, Indonesia

A.4.1.1. Host Party(ies):

Indonesia

A.4.1.2. Region/State/Province etc.:

Jakarta Special Region (Daerah Khusus Ibukota – DKI)

A.4.1.3. City/Town/Community etc:

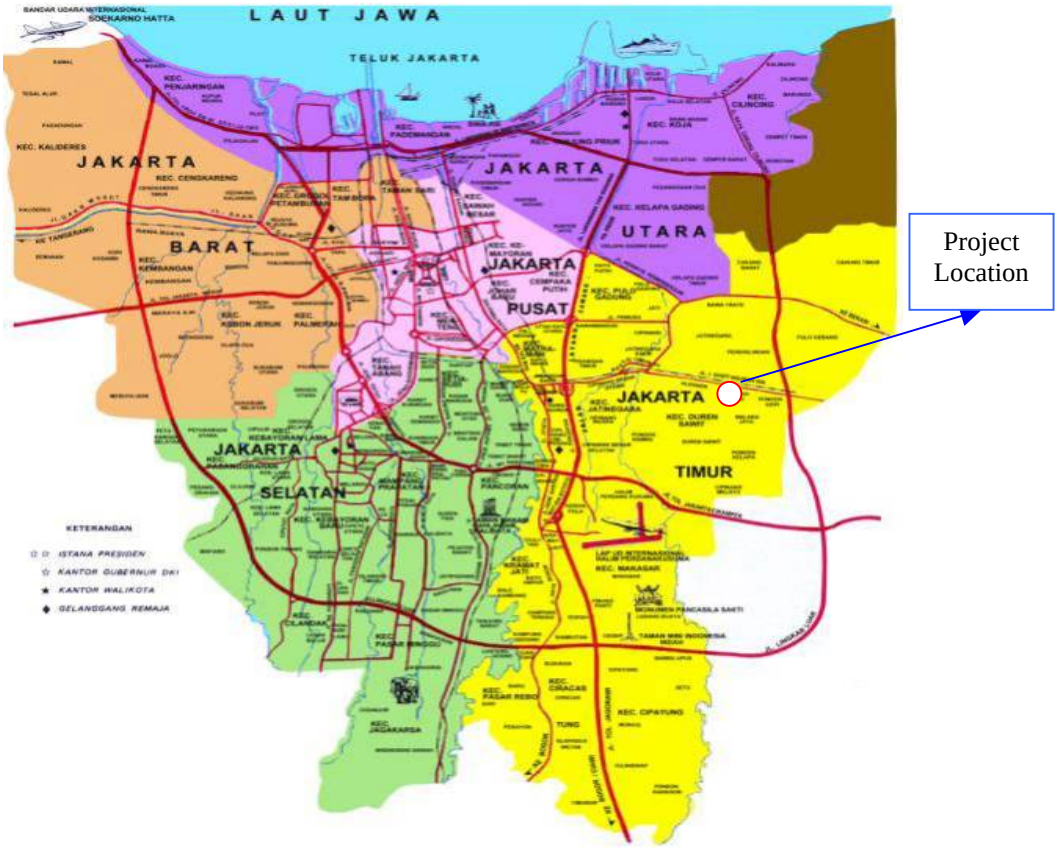
Jakarta

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

The project activity is located in the industrial complex at the eastern side of the city and can be reached by automobiles from the International Airport of Cengkareng and several other directions. Except for a possibility of running into a heavy traffic the access roads are excellent.


INDONESIA
BANGKOK
VIETNAM
CAMBODIA
PHNOM PENH
HO CHI MINH CITY
(Saigon)
THAILAND
MANILA
PHILIPPINES
PACIFIC
OCEAN
PALAU
KUALA
LUMPUR
BANDAR SERI
BEGAWAN
BRUNEI
MALAYSIA
SINGAPORE
Sumatra
Kalimantan
Sulawesi
Maluku
Irian Jaya
PAPUA
NEW GUINEA
Jakarta
NUSA TENGGARA
Java
Bali
Lombok
Flores
Komodo
& Rinca
EAST
TIMOR
INDIAN
OCEAN
Darwin
0 500 km
0 300 miles
AUSTRALIA


JAVA
Pangkalanbun
Pulau
Belitung
Banjarmasin
Kalimantan
INDONESIA
SUMATRA
JAVA SEA
Bakauheni
Pulau
Scribu
Serang
Karimunjawa
Islands
Pulau
Bawean
JAKARTA
Krakatau
Islands
Danau
Jatiluhur
Indramayu
Jepara
Rembang
Pulau
Madura
Tegal
Bandung
Semarang
Solo
(Surakarta)
Surabaya
Pulau
Tinjil
Ciamis
Baluran
National
Park
Genteng
Pameungpeuk
Borobudur
Jombang
Pulau
Deli
Cilacap
Yogyakarta
Malang
Pacitan
Banyuwangi
BALI
Grajagan
0 200 km
0 120 miles
INDIAN OCEAN



A.4.2. Category(ies) of project activity:

Manufacturing industry, sectoral scope 04.

The company P.T. Master Steel MFG Co has four steel plants and manufactures steel for construction use from steel scrap. The production capacity of the Kesa Plant, the project site, is 360,000 ton steel per annum. The furnace has a capacity of 80 ton per batch.
Coke is imported from China, while bio-char will be manufactured locally in Indonesia, the area of Palembang in South Sumatra.

A.4.3. Technology to be employed by the project activity:

Electric arc furnace (EAF) is used to melt and refine steel scraps to manufacture steels mainly used for construction. Though its main energy source is electricity, auxiliary energies such as oxygen, liquid/gaseous fuel, and coke (or such similar low-volatile solid carbon materials as anthracite or petro-coke) are used to save electricity and to expedite melting and refining. Ratio of such auxiliary energies to electrical energy is roughly 50 % in modern EAFs. Most important auxiliary energy source is coke which contains 85 – 90 % of fixed-carbon as a main constituent. Unit consumption of coke is about 20 - 30 kg/ton-steel. Coke is more suited than coal because the volatile matter in coal will have a bad influence upon steel refining process. Lump coke is used as a mixture to the scrap when it is charged into the EAF, while coke powder is injected into the EAF with oxygen during melting and refining process. The use of bio-char made from oil palm kernel shell was tested in a Japanese EAF by JP Steel Plantech Co, Project Participant, and good results were proved.

A.4.4 Estimated amount of emission reductions over the chosen crediting period:

The proposed start of the crediting period is 1 January 2009, and the end is 31 December 2018. The project duration is 10 years. Therefore the estimated GHG emission reduction is 111,108 ton CO2.

Years	Annual estimation of emissions in tonnes of CO_2 e
2009	11,108
2010	11,108
2011	11,108
2012	11,108
2013	11,108
2014	11,108
2015	11,108
2016	11,108
2017	11,108
2018	11,108
Total estimated reduction (ton of CO2 e)	111,108
Total number of crediting years	10 years
Annual average over the crediting period of Estimated reduction (tCO2)	11,108

A.4.5. Public funding of the project activity:

There is no public funding is utilized in this project activity.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

This project activity will apply a new methodology similar to ACM 0003 in its philosophy that is applicable to cement industry, called: "Emission reduction through partial substitution of fossil fuels with alternative fuels or less carbon intensive fuels in cement manufacture".

This new methodology is called: "Emission reduction through partial or total substitution of fossil fuels with alternative bio-char fuels in steel manufacture with Electric Arc Furnace". This methodology, however, is not a copy of the AM 0003, the idea, the flow of thought, in it is the thing that is applied, hence this methodology is an independent methodology.

B.2 Justification of the choice of the methodology and why it is applicable to the project activity:

There is a similarity of the activity in the cement industries regarding this substitution of fossil fuels, the difference being the characteristic of the fuel substitute in steel manufacture needs to be as close as possible to coke. The fuels that is in mind is bio-char produced from either coconut or oil palm kernel shells by other companies. This is the result of experimental testing in the field. Other bio-char that is produced from other type of biomass may require additional test and proving.

Examples of the industrial analysis data of palm waste charcoal and coke

Items	Palm waste charcoal	Typical coke
Moisture content	7.5 %	13.0 %
Ash content	3.2 %	12.1 %
Volatile content	8.5 %	1.1 %
Fixed carbon content	88.3 %	86.8 %
Bulk density	0.58 ton/m^3	0.55 ton/m^3
Higher heating value (HHV)	7,250 kcal/kg	6,900 kcal/kg

Applicability of the methodology to the project activity

No.	Items	Remarks
1	Fossil fuel used is partially or totally replaced by bio-char	Bio-char function is to provide energy which is in the baseline activity is supplied by coke, hence by using some amount of bio-char, the use of coke is reduced.
2	A significant investment is required	The required investment is not in the hardware but in the financial side, the higher cost of bio-char
3	During the last three years prior to the start of the project activity, no bio-char has been used	The project proponent has not yet commercially used bio-char in their activity for the last three years prior to the start of the project activity
4	CO_2 emission reduction calculation is based on steel making process in the Electric Arc Furnace only	This is proved in the calculation of the Emission Reduction, ER_y
5	The methodology is applicable only	The claim for emission reduction is based on the

	for installed capacity	existing capacity of production only
6	Project activity does not include the emission from carbonization activities	In the calculation of the emission reduction, emission from carbonization activities is not included
7	The project activity does not include methane emission from the pile of biomass from which the bio-char is produced	In the calculation of the emission reduction, methane emission from the pile of biomass from which the bio-char is produced is not included
8	The bio-char is manufactured from palm kernel shell or coconut shell that is normally dumped and left to decay or burnt inefficiently	The project activity utilizes bio-char made from the left over of biomass residues at the timber vinegar factory
9	The substitution of coke by bio-char does not change the electricity consumption	The project activity does not change the electricity consumption
10	The type of furnace that is used is Electric Arc Furnace	The project activity utilizes an Electric Arc Furnace

B.3. Description of the sources and gases included in the project boundary

The physical project boundary covers the steel manufacturing facilities only, and the transportation of fuel to the site of the plant from the site of the "Carbonizer".

Table 1: Emissions sources included in or excluded from the project boundary

	Source	Gas	Included?	Justification/Explanation
Baseline	Emissions from coke used in the Electric Arc Furnace ($BE_{FF,y}$)	CO2	Yes	Main emission source
		CH4	No	Minor source. Neglected for simplicity and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative
	Emission from transportation of coke to the plant site ($BE_{TR,y}$))	CO2	Yes	Main source
		CH4	No	Minor source, neglected for simplicity, and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative Production of bio-char is not part of this activity (The activity procures bio-char produced by another commercial company)
	Emission from transportation of coke on the plant site ($BE_{L,TR,y}$)	CO2	Yes	Main source.
		CH4	No	Minor source. Neglected for simplicity and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative
Pro.	Emissions from the use	CO2	Yes	Main source

	of coke in the Electric Arc Furnace in the project activity ($PE_{FF,y}$)	CH4	No	Minor source. Neglected for simplicity and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative
	Emissions from bio-char used in the Electric Arc Furnace in the project activity ($PE_{B,y}$)	CO2	Yes	Major source. Since bio-char contains "neutral carbon", $PE_{B,y}$ is set equal to zero.
		CH4	No	Minor. Neglected for simplicity and be conservative
		N2O		Minor source. Neglected for simplicity and be conservative
	Emissions from the transportation of coke to the plant site ($PE_{FF,TR,y}$)	CO2	Yes	Major source.
		CH4	No	Minor source. Neglected for simplicity, and be conservative
		N2O	No	Minor source. Neglected for simplicity, and be conservative
	Emission from transportation of bio-char to the plant site ($PE_{B,TR,y}$)	CO2	Yes	Major source
		CH4	No	Minor source. Neglected for simplicity and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative
	Emission from transportation of coke on the plant site ($PE_{L,FF,TR,y}$)	CO2	Yes	Major source
		CH4	No	Minor source. Neglected for simplicity and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative
	Emission from transportation of bio-char on the plant site ($PE_{L,B,TR,y}$)	CO2	Yes	Major source
		CH4	No	Minor source. Neglected for simplicity and be conservative
		N2O	No	Minor source. Neglected for simplicity and be conservative

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

Procedure for the selection of the most plausible baseline scenario and demonstration of additionality

F-matrix

Index	Options	Barriers	Remarks
F1	The proposed activity not undertaken as a CDM project activity (i.e. use of alternative fuels).	Use of alternative fuels will call for additional cost (Information to date is: cokes = 200 US$/ton, while bio-char = 250 US$/ton).	The project activity will not go for this option.

F2	Continuation of current practice, i.e., a scenario in which the company continues to produce steel using the existing technology, materials and fuel mix.	The activity will emit GHG of the amount of 28,050 ton CO2/y due to the burning of coke in the steel production process.	This activity portray the current activity.
F3	Partial substitution of coke with bio-char in the Electric Arc Furnace	Bio-char is currently produced from biomass residues that is routinely produced in palm oil mills. While some of it is used, some other is wasted, some other is also converted into bio-char in a carbonizing equipment. There is no laws/regulation against this practice.	This is an opportunity for steel manufacturer to replace part of coke they used in the Electric Arc Furnace with bio-char.
F4	The currently used fuels are partially substituted with alternative fuels other than those used in the CDM project activity. If relevant, develop different scenarios with different mixes of alternative fuels and varying degrees of fuel switch from traditional to alternative fuels or less carbon intensive fuels.	When different kinds of suitable alternative fuels become available, this option should be considered.	The currently available alternative fuel in the market is the bio-char manufactured from coconut or oil palm shells. Other bio-char material available in the market is wood char. This char, however, has a possibility of bad affect in that it may promote wood cutting, which will introduce a reduction in Greenhouse Gas sink, thereby help increase the global warming phenomenon. In addition, its characteristics is quite different from the regular cokes [1)] The project activity will not opt for this option.
F5	The construction of a new	The cost of construction	The barrier is again

	carbonizing plant.	of additional facility to adapt to the new type of fuel is relatively low; it is the cost of production of the alternative fuel that is the barrier, which is expected to increase in the future.	cost.

The B-matrix

Index	Options	Barriers	Remarks
B1	The bio-char is dumped or left to decay under mainly aerobic conditions. This applies, for example, to dumping and decay of biomass residues on fields.	There is no law or regulation prohibiting this practice, and depending on the thickness of the pile, it may or may not emits CH4.	This practice will not prohibit the owner of the bio-char to sell it, because they are not required to do it.
B2	The bio-char is dumped or left to decay under clearly anaerobic conditions. This applies, for example, to deep landfills with more than 5 meters. This does not apply to bio-char that is stock-piled or left to decay on fields.	There is no law or regulation prohibiting this practice, and depending on the thickness of the pile, it may or may not emits CH4.	This practice is also not required by law, and hence it will not prohibit them to sell it to prospective users such as this project activity.
B3	The bio-char is burnt in an uncontrolled manner without utilizing them for energy purposes.	There is no law or regulation that prohibit this practice.	There is plenty of bio-char available in the market which can be procured as fuel. When the project starts, a procurement contract will be signed.
B4	The bio-char is sold to other consumers in the market and used by these consumers, such as for heat and/or electricity generation, for the generation of bio-fuels.	There is no law or regulation prohibiting this practice.	A procurement contract will be signed when the project starts.
B5	The proposed project activity is not undertaken as a CDM project activity, i.e. the use of bio-char in the project activity.	The use of bio-char in this project activity requires extra cost which is higher than the price of coke, which is a continuous running cost. The extra revenue from the sales of the CER is expected to help relief the company	The company will not opt for this option. The extra cost of fuel will become a running cost all the time.

		from additional financial burden.	

In summary, the situation, seen from the existing laws/regulations, are as follows:

F1 : will not be done by the project proponent
F2 : can be done now by the project proponent
F3 : can be done now by the project proponent
F4 : can be done conditionally to the project proponent
F5 : will not be done, because it is not the issue to the project proponent

B1 : can be done by the bio-char owner, but not closed for selling the bio-char to other users
B2 : can be done by the bio-char owner, but not closed for selling the bio-char to other users
B3 : can be done by the bio-char owner, but not closed for selling the bio-char to other users
B4 : can be done by the bio-char owner, but not closed for selling the bio-char to other users
B5 : will not be done by the owner of the project activity

Combining, options that are available to the project owner are: F2, F3, and B1, B2, B3, and B4. This means, that F2 and/or F3 can be combined with either B1, B2, B3, or B4. In other words, probability of availability of bio-char is high, hence the determining factors will be looked at F2 and F3.

F2 represents the current activity, while F3 represents the proposed project activity, that is " Partial substation of coke with bio-char in the Electric Arc Furnace".

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):

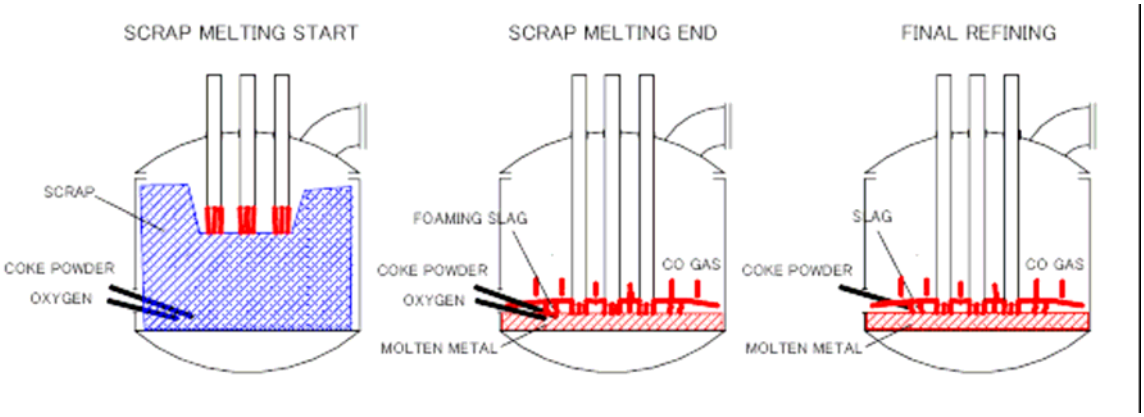


Figure 3

Figure 3 schematically describes the steel manufacturing process using an Electric Arc Furnace. On the left most side diagram pictures the start of the process. Coke powder entry is indicated by an arrow. The diagram in the middle pictures the end of the melting process, there it is seen that coke powder is still fed into the furnace, while the diagram at the right most side indicates the refining process, in which coke is still fed into the furnace. Coke fed into the furnace experiences reaction and produces CO2.

In this proposed activity, coke will be partially replaced by bio-char, thereby reducing the production of CO2 in the process, proportional to the amount of coke that is replaced.

Types and quantities of fuels used in the Electric Arc Furnace for the last three years and in the project

Items	Types and quantities of fuels
Fuels used in the last three years	Coke; 9000 ton/y; 621*10^8 kcal/y
Fóssil fuel used in the Project. (Coke, 60 % of baseline)	Coke; 5400 ton/y; 3726 * 10^7 kcal/y
Bio-char in the Project. From KPS	Bio-char; 3426.2 ton/y; 2484 * 10^7 kcal/y

Demonstration and assessment of additionality

Step 1. Identification of alternatives to the project activity consistent with mandatory laws and regulations.

This is done above.

Step 2. Investment analysis

The electric arc furnace (EAF) production and operation

EAF size : 80 ton
Annual production : 360,000 ton/y
Coke unit consumption at EAF : 25 kg coke/ton
Coke replacing rate to bio-char : 40 %
Carbon content and price of cokes and palm waste charcoal
Carbon content in coke : 85 %
Coke price : 200 US$/ton
Carbon content in charcoal : 85 %
Charcoal price : 250 US$/ton

Annual consumption and cost of coke and palm kernel shell charcoal
Annual coke replacement : 25/1000 x 360,000 x 0.40 = 3,600 ton/y
Annual replaced coke cost : 3,600 ton/y x 200 US$/ton = 720,000 US$/y

Annual bio-char consumption : 3,600 ton/y
Annual bio-char cost : 3,600 ton/y x 250 US$/ton = 900,000 US$/y
Cost increase with bio-char : 900,000 – 720,000 = 180,000 US$/y

GHG emission reduction and CER credit
Annual GHG emission reduction: 3,600 ton cokes/y x 0.85 x 0.99 x 44/12 = 11,108 ton CO_2/y
CER credit at a price of 10, 15, and 20 US$/ton CO_2 are as follows:
10 US$/ton CO_2 : 11,108 ton CO_2/y x 10 US$/ton CO_2 = 111,080 US$/y
15 US$/ton CO_2 : 11,108 ton CO_2/y x 15 US$/ton CO_2 = 166,620 US$/y
20 US$/ton CO_2 : 11,220 ton CO_2/y x 20 US$/ton CO_2 = 222,160 US$/y

There is no additional investment needed in order to use bio-char.

Step 3. Barrier analysis

Technical barrier or technological barrier. There is no basic barrier in this project from the point of view of technology. The barrier that is faced is primarily in the financial side, due to the expected increase of the price of bio-char.

Step 4. Common practice analysis This project, if it goes forward, will be the first of its kind in Indonesia and in the region. Hence there is no established experience on the part of the project proponent at a commercial basis, meaning all possible risks that may arise from the proposed project activity will be borne by the project proponent.

Conclusion is: this project is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

Baseline emission
BE_y : Baseline emission in the year y
$BE_{FF,y}$: Emission from fossil fuel in the baseline activity in the year y
$BE_{TR,y}$: Emission from fossil fuel in the baseline from transportation of fossil fuel to site

$BE_{LTR,y}$: Emission from fossil fuel in transportation on site of the plant
$BE_{EC,y}$: Emission from electricity use or additional fossil fuel on site

$BE_y = BE_{FF,y} + BE_{TR,y} + BE_{LTR,y} + BE_{EC,y}$ ……(1)

Project emission

PE_y : Project emission in the project in the year y
$PE_{FF,y}$: Project emission from fossil fuel in the project in the year y
$PE_{B,y}$: Project emission from bio-char in the year y
$PE_{TR,y}$: Project emission from transportation of fossil fuel to the site
$PE_{BTR,y}$: Project emission from transportation of bio-char to the site
$PE_{LTR,y}$: Project emission from fossil fuel in transport of fossil fuel on site
$PE_{LBTR,y}$: Project emission from transportation of bio-char on site
$PE_{EC,y}$: Project emission from electricity use or additional fossil fuel on site

$PE_y = PE_{FF,y} + PE_{B,y} + PE_{TR,y} + PE_{BTR,y} + PE_{LTR,y} + PE_{LBTR,y} + PE_{EC,y}$ ……(2)

Emission reduction

Subtracting equations (2) from (1) one gets the emission reduction ER_y,

$ER_y = BE_y - PE_y$ ……(3)

$ER_y = (BE_{FF,y} – PE_{FF,y} – PE_{B,y}) + (BE_{TR,y} – PE_{TR,y} - PE_{BTR,y}) + (BE_{LTR,y} – PE_{LTR,y} –$

$PE_{LBTR,y}) + (BE_{EC,y} – PE_{EC,y})$ ……(4)

In this project the following conditions or situation applies:

a. the substitution of cokes by bio-char is 40 %, hence $PE_{FF,y} = 0.6\ BE_{FF,y}$
b. the transportation of fossil fuel to the site $PE_{TR,y} = 0.6\ BE_{TR,y}$
c. the transportation of fossil fuel on site, $PE_{LTR,y} = 0.6\ BE_{LTR,y}$
d. the mode of operation of the plant remains the same due to similarity of the physical characteristic of cokes and bio-char from palm oil waste, hence local transportation of fuel remains the same, and there is no need of additional electricity, hence $BE_{LTR,y} = PE_{LTR,y} + PE_{LBTR,y}$ and $BE_{EC,y} = PE_{EC,y}$
e. cokes is transported from China to Jakarta, Indonesia, while bio-char is manufactured and procured in Indonesia, from Palembang, South Sumatra, and transported to Jakarta, hence mathematically speaking $BE_{TR,y} > PE_{BTR,y}$

Taking these points into consideration, equation (4) becomes:

$ER_y = (BE_{FF,y} – 0.6\ BE_{FF,y} - PE_{B,y}) + (BE_{TR,y} – 0.6\ BE_{TR,y} - PE_{BTR,y})$ ……(5)

Further, since CO_2 emission from burning bio-char is considered neutral, hence $PE_{B,y} = 0$, equation (5) becomes:

$ER_y = 0.4\ BE_{FF,y} + (0.4\ BE_{TR,y} - PE_{BTR,y})$ ……..…….(6)

Further:

$BE_{TR,y} = M_{FF,y}\ x\ D_{FF,y}\ x\ ef_{TR,y}$, and …….(7)

$PE_{BTR,y} = M_{B,y}\ x\ D_{B,y}\ x\ ef_{TR,y}$ ……(8)

Where:
$M_{FF,y}$ = mass of coke transported in the year y, and …….(9)
$M_{B,y}$ = mass of bio-char transported in the year y = $0.4\ M_{FF,,y}$ ……..……(10)
$D_{FF,y}$ = disntance traveled in transporting $M_{FF,y}$ in the year y to the site……...(11)
$D_{B,y}$ = disntance traveled in transporting $M_{B,y}$ in the year y to the site ……(12)
$ef_{TR,y}$ = emission factor in transporting $M_{FF,y}$ and $M_{B,y}$ in the year y per unit mass per kilometer…..(13)

Combining equations (6) through (13):

$ER_y = 0.4\ BE_{FF,y} + 0.4\ M_{FF,y}\ x\ (D_{FF,y} - D_{B,y})\ x\ ef_{TR,y}$ ……...(14)

Since the bulk densities of coke and bio-char are very similar, 0.55 ton/m^3 and 0.58 ton/m^3 respectively (see Section B2), the number of truck-trips will be proportional to the mass transported, that is 6:4 for coke and bio-char respectively. In addition, the single trip distance for the transportation of coke (from China to the site) is much larger than the single trip distance for the transportation of bio-char (from Palembang to the site), hence it is fair to assume that $D_{FF,y} - D_{B,y} >> 0$, but to simplify the calculation, and at the same time to be conservative, this quantity is ignored, assumed to be zero, hence equation 14) becomes:

$ER_y = 0.4\ BE_{FF,y}$ ……..……(15)

Leakage

There is no leakage foreseen in this project.

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Parameters:	**FC_x , FC_{x-1}; FC_{x-2}**
Data unit:	Mass or volume units
Description:	Quantity of coke used in the project plant in year x, x-1, x-2, where x is the year prior to the start of the project activity.
Source of data:	Three years data of the from fuel consumption data logs at the project site
Measurement procedures (if any):	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. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
Any comment:	

Parameters:	**NCV**
Data unit:	GJ/mass or volume units
Description:	Net calorific value of coke used in the project plant in the last three years prior to the start of the project activity
Source of data:	The following data sources may be used if the relevant conditions apply:

Data source	**Conditions for using the data source**
a) Values provided by the fuel supplier in invoices	The preferred source
b) Measurements by the project participants	If a) is not available
c) Regional or national default values	If a) is not available
d) IPCC default values at the lower limit of the uncertainty at a 95 % confident interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available

Measurement procedures	For a) and b): measurements should be undertaken in line with

(if any):	national or international fuel standards.
Any comment:	Verify if the values under a), b), and c) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b), or c) should have ISO17025 accreditation or justify that they can comply with similar quality standards.

Parameters:	**$EF_{CO2,FF,}$**
Data unit:	tCO2/GJ
Description:	Weighted average CO2 emission factor for coke used in the project plant in the last three years prior to the start of the project activity
Source of data:	The following data sources may be used:

Data source	**Conditions for use in the data source**
a)Values provided by the fuel supplier in invoices	Preferred data source
b) Measurements by the project participants	If a) is not available
c)Regional or national default values	If a) is not available
d) IPCC default values at the lower limit of the uncertainty at a 95 % confident interval as provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available

Measurement procedures (if any)	For a) and b) measurements should be undertaken in line with national or international fuel standards
Any comment:	If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and those two values are based on measurements for this specific fuel, this CO_2 emission factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options b), c), or d) should be used.

Parameters:	**$NN_{FF,}$**

Data unit:	
Description:	Number of trips made in transporting coke to be used in the EAF prior to the project activity
Source of data:	Three years data of the from fuel consumption data logs at the project site
Measurement procedures (if any):	
Any comment:	

Parameters:	**$AVD_{FF,}$**
Data unit:	km
Description:	Average distance travelled in transporting coke to the plant site in the year prior to the project activity
Source of data:	Three years data of the from fuel consumption data logs at the project site
Measurement procedures (if any):	
Any comment:	

Parameters:	**$EF_{CO2,BL}$**
Data unit:	tCO2/ y
Description:	Emission factor of coke used in the EAF prior to the project activity
Source of data:	Three years data of the from fuel consumption data logs at the project site
Measurement procedures (if any):	Follow the IPCC guidelines of 2006
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

According equation (15) the emission reduction is:
$ER_y = 0.4\ BE_{FFy}$

Calculation of $BE_{FF,y}$:

Coke consumption (FC_y) = 9000 ton/y
C content of coke = 85 %
Fraction of C oxidized = 0.99 (all volatile matter has been removed)
CO2 emission ($BE_{FF,y}$) = 27769.5 tCO_2/y ……..……(16)

Combining Equations (15) and (16), the emission reduction ER_y is:

ER_y = 11,108 tCO2/y ……(17)

Project emission $PE_y = 0.6\ BE_{FF,y}$ = 16661.7 tCO_2/y …….(18)

B.6.4 Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of Baseline emissions (tonnes of CO_2e)	Estimation of leakage (tones of CO_2e)	Estimation of overall emission reductions (tonnes of CO_2e)
2009	16661.7	27769.5	0	11107.8
2010	16661.7	27769.5	0	11107.8
2011	16661.7	27769.5	0	11107.8
2012	16661.7	27769.5	0	11107.8
2013	16661.7	27769.5	0	11107.8
2014	16661.7	27769.5	0	11107.8
2015	16661.7	27769.5	0	11107.8
2016	16661.7	27769.5	0	11107.8
2017	16661.7	27769.5	0	11107.8
2018	16661.7	27769.5	0	11107.8
Total (tonnes of CO_2e)	166617	277695	0	111078

B.7 Application of the monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	**$FC_{FF,y}$**
Data unit:	Mass or volume units
Description:	Quantity of coke used in the Electric Arc Furnace in the year y (ton/y)
Source of data:	Invoice letters
Measurement procedures (if any):	Use mass or volume meters. The consistency of metered fuel consumption quantities should be crosschecked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
Monitoring frequency:	Recorded continuously and aggregated at least annually.

QA/QC procedures:	According to ISO 9000 or similar quality systems
Any Comment:	

Data / Parameter:	**$FC_{B,k,y}$**
Data unit:	Mass or volume units
Description:	Quantity of bio-char used in the project plant in year y (ton/y)
Source of data:	Invoice letters
Measurement procedures (if any):	Use mass or volume meters. The consistency of metered fuel consumption quantities should be crosschecked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
Monitoring frequency:	Recorded continuously and aggregated at least annually.
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any Comment:	

Data / Parameter:	**$FC_{TR,i,y}$**
Data unit:	Mass or volume units
Description:	Quantity of fossil fuel of type i consumed by the trucks for transportation of fossil fuel to be used in the Electric Arc Furnace in the year y (ton or volume/y)
Source of data:	Invoice letters
Measurement procedures (if any):	Use mass or volume meters. The consistency of metered fuel consumption quantities should be crosschecked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
Monitoring frequency:	Recorded continuously and aggregated at least annually.
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any Comment:	

Data / Parameter:	$FC_{TR.k.i,y}$
Data unit:	Mass or volume units
Description:	Quantity of fossil fuel of type i consumed by the trucks for transportation of bio-char in the year y (ton or volume/y)
Source of data:	Invoice letters
Measurement procedures (if any):	Use mass or volume meters. The consistency of metered fuel consumption quantities should be crosschecked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should also be cross-checked with available purchase invoices from the financial records.
Monitoring frequency:	Recorded continuously and aggregated at least annually.
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any Comment:	

Data / parameter:	$EF_{FF,CO2,y}$	
Data unit:	tCO_2/GJ	
Description:	CO2 emission factor of coke used in the Electric Arc Furnace in year y (tCO2/GJ)	
Source of data:	**Data source**	**Conditions for using the data source**
	a) Values provided by the fuel supplier in invoices	This is the preferred source.
	b) Measurements by the project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well documented, reliable sources (such as national energy balances).
	d) IPCC default values at the upper/lower limit6 of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available

Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards.
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 For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any comment:	For a): If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options b), c) or d) should be used.

Data / parameter:	**$EF_{FF,CO2,i,y}$**	
Data unit:	tCO_2/GJ	
Description:	CO2 emission factor of fossil fuel type i used in transporting fossil fuel to be used in the Electric Arc Furnace in year y (tCO2/GJ)	
Source of data:	**Data source**	**Conditions for using the data source**
	a) Values provided by the fuel supplier in invoices	This is the preferred source.
	b) Measurements by the project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well documented, reliable sources (such as national energy balances).
	d) IPCC default values at the upper/lower limit6 of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available
Measurement	For a) and b): Measurements should be undertaken in line with national or	

procedures (if any):	international fuel standards.
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 For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any comment:	For a): If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options b), c) or d) should be used.

Data / parameter:	**$EF_{FF,CO2,i,y}$**
Data unit:	tCO_2/GJ
Description:	CO2 emission factor of fossil fuel type i used in transporting fossil fuel to be used in the Electric Arc Furnace in year y (tCO2/GJ)
Source of data:	**Data source** / **Conditions for using the data source** a) Values provided by the fuel supplier in invoices / This is the preferred source. b) Measurements by the project participants / If a) is not available c) Regional or national default values / If a) is not available These sources can only be used for liquid fuels and should be based on well documented, reliable sources (such as national energy balances). d) IPCC default values at the upper/lower limit6 of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories / If a) is not available
Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards.
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 For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into

	account
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any comment:	For a): If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options b), c) or d) should be used.

Data / parameter:	**$EF_{km,CO2,y}$**
Data unit:	tCO_2/km
Description:	CO2 emission factor of fossil fuel used in transporting bio-char to the project site in year y (tCO2/km)
Source of data:	**Data source** / **Conditions for using the data source** a) Values provided by the fuel supplier in invoices — This is the preferred source. b) Measurements by the project participants — If a) is not available c) Regional or national default values — If a) is not available These sources can only be used for liquid fuels and should be based on well documented, reliable sources (such as national energy balances). d) IPCC default values at the upper/lower limit6 of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories — If a) is not available
Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards.
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 For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account
QA/QC procedures:	According to ISO 9000 or similar quality systems
Any comment:	For a): If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If

	another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options b), c) or d) should be used.

Data / parameter:	**$EF_{CO2,FF,i,y}$**	
Data unit:	tCO_2/GJ	
Description:	CO2 emission factor of fossil fuel used in transporting bio-char to the project site in year y (tCO2/GJ)	
Source of data:	**Data source**	**Conditions for using the data source**
	a) Values provided by the fuel supplier in invoices	This is the preferred source.
	b) Measurements by the project participants	If a) is not available
	c) Regional or national default values	If a) is not available These sources can only be used for liquid fuels and should be based on well documented, reliable sources (such as national energy balances).
	d) IPCC default values at the upper/lower limit6 of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available
Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards.	
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 For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account	
QA/QC procedures:	According to ISO 9000 or similar quality systems	
Any comment:	For a): If the fuel supplier does provide the NCV value and the CO_2 emission factor on the invoice and these two values are based on measurements for this specific fuel, this CO_2 factor should be used. If another source for the CO_2 emission factor is used or no CO_2 emission factor is provided, options b), c) or d) should be used.	

Data / parameter:	**NCV_y**

<table>
<tr><td></td><td></td></tr>
<tr><td>Data unit:</td><td>GJ/ton or volume units</td></tr>
<tr><td>Description:</td><td>Weighted average net calorific value of the fossil fuel used in the Electric Arc Furnace in the year y</td></tr>
<tr><td>Source of data:</td><td>The following data sources may be used if the relevant conditions apply:

<table><tr><th>Data source</th><th>Conditions for using the data source</th></tr><tr><td>a) Values provided by the fuel supplier in invoices</td><td>This is the preferred source.</td></tr><tr><td>b) Measurements by the project participants</td><td>If a) is not available</td></tr><tr><td>c) Regional or national default values</td><td>If a) is not available

These sources can only be used for liquid fossil fuels and should be based on well documented, reliable sources (such as national energy balances).</td></tr><tr><td>d) IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories</td><td>If a) is not available

This source may only be used for fossil fuels.</td></tr></table></td></tr>
<tr><td>Measurement procedures (if any):</td><td>For a) and b): Measurements should be undertaken in line with national or international fuel standards.</td></tr>
<tr><td>Monitoring frequency:</td><td>For a) and b): The NCV should be obtained for each fuel delivery, from which weighted average annual values should be calculated
For c): Review appropriateness of the values annually
For d): Any future revision of the IPCC Guidelines should be taken into account</td></tr>
<tr><td>QA/QC procedures:</td><td>Verify if the values under a), b) and c) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b) or c) should have ISO17025 accreditation or justify that they can comply</td></tr>
</table>

	with similar quality standards.
Any comment:	-

Data / parameter:	**$NCV_{B,k,y}$**
Data unit:	GJ/ton or volume units
Description:	Weighted average net calorific value of bio-char used in the Electric Arc Furnace in the year y
Source of data:	The following data sources may be used if the relevant conditions apply:

Data source	**Conditions for using the data source**
a) Values provided by the fuel supplier in invoices	This is the preferred source.
b) Measurements by the project participants	If a) is not available
c) Regional or national default values	If a) is not available These sources can only be used for liquid fossil fuels and should be based on well documented, reliable sources (such as national energy balances).
d) IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available This source may only be used for fossil fuels.

Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards.
Monitoring frequency:	For a) and b): The NCV should be obtained for each fuel delivery, from which weighted average annual values should be calculated For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account
QA/QC procedures:	Verify if the values under a), b) and c) are within the uncertainty range

	of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b) or c) should have ISO17025 accreditation or justify that they can comply with similar quality standards.
Any comment:	-

Data / parameter:	**$NCV_{TR,i,y}$**
Data unit:	GJ/ton or volume units
Description:	Weighted average net calorific value of fossil fuel type i used in trucks in the year y
Source of data:	The following data sources may be used if the relevant conditions apply:

Data source	**Conditions for using the data source**
a) Values provided by the fuel supplier in invoices	This is the preferred source.
b) Measurements by the project participants	If a) is not available
c) Regional or national default values	If a) is not available These sources can only be used for liquid fossil fuels and should be based on well documented, reliable sources (such as national energy balances).
d) IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	If a) is not available This source may only be used for fossil fuels.

Measurement procedures (if any):	For a) and b): Measurements should be undertaken in line with national or international fuel standards.
Monitoring	For a) and b): The NCV should be obtained for each fuel delivery,

frequency:	from which weighted average annual values should be calculated For c): Review appropriateness of the values annually For d): Any future revision of the IPCC Guidelines should be taken into account
QA/QC procedures:	Verify if the values under a), b) and c) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements. The laboratories in a), b) or c) should have ISO17025 accreditation or justify that they can comply with similar quality standards.
Any comment:	-

Data / Parameter:	**N_y**
Data unit:	-
Description:	Number of truck trips during the year *y*
Source of data:	Transportation data logs.
Measurement procedures (if any):	-
Monitoring frequency:	Continuously
QA/QC procedures:	Check consistency of the number of truck trips with the quantity of biomass combusted, e.g. by the relation with previous years.
Any comment:	Applicable if option 1 is chosen to estimate CO2 emissions from transportation. Project participants have to monitor either this parameter or the average truck load T_{Ly}.

Data / Parameter:	**AVD_y**
Data unit:	km
Description:	Average round trip distance (from and to) between the bio-char supply sites and the site of the project plant during the year *y*
Source of data:	Transportation data logs.
Measurement procedures (if any):	-
Monitoring frequency:	Continuously
QA/QC procedures:	Check consistency of distance records provided by the truckers by comparing recorded distances with other information from other sources (e.g. maps).
Any comment:	Applicable if option 1 is chosen to estimate CO2 emissions from transportation. If alternative fuels are supplied from different sites, this parameter

	should correspond to the mean value of km traveled by trucks that supply the alternative fuels to the plant

Data / Parameter:	**$AF_{TR,k,y}$**
Data unit:	Mass or volume units
Description:	Quantity of bio-char that has been transported to the project site during the year *y*.
Source of data:	Measurements by project participants
Measurement procedures (if any):	Use mass or volume meters The consistency of metered fuel consumption quantities should be crosschecked by an annual energy balance that is based on purchased quantities and stock changes. Where the purchased fuel invoices can be identified specifically for the CDM project, the monitored quantities should also be cross-checked with available purchase invoices from the financial records.
Monitoring frequency:	Recorded continuously and reported monthly and adjusted according to stock change.
QA/QC procedures:	According to ISO 9000 or similar quality systems.
Any comment:	-

Data / Parameter:	**TL_y**
Data unit:	Mass or volume units
Description:	Average truck load of the trucks used during the year y
Source of data:	Transportation data logs.
Measurement procedures (if any):	-
Monitoring frequency:	Continuously
QA/QC procedures:	-
Any comment:	Applicable if option 1 is chosen to estimate CO_2 emissions from transportation. Project participants have to monitor either the number of truck trips N_y or this parameter.

B.7.2 Description of the monitoring plan:

>>

B.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

2008-06-30

The name of the responsible person/entity is not decided yet. This decision will be made after the New Methodology is approved.

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

10 years

C.1.1. Starting date of the project activity:

01 January 2009

C.1.2. Expected operational lifetime of the project activity:

Unlimited

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

01 January 2009

C.2.1.2. Length of the first crediting period:

10 years

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01 January 2009

C.2.2.2. Length:

10 year

SECTION D. Environmental impacts

>>

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

This fuel change does not require additional environmental Impact Analysis. The project proponent has an EIA called AMDAL which can be made available to the DNA and DOE.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>>

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

Project participants visited Indonesian Ministry of Industry, Ministry Agriculture, and Ministry of Environment to explain the Project in October 2007 and February 2008. Also Project participants visited several Indonesian palm oil mills to invite them to join the Project by producing bio-char with reasonable price and sufficient volume continuously.

E.2. Summary of the comments received:

>>

All parties were interested in the Project, and the Ministries suggested to promote this technology to the other steel mills. The Project will create jobs and reduce fossil fuel import. Palm oil mills will make a study to install new carbonizing plants to supply bio-char to steel mills.

E.3. Report on how due account was taken of any comments received:

>>

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	PT MASTER STEEL MFG. CO
Street/P.O.Box:	Jalan Pangeran Jayakarta 107
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URL:	
Represented by:	
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Salutation:	
Last Name:	Soemedi
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E-mail:	nakayamam@steelplantech.co.jp
URL:	http://www.steelplantech.co.jp
Represented by:	
Title:	Manager,Chief Engineer
Salutation:	
Last Name:	Michio
Middle Name:	
First Name:	Nakayama
Department:	Technology Management Department

Mobile:	
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Direct tel:	+81-45- 501-6166
Personal e-mail:	nakayamam@steelplantech.co.jp

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding utilized in this project.

Annex 3

BASELINE INFORMATION

Proves of the applicability condition will be supplied, when it is relevant, in the form of:

1. Proof that for the last three years the project has not used bio-char in their activity;
2. Proof of the steel production;
3. Proof that the carbonizer utilizes biomass residues that is normally dumped and left to decay;
4. Proof that here is no change of electricity consumption due to this project activity.

Annex 4

MONITORING INFORMATION

Monitoring shall be done by the staff of Master Steel operating department.