CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)
Version 01

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NOTE:

(i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.

(ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)[1,2] that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

[1] The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

[2] At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

CPA-xxx Energy efficiency project for xxx (corporation name)
Version: 02
Date:30/11/2012

A.2. Description of the small-scale CPA:

CPA-xxx Energy efficiency project for xxx (corporation name) which is to be implemented by xxx (corporation name) is a kiln efficiency improvement project, located at Liaoning Faku Economic Development Zone, Shenyang City, China.

xxx (corporation name) produces ceramic bricks, the annual capacity of which is xxx (production capacity). Currently, xxx (corporation name) has xxx (number) normal kiln systems which is widely used in Chinese ceramic production. The energy feed of the kilns is xxx (fossil fuel type).

The purpose of this CPA is to improve energy efficiency of kilns to xxx (replace or modify existing or purchase new, etc.) ceramic kilns by using “Blackbody Radiation Strengthen Technology” (BRST). After the CPA, xxx (energy type) consumed for ceramic production will be saved up to xxx (certain percentage). The CPA is currently xxx (CPA construction status).

To carry out this CPA, Uniufa and xxx (corporation name) have signed a contract. xxx (corporation name) will voluntarily participate in the PoA (Energy efficiency programme for ceramic kilns in Liaoning Faku Economic Development Zone) and carry out this CPA. Uniufa will provide technical and administrative support to xxx (corporation name). CER revenue of this CPA will be allocated to xxx (corporation name). Without CER revenue, xxx (corporation name) would continue to xxx (use existing or purchase normal) kilns for ceramic production until the kilns reach their lifetime.

This CPA will bring significant environmental, technical and economic benefits to the local community as follows:

- This CPA is to install energy efficiency measures for ceramic kilns, thereby reducing GHG emissions through reduced fossil fuel consumption.
- Local environment quality is also improved due to the reduce of harmful emissions (e.g. SO_x, NO_x and TSP) from fossil fuel combustion.
- Investment environment will be improved and further promote economic development.

The saved energy in the CPA are expected to be xxx GWh_{th} per year, and the emission reduction will be xxx tCO_2e every year and during the crediting period, the total emission reduction will be xxx tCO_2e.

A.3. Entity/individual responsible for the small-scale CPA:

CPA-001 implementer is xxx (corporation name)

A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

A.4.1.1. Host Party:

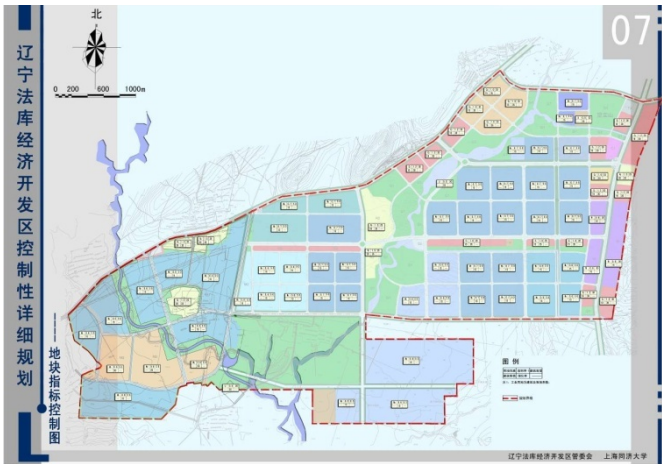
People's Republic of China

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):

The CPA is located at Liaoning Faku Economic Development Zone, Faku County, Shenyang City, Liaoning Province. Its east longitude and north latitude are xxx and xxx respectively. The CPA implementer is xxx (corporation name). The contact information is listed in Annex 1.
The geographical location of the CPA is indicated in the following figure A4.1.2,

Liaoning Province in China

Faku County in Liaoning Province



Liaoning Faku Economic Development Zone

Figure A4.1.2 Geographical location of the CPA

A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

The start date of the CPA will be the earliest date at which either the implementation or construction or real action of project activity begins.
dd/mm/yyyy

A.4.2.2. Expected operational lifetime of the small-scale CPA:

xxx years

A.4.3. Choice of the crediting period and related information:

xxx

A.4.3.1. Starting date of the crediting period:

dd/mm/yyyy (Or the date of inclusion, whichever is later.)

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

xxx years

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

In the xxx years of crediting period, the total estimated amount of emission reductions is expected to be xxx tCO_2e.Annual emission reductions is calculated to be xxx tCO_2e, which is not exceed the limit of the small scale methodology.

Years	Annual estimation of emission reductions in tonnes of CO_2e
Total estimated reductions (tonnes of CO_2e)	
Total number of crediting years	
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	

A.4.5. Public funding of the CPA:

The CPA will not receive any public funding from Annex I Parties.

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

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According to paragraph 8 of annex 13 in EB 54 report, for the purposes of registration of a Programme of Activities (PoA)[3] a proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity[4], which:

(a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same sectoral scope, and;

(b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.

There is no registered activity has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same sectoral scope. Thus, the proposed small scale CPA under PoA is not deemed to be de-bundled component of a large-scale activity.

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

The CPA implementer xxx (corporation name) has signed a contract with Uniufa and made a statement that they are aware and agree that the CPA is under the PoA. The contract also includes the item that the proposed CPA is neither under another PoA or a part of another CDM project activity.

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

Energy efficiency programme for the ceramic kilns in Liaoning Faku Economic Development Zone
Version: xx
Date: dd/mm/yyyy

B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :

>>
CPA-xxx meets all eligibility criteria required in Section A.4.2.2. of the design document of the PoA, as shown in the following Table B.2,

Table B.2 Eligibility criteria

No.	Eligibility criteria	Analysis
(a)	The CPA shall be within the geographical boundary of the PoA, which is Liaoning Faku Economic	The CPA is located at Liaoning Faku Economic Development Zone. Its east

[3] Only those POAs need to be considered in determining de-bundling that are: (i) in the same geographical area; and (ii) use the same methodology; as the POA to which proposed CPA is being added

[4] Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity

	Development Zone. Each CPA shall be uniquely identified by geographical coordinates.	longitude and north latitude are xxx and xxx respectively.
(b)	Each CPA shall be checked with the host country DNA and EB data base to make sure it has not been already registered either as a CDM project activity or as a CPA of another PoA. And unique ID will be given to each CPA, such as CPA-001, CPA-002 and so on.	This CPA has not been registered as a CDM project or CPA of other PoA. And the given ID is CPA-xxx.
(c)	Each CPA shall adopt "BRST" to improve energy efficiency and thus to save energy use of affected facility or process by about 20%, either replace, modify or retrofit existing kilns or install new kilns (Greenfield facility).	This CPA will adopt "BRST" to xxx (modify or purchase, etc.) kilns and thus to save energy use of kilns by approximately xxx (percent).
(d)	Document evidence should be provided to make sure the start date of the CPA is not earlier than the validation date of the PoA. The start date of the CPA shall be the earliest date at which either the implementation or construction or real action of project activity begins.	The CPA starts on dd/mm/yyyy. (The start date of the CPA will be the earliest date at which either the implementation or construction or real action of project activity begins.)
(e)	The CPA shall comply with applicability and other requirements in methodology AMS-II.D. "Energy efficiency and fuel switching measures for industrial facilities" i.e. 1. The CPA shall be aimed primarily at energy efficiency and comprises BRST implemented at a single or several ceramic kilns. 2. The CPA may replace, modify or retrofit existing kilns using BRST or install BRST in a new kiln. 3. The energy used for the kilns can and shall be directly measured and recorded within the CPA boundary. 4. The impact of the measures implemented by the CPA can be clearly distinguished from changes in energy use due to other variables not influenced by the project activity (signal to noise ratio). 5. The aggregate energy savings of a single CPA (inclusive of a single facility or several facilities) may not exceed the equivalent of 180 GWh_{th} per year in fuel input. 6. In the case of replacement, modification or retrofit measures, the baseline consists of the energy baseline of the existing facility or sub-system that is replaced, modified or retrofitted. In the case of project activities involving several facilities, the baseline	The CPA complies with applicability and other requirements in methodology AMS-II.D. "Energy efficiency and fuel switching measures for industrial facilities" (version 12). i.e. 1. The CPA aims primarily at energy efficiency and comprises BRST implemented at ceramic kilns. 2. The CPA is to xxx kilns using BRST. 3. The energy used for the kilns can and will be directly measured and recorded within the CPA boundary. 4. The measures implemented by the CPA would decrease the energy consumption by xxx, which is significant and can be clearly distinguished from changes in energy use due to other variables not influenced by the project activity (signal to noise ratio). 5. The aggregate energy savings of the CPA is xxx GWh_{th}, which do not exceed the xxx GWh_{th} per year in fuel input. 6. In the case of replacement, modification or retrofit measures, the baseline is the existing kilns that are modified. The estimated date for the

	needs to be established separately for each site. In the case of project activities involving multiple energy efficiency measures at individual facilities, the interaction between the measures should be taken into consideration when establishing the baseline. For new facilities and project activities involving capacity additions, the energy baseline consists of the facility that would otherwise be built; the most plausible baseline scenario for the project activity shall be evaluated based on the related and relevant requirements in the General Guidance for SSC methodologies. In the absence of the CPA, the existing kilns (or kilns to be otherwise built for greenfield project) would continue to consume energy (EC_{BL} in GWh/year) at historical average levels (or historical average levels from other similar plant for greenfield project)(EC_{HY} in GWh/year), until the time at which the kilns would be likely to be replaced, modified or retrofitted in the absence of the CDM project activity ($DATE_{BaselineRetrofit}$). From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and baseline energy consumption (EC_{BL}) is assumed to equal project energy consumption ($EC_{PJ,y}$ in GWh/year), and no emission reductions are assumed to occur." 7. Conditions regarding leakages. (1) The equipment currently being utilised shall not be transferred from outside the boundary to the project activity. (2) The CPA in this PoA shall not involve fossil fuel switching measures. If involved, the leakage emissions in the baseline situation shall be higher than leakage emissions in the project situation, and hence, leakage emissions can be set to zero. (3) In case the CPA involves the replacement of equipment, the replaced equipment shall be scrapped and the leakage effect can be neglected. An independent monitoring of scrapping of replaced equipment needs to be implemented. The monitoring should include a check if the number of project activity equipment distributed by the project and the number of scrapped equipment correspond with each other. For this purpose, scrapped equipment should	existing kilns to be retrofit is xxx. No emission reductions are assumed to occur after that time. For new facilities and project activities involving capacity additions, the energy baseline consists of the facility that would otherwise be built; the most plausible baseline scenario for the project activity shall be evaluated based on the related and relevant requirements in the General Guidance for SSC methodologies. 7. Conditions regarding leakages. (1) The equipment currently being utilised is not transferred from outside the boundary to the project activity. (2) The proposed CPA does not involve fossil fuel switching measures. If involved, the leakage emissions in the baseline situation shall be higher than leakage emissions in the project situation, and hence, leakage emissions can be set to zero 3) In case the CPA involves the replacement of equipment, the replaced equipment shall be scrapped and the leakage effect can be neglected. An independent monitoring of scrapping of replaced equipment will be implemented. The monitoring should include a check if the number of project activity equipment distributed by the project and the number of scrapped equipment correspond with each other. For this purpose, scrapped equipment should be stored until such correspondence has been checked. The scrapping of replaced equipment should be documented and independently verified.

	be stored until such correspondence has been checked. The scrapping of replaced equipment should be documented and independently verified.	
(f)	1 Each CPA shall prove through investment analysis that the CPA would not occur in the absence of CDM because of investment barrier, according to "Guidelines on the demonstration of additionality of small-scale project activities" (version 09.0, EB68). For investment comparison analysis, the financial indicators (e.g. NPV, IRR) of the proposed CPA (without CDM revenue) shall be below that of other alternatives. For benchmark analysis, the IRR of the proposed CPA (without CDM revenue) shall below the benchmark. The discounting rate or financial benchmark can be taken from the latest version of official publication "Economic evaluation measurements and parameters of constructive projects", which offers an appropriate guide. 2 Basic parameters such as initial investment, O&M cost, and energy saving revenue for the calculation of cash flow shall have several reliable sources and can be crosschecked. 3 Sensitivity analysis shall be conducted for variables such as fuel price, total investment, and annual O&M cost. The variations should at least cover a range of +10% and -10%. 4 Adopting BRST for ceramic kilns is not mandatory in Liaoning Faku Economic Development Zone.	1 This CPA adopts xxx for investment analysis. The xxx (financial indicator) of the proposed CPA (without CDM revenue) is below xxx (comparison target). This CPA would not occur in the absence of CDM because of investment barrier. The discounting rate or financial benchmark is taken from the latest version of official publication "Economic evaluation measurements and parameters of constructive projects", which is xx%. 2 Basic parameters such as initial investment, O&M cost, and energy saving revenue for the calculation of cash flow have several reliable sources and can be crosschecked. 3 Sensitivity analysis is conducted for variables such as fuel price, total investment, and annual O&M cost. The variations cover a range of +10% and -10%. 4 Adopting BRST for ceramic kilns is not mandatory in Liaoning Faku Economic Development Zone.
(g)	Each CPA shall undertake an environmental impact analysis and the EIA shall be approved by relevant authorities.	This CPA is undertaking an environmental impact analysis and the CPA will be included if the EIA is approved by relevant authorities.
(h)	There is no funding from Annex I parties for each CPA. If any, it does not result in a diversion of official development assistance.	In this CPA, there are no fundings from Annex I parties.
(i)	No requirements regarding target group and	Applicable

	distribution mechanisms.	
(j)	No sampling is required in this PoA.	Applicable
(k)	The energy saving of every CPA in aggregate meets the small-scale threshold criteria of 180 GWh_{th} throughout the crediting period.	The aggregate energy savings of the CPA is xxx GWh_{th}, which do not exceed the 180 GWh_{th} per year in fuel input.
(l)	The SSC-CPA included in the PoA shall conduct debundling check according to annex 13 in EB 54.A proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity[5], which: (a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same sectoral scope, and; (b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.	The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity according to the analysis in A.4.6;

This small-scale CPA can be included in the Programme of Activities because it meets all the eligibility criteria developed in the PoA-PDD.

B.3. Assessment and demonstration of additionality of the small-scale CPA , as per eligibility criteria listed in the Registered PoA:

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To demonstrate the CPA additionality, the criteria developed in PoA-DD section E.5.2. shall be complied.

1 Each CPA shall prove through investment analysis that the CPA would not occur in the absence of CDM because of investment barrier, according to “Guidelines on the demonstration of additionality of small-scale project activities” (version 09.0, EB68).

For investment comparison analysis, the financial indicators (e.g. NPV, IRR) of the proposed CPA (without CDM revenue) shall be below that of other alternatives.

For benchmark analysis, the IRR of the proposed CPA (without CDM revenue) shall below the benchmark.

The discounting rate or financial benchmark can be taken from the latest version of official publication “Economic evaluation measurements and parameters of constructive projects”, which offers an appropriate guide.

2 Basic parameters such as initial investment, O&M cost, and energy saving revenue for the calculation of cash flow shall have several reliable sources and can be crosschecked.

[5] Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity

3 Sensitivity analysis shall be conducted for variables such as fuel price, total investment, and annual O&M cost. The variations should at least cover a range of +10% and -10%.

4 Adopting BRST for ceramic kilns is not mandatory in Liaoning Faku Economic Development Zone.

1 Investment analysis

For this CPA, xxx analysis is adopted here. The financial indicator is xxx. And the applied xxx (benchmark or discounting rate) is taken from the latest version of official publication "Economic evaluation measurements and parameters of constructive projects", which offers an appropriate guide. The xxx (benchmark or discounting rate) adopted is xx% as required in the criteria. The identified basic parameters for the calculation of cash flow can be crosschecked.

Table B.3.1 Basic parameters of investment analysis

No.	Item	Value	Unit
1	Total investment	xxx	10,000RMB
1.1	Investment on fixed asset	xxx	10,000RMB
1.2	Working capital	xxx	10,000RMB
2	Annual cost	xxx	10,000RMB/yr
2.1	Labor cost and welfare	xxx	10,000RMB/yr
2.2	Administration cost	xxx	10,000RMB/yr
2.3	Maintenance cost	xxx	10,000RMB/yr
2.4	Overhaul cost	xxx	10,000RMB/yr
2.5	Insurance cost	xxx	
2.6	Depreciation cost	xxx	10,000RMB/yr
2.6.1	Salvage value	xxx	
2.6.2	Period of depreciation	xxx	years
3	Annual financial Revenue	xxx	10,000RMB/yr
3.1	Energy saving	xxx	10,000RMB/yr
3.2	CER revenue	xxx	10,000RMB/yr
4	Tax	xxx	
4.1	VAT	xxx	
4.2	Urban construction tax and educational surtax	xxx	of VAT
4.3	Corporate tax	xxx	

Table B.3.2 shows the results of the calculated financial indicator based on the data listed below:

Table B.3.2 financial indicator Comparison

xxx	Value
xxx	xxx

xxx	xxx
xxx	xxx

If the financial indicator of the proposed CPA is disadvantaged (to benchmark or that of other alternative), the proposed CPA faces investment barrier that prevent to happen.

2 Sensitivity analysis

The objective of this sub-step is to check whether the conclusion regarding the above financial unattractiveness is robust to reasonable variations in critical assumptions. As per *Guidelines on the assessment of investment analysis*, only the variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. xxx parameters are considered in the following sensitivity analysis:

1) xxx
2) xxx
3) xxx
….
xxx (sensitivity analysis result)

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

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As per AMS-II.D (Version 12), the project boundary is the physical, geographical site of the industrial or mining and mineral production facility(ies), processes or equipment that are affected by the project activity.

For this CPA, the project boundary is the physical, geographical site of the kilns to be xxx (replaced or modified or purchased, etc.), as shown in red square of the following Chart B.4.

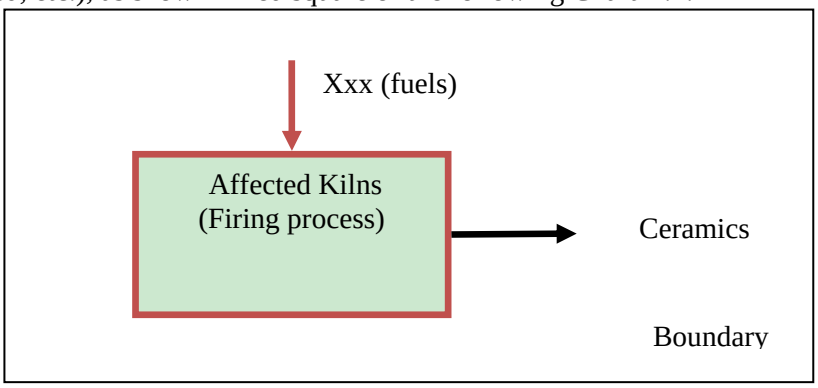

Chart B.4 Boundary of the CPA

GHG emission sources taken into account in the project activity are shown in the Table B.4.

Table B.4. GHG emission sources related to the project activity

Source	Gas	Included?	Justification / Explanation

Baseline	Fossil fuel consumption in the kilns	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification. This is conservative.
		N_2O	No	Excluded for simplification. This is conservative.
Project Activity	Fossil fuel consumption in the kilns	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification. This is conservative.
		N_2O	No	Excluded for simplification. This is conservative.

The CPA is located at Liaoning Faku Economic Development Zone, which is within the boundary of the PoA.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

Data / Parameter:	$EC_{UnitBL,i}$
Data unit:	GWh per unit (t or m^2) ceramic product
Description:	the energy consumption of fuel type i per unit product produced at historical level
Source of data used:	Plant historical average data; for Greenfield projects, historical data of other similar plants shall be used.
Value applied:	xxx GWh/m^2
Justification of the choice of data or description of measurement methods and procedures actually applied :	Used to determine EC_{HR}. The energy consumption of ceramic plants may vary according to actual productivity (M_y). It is more appropriate to use $EC_{UnitBL,i}$ and actual productivity to determine the corresponding baseline energy consumption and emissions.
Any comment:	/

Data / Parameter:	$DATE_{BaselineRetrofit}$
Data unit:	year
Description:	the time when the kilns (or kilns to be built for greenfield project) would be likely to be replaced, modified or retrofitted in the absence of the CDM project activity
Source of data used:	According to specifications of ,Tool to determine the remaining lifetime of equipments
Value applied:	xxx
Justification of the choice of data or description of measurement methods and procedures actually applied :	The three options below can be chosen determine the remaining lifetime of the equipment, Option (a): Use manufacturer's information for the technical lifetime of equipment and compare to the date of first commissioning Option (b): Obtain an expert evaluation Option (c): Use default values
Any comment:	/

Data / Parameter:	$COEF_{i,y}$
Data unit:	(t CO_2e/ GWh)
Description:	The CO_2 emission coefficient of fuel type i in year y
Source of data used:	The IPCC default values may be used, or, the equation (4) conditioned in B.5.2 can be applied for calculation.
Value applied:	xxx
Justification of the choice of data or description of measurement methods and procedures actually applied :	/
Any comment:	/

B.5.2. Ex-ante calculation of emission reductions:

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The emission reduction achieved by energy efficiency is estimated according to the AMS-II.D (Version 12).

According to the AMS-II.D (Version 12), "*In the absence of the CDM project activity, the existing facility(ies) would continue to consume energy (EC_{BL} in GWh/year) at historical average levels (EC_{HY} in GWh/year), until the time at which the industrial or mining and mineral production facility(ies) would be likely to be replaced, modified or retrofitted in the absence of the CDM project activity ($DATE_{BaselineRetrofit}$). From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and baseline energy consumption (EC_{BL}) is assumed to equal project energy consumption ($EC_{PJ,y}$ in GWh/year), and no emission reductions are assumed to occur.*"

EC_{BL}= EC_{HY} until $DATE_{BaselineRetrofit}$
EC_{BL}= $EC_{PJ,y}$ on/after $DATE_{BaselineRetrofit}$

Each energy form in the emission baseline is multiplied by an emission coefficient (in kg CO_2e/kWh). For the electricity displaced, the emission coefficient is calculated in accordance with provisions under category I.D. For fossil fuels, the IPCC default values for emission coefficients may be used.

As to the CPA, the main energy is thermal energy, such as coal gas, natural gas, coal and so on. So the unit of energy consumption and its emission coefficient applies TJ/year and t CO2e/TJ respectively in the PoA DD and CPA DD for the calculation convenience.

Baseline Emissions:

$BE_y = EC_{BL} \times COEF_{i,y}$ (1)
EC_{BL}= EC_{HY} until $DATE_{BaselineRetrofit}$ (2)
EC_{BL}= $EC_{PJ,y}$ on/after $DATE_{BaselineRetrofit}$ (3)

Where,

BE_y	Baseline emission in year y (tCO2e/year).
EC_{BL}	Baseline energy consumption (GWh/year)
EC_{HY}	Energy consumption at historical average levels(GWh/year)
$EC_{PJ,y}$	Project energy consumption in year year (GWh/year)
$DATE_{Baseline\ Retrofit}$	The time when the kilns (or kilns to be built for greenfield project) would be likely to be replaced, modified or retrofitted in the absence of the CDM project activity.
$COEF_{i,y}$	The CO_2 emission coefficient of fuel type i in year y (t CO_2e/GWh). The following equation is applied for calculation.

$$COEF_{i,y} = w_{C,i,y} / NCV_{i,y} \times 44/12 \times 3600 \quad (4)$$ [6]

$w_{C,i,y}$	The weighted average mass fraction of carbon in fuel type i in year y (kg C/ t or m^3).
$NCV_{i,y}$	The net calorific value of the fuel type i in year y (MJ/ t or m^3).
44&12	Molecular weight of carbon dioxide (CO_2) and carbon (C) respectively.

$$EC_{HY} = EC_{UnitBL,i} \times M_y \quad (5)$$

$EC_{UnitBL,i}$	The baseline energy consumption of fuel type i per unit ceramics production at historical level (or historical level of other similar plant, for greenfield projects) (GWh / t or m^2 ceramics);
M_y	The quantity of ceramic production during the year y (t or m^2 ceramics /year);

Project Emission

The project emission is calculated according to the following equations.

$$PE_y = EC_{PJ,y} \times COEF_{i,y} \quad (6)$$

$$EC_{PJ,y} = FC_{PJ,i,y} \times NCV_{i,y}/3600/1000 \quad (7)$$

PE_y	Project emissions in the year y (tCO_{2e} / year)
$EC_{PJ,y}$	Energy consumption during the year y (GWh/year);
$COEF_{i,y}$	The CO_2 emission coefficient of fuel type i in year y (tCO_2e/ GWh). It is derived through the same way as that for ex-ante.
$FC_{PJ,i,y}$	Fuel type i consumption in the year y (t or m^3/ year)
$NCV_{i,y}$	Net calorific value of the fuel type i in year y (MJ/ t or m^3).

Leackage:

According to paragraph 11 of AMS-II.D (version 12), "If the equipment currently being utilised is transferred from outside the boundary to the project activity, leakage is to be considered." For this CPA, the equipment currently being utilised is not transferred from outside the boundary to the project activity,

[6] Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (EB41,annex11 formula 2)

thus leakage is deemed to be zero.

According to paragraph 14 of AMS-II.D (version 12), "In case the project activity involves fossil fuel switching measures leakage resulting from fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of fossil fuels outside of the project boundary shall be considered as per the guidance provided in the leakage section of the most recent version of the large scale approved methodology ACM0009. In case leakage emissions in the baseline situation are higher than leakage emissions in the project situation, leakage emissions will be set to zero." The CPA xxx. Hence, leakage emissions can be set to zero.

According to paragraph 15 of AMS-II.D (version 12), "In case the project activity involves the replacement of equipment, and the leakage effect of the use of the replaced equipment in another activity is neglected because the replaced equipment is scrapped, an independent monitoring of scrapping of replaced equipment needs to be implemented." The CPA xxx.

Emission Reduction

$$ER_y = BE_y - PE_y - LE_y \quad (8)$$

ER_y Emission Reduction in the year y (t CO2e / year)
BE_y Baseline emission in year y (tCO2e/year).
PE_y Project emissions in the year y (tCO2e / year)
LEy Leakage in the year y (tCO2e / year)

Energy Saving

$$ES_y = EC_{BL} - EC_{PJ,y} \quad (9)$$

ES_y Energy saving in year y (GWh/year)
EC_{BL} Baseline energy consumption (GWh/year)
$EC_{PJ,y}$ Energy consumption in year y (GWh/year)

Table 5.2 Ex-ante estimation of Emission reductions

1 Baseline Emissions

Parameter	Description	Value	Unit	Source or formula
BE_y	Baseline emission in year y		tCO2e/year.	
EC_{BL}	Baseline energy consumption		GWh/year	
EC_{HY}	Energy consumption at historical average levels		GWh/year	

$EC_{UnitBL,i}$	The baseline energy consumption of fuel type i per unit ceramics production at historical level		GWh /m^2	
M_y	The quantity of ceramic production during the year y		m^2 ceramics /year	
$DATE_{BaselineRetrofit}$	The time at which the industrial or mining and mineral production facility(ies) would be likely to be replaced, modified or retrofitted in the absence of the CDM project activity.		Year	
$COEF_{i,y}$	The CO_2 emission coefficient of fuel type i in year y.		t CO_2e/GWh	
$w_{C,i,y}$	The weighted average mass fraction of carbon in fuel type i in year y		kg C/m^3	/
$NCV_{i,y}$	The net calorific value of the fuel type i in year y		MJ/m^3	/
44&12	Molecular weight of carbon dioxide (CO_2) and carbon (C) respectively.		/	/

2 Project Emissions

Parameter	Description	Value	Unit	Source
PE_y	Project emissions in the year y		t CO2e/year	
$EC_{PJ,y}$	Project energy consumption in year y		GWh/year	
$FC_{PJ,i,y}$	Fuel type i consumption in the year y		m^3/ year	

3 Leakage

Parameter	Description	Value	Unit	Source
LE_y	Project leakage in the year y		t CO2e/year	/

4 Emission Reductions

Parameter	Description	Value	Unit	Source

ER_y	Emission reduction from methane recovery component in year *y*		t CO2e/year	

5 Energy Saving

Parameter	Description	Value	Unit	Source
ES_y	Energy saving in year y		GWh/year	

B.5.3. Summary of the ex-ante estimation of emission reductions:

>>

xxx is adopted by CPA-xxx. It is expected that CPA-xxx will generate a total greenhouse gas emission reductions of xxx tCO_2e over the crediting period from dd/mm/yyyy to dd/mm/yyyy.

Year	Estimation of project activity emissions (tonnes of CO_2 e)	Estimation of baseline emissions (tonnes of CO2 e)	Estimation of leakage (tonnes of CO2 e)	Estimation of overall emission reductions (tonnes of CO2 e)
Total (tonnes of CO2 e)				
Annual average over the crediting period of estimated reductions (tonnes of CO e)				

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:

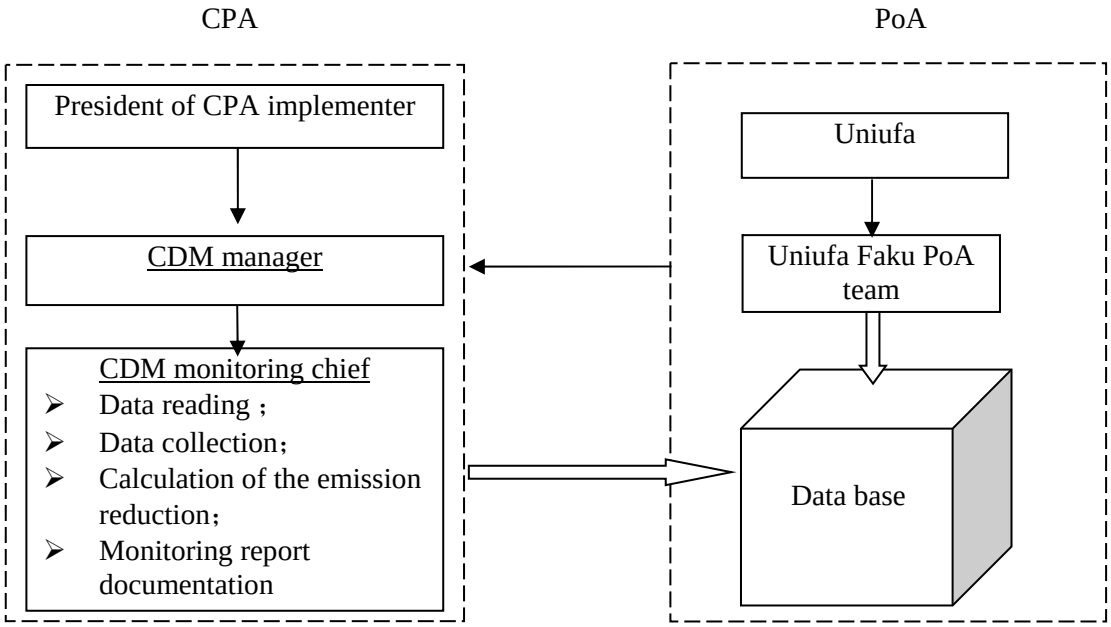
The purpose of the monitoring plan is to provide a standard by which Uniufa will conduct monitoring and verification of the proposed CPA. The monitoring plan will be in accordance with all the CDM relevant rules and regulations. The monitoring plan will facilitate accurate and consistent monitoring of the emission reduction.

1. Monitoring organization

Implementation of the monitoring plan is to ensure real, measurable, long-term greenhouse gas emissions reduction. It is a crucial procedure to identify the final CERs of the proposed project. This monitoring plan for the proposed project activity will be implemented by individual CPAs implementer with the technical support from Uniufa.

The president of CPA implementer will appoint one CDM monitoring manager and several CDM monitoring staff. The original records and electronic copy will be kept by The CDM monitoring group of CPA. Uniufa will keep the copy of original records and electronic data.

The CDM monitoring manager and Uniufa will make the CDM monitoring staff understand the importance of monitoring for the CDM project activity as well as instruct technical matters such as how to use, maintain and calibrate monitoring equipment (including on-site training), procedure for error detection, data processing for calculation of emissions reductions, data archiving system (storage media, frequency of recording and backup, etc.), preparation of internal monitoring report and data entry method.



2. Monitoring parameters and equipment

According to paragraph 12 of AMS-II.D (version 12), In the case of replacement, modification and retrofit measures the monitoring shall consist of:

(a) Documenting the specifications of the equipment replaced;

(b) Metering the energy use of the industrial or mining and mineral production facility, processes or the equipment affected by the project activity; The energy consumption of affected individual kiln will be measured by meters or scales ($FC_{PJ,i,y}$). And the NCV of fuel type i ($NCV_{i,y}$) and ceramic production (M_y) are to be measured.

(c) Calculating the energy savings using the metered energy obtained from sub-paragraph (b).

In the case of project activities involving several facilities, the monitoring procedure as described above shall apply for each facility.

Each CPA may monitor the following parameter where the equation (4) in section E.6.2 is used.

- The carbon content of the fossil fuels can be, either provided by fuel supplier or measured through laboratory analysis or analysers.($w_{c,i,y}$)

Parameters details as follows,

Data / Parameter:	M_y
Data unit:	m^2 /year
Description:	the quantity of ceramic product produced during the year y
Source of data used:	/
Value of data applied for the purpose of calculating expected emission reductions in section B.5	/
Description of measurement methods and procedures to be applied:	Monitored by CPA implementer , Count the number of ceramics to calculate the quantity of ceramic in m^2
QA/QC procedures to be applied:	/
Any comment:	/

Data / Parameter:	$FC_{PJ,i,y}$
Data unit:	m^3 / year
Description:	the quantity of fuel type i combusted during the year y of the project activity
Source of data used:	/
Value of data applied for the purpose of calculating expected emission reductions in section B.5	/
Description of measurement methods and procedures to be applied:	Use either mass or volume meters. In cases where fuel is supplied from small daily tanks, rulers can be used to determine mass or volume of the fuel consumed, with the following conditions: The ruler gauge must be part of the daily tank and calibrated at least once a year and have a book of control for recording the measurements (on a daily basis or per shift); Accessories such as transducers, sonar and piezoelectronic devices are accepted if they are properly calibrated with the ruler gauge and receiving a reasonable maintenance; In case of daily tanks with pre-heaters for heavy oil, the calibration will be made with the system at typical operational conditions.
QA/QC procedures to be applied:	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:	/

Data / Parameter:	$w_{C,i,y}$
Data unit:	kg C/ m^3
Description:	Weighted average mass fraction of carbon in fuel type i in year y
Source of data used:	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
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Measurements should be undertaken in line with national or international fuel standards. The mass fraction of carbon should be obtained for each fuel delivery, from which weighted average annual values should be calculated.
QA/QC procedures to be applied:	Verify if the values under a) and b) 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 b) should have ISO17025 accreditation or justify that they can comply with similar quality standards.
Any comment:	Applicable where equation (4) in B.4.2 is used.

Data / Parameter:	$NCV_{i,y}$
Data unit:	GJ per mass or volume unit (e.g. GJ/m³, GJ/ton)
Description:	Weighted average net calorific value of fuel type i in year y
Source of data used:	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 if the carbon fraction of the fuel is not provided (Option A)
	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 upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of / If a) is not available

	Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories	
Value of data applied for the purpose of calculating expected emission reductions in section B.5	See the CPA for details.	
Description of measurement methods and procedures to be applied:	For a) and b): Measurements should be undertaken in line with national or international fuel standards. 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 to be applied:	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:	Applicable where equation (4) in B.4.2 is used. And for calculation of project emissions.	

3. Data collection

The CDM monitoring staff will implement data reading and periodical recording. The CDM monitoring staff shall implement maintenance, calibration and necessary repair of monitoring equipment. The staff is also responsible for periodical reporting of monitoring result to the CDM monitoring manager. The monitoring data mainly include coal consumption, ceramic production and electricity consumption.

CDM manager is in charge of monitoring report, including:

- Compare and calculate the data need measured in the monitoring plan;
- Identify the errors such as typing error and mistakes in digit and unit and made necessary correction.

4. Data Management

Data monitored for CDM purposes will be aggregated, summarized, calculated and recorded as an electronic file at the end of every month. Backup is saved in a digital recording media like CD and as printed out. All relevant documents such as maps, drawings, applicable standards, monitoring guidance, etc. are systematically stored in order to use to check appropriateness of data and data management. The collected data and relevant documents will be made available to the verifier so that the reliability of the information can be checked. All the data shall be kept and archived electronically for two years after the end of crediting period or the last issuance of CERs, whichever occurs later.

5. Quality Assurance and Quality Control

All monitoring equipment will be maintained and calibrated in line with manufacturers' instruction or

national standards. These activities will assure that the equipment operates at the stated level of accuracy.

6. Monitoring Report
At the end of the year, the CME shall instruct the CPA owner prepare a monitoring report for verification by DOE.

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

☐ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

The implementation of the PoA will take an important role in energy efficiency improvement of Ceramic industry. Not only would the programme reduce save energy, but also reduce pollution due to combustion of fossil fuels. Analysis of the CPA environmental impacts is as follows,

1. Air Quality
The energy feeds for the kilns are fossil fuels. After the CPA, the pollutants will be reduced due to less use of fossil fuels as of improved energy efficiency. The air quality will be improved due to the CPA.

2. Water Quality
There is no water involved in this CPA. There will be no impact on water quality.

3. Noise
There will be no change of noise in this CPA.

4. Solid waste
The CPA is to adopt BRST in kilns for ceramic production. There will be solid waste generated due to the installation. Such solid waste shall be handled in the same way as the ceramic plants handle their current solid waste material.

Hence, it is concluded that the overall environmental impacts of the CPA is positive.

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

In accordance with the laws/regulations of China, an environmental impact assessment is required for a typical CPA, included in the programme of activities.

SECTION D. Stakeholders' comments

>>

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

√ Please tick if this information is provided at the PoA level.

In this case sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

N.A.

D.3. Summary of the comments received:

N.A.

D.4. Report on how due account was taken of any comments received:

N.A.

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

CPA implementer

Organization:	xxx (corporation name)
Street/P.O.Box:	Liaoning Faku Economic Development Zone
Building:	-
City:	Shenyang
State/Region:	Liaoning Province
Postfix/ZIP:	110400
Country:	People's republic of China
Telephone:	xxx
FAX:	xxx
E-Mail:	xxx
URL:	-
Represented by:	xxx
Title:	xxx
Salutation:	xxx
Last Name:	xxx
Middle Name:	-
First Name:	xxx
Department:	-
Mobile:	-
Direct FAX:	xxx
Direct tel:	xxx
Personal E-Mail:	xxx

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

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