



CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAMME OF ACTIVITIES DESIGN DOCUMENT FORM
(CDM-SSC-POA-DD) VERSION 01

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NOTE:

- (i) This form is for the submission of a CDM PoA whose CPAs apply a small scale approved methodology.
- (ii) At the time of requesting registration this form must be accompanied by a CDM-SSC-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-SSC-CPA-DD (using a real case).



SECTION A. General description of small-scale programme of activities (PoA)

A.1 Title of the small-scale programme of activities (PoA):

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Green Brick Development Programme of Activities Managed by INTRACO

Version: 04

Date: 21/05/2012

A.2. Description of the small-scale programme of activities (PoA):

PoA Description

The “**Green Brick Development Programme of Activities Managed by INTRACO**” later on referred to as “**The PoA**”, will support the development of new brick¹ production facilities (hereafter referred to as “**unburnt brick plants**”) in Viet Nam that produce brick in a clean technology with avoidance of conventional fossil fuel consumption,. Each small-scale CDM Program Activity (referred later on as **CPA**) under this PoA will comprise one or more such unburnt brick plants within the threshold for a small-scale (Type III) CDM project.

1. General operating and implementing framework of the PoA

The coordinating/management entity (CME) of this PoA is Investment and Trade Consultancy Company Limited (referred later on as **INTRACO** or the CME). The CME will work closely with the developers of the unburnt brick plants and other organizations active in the construction material sector in Viet Nam to facilitate the development of new unburnt brick plants and their inclusion in this PoA. The CME will also act as the focal point with the CDM Executive Board in all the aspects relating to the validation, registration, inclusion and verification/issuance of carbon credits generated by the CPAs of the PoA.

2. Policy/measure or stated goal of the PoA

The objective of the PoA is to develop a platform to overcome institutional, financial and structural hurdles for the construction of a series of new unburnt brick plants. The CPAs of the PoA will produce bricks using unburnt brick technology to meet the domestic demand. This PoA fits into the “the Program on development of non-baked building materials through 2020”² issued by Prime Minister's Decision No. 567/QD-TTg dated April 28, 2010. This decision sets targets for unburnt brick production and encourages the elimination of burnt clay brick manufacturing methods. However, these measures are voluntary and at present the adaption of un-burnt brick production technologies has not penetrated in the market and is not a prevailing practice³.

There are no mandatory policies in Viet Nam that require enterprises to adopt unburnt brick production technologies and neither are their mandatory policies that forbid establishment of traditional fossil fuel fired, clay burnt brick manufacturing facilities.

¹ Brick in the context of this PoA and the applied methodology includes solid bricks and blocks as well as hollow blocks used in building construction.

² English translation “Program on development of non-baked building materials through 2020” available on: <http://lawfirm.vn/?a=doc&id=1993>

³ Letter from Ministry of Construction dated 27 November 2008 to Construction Department of provinces and cities directly under state, on the development of the unburnt brick sector, a copy of the same writing was provided to DOE during validation.



In the above context, and the fact that market acceptance and market share of unburnt bricks is very low,⁴ this PoA will facilitate the abatement of greenhouse gas emissions through displacement of fossil fuel-based clay brick in the country. The PoA contributes to the sustainable development of Viet Nam, as determined by the sustainable development criteria of Viet Nam DNA⁵.

3. Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.

As described in bullet 2 above, there is no mandatory regulation which prohibits burnt brick production facility or mandates the implementation of green brick production in Viet Nam. The CME is promoting the proposed program on a voluntary basis and there is no binding on the CME to develop this program. Hence, the PoA is a voluntary action being coordinated and managed by INTRACO, later on referred to as “**The CME**”.

Contribution to Sustainable Development:

The PoA promotes an eco-friendly technology for production of alternative building materials. Technologies employed by the CPAs in this PoA do not involve an intensive sintering/firing stage, which is applied in normal fired clay brick production and therefore the CPAs of the PoA will contribute to conservation of energy and fossil fuel (coal). By displacing burnt clay bricks in the walling materials market, the PoA contributes to protect the environment by minimising eco-hostile activities such as topsoil denudation leading to land degradation, and air pollution caused by emission of unprocessed flues. Furthermore, since the alternative building material is manufactured using industrial wastes and byproducts as raw materials (part of the raw material), the environmental impacts associated with improper disposal of such industrial wastes are also mitigated by the PoA.

On social front, the CPAs of the PoA will create business opportunities for the small and micro enterprises. In the production and operations in the burnt clay brick industry labourers are often exposed to unhealthy working conditions due un-ergonomic design of the kiln and the combustion of fossil fuels. Whereas, unburnt brick plants have the advantage of using a well-designed plant that provides ergonomic and safe working conditions for the labourers.

A.3. Coordinating/managing entity and participants of SSC-POA:

1. Coordinating or managing entity of the PoA is the entity which communicates with the Board
2. Project participants may or may not be involved in one of the CPAs related to the PoA.

Project participants being registered in relation to the proposed PoA are:

Name of Party involved (host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Viet Nam (host)	Investment and Trade Consultancy Company Limited (INTRACO)	No

⁴ “Study Report Current Fuel Consumption for Burnt Materials and development plan for unburnt brick production”, issued by the Vietnam Association for Building Materials, October 2010.

⁵ http://www.noccop.org.vn/images/article/Viet%20Nam%20CDM%20Pipeline_a43.pdf



United Kingdom of Great Britain and Northern Ireland	ENECO Energy Trade B.V.	No
United Kingdom of Great Britain and Northern Ireland	EnBW Trading GmbH	No

- Investment and Trade Consultancy Company Limited (INTRACO) is a private company registered in Viet Nam and is a Participant. INTRACO is also the Focal Point for all Scopes of Authority and the coordinating/managing entity (CME) of this SSC-PoA.
- ENECO Energy Trade B.V. is a private entity registered in The Netherlands and is a Participant.
- EnBW Trading GmbH is a private entity registered in Germany and is a Participant.

A.4. Technical description of the small-scale programme of activities:

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A.4.1. Location of the programme of activities:

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A.4.1.1. Host Party(ies):

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Viet Nam

A.4.1.2. Physical/ Geographical boundary:

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The PoA will be implemented within the geographical boundaries of Viet Nam, but excluding the following provinces: Can Tho, An Giang, Bạc Liêu, Ben Tre, Ca Mau, Dong Thap, Hau Giang, Kien Giang, Long An, Soc Trang, Tien Giang, Tra Vinh and Vĩnh Long. National and sectoral policies in the relevant sector i.e. brick production are same within the geographical boundaries of Viet Nam. With regard to this PoA there is no difference in the national or sectoral policies between regions or provinces.

The geographical coordinates of Viet Nam are⁶: The geographic coordinates of Vietnam consists of latitude 102° 08' (=102.1333°) - 109° 28' (=109.4666°) east and longitude 8° 02' (=8.0333°) - 23° 23' (=23.3833°) north.

The geographical boundaries are shown in the figure below:

⁶ <http://www.mapsofworld.com/country-profile/information-on-vietnam-its-geography-and-history.html>

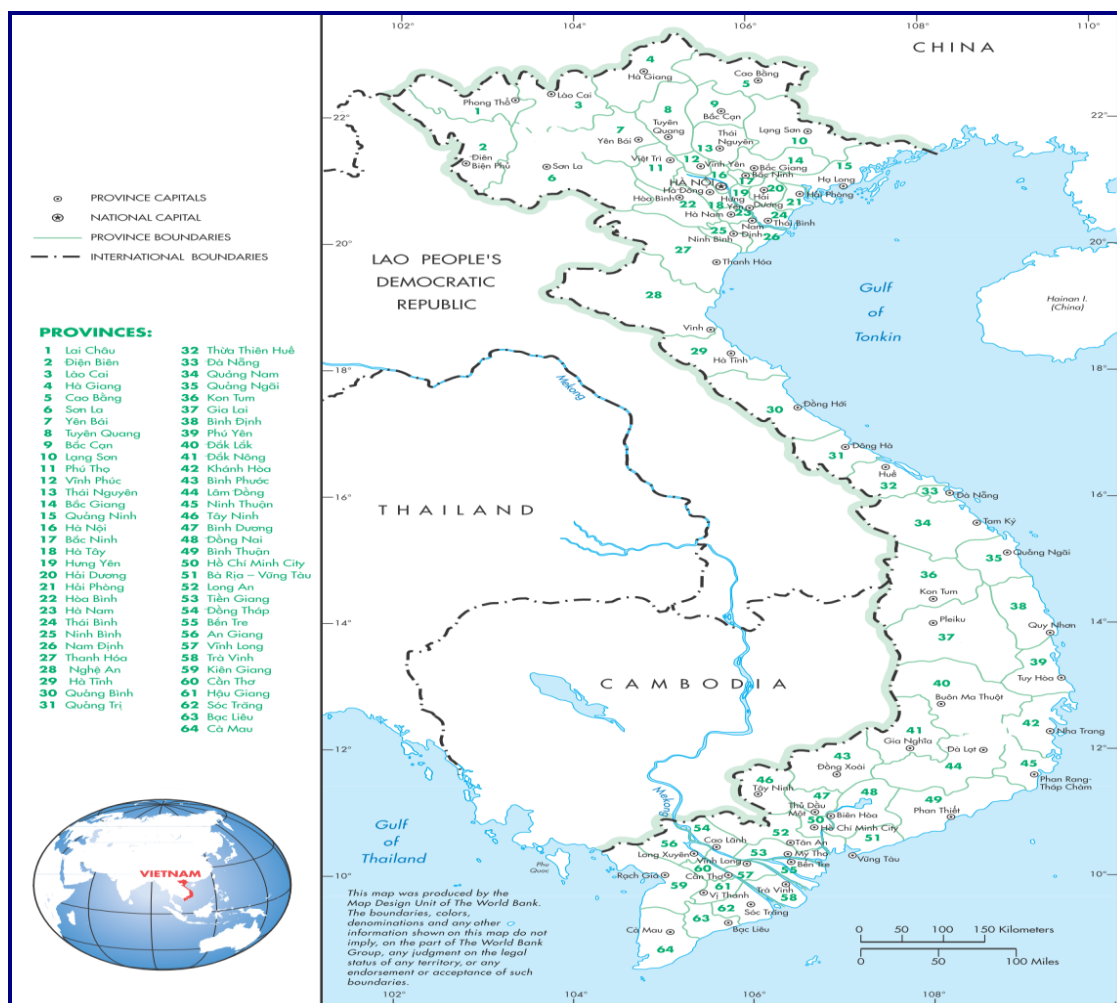


Figure A.4.1.2 - map of Viet Nam

A.4.2. Description of a typical small-scale CDM programme activity (CPA):

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A typical CPA of the PoA shall be within the threshold (i.e. emission reduction of less than or equal to 60 kilotons of CO₂ equivalent annually) as per the §7 (c) of applied Baseline and Monitoring Methodology AMS III.Z/version 03. This is further elaborated in section E.2.

The unburnt brick production plants shall be a new facility (Greenfield project) by the CPA implementer and consist of one of the following technological scenario for the production of unburnt bricks:

S. No.	Description of technological scenario
1	Concrete Bricks
2	Autoclaved Aerated Concrete Blocks

A.4.2.1. Technology or measures to be employed by the SSC-CPA:

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Description of the baseline



The most commonly used brick in Viet Nam is the *fired clay brick*. Manufacturing of baked clay bricks requires kilns (fired with fossil fuel in common) of high temperatures in the sintering process. This process is energy-intensive process and in Viet Nam most traditional brick manufacturing plants utilize fossil fuels such as coal as the fuel for the firing process.⁷

In Viet Nam, the dominating technology for burnt brick production is the use of clamp and tunnel kilns. In 2009, 92% of the burnt bricks were produced with using clamp or tunnel kilns. Clamp brick kilns are typically small-scale and the most primitive type of brick kilns since no permanent kiln structure is built. It consists of essentially a pile of moulded clay lumps inter spread with combustibles material. The capacity of the clamp is typically small-scale. Tunnel kilns are usually highly mechanised. In tunnel kilns, the bricks move through a "tunnel" on a cart. Tunnel kilns are medium and large-scale production facilities. In Viet Nam two types of burnt bricks are produced: solid and hollow bricks. The latter is lighter but also has a lower compressive strength than a solid brick⁸.

The production of unburnt bricks by the SSC-CPAs under this PoA in contrast, does not require the energy-intensive firing process. Production takes place in an efficient and mechanized production facilities that allow large quantities of bricks to be produced in a sustainable matter. Unburnt brick facilities will utilize (part of raw material) waste/by-products of other industrial processes, such as fly ash.

The total quantity of emission reductions achieved by the CPAs of the PoA will be estimated as the difference between the emissions due to production of unburnt bricks produced in the CPAs and the emissions those would have occurred due to the production of equal volume of burnt clay bricks (= baseline brick).

Technology employed:

The small scale CDM Programme Activity (SSC-CPAs) of the PoA will involve the establishment of new brick production facility that do not require sintering/firing of bricks in a kiln.

Description of the Technology:

The SSC-CPAs under the PoA will include any one or combination of the following technological scenarios:

S.No.	Description of scenario
1	Concrete Bricks
2	Autoclaved Aerated Concrete Blocks (AAC)

Table A4.2.1.1 - Project Scenario's

The exact raw material composition and process steps will depend on technology employed, availability of raw materials/additives and other requirements and shall be determined by each CPA based on information from the technology supplier. In this regard it is important to note that CPA utilizing the same technology scenario may utilize different raw material ratios.

⁷ "Study Report Current Fuel Consumption for Burnt Materials and development plan for unburnt brick production", issued by the Vietnam Association for Building Materials, October 2010.

⁸ "Study Report Current Fuel Consumption for Burnt Materials and development plan for unburnt brick production", issued by the Vietnam Association for Building Materials, October 2010.



In the table below (A4.2.1.2) the raw materials are defined by type, where binding agent acts as the material that will bind aggregates and admixtures together. Aggregates are typically coarse particulate material added as reinforcement to add strength to the product. Admixtures are materials added to modify the properties of the overall material.

Scenario 1: Technology description of concrete bricks

Concrete bricks are made with a mixture of cement as binding agent, aggregate and water. The mixture is shaped and cured (atmospheric drying) after which the bricks are ready for use. Shaping is typically done by pouring the mixture in moulds. After being introduced in the mould further shaping can take place by using an electric cutting equipment (such as a wire cutter) to shape the mixture in the desired size. When the mixture has been shaped it is air cured.

Scenario 2: Autoclaved Aerated Concrete Blocks

Autoclaved Aerated Concrete Blocks (AAC) are made with a mixture typically consisting of cement, lime, silica sand, or fly ash, water, gypsum, aluminium powder or paste and poured into a mould. The reaction between aluminium and concrete causes microscopic hydrogen bubbles to form. After evaporation of the hydrogen, the now highly closed-cell, aerated concrete is cut to size and formed by steam-curing in a pressurized chamber (an autoclave). During the curing process, the autoclave uses high-pressure steam at temperatures of about 190°C to accelerate the hydration of the concrete and create a second chemical reaction that gives ACC its strength, rigidity, and dimensional stability. The steam is generated by a boiler using fossil fuels. The consumption of the fuel is monitored and associated GHG emissions are accounted as project emissions.

Indicative raw material composition under different technological scenarios:

The table below lists the main raw materials for each production process and the respective composition⁹:

No.	Criteria	Clay fired bricks (= baseline brick)	Scenario 1: Concrete Bricks	Scenario 2: Autoclaved Aerated Concrete Blocks
1.	Clay	100%	Not applicable	Not applicable
2.	Cement (binding agent)	Not applicable	Applicable	Applicable
3.	Lime (binding agent)	Not applicable	Not applicable	Applicable
4.	Stone dust (aggregate)	Not applicable	Applicable	Applicable
5.	Sand (aggregate)	Not applicable	Applicable	Applicable
6.	Gypsum (Admixture)	Not applicable	Not applicable	Applicable
7.	Fly ash (Admixture)	Not applicable	Applicable	Applicable
8.	Powdered aluminium (admixture)	Not applicable	Not applicable	Applicable
9.	Iron and steel slag (aggregate)	Not applicable	Applicable	Not applicable

⁹ All the raw materials indicated in table A.4.2.1.2 may or may not be utilized in all CPAs. These are just for indicative purposes. As part of requirement of applied monitoring methodology the quantity of each raw material shall be monitored at individual CPA level. At individual CPA level any other raw material which is not listed in the table A4.2.1.2 may be used, provided it complies with requirement of applied methodology i.e. monitoring of individual raw materials and addressing leakage emission on the account of production/processing/transportation.



10.	Water (admixture)	Applicable	Applicable	Applicable
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Table A4.2.1.2 – Possible raw material used under different scenarios

It is important to establish that the baseline brick only utilises clay as raw material whereas in the two different project technological scenarios the project bricks will utilize different raw materials as tabulated above.

The exact ratios of the raw materials may vary based on the specific operating conditions, equipment used and manufacturing requirements. In all the above scenarios, the CPA implementer, during CPA inclusion shall ensure to consider leakage on the account of raw material processing/production and transportation in line with §12 of AMS III.Z version 03.

National standards that determine the technical requirements and testing procedures for the bricks (both baseline brick and brick of the CPAs¹⁰ of the PoA) are shown below:

Service level requirement	CPA brick with density \geq 1,600 kg/m³	CPA brick with density \leq 1,600 kg/m³
Relevant Baseline Standard ¹¹	TCVN 1451:1998	TCVN 1450:2009
Compressive strength defined in standard (average compressive strength for 5 test samples)	≥ 5 MPa ¹²	≥ 3.5 MPa ¹³

Table A4.2.1.3 – applicable national standards and service level required

At individual CPA level based on the density of the brick the relevant baseline standard shall be identified. Bricks having a density higher than 1,600 kg/m³ shall use TCVN 1451:1998 and have a compressive strength equal to or higher than 5 MPa¹⁴. Bricks with a density lower than 1,600 kg/m³ shall have a compressive strength higher than or equal to 3.5 MPa¹⁵ and apply TCVN 1450:2009 as the relevant baseline standard. Therefore, bricks produced by CPA shall comply with a minimum compressive strength based on their density.

The service level of project brick shall be comparable to or better than the baseline brick, i.e., the bricks produced in the brick production facility during the crediting period shall meet or exceed the performance level of the baseline bricks. National standard as indicated above (or any amendments thereafter) shall be used to identify the strength class of the bricks, and shall not be lower than the lowest class bricks in the standard. Project bricks shall be tested in nationally approved laboratories at 6 months interval (at a minimum) and test certificates on compressive strength are made available for verification.

¹⁰ For unburnt concrete bricks the national standard TCVN 6477 : 1999 (or the latest version available at time of CPA inclusion) shall be followed. Similarly for AAC blocks the national standard TCVN 7959 : 2008 (or the latest version available at time of CPA inclusion) shall be followed.

¹¹ or any amendments thereafter

¹² Table 3, page 5 of TCVN 1451:1998.

¹³ Table 3, page 8 of TCVN 1450:2009.

¹⁴ Table 3, page 5 of TCVN 1451:1998.

¹⁵ Table 3, page 8 of TCVN 1450:2009.



A.4.2.2. Eligibility criteria for inclusion of a SSC-CPA in the PoA:

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The CME has all competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria (as tabulated below) before inclusion in the registered PoA. The relevant documents for the compliance of para 9 (for development and implementation of management system) annex 3 of EB 63 has been provided to the DOE for validation.

Each of the CPA to be included in the proposed PoA shall require to meet the following applicable eligibility criteria (considering the para 13, annex 3 of EB 63):

S. No.	Eligibility criteria description	Information/document requirement	Eligibility check outcome (to be confirmed at CPA level by the CME)
a.	The CPA shall be located in Viet Nam, but not in the following provinces: Can Tho, An Giang, Bac Lieu, Ben Tre, Ca Mau, Dong Thap, Hau Giang, Kien Giang, Long An, Soc Trang, Tien Giang, Tra Vinh and Vinh Long.	All of the following documents shall be provided: <input type="checkbox"/> Business license of the CPA Implementer issued by Vietnamese local authorities. <input type="checkbox"/> Declaration from the CPA implementer confirming that the boundary of the implemented CPA is within the geographical territory of Viet Nam, but not within the aforementioned provinces and including information regarding geographic reference (latitude and longitude), name and address of the SSC-CPA.	<input type="checkbox"/> Yes <input type="checkbox"/> NO
b	The CPA implementer has signed a valid contractual agreement with the CME which permits its participation and inclusion in the PoA and specifies the duties and responsibilities of a CPA implementer and the acceptance of the terms and conditions of the PoA. This contract is one of the measures to avoid double counting as it would contain the name and full details of CPA implementer at the same time, it	The following document shall be provided: <input type="checkbox"/> Contractual agreement between CME and CPA implementer.	<input type="checkbox"/> Yes <input type="checkbox"/> NO



	would contain an agreement /undertaking by the CPA implementer stating that the CPA is only a part of this PoA and shall not be subscribed as a stand-alone project or part of any other PoA.		
c.	The SSC-CPA shall confirm to one of technological scenarios used for the production of unburnt brick as described in section A.4.2 of the SSC-PoA-DD	<p>The following document shall be provided:</p> <p><input type="checkbox"/> Confirmation by the CME regarding the applicable technological scenario for the CPA.</p> <p>Any of the following documents shall be provided:</p> <p><input type="checkbox"/> Purchase order of equipment</p> <p><input type="checkbox"/> Feasibility Study / Project Proposal of the project that describes the project technology.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> NO</p>
d.	The start date of the SSC-CPA shall not be before the commencement of validation of the PoA (10/12/2010, the date the PoA was published on the website of the UNFCCC for Global Stakeholders Consultation).	<p>One of the following documents shall be provided:</p> <p><input type="checkbox"/> In case available, the earliest signed equipment or (sub) contractor agreement with a total contract value that is significant to the project activity (the date of signing the purchase order by SSC-CPA Implementer shall constitute the starting date of the SSC-CPA).</p> <p><input type="checkbox"/> Declaration from the CPA Implementer that no contracts have been signed till the CPA inclusion date.</p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> NO</p>
e	The CPA shall meet the applicability and other requirements of the methodology AMS.III.Z Version 03. ¹⁶	As described in section E.2 of the PoA DD, the CPA shall meet relevant requirement of the meth and the required document shall	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> NO</p>

¹⁶ Including the level of service level compliance as per relevant national standard, refer section A.4.2.1



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		be supplied to the DOE at the time of inclusion.	
f	Demonstration of additionality as described in the section E.5.1 of the PoA DD in line with §6 and §8 of annex 2, EB 63.	The CPA provides related documents to substantiate the argument of barrier analysis put forth in section E.5.1 of the PoA DD.	<input type="checkbox"/> Yes <input type="checkbox"/> NO
g	The SSC-CPA shall conduct local stakeholder's consultation and Environmental Analysis at CPA level. This shall be carried out prior to inclusion.	The following documents shall be provided: <input type="checkbox"/> Meeting minutes and other related documents of the local stakeholder consultation. <input type="checkbox"/> Copy of Environmental Analysis report.	<input type="checkbox"/> Yes <input type="checkbox"/> NO
h	CPA of the PoA shall be within the threshold (i.e. emission reduction of less than or equal to 60 kilotons of CO ₂ equivalent annually) as per the §7 (c) of applied Baseline and Monitoring Methodology AMS III.Z/version 03.	The CPA implementer and CME shall consider this condition in the CPA DD and Emission reduction spread sheet.	<input type="checkbox"/> Yes <input type="checkbox"/> NO
i	Confirmation that the CPA is not a de-bundled component of another large-scale CPA or CDM project activity as per latest guidance given by the CDM Executive Board	The following document shall be provided: <input type="checkbox"/> Declaration from the CPA Implementer confirming that the CPA is not a de-bundled component of another large-scale CPA or CDM project activity as per latest guidance given by the CDM Executive Board. And: <input type="checkbox"/> Confirmation that the SSC-CPA is not a de-bundled component of another large-scale SSC-CPA or CDM project activity as per latest guidance given by the CDM Executive Board shall be provided in the SSC-CPA-DD.	<input type="checkbox"/> Yes <input type="checkbox"/> NO



j	Confirmation on involvement of public funding or ODA from Annex I Parties in SSC-CPA	<p>The following document shall be provided:</p> <p>Option 1: <input type="checkbox"/> Declaration (document) from the CPA Implementer regarding the no involvement of public funding or ODA from Annex I Parties.</p> <p>And: <input type="checkbox"/> Confirmation in the SSC-CPA-DD regarding no involvement of public funding or ODA from Annex I Parties.</p> <p>OR</p> <p>Option 2: <input type="checkbox"/> In case of public funding, an affirmation/confirmation / declaration that such public funding does not result in diversion of ODA.</p> <p>And: <input type="checkbox"/> Confirmation in the SSC-CPA-DD regarding no diversion of ODA from Annex I Parties.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> NO
k	The CPA implementer shall be duly registered by the Vietnamese authorities prior to inclusion	<p>The following document shall be provided: <input type="checkbox"/> Business license of the CPA Implementer issued by Vietnamese local authorities.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> NO
l	The SSC-CPA shall be in compliance with statutory requirements of Viet Nam.	<p>The following document shall be provided: <input type="checkbox"/> Approval document from the Vietnamese local authorities, to approve the Environmental Impact Assessment.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> NO



m	Confirmation on the crediting period of the SSC-CPA which shall not exceed the length of the PoA (28 years) regardless of the time of inclusion of CPA in the PoA	Confirmation described in the SSC-CPA-DD states that the crediting period of the SSC-CPA shall not exceed the length of the PoA.	<input type="checkbox"/> Yes <input type="checkbox"/> NO
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A.4.3. Description of how the anthropogenic emissions of GHG by sources are reduced by a SSC-CPA below those that would have occurred in the absence of the registered PoA (assessment and demonstration of additionality):

(i) The proposed PoA is a voluntary coordinated action;

The proposed PoA is a voluntary coordinated action by the CME as explained in section A.2 of this document.

(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;

The information presented here constitutes the demonstration of additionality of the PoA as a whole.

The “Overall planning for the development of construction materials up to the year of 2020” issued by The Prime Minister as Decision No. 121/2008/QĐ-TTg dated August 29, 2008 and the Decision No. 567/QĐ-TTg dated April 28, 2010 on the “the Program on development of non-baked building materials through 2020.”¹⁷ only encourages voluntary efforts of industries to develop capacity for the production of unburnt bricks. Hence, the proposed PoA is implementing a voluntary measure.

In early 2010, few enterprises approached INTRACO for development of unburnt brick plants as CDM project activities as the unburnt brick technologies faced the prevailing practice and market acceptability barriers. Without the support of CDM the unburnt brick facilities would not be implemented.

Based on this information INTRACO proposed the development of a PoA, to overcome the mentioned barriers and allow even small component projects to receive revenue through CDM. INTRACO then signed a PoA development agreement with two technology providers.

Later on, in May 2010, INTRACO was invited to the seminar “Solutions for investment, production & application of non-fired wall materials replacing the fired clay bricks”. This seminar was organized by the VABM (Viet Nam Association for Building Materials)¹⁸.

During this seminar participants discussed about the development of the unburnt brick production and the Decision No. 567/QĐ-TTg dated April 28, 2010 on the “the Program on development of non-baked building materials through 2020.”, that had recently been approved by the Prime Minister. This decision set a target of 20-25% of bricks in 2015 to be produced by unburnt brick production methods.

¹⁷ Decision No. 567/QĐ-TTg from <http://lawfirm.vn/?a=doc&id=1993>

¹⁸ One of the main objectives of the VABM is to raise awareness and promote new methods of production of building materials and to provide support to parties that aim to introduce new technologies for building materials.



VABM¹⁹ recognized that barriers related to market acceptance and prevailing practice prevented the implementation of unburnt bricks in Viet Nam. The barriers at PoA level are further established by the following text reiterated (by chairman of VABM) below²⁰:

“In Vietnam, the government already set the target of 20 percent of non-baked materials in building materials to be used in 2005 and 30 percent in 2010. However, in reality, non-baked material productivity is very low. In 2009, the percentage of non-baked materials in building materials was about 8-8.5 percent. PhD Tran Van Huynh, the chairman of the Vietnam Association for Building Materials, explained that using clay-baked bricks is traditional and is suited to small-sized production. Non-baked bricks which are much bigger create difficulties when transported and used. Construction works built with non-baked bricks require complicated building procedures and skillful workers.

Another reason is insufficient policies for non-baked materials. The lack of policies on the use and production of non-baked materials, construction standards and prices for these kinds of materials have created difficulties for consultants, designers and architects to use them.

In addition, another disadvantage of non-baked materials is their high price. Bricks which are produced by vertical kilns are much cheaper thanks to using agricultural land without paying tax. Domestic construction investors are used to using these bricks. They are not aware of the great advantages of non-baked bricks. At present, most construction works using non-baked materials belong to foreign investors.”

One of the major barriers to the development of this program is market unacceptability. While these barriers were very well known, as explained above, INTRACO was unable to find any formal research on the barriers that prevented the development of the unburnt brick production in Viet Nam. Therefore, it commissioned the VABM to conduct a survey²¹ on the status of development of unburnt brick technologies.

The survey revealed that presently the adoption of the unburnt bricks in Viet Nam will not be sufficient to meet the target of 20%-25%, as defined in the Decision No. 567/QĐ-TTg. The main barrier was due to the prevailing practice and market acceptance. Survey respondents mentioned the main reason for them not to utilize unburnt bricks was the color of the unburnt bricks, which was not perceived as attractive. Other reasons were doubt about the quality of the unburnt brick and the training of the masons in using the new material.

Furthermore, the study noted that at this moment there was no incentive policy for unburnt bricks, while this would be an important motivation for the development of unburnt brick production and consumption in Viet Nam.

Based on the event and information described above, INTRACO held a management meeting where it was decided that there was sufficient potential to develop a CDM PoA. INTRACO also decided to become the CME and to finance the development of the PoA, expecting future CDM revenue. During this management meeting it was noted that at this moment there was no mandatory policy to establish

¹⁹ VABM (Vietnam Association for Building Materials) is one of the independent/credible third party recognized in Viet Nam, established by decision number 52/2005-BNV dated 04 May 2005 by Ministry of Home Affairs. This is a nonprofit organization in Viet Nam for the promotion and research of building materials.

²⁰ News article from VABM on unburnt brick production from: <http://buildviet.info/en-US/news/p1027c1027n3296/building-a-sustainable-brick-industry.htm>

²¹ Survey Report on Market Acceptance for Unburnt Bricks in Vietnam



unburnt brick plants in Viet Nam. It was noted that no incentive policies existed to provide financial support for the development of unburnt brick facilities. Furthermore, it was noted that this activity was taken voluntarily by INTRACO and that CDM was the decisive and only revenue source for development of the PoA.

(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;

This PoA is not implementing a mandatory policy or regulation and therefore this bullet is not applicable to this PoA.

(iv) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.

This PoA is not implementing a mandatory policy or regulation and therefore this bullet is not applicable to this PoA.

Conclusion

The PoA is a voluntary initiative, initiated by the CME and CDM revenue is a decisive factor for the decision of the CME to develop the PoA. Furthermore, the PoA is not implementing any mandatory policy/regulation requirement in Viet Nam which enforce the establishment or development of unburnt brick production facilities.

Hence, implementation of this PoA and avoidance of anthropogenic GHG emissions are additional to those that would have occurred in absence of this PoA.

A.4.4. Operational, management and monitoring plan for the <u>programme of activities</u> (PoA):

A.4.4.1. Operational and management plan:
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The proposed PoA involves a range of operational activities in order to implement and manage each CPA by the coordinating entity and CPA implementers within the PoA. The chart and table below described the operational and management plan:

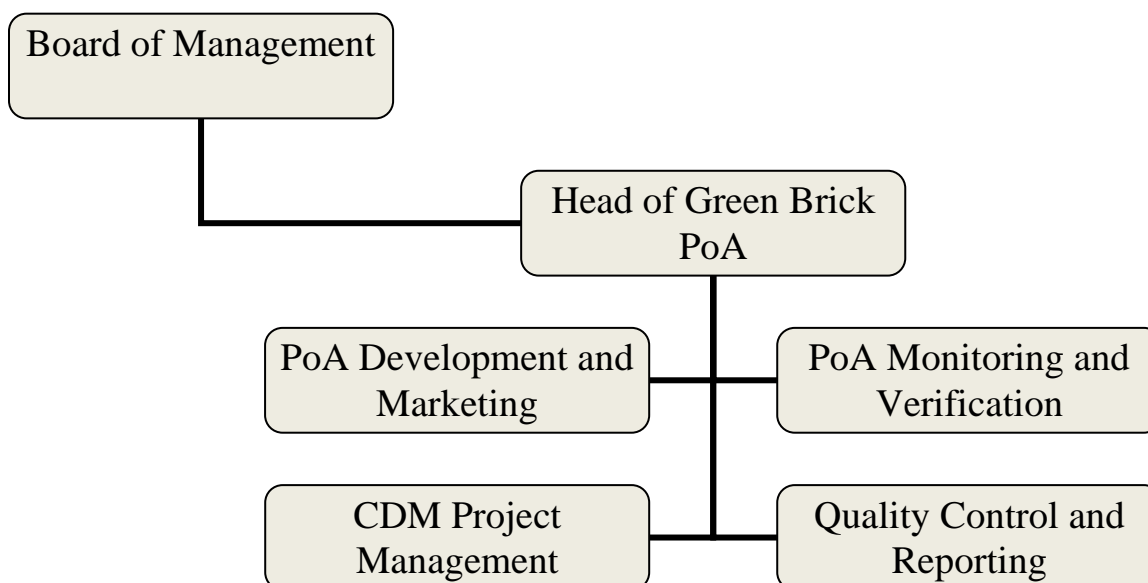


Figure A.4.4.1.1 - CME organisation chart for PoA Management and development

The CME in their management system has all competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. The relevant documents for the compliance of para 9 (for development and implementation of management system) annex 3 of EB 63 has been provided to the DOE for validation.

Based on the above defined chart the roles and responsibilities can be defined as shown in the table below:

Entity Department	Management Responsibilities and Arrangements
Board of Management	<ul style="list-style-type: none"> Registration of the PoA Implementation of the Program objectives Ensuring proper overall management of the PoA CER issuance
Head of Green Brick PoA	<ul style="list-style-type: none"> Program operation as per CDM guidelines and board of management strategy. Proper and timely validation of the the PoA Review of program compliance as per guidelines Awareness creation and promotion of the PoA Ensuring proper CDM project operation and management as per required guidelines and board of management strategy throughout the crediting period.
PoA Development and Marketing	<ul style="list-style-type: none"> Inclusion of CPA under the PoA Review of CPA compliance as per guidelines Ensure verification of CPAs Identification of CPA Listing of eligible CPA's Inclusion of eligible CPAs under PoA CPA-DD and PoA-DD Development



	<ul style="list-style-type: none"> Validation / verification support Site support to CPA implementers (validation and verification) Validation and verification support to CPA implementer throughout the crediting period.
PoA Monitoring and Verification	<ul style="list-style-type: none"> Preparation of monitoring report for Emission Reduction CPA onsite monitoring support Development and implementation of monitoring system of each CPA Monitoring training of CPA Monitoring and record keeping and data backup / archival of monitoring parameters. Ensuring and implementing emergency preparedness program for monitoring Review and improvement suggestions of monitoring system and plan Site support to CPA implementers (monitoring)
CDM Project Management	<ul style="list-style-type: none"> Collecting information and documentation of the CPA Collection and scrutiny of all documents related to the eligibility criteria of CPA inclusion Focal point for CPA Implementers Collection of necessary statutory approvals from CPA implementers
Quality Control and Reporting	<ul style="list-style-type: none"> Process improvement proposals Progress reporting to stakeholders and management. Quality control of supporting documents and site information

In addition to the above management tasks, the CME will implement the following operational elements to ensure proper management and oversight of the proposed PoA.

(i) A record keeping system for each CPA under the PoA

In order to unambiguously identify unburnt brick plants participating in the PoA a serial numbering system will be implemented that uniquely identify each unburnt brick plant through numbers for the CPA and the CPA owner. This serial numbering system will be used to record baseline and monitoring data on a continuous basis using an Excel database. In this way, the PoA CME will be able to track the emission reduction of each CPA over the full duration of the crediting period.

In summary, INTRACO will record and document CPA detail information as follows:

- Name of the CPA and its production capacity
- The name, address, and CPA owner details of each participating CPA
- The geographical coordinates of each CPA
- The record of technical specification of CPA participating in the PoA

INTRACO will be responsible for the management of records and data associated with each CPA. The Excel database will be updated manually using the data supplied by the participating CPA. It will form the basis for the verification of CPAs and be available for inspection by the DOE at any point in time.

The record keeping will be carried out by using the field instruments, hardware and software installed at every Project site and/or manual data recording in the log book. The captured data will be transferred to the server of CME, which will have provision to archive the data as per individual CPAs. Each CPA operator will carry out a periodic analysis (quarterly) of data for the individual Project. In case of



any anomalies identified during the review by the CPA operator, appropriate corrective actions will be taken. The review report will be submitted to the CME & DOE.

(ii) A system/procedure to avoid double counting:

The CME will confirm as per EB 55 Annex 38 Paragraph 6(i), that the Project activities included in the SSC CPA is not registered in any other SSC CPA of the PoA or any other registered CDM Project activity through following procedure to avoid double counting of CPA under any other CDM or PoA activity -

1. At time of CPA eligibility check, CME will seek confirmation in SSC-CPA and also check any-double counting using public information sources like UNFCCC website data.

2. The CME will maintain a record with the unique identification information that is publicly available.

Furthermore at the time of inclusion the CME is taking a declaration from the CPA implementer (as a part of mandate) as below-

Mandate by CPA operators shall state that "there is no double counting of CERs from this CPA under any CDM Project or CPA in another PoA".

(iii) The SSC CPA included in the PoA is not a debundled component of another CDM Programme Activity or another CDM Project activity:

The CME will follow the "Guidance for determining the occurrence of de-bundling under a Programme of Activity" (version 03, EB 54, Annex 13) to ensure that the proposed CPA is not a de-bundled component of a large scale activity.

Para 8: For the purposes of registration of a Programme of Activities (PoA),²² 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 activity²³, which satisfies both conditions (a) and (b) below:

- (a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or CME, which also manages a large scale PoA of the same technology/measure, and;
- (b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.

Para 9: If a proposed small-scale CPA of a PoA is deemed to be a debundled component in accordance with paragraph 8 above, but the total size of such a CPA combined with a registered small-scale CPA of a PoA or a registered CDM project activity does not exceed the limits for small-scale CDM and small-scale A/R project activities as set out in Annex II of the decision 4/CMP.1²⁴ and 5/CMP.1 respectively, the CPA of a PoA can qualify to use simplified modalities and procedures for small-scale CDM and small-scale A/R CDM project activities.

Para 10: If each of the independent subsystems/measures (e.g., biogas digester, solar home system) included in the CPA of a PoA is no larger than 1% of the small-scale thresholds defined by the methodology applied²⁵, then that CPA of PoA is exempted from performing de-bundling check i.e., considering as not being a de-bundled component of a large scale activity.

²² 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

²³ 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.

²⁴ Limits have been revised as set in paragraph 28 of decision 1/CMP.2.

²⁵ i.e., 15 kW installed capacity or 0.6 GWh annual energy savings or 0.6 ktCO₂e annual emission reductions.



In relation to the Para 8, if CPA does not satisfy both the condition 8 (a) and 8 (b), the proposed small scale CPA of a PoA is not deemed to be debundled component of a large-scale activity, therefore is eligible to use the simplified modalities and procedures for small-scale Project activities. However if CPA satisfy above conditions and the total size of the SSC CPA does not exceed the limit for SSC Project activity, the proposed small scale CPA of a PoA is deemed to be debundled component of a large-scale activity but can qualify to use the simplified modalities and procedures for small-scale Project activities.

In relation to para 9, CPA will be included if the total size of such a CPA combined with a registered small-scale CPA of a PoA or a registered CDM Project activity does not exceed the limits for small-scale CDM Project activity.

In relation to para 10, the net GHG emission reductions of Project activity under CPA included in this PoA will be larger than 1% (i.e. 0.6 ktCO_{2e} annual emission reduction) of the small scale thresholds defined by the methodology applied. Hence the CPAs included in PoA will have to perform de-bundling check as per above mentioned para 8 and 9.

The CPA Operators involved in any of the SSC CPA under this programme shall provide the mandate to the CME to subscribe the Project under the PoA. The CME will be operating all the SSC CPA and no separate entity will be engaged for operating the CPA of this programme.

(iv) The CPA Operators are aware and have agreed that their activity is being subscribed to the PoA.

The CPA implementer will provide the mandate to CME stating that, they are aware and have agreed that their activity is subscribed to the PoA. The CPA implementer has to give a declaration to CME that the SSC-CPA is not a de-bundled component of large scale Project. The CME will confirm that the Project activity is as per EB 54 Annex 13 guideline of debundling and the CPA not a de-bundled component of large scale Project.

A.4.4.2. Monitoring plan:

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The CME has opted for verification of each CPA.

The project database shall be maintained by each of the CPA implementers at the respective project sites and shared with CME.

Each of the CPA implementer shall maintain all the relevant documents for all of the related parameters as mention in the section E.7.1 and E.7.2 of the PoA DD.

The project database (at individual CPA level) shall record the start and end dates of each monitoring period and the emission reductions attributable for the monitoring period. Verification of each CPA shall be done by an appointed DOE. The CME of the PoA shall prepare the monitoring report based on the data gathered from the individual CPAs. This report will unambiguously set-out the data relating to the emission reductions generated by each of the CPAs during the monitoring period. Database shall be maintained in digital format to the extent possible with data control procedures in place. Appropriate record keeping procedures would be implemented to ensure that each monitoring period data set can be transparently attributed to its corresponding CPAs, preventing any occurrences of double counting.



A.4.5. Public funding of the programme of activities (PoA):

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No public funding is used to implement this Programme of activities (PoA). Furthermore the CME will ensure that, at the time of inclusion of CPA, there is no public funding from Annex - I parties received. This can be confirmed through mandate / declaration given by CPA operator to CME. In case public funding is received for CPA, an affirmation will be provided that such funding does not result in a diversion of Official Development Assistance (ODA).

SECTION B. Duration of the programme of activities (PoA)

B.1. Starting date of the programme of activities (PoA):

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The starting date of the PoA is 01/07/2012 or the effective date of registration, whichever is later.

B.2. Length of the programme of activities (PoA):

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28 years, 0 month

SECTION C. Environmental Analysis

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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:

1. Environmental Analysis is done at PoA level ☐
2. Environmental Analysis is done at SSC-CPA level ☒

Local and focalized impacts of unburnt brick project (depending on the location, production capacity) justify a separate environmental assessment for each CPA. Environmental analysis will therefore be conducted for each unburnt brick plant (=one CPA) according to the applicable environmental policies.

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

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The environmental impacts analysis will be done at CPA level.

Please refer to section C.3 for the justification why the environmental impact analysis will be performed at CPA level.

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

>>



At the time of application for the PoA, the Environment Protection Law of Viet Nam 2005²⁶ (Article 18) and Decree No. 80/2006/ND-CP²⁷ dated August 9, 2006 about guideline of implementation some articles of Environment Protection Law, provides that an unburnt brick project shall conduct an Environmental Impact Assessment (EIA) and EIA approved by the local authorities. As required by this law and/or subsequent laws and regulations that may come into effect in Viet Nam following the PoA. EIA will be conducted and applied for approval separately for each CPA. The findings of the respective EIA and details on any recommended mitigation measures to minimize the negative impacts and ensure the long-term benefits from a CPA shall be described in the corresponding CPA-DD.

SECTION D. Stakeholders' comments

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

1. Local stakeholder consultation is done at PoA level
2. Local stakeholder consultation is done at CPA level



Local and focalized impacts of each unburnt brick project (depending on the location, production capacity) justify a local stakeholder consultation at both PoA and CPA level. In order to provide a forum for stakeholders at the national level and those that cannot attend every local stakeholder consultation for a CPA to express their opinion on the PoA, the PPs have organized a PoA local stakeholder consultation to present and discuss the aims and the goals of this initiative.

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

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A PoA stakeholder consultation had been organized by the CME INTRACO on 10/11/2010 at conference room of Bao Son hotel in Hanoi, Viet Nam. The stakeholder consultation was attended by approximately 200 people.

The stakeholder's consultation identified and attendees included:

- Viet Nam Association for Building Materials
- The Viet Nam DNA
- Representatives from Ministry of Construction, Ministry of Planning and Investment, Ministry of Natural Resources and Environment, Ministry of Science and Technology, Ministry of Finance
- Representatives from international carbon trading organizations
- Representatives of the Designated Operational Entity, TÜV Rheinland.
- Local people, the general public
- Representatives from local banks and Media, Press
- Interested parties such as the Viet Nam Building Material Institute, technology providers
- Representatives from potential unburnt brick project owners

Stakeholders were invited through written letters, e-mails, as well as public announcements to enable all interested parties to be informed of and/or take part in the stakeholder meeting.

²⁶ Environment Protection Law of Viet Nam 2005, obtained from:
http://vea.gov.vn/en/laws/LegalDocument/Pages/LawNo52_2005_QH11onenvironmentalprotection.aspx

²⁷ Decree No. 80/2006/ND-CP dated August 8, 2006, obtained from: <http://vea.gov.vn/en/laws/LegalDocument/Pages/DecreeNo812006ND-CP.aspx>



D.3. Summary of the comments received:

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All Public stakeholders understood that the PoA contributes to sustainable development of Viet Nam, especially increase in local budget and reduction of poverty; hence they expressed supportive opinion to the PoA, the results of stakeholder consultation are shown as follow:

- The programme reduces the use of fossil fuel consumption in the brick production industry and will contribute to socio-economic development in the rural area.
- The good impacts are expected from handling of industrial and building waste dumped.
- Jobs are provided during construction and operation.

Besides positive comments, some concerns by stakeholders were also found and the CME clarified on the concerns was made as follows:

Questions	Clarifications by the CME
How is the programme ensure that all CPAs are environmental friendly and minimize the negative impacts	The CME clarified that the strict criteria to select the CPAs that meet CDM requirements are monitored to ensure all CPAs meet the minimum requirements which published in the PoA DD for global stakeholders to access.
Will there be employment opportunities for skilled labour available locally?	The CME clarified that the selection of employees happens on a CPA level, but that from current experience can be observed that CPA owners usually hire people from the locality of the specific project.
Will the installation of machines create noise and disturb the surroundings during construction and operation period?	The CME clarified that all CPAs shall comply with the local environmental standard as well as using of the advanced machine and technology to minimize noises . An EIA Report shall be prepared and get approved is the precondition of the PoA to ensure that the neighbouring area minimal noise controlled and accepted.
Only one unburnt brick project from India is currently registered with the UNFCCC and this project was registered a long time ago. Is it still worthwhile to apply for CDM?	The CME explained that the reason for this fact is that previously there was no specific methodology available that could be applied to the unburnt brick projects. However, a new and clear methodology is available which makes it easier to complete the steps to obtain CDM registration.

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

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No negative comment has been received so no corrective action is taken.

SECTION E. Application of a baseline and monitoring methodology

This section shall demonstrate the application of the baseline and monitoring methodology to a typical SSC-CPA. The information defines the PoA specific elements that shall be included in preparing the PoA specific form used to define and include a SSC-CPA in this PoA (PoA specific CDM-SSC-CPA-DD).

E.1. Title and reference of the approved SSC baseline and monitoring methodology applied to a SSC-CPA included in the PoA:



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The approved baseline and monitoring methodology applied to a SSC-CPA included in this PoA is AMS III.Z./version 03 “***Fuel Switch, process improvement and energy efficiency in brick manufacture***”.

The relevant tools / guidance as per AMS III.Z (version 03) are provided below:

1. General Guidelines to SSC CDM methodologies (Version 17, EB 61, Annex 21)
2. Tool to calculate baseline, Project and/or leakage emissions from electricity consumption (version 01 EB 39 Annex 7)
3. Tool to calculate the emission factor for an electricity system (Version 02.2.1, EB 63 Annex 19)
4. Tool to calculate Project or leakage CO₂ emissions from fossil fuel combustion (version 02 EB 41 Annex 11)

E.2. Justification of the choice of the methodology and why it is applicable to a SSC-CPA:

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Paragraph of methodology	The applicability criteria of AMS III.Z./version 03 are the following:	Methodology AMS III.Z./version 03 is applicable to an CPA under the proposed PoA because:
1	<p><i>The methodology comprises one or more technology/measures listed below in existing brick production facilities:</i></p> <ul style="list-style-type: none"> • <i>Shift to an alternative brick production process; or</i> • <i>Partial substitution of fossil fuels with renewable biomass (including solid biomass residues such as sawdust and food industry organic liquid residues); or</i> • <i>Complete/partial substitution of high carbon fossil fuels with low carbon fossil fuels.</i> 	Not applicable, since the CPAs of the PoA shall be Greenfield facilities and shall not be implemented in existing brick production facility.
	<p><i>The Fuel substitution and associated activities may also result in improved energy efficiency of existing facility; however project activities primarily aimed at emission reductions from energy efficiency measures shall apply AMS-II.D. Thus the methodology is applicable for the production of:</i></p> <p><i>(a) Bricks that are the same in the project and baseline cases; or</i></p> <p><i>(b) Bricks that are different in the project case versus the baseline case due to a change(s) in raw materials, use of different additives, and/or production process changes resulting in reduced use or avoidance of fossil fuels for forming, sintering (firing) or drying or other applications in the facility as long as it can be demonstrated that the service level of the project brick</i></p>	Not applicable, since the CPAs of the PoA shall be Greenfield facilities and shall not be implemented in existing brick production facility.



	<i>is comparable to baseline brick (see paragraph 8). Examples include pressed mud blocks (soil blocks) with cement or lime stabilisation and other ‘unburned’ bricks that attain strength owing to fly ash, lime/cement and gypsum chemistry.</i>	
2	<i>The measures may replace, modify or retrofit systems in existing facilities or be installed in a new facility</i>	CPAs to be included under the PoA shall be a new (greenfield) facility.
3	<i>New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the General Guidance for SSC methodologies.</i>	As the CPAs of the PoA shall be a Greenfield projects, the baseline scenario has been determined in accordance with latest version of the General Guidelines to SSC CDM methodologies.
4	<i>The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the General Guidance for SSC methodologies. If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e., the time when the affected systems would have been replaced in the absence of the project activity.</i>	CPAs to be included in the PoA shall be a Greenfield project and no equipment will be replaced. Hence, this condition is not applicable to the proposed CPAs of the PoA.
5	<i>In the case of existing facilities, this category is only applicable if it can be demonstrated, with historical data, that for at least three year prior to the project implementation, only fossil fuel (no renewable biomass) was used in the brick production systems, which are being modified or retrofitted.</i>	CPAs to be included in the PoA shall be a Greenfield project. No existing facility will be modified due to the implementation of the CPA activity. Hence, this condition is not applicable.
6	<i>In the case of project activities involving changes in raw materials (including additives), it shall be demonstrated that additive materials are abundant in the country/region according to the following procedures:</i> <i>Step 1: Using relevant literature and/or interviews with experts, a list of raw materials to be utilized is prepared based on the historic and/or present consumption of such raw materials.</i> <i>Step 2: The current supply situation for each type of raw material to be utilized is assessed and their</i>	The raw materials used under the different technological scenarios (of CPAs) under this PoA involves various raw material and additives. As an indicative purpose, it has been detailed in the table list of section A.4.2.1. By referring to SSC WG clarification no 518, at individual CPA level, the surplus of availability demonstration, would only be



	<p><i>availability abundance is demonstrated using one of the approaches below:</i></p> <ul style="list-style-type: none"> <i>Approach 1: Demonstrate that the raw materials to be utilized, in the region of the project activity, are not fully utilized. For this purpose, demonstrate that the quantity of material is at least 25% greater than the demand for such materials or the availability of alternative materials for at least one year prior to the project implementation.</i> <i>Approach 2: Demonstrate that suppliers of raw materials to be utilized, in the region of the project activity, are not able to sell all of the subject raw materials. For this purpose, project participants shall demonstrate that a representative sample of suppliers of the raw materials to be utilized, in the region, had a surplus of material (e.g., at the end of the period during which the raw material is sold), which they could not sell and which is not utilized.</i> 	<p>applicable for “waste products” and this shall not be applicable for industrial products with commercial value.</p> <p>Demonstration of the abundance of additive/raw material in the country/region shall be provided by the CPA at time of inclusion, in line with step 1 and 2 of the procedure described in the methodology. Information regarding the raw materials to be utilized shall be obtained from the CPA feasibility Study or technology provider.</p>
7 (a)	<p><i>The service level of project brick shall be comparable to or better than the baseline brick, i.e., the bricks produced in the brick production facility during the crediting period shall meet or exceed the performance level of the baseline bricks (e.g., dry compressive strength, wet compressive strength, density). An appropriate national standard shall be used to identify the strength class of the bricks, bricks that have compressive strengths lower than the lowest class bricks in the standard are not eligible under this methodology. Project bricks are tested in nationally approved laboratories at 6 months interval (at a minimum) and test certificates on compressive strength are made available for verification</i></p>	<p>Project bricks shall be tested in a nationally approved laboratory at least every six (6) months and certificates of these tests will be available for verification. Tests will be performed in accordance with the relevant national standard or any amendment thereon.</p> <p>The unburnt bricks produced in the brick production facility during the crediting period shall meet or exceed the performance level of the baseline bricks (i.e. compressive strength).</p>
7 (b)	<p><i>The existing facilities involving modification and/or replacement shall not influence the production capacity beyond $\pm 10\%$ of the baseline capacity unless it is demonstrated that the baseline for the added capacity is the same as that for the existing capacity in accordance with paragraph 3</i></p>	<p>CPAs to be included in the PoA shall be a Greenfield project. Hence, there is no modification or replacement involved in the project.</p>



		This bullet of the meth is not applicable for the CPAs of the PoA.
7 (c)	<i>Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO₂ equivalent annually</i>	CPAs to be included in the PoA shall be limited to those that result in emission reductions of less than or equal to 60 kt CO ₂ equivalent annually.
8	<i>This methodology is not applicable if local regulations require the use of proposed technologies or raw materials for the manufacturing of bricks unless widespread non compliance (less than 50% of brick production activities comply in the country) of the local regulation evidenced.</i>	There are no mandatory local regulations that require the use and production of the unburnt/green brick technology to be utilized in the CPAs of the PoA.
Footnote 1:	<i>Brick in the context of this methodology includes solid bricks and blocks as well as hollow blocks used in building construction.</i>	Bricks to be produced under the CPAs of PoA shall include solid bricks/blocks and hollow bricks/blocks used in the construction of buildings.
Footnote 2:	<i>As per annex 18, EB 23 (definition of renewable biomass)</i>	This foot note is not applicable for the CPAs of PoA as production of green brick does not involve firing of biomass.
Footnote 3:	<i>Fatty acids from oil extraction, waste oil and waste fat of biogenic origin (includes waste oil from restaurants, agro and food industry, slaughterhouses or related commercial sectors). The sources/origin of waste oil/fat and respective volumes must be identified and clearly documented in the PDD. No CERs from waste oil/fat can be claimed under this methodology if it is not produced from biogenic origin, biogenic shall mean the oils and/or fats originate from either vegetable or animal biomass, but not from mineral (fossil) sources.</i>	This foot note is not applicable for the CPAs of PoA as production of green brick does not involve firing of fatty acids from oil extraction, waste oil and waste fat of biogenic origin.
Footnote 4:	<i>E.g., from anthracite coal to natural gas.</i>	This foot note is not applicable for the CPAs of PoA as there shall not be switching from high to low carbon fossil fuels. The CPAs of the PoA shall be greenfield



		facilities.
Footnote 5:	<i>May involve mechanical and hydraulic systems for energy transmission to the soil block via a lever, toggle, cam, pivot, ball and socket joint, piston, etc.</i>	The CPA require the mechanical and hydraulic systems for energy transmission, for example for the extrusion of bricks but This foot note is not applicable for the CPAs of PoA as §1 is only applicable for the project implemented in existing facilities.
Footnote 6:	<i>E.g., replace and/or modify an existing heating and/or firing facility(/-ies) to enable the use of biomass residues.</i>	The CPA are Greenfield, hence there will be no modification or replacement of existing facilities.
16	<i>In case the project activity involves the replacement of equipment, and the leakage effect from 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 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.</i>	The CPA are Greenfield, hence there will be no replacement of existing facilities.

Table E.2.1 – Applicability Criteria methodology

E.3. Description of the sources and gases included in the SSC-CPA boundary

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In the baseline, the main emission source of GHG is the combustion of coal during the firing/sintering stage. This stage is completely avoided in the technologies employed in the CPAs of the PoA.

In line with the definition in methodology for type AMS.III-Z, version 03, the boundary for the purpose of the proposed CPA is defined as the physical and geographical site where the brick production takes place during both the baseline and crediting period. Accordingly project boundaries of different technological scenarios of the programme are delineated as below:

Figure E.3.1 Flow diagram of the CPA boundary for technological scenario 1 (Concrete Bricks)

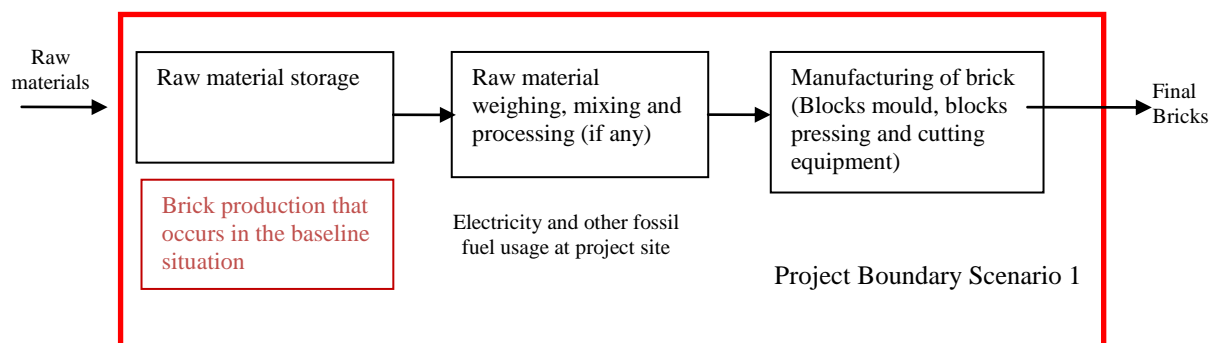
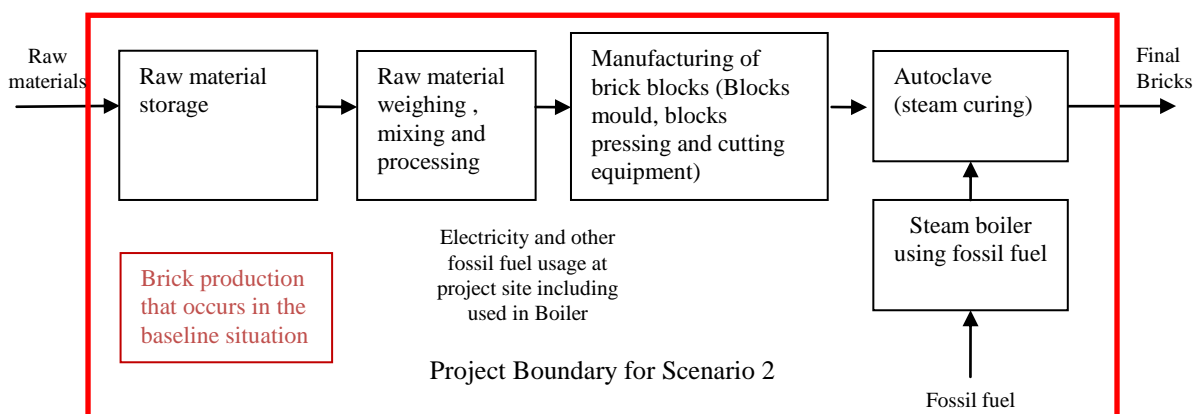


Figure E.3.2 Flow diagram of the project boundary for technological scenario 2 (Autoclaved Aerated Concrete):



Scenario 2 requires autoclave (steam curing). Steam is generated in boilers that will be fired with fossil fuels.

Table E.3.3: Emission sources included/excluded from the CPA boundary

	Source	Gas		Justification/Explanation
Baseline	Fossil fuel consumption for the firing/sintering	CO ₂	Included	This is the main emission source in the baseline. In the baseline thermal energy is generated with coal to fire/sinter clay bricks.
		CH ₄	Excluded	Excluded for simplification. This is conservative.
		N ₂ O	Excluded	Excluded for simplification. This is conservative.
Project emissions	On-site electricity consumption	CO ₂	Included	Electricity (grid) will be consumed to operate equipment used in the CPAs. This shall be accounted for the project emissions.
		CH ₄	Excluded	Excluded for simplification. This emission source is assumed to be very small.
		N ₂ O	Excluded	Excluded for simplification. This emission source is assumed to be very small.
	On-site fossil	CO ₂	Included	For Scenario 2 (Autoclaved Aerated Concrete



	Fuel consumption			blocks) will consume fossil fuel(s) to generate thermal energy for the autoclave (steam curing) stage of block production. In addition, fossil fuels may be consumed by onsite electricity generators (DG sets), etc.
		CH ₄	Excluded	Excluded for simplification. This emission source is assumed to be very small
		N ₂ O	Excluded	Excluded for simplification. This emission source is assumed to be very small

The table above describes the emission sources that are accounted for direct GHG emissions by the CPA i.e. project emissions, while indirect emissions (due to the production/processing and transportation of raw materials) are accounted as leakage emission and detailed in section E.6.1 of the PoA DD.

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

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The baseline scenario for the CPAs of the PoA would be the burnt clay brick (most common and prevailing practice in Viet Nam). These burnt clay brick production are primarily using fossil fuel mainly coal in the sintering/firing process. CPAs under this PoA shall be new facilities, i.e. Green field project activities. As per the methodology AMS-III.Z Version 03, for new facilities, the CPA should be in compliance with the “General guidelines to SSC CDM methodologies”. The baseline scenario for the CPAs of PoA is determined in line with the latest version of “General guidelines to SSC CDM methodologies” and summarised below:

Step 1: identification of alternatives

Identification of the various alternatives available to the project proponent that deliver comparable level of service including the proposed project activity undertaken without being registered as a CDM project activity is listed below:

Baseline alternative scenario	Alternative – general description	Alternative – specific description
A	The proposed CPA activity undertaken without revenue from CDM	Installation of a brick manufacturing unit that complies with technological scenario 1 or 2 (as described in section A.4.2.1). The bricks produced would confirm to the relevant national standard.
B	Fossil fuel baked (fired) clay brick manufacturing	Common practice for walling material manufacturing in Viet Nam is baked (fired) clay brick manufacturing through the application of various technologies (VSBK, Clamp, Tuynel and other batch Kilns) using fossil fuels (mainly coal). These bricks have comparable properties



		with those produced by the CPA, in terms of quality and application areas.
C	Biomass baked (fired) clay brick manufacturing	<p>Production of biomass burnt clay bricks is practiced in the Mekong delta of Viet Nam²⁸, where rice husk is abundant. The manufacturing of clay bricks requires no special technique and expertise for the construction and operation. The market acceptance of the burnt bricks using this process is excellent. However, the operation of this alternative depends on the availability of rice husk/other biomass and is therefore not applied outside the Mekong delta region²⁹.</p> <p>Furthermore, as per planning of this programme, the Mekong Delta region is now excluded from the geographical boundary of this PoA, hence this alternative is no more available and plausible for the CPAs in the PoA.</p>

In conclusion, alternative C is not plausible. The remaining alternatives are alternative A and B.

Step 2: Compliance with local regulation

List the alternatives identified per Step 1 in compliance with the local regulations (if any of the identified baseline is not in compliance with the local regulations, then exclude the same from further consideration).

The installation and production of a burnt clay brick as well as unburnt brick facility are in compliance with the laws of Viet Nam.

Regulations related to the project activities under this PoA are the Environmental Protection Law (Law No. 52/2005/QH) as well as the Law on Construction (Law No. 16/2003/QH11).

Furthermore, referring to §6(b) of EB 55 annex 38, for consideration of all national/sectoral policies and regulation for determination of the baseline determination it is noted that there are currently no regulations in Viet Nam which mandates the CPA implementer to install a unburnt brick production facility. Neither is there a mandate that prevents the manufacturing using other, conventional processes.

Concluding remarks: All the above plausible alternative scenarios (A and B) are in compliance with the local regulation, hence further subjected to step 3 below.

²⁸ “Study Report Current Fuel Consumption for Burnt Materials and development plan for unburnt brick production”, issued by the Vietnam Association for Building Materials, October 2010, page 7.

²⁹ “Study Report Current Fuel Consumption for Burnt Materials and development plan for unburnt brick production”, issued by the Vietnam Association for Building Materials, October 2010, page 7.



Step 3: Eliminate and rank the alternatives

Eliminate and rank the alternatives identified in Step 2 taking into account barrier tests specified in attachment A to Appendix B of the simplified modalities and procedures of SSC CDM.

The remaining alternatives after step 2 are:

Baseline alternative scenario	Alternative – general description
A	The proposed PoA undertaken without revenue from CDM
B	Fossil fuel baked (fired) clay brick manufacturing

To eliminate and rank alternatives identified in step 2, a barrier test (please refer section E.5.1 of the PoA DD) is conducted in accordance with latest version of Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities. As per alternative A, i.e. CPA without CDM is not plausible alternative as it faces prohibitive barriers whereas alternative B (burnt clay brick) does not face these barriers.

Based on the analysis provided above, as well as in section E.5.1 the only remaining alternative/most plausible alternative is the establishment of a burnt clay brick production facility by using fossil fuel (i.e. coal), which requires coal to be fired in a kiln. As the aforementioned alternative is the only remaining alternative, this alternative is the baseline scenario for the CPAs of the PoA.

As per AMS III-Z, Version 03, EB 54, the baseline emissions are the emissions related to fossil fuel consumption (fossil fuel consumed multiplied by an emission factor) associated with the systems(s), which were or would have otherwise been used, in the clay brick production facility in the absence of project activity.

Weighted average energy use of these technologies has been considered for determining the baseline emissions of the facility or facilities.

Hence, this scenario (i.e. burnt clay brick using fossil fuel) shall form the baseline scenario for the CPAs of the PoA. Nevertheless, baseline emission factor shall be determined as per paragraph 10 of the methodology AMS-III.Z Version 03 at the time of CPA inclusion. The same shall be part of annex 3 of the CPA DD. The baseline scenario is the same for both technology scenarios that are possible under the PoA (i.e. technological scenario 1 (Concrete Bricks) and scenario 2 (Autoclaved Aerated Concrete).

E.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the SSC-CPA being included as registered PoA (assessment and demonstration of additionality of SSC-CPA): >>

E.5.1. Assessment and demonstration of additionality for a typical SSC-CPA:

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The additionality argument for the CPAs of this PoA, is being put forth in the PoA DD and generic CPA DD. Considering the paragraph 4 of annex 26 of EB 60 the full additionality demonstration/assessment is not required for the component project activities rather the confirmation through eligibility has to be



provided in the CPA DD. Adding to this, UNFCCC in its 63rd meeting (Annex 2), has released one standard for the additionality demonstration for PoA. According to paragraph 8 of this standard, PoA that will include one or more small scale projects as CPAs shall include eligibility criteria derived from the relevant requirements of Attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities which are as follows:

- **Investment barrier:** a financially more viable alternative to the project activity would have led to higher emissions
- **Technological barrier:** a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions
- **Barrier due to prevailing practice:** prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;
- **Other barriers:** such as institutional barriers or limited information, managerial resources, organizational capacity, or capacity to absorb new technologies.

Based on the above requirement related to additionality criteria of CPA, CME has delineated the additionality argument in this PoA DD. Subsequent CPAs of the PoA would only require to confirm that this additionality argument is valid for their CPAs by means of eligibility criteria confirmation.

The CPAs of the PoA faces one or more of the barriers (listed below):

The most relevant barrier(s) which would prevent the implementation of each of the CPAs of this PoA in absence of CDM are as follows:

Barrier due to prevailing practice

In the year 2001 the Prime Minister of Viet Nam issued decision number 115/2001/QD-TTg³⁰ which aimed at a 20% market share for unburnt bricks in 2005 and 30% in 2010. In practice, the share of unburnt bricks was 5% in 2005 and 8% in 2009, as shown in table E.5.1. It is also unlikely that the new target of 10-15% market share in 2010 which was set by Prime Ministers Decision 121/2008/QD-TTg will be reached.

Table E.5.1 Market share of burnt clay bricks and unburnt bricks^{31, 32}

Type of Bricks	Percentage of market in 2005	Percentage of market in 2006	Percentage of market in 2007	Percentage of market in 2008	Percentage of market in 2009	Percentage of market in 2010
Total	100%	100%	100%	100%	100%	100%
Unburnt bricks	5%	6%	7%	7%	8%	8%
Burnt clay bricks	95%	94%	93%	93%	92%	92%

The main reason for the slow adaption of unburnt brick technologies is the excellent market acceptance of burnt bricks, which is further outlined below. The table above clearly demonstrates that prevailing

30 <https://rauhoaquavietnam.vn/lawdetail.aspx?lawid=1399>

31 “Study Report Current Fuel Consumption for Burnt Materials and development plan for unburnt brick production”, issued by the Vietnam Association for Building Materials, October 2010.

32 Data for 2010 from Confirmation letter issued by Ministry of Construction, Department of Building Materials



practice for the production of brick in Viet Nam is production of Burnt clay brick. This prevailing practice, i.e., production of burnt clay brick leads to higher emissions. It is worthwhile to mention here that, the government is encouraging (made policies but on voluntary basis) for the promotion of un-burnt brick from 2001. In spite of this the market penetration of such technology till 2010 is very low. Considering the low progress, “the Program on development of non-baked building materials through 2020”³³ issued by Prime Minister's Decision No. 567/QD-TTg³⁴ dated April 28, 2010 was again released by the Prime Minister of Viet Nam. This decision sets targets for unburnt brick production and encourages the elimination of burnt clay brick manufacturing methods. However, these measures are voluntary and at present the adaption of un-burnt brick production technologies has not penetrated in the market and is not a prevailing practice.

It can be concluded that the prevailing practice in the walling market of Viet Nam, without additional measures like the support provided through this PoA, will continue to be burnt clay brick manufacturing and as such the prevailing practice would have led to implementation of a technology with higher emissions.

Above demonstration proves that in absence of CDM the CPA of this PoA would face barrier due to prevailing practice.

Other barriers: Market acceptance of unburnt brick products

The building materials market is a conservative market and people who build houses, generally build only once in their lifetime. What they build should be a long-term investment and should long last. In Viet Nam, the perception of quality of a good brick is that a brick should be of red colour, be solid and produce a ringing sound when clapped against another brick. The perceptions of house builders are reinforced by the masons, most of who are not formally trained. Usage of unburnt bricks may involve new technical skills and equipment which masons are not familiar with.

A recent market acceptance survey³⁵ held by interviewing construction companies and wholesalers/retailers/masons of bricks concluded that 88% of the survey respondents know that unburnt bricks are available in the market, but only 3% of the respondents had utilized or sold unburnt bricks. The grey color (imparted by the color of fly ash, cement and stone-dust) of the unburnt brick products was the main barrier (mentioned by 72% of the respondents) in terms of low consumer acceptance. The above barriers were also confirmed by Vietnam Association for Construction Contractors and the Ministry of Construction.^{36, 37}

The colour is the barrier observation that creates negative and sentimental perception on the quality of the product can be seen in the pictures below:

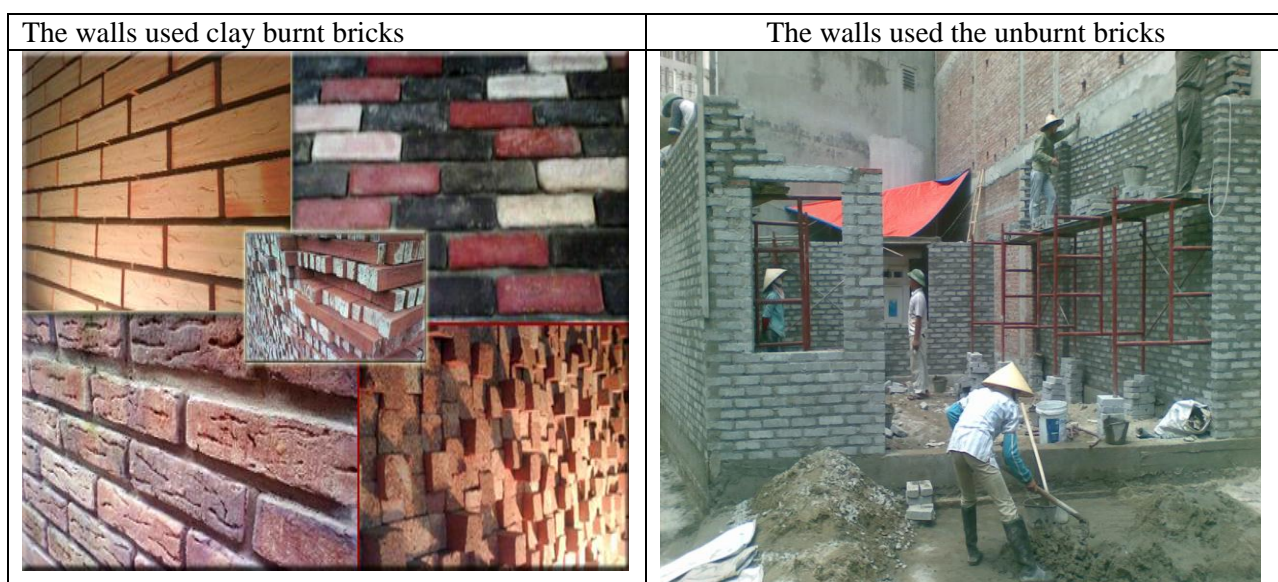
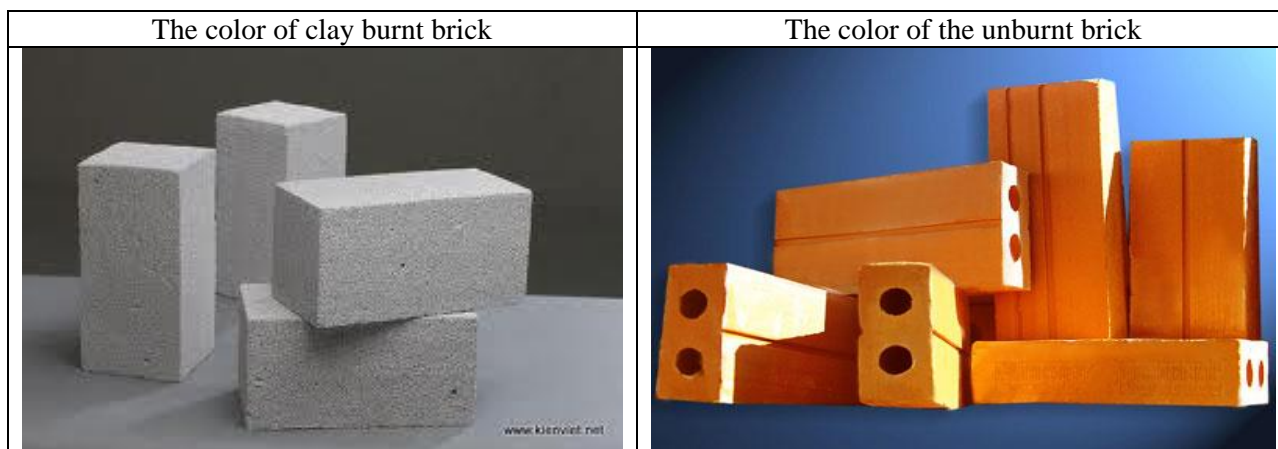
³³ <http://lawfirm.vn/?a=doc&id=1993>

³⁴ <http://lawfirm.vn/?a=doc&id=1993>

³⁵ Market acceptance survey conducted by Viet Nam Association for Building Materials (VABM), August 2010.

³⁶ Letter from Vietnam Association for Construction Contractors, on “Opinion on development of unburnt bricks in Vietnam”

³⁷ Letter from Ministry of Construction, on “development of unburnt bricks”



Picture E 5.1: burnt and unburnt bricks

Market education is a time-consuming and costly affair which is beyond the capacity of individual brick-makers (i.e. the individual CPA implementers).

Despite the various superiorities of the unburnt brick over clay brick, market acceptance has been holding back the development of the unburnt brick technology. In context of the above barrier, the PoA has been designed to encourage the CPA implementers for the installation of unburnt facilities using CDM benefits.

E.5.2. Key criteria and data for assessing additionality of a SSC-CPA:

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The criteria for assessing the additionality of each CPA shall be done as per below requirement (refer section E.5.1 and section A.4.2.2):



Based on the above section related to additionality criteria of CPA, CME has delineated the additionality argument in this PoA DD. Subsequently CPAs of the PoA (at the time of inclusion) shall only be required to confirm that this additionality argument (as mentioned in section E.5.1, above) is valid for their CPAs by means of eligibility criteria confirmation. Hence, subsequent CPAs of the PoA would be additional if they are able to demonstrate the eligibility compliance.

E.6. Estimation of Emission reductions of a CPA:

E.6.1. Explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical SSC-CPA:

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Baseline emissions

As per paragraph 10 of the AMS-III.Z Version 03, *“The baseline emissions are the fossil fuel consumption related emissions (fossil fuel consumed multiplied by an emissions factor) associated with the system(s), which were or would have otherwise been used, in the brick production facility(ies) in the absence of the project activity.”*

Further paragraph 10(b) states:

“For projects involving installation of systems in a new facility, the average annual historical baseline fossil fuel consumption value and the baseline brick production rate shall be determined as that which would have been consumed and produced, respectively, under an appropriate baseline scenario. If the baseline scenario identified includes different technologies with different levels of energy consumption, a weighted average energy use of these technologies can be considered for determining the baseline emissions of the facility or facilities.”

As per Section E.4 of the PoA-DD the baseline scenario of the CPAs has been established at the PoA level. The corresponding baseline emission factor shall be determined/calculated taking into account the different technologies with different levels of energy consumption associated with the baseline brick production in Viet Nam at the time of CPA inclusion.. The same shall be determined in Annex 3 of the CPA-DD.

The baseline emissions for a typical CPA are calculated as below:

$$BE_y = EF_{BL} * P_{PJ,y} \quad (\text{AMS.III.Z: eq: 1})$$

Where:

BE_y	The annual baseline emissions from fossil fuels displaced by the project activity in t CO ₂ e in year y (of the crediting period)
EF_{BL}	The annual production specific emission factor for year y, in t CO ₂ / m ³
$P_{PJ,y}$	The annual net production of the facility in year y, in m ³

The annual production specific emission factor (EF_y) can be calculated *ex ante* as follows:

$$EF_{BL} = \sum_{j,i} (FC_{BL,i,j} \times NCV_j \times EF_{CO_2,j}) / P_{Hy} \quad (\text{AMS.III.Z: eq 2})$$



Where:

$FC_{BL,i,j}$	Average annual baseline fossil fuel consumption value for fuel type j combusted in the process i , using volume or weight units
NCV_j	Average net calorific value of fuel type j combusted, TJ per unit volume or mass unit
$EF_{CO_2,j}$	CO ₂ emission factor of fuel type j combusted in the process i in t CO ₂ / TJ
P_{Hy}	Average annual historical baseline brick production rate in units of volume, m ³

Project emissions

As per paragraph 13 of approved methodology AMS.III-Z Version 03 “*Project activity emissions (PE_y) consist of those emissions associated with the use of electricity or fossil fuel or both and are calculated in accordance with the “Tool to calculate baseline, project and /or leakage emissions from electricity consumption” and/or “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (tCO_{2e})*”.

The typical CPAs of the PoA shall consume electricity from the grid. However, in a few cases, diesel based generators are standby and/or main source of electricity.. In addition, boilers may be installed to generate thermal energy for autoclaving (steam curing) in technology scenario 2. These boilers use fossil fuels.

Project emissions from electricity consumption

A typical CPA of the PoA will consume electricity at the project site to run various equipments. The emission on the account of electricity (PE_{EC,y})consumption has been designed to calculate in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption” (version 01).

The tool is applicable if one out of the following three scenarios applies to the sources of electricity consumption:

- Scenario A: Electricity consumption from the grid
- Scenario B: Electricity consumption from (an) off grid fossil fuel fired captive power plant
- Scenario C: Electricity consumption from the grid and fossil fuel fired captive power plant.

The CPA would consume electricity from the grid. Thus, the applicable scenario is Scenario A.

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y}) \quad (\text{eq. 1 of the tool})^{38}$$

Where:

Parameter	Description	Unit
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³⁸ Equation numbering maintained as shown in “Tool to calculate baseline, project and/or leakage emission from electricity consumption” (version 01)



$PE_{EC,y}$	Project emissions from electricity consumption in year y	tCO ₂ e/yr
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project electricity consumption source j in year y	(MWh/yr)
$EF_{EL,j,y}$	Emission factor for electricity generation for source j in year y	(tCO ₂ /MWh)
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y	-

Under scenario A of the tool, option A1 is being used to calculate the CO₂ emission factor of grid electricity. As per scenario A1, the emission factor is the combined margin emission factor of the grid, calculated as per the guidelines provided under the latest version of “Tool to calculate emission factor for an electricity emission”. For ex-ante calculation purposes (for the real case CPA the latest approved grid emission factor is applied, of which the detailed calculation is publicly available³⁹).

The grid emission factor (ex-ante calculation for the real case CPA) has been calculated based on combined margin approach considering the data from Grid Emission Factor Report approved (2003-2008) by DNA Viet Nam dated 26/03/2010 which is available at the time of preparation and webhosting of the PoA DD. Although the DNA published report dated 26/03/2010 is based on tool version 01.1, however the approach and the applied formula for calculating OM and BM in accordance with tool version 02.2.1 has not undergone any change. CPAs of the PoA shall calculate the combined margin emission factor at the time of inclusion and that emission factor shall be fixed ex-ante for the CPA.

For the Average technical transmission and distribution losses for providing electricity to source j in year y ($TDL_{j,y}$), CPAs of the PoA shall consider the default value as mentioned in the tool, as a conservative and simplified approach.

Project emissions from fossil fuel consumption

Since fossil fuel (diesel, coal or FO) may be consumed for the operation of diesel generators in case of grid power failure or main electricity source and/or operation of a steam boiler, etc., CO₂ emission from fossil fuel combustion ($PE_{FC,y}$) should be calculated using the latest approved version of the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” Version 02 (EB 41, Annex 11). According to this Tool, CO₂ emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y} \quad (1)^{40}$$

Where

Parameter	Description	Unit
$PE_{FC,j,y}$	Are the CO ₂ emissions from fossil fuel combustion in process j	(t CO ₂ e/yr)

³⁹ Approved Grid Emission Factor from the official website of the DNA of Vietnam

⁴⁰ Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion



	during year y	
$FC_{i,j,y}$	Is the quantity of fuel type i combusted in process j during year y	(mass or volume unit/year)
$COEF_{i,y}$	Is the CO ₂ coefficient of fuel type i in year j	(t CO ₂ /mass or volume unit)
i	Are the fuel types combusted in process j during the year y	

As the data on the chemical composition of the fossil fuel type i used by the project activity is not available. Thus, the option B of the Tool is adopted for calculation of the CO₂ emission coefficient $COEF_{i,y}$. The $COEF_{i,y}$ is calculated based on net calorific value and CO₂ emission factor of the fuel type i , as follows:

$$COEF_{i,y} = NCV_{i,y} \times EF_{CO_2,i,y} \quad (4)^{41}$$

Where:

Parameter	Description	Unit
$COEF_{i,y}$	Is the CO ₂ coefficient of fuel type i in year j	(t CO ₂ /mass or volume unit)
$NCV_{i,y}$	Is the weighted average net calorific value of the fuel type i in year j	(GJ/mass or volume unit)
$EF_{CO_2,i,y}$	Is the weighted average CO ₂ emission factor of fuel type i in year y	(t CO ₂ /GJ)
i	Are the fuel types combusted in process j during the year y	

For ex ante estimation purpose, the fossil fuels consumption will be based on parameters available in the feasibility study report or a declaration from the technology supplier of each CPA. Actual fossil fuel consumption will be part of the monitoring plan of each CPA.

Leakage

As per paragraphs 11 and 12 of AMS.III.Z the applicable small scale methodology, there are two possibilities in which leakages have to be accounted:

11. Leakage emissions on account of diversion of biomass from other uses (competing uses) shall be calculated as per “General guidance on leakage in biomass project activities”.

The CPAs of the PoA shall not consume any kind of biomass. Hence this is not applicable for the CPAs of this PoA.

12. In the case of project activities involving change in production process or a change in type or quantity of raw and/or additive materials as compared to the baseline, the incremental emissions associated with the production/consumption and transport of those

⁴¹ Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion



raw and/or additive materials consumed as compared to baseline, shall be calculated as leakage.

Leakage shall be considered for the CPAs, based on the specific quantities of additive materials used and the incremental emissions associated with the production/processing and transportation of these materials in the CPA.

Raw Material⁴²	Transportation	Production and/or processing	Justification
Cement	Yes	Yes	Leakage on the account of both production and transportation of cement shall be accounted at the CPA level.
Lime	Yes	Optional	Leakage shall be accounted for transportation at CPA level. Leakage on the account of production/processing if required (in case of waste not required to considered) shall be done at CPA level.
Stone dust	Yes	Optional	Leakage shall be accounted for transportation at CPA level. Leakage on the account of production/processing if required (in case of waste not required to considered) shall be done at CPA level.
Sand	Yes	No	Leakage shall be accounted for transportation at CPA level. No processing is required in case of sand.
Gypsum	Yes	Optional	Leakage shall be accounted for transportation at CPA level. Leakage on the account of production/processing if required (in case of waste not required to considered) shall be done at CPA level.
Fly ash	Yes	No	Leakage shall be accounted for transportation at CPA level. Waste material of thermal power

⁴² The raw materials indicated in table may or may not be utilized in all the CPAs. This is just for indicative purposes. As part of requirement of applied monitoring methodology the quantity of each raw material shall be monitored at individual CPA level. At individual CPA level any other raw material which is not listed in the table may be used provided it complies with requirement of applied methodology i.e. monitoring of individual raw materials and addressing emission on the account of production/processing/transportation.



			plants needs to be demonstrated at CPA level as well. Since it is waste hence emission on the account of production/processing is not required
Aluminium powder	Yes	Optional	Leakage shall be accounted for transportation at CPA level. Leakage on the account of production/processing if required (in case of waste not required to be considered) shall be done at CPA level.
Iron and steel slag	Yes	No	Leakage shall be accounted for transportation at CPA level. Waste material of iron and steel industry needs to be demonstrated at CPA level as well. Since it is waste hence emission on the account of production/processing is not required

The surplus availability of each raw material/additive (demonstrated as “waste”) shall be demonstrated in accordance with paragraph 6 of AMS.III.Z at individual CPA level.

The applicable equations for leakage are:

$$LE_y = LE_{rm,prod,y} + LE_{TR,y}$$

Where:

Parameter	Unit	Description
LE_y	tCO ₂ e	Leakage emission from raw material production/processing and transportation in the year y
$LE_{rm,prod,y}$	tCO ₂ e	Leakage emission from raw material production/processing in the year y
$LE_{TR,y}$	tCO ₂ e	Leakage emission from raw material transportation in the year y

Leakage emissions due to raw material production/processing:

The Methodology does not provide equations for estimation for calculation of leakage emissions due to raw material production/processing. Therefore, the following equation has been developed by CME:

$$LE_{rm,prod,y} = \sum_m RMC_{m,y} * COEF_{m,y}$$

Where:

Parameter	Unit	Description
$LE_{rm,prod,y}$	tCO ₂ e	Leakage emission from raw material production/processing in the year y



$RMC_{m,y}$	Ton	Quantity of raw material type m purchased for producing bricks in the year y
$COEF_{m,y}$	tCO ₂ e/ton	CO ₂ emission factor for production/processing of raw material type m in year y
m		Type of raw material utilized in CPA

Leakage emission due to (each) raw material transportation:

Leakage emissions due to raw material transportation are accounted for based on the Option B described in the methodological tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0) (EB 63, Annex 10). Option B relies on conservative default emission factors to estimate project or leakage emissions from road transportation of freight.

$$LE_{TR,y} = \sum_n D_{n,y} \cdot FR_{n,y} \cdot EF_{CO_2,TRANS} \cdot 10^{-6} \quad (1)^{43}$$

Where:

Parameter	Unit	Description
$LE_{TR,y}$	tCO ₂ e	Leakage emissions from road transportation of freight during the year y
$D_{n,y}$	km	Return trip road distance between the origin and destination of freight transportation activity for the raw material type “n” during the year y
$FR_{n,y}$	t	Total mass of the raw material / additive type “n” transported in the year y
$EF_{CO_2,TRANS}$	g CO ₂ e/t km	Default CO ₂ emission factor for freight transportation activity (As a simplified and conservative approach, emission factor of the light vehicles shall be considered at the CPA level).
n		Type of raw material “n” transported

Emission reductions

Emission reductions (ER_y) achieved by the CPA will be calculated as the difference between the baseline emissions and the sum of project emissions and leakage as follows:

$$ER_y = BE_y - PE_y - Leakage \quad (AMS.III.Z: eq. 3)$$

Where:

ER_y Emission reductions in year y (t CO₂e/yr)

⁴³ Equation of the tool “Project and leakage emissions from road transportation of freight” Version 01.0.0 has been modified to have clear identification for the emissions related to transportation of the raw materials / additives in the CPAs of the PoA.



BE_y Baseline emissions in year y (t CO₂e/yr)

PE_y Project emissions in year y (t CO₂/yr)

LE_y Leakage emissions in year y (t CO₂/yr)

E.6.2. Equations, including fixed parametric values, to be used for calculation of emission reductions of a SSC-CPA:

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Baseline emissions

The baseline emissions for a typical CPA are calculated as below:

$$BE_y = EF_{BL} * P_{PJ,y} \quad (\text{AMS.III.Z: eq. 1})$$

Where:

Parameter	Description	Unit	Value	Explanation
BE_y	The annual baseline emissions from fossil fuels displaced by the project activity in t CO ₂ e in year y (of the crediting period)	tCO ₂ e	CPA Specific	The value will be CPA specific.
EF_{BL}	The annual production specific emission factor for year y, in t CO ₂ / m ³	tCO ₂ e/m ³	Shall be determined at CPA level and will be fixed ex-ante for the entire crediting period of the specific CPA.	This value shall be determined at the time of CPA inclusion in baseline selection/emission factor determination. This shall be part of annex 3 of CPA-DD.
$P_{PJ,y}$	The annual net production of the facility in year y, m ³	m ³	CPA Specific	The value will be CPA specific.

Table E.6.2.1

The annual production specific emission factor (EF_y) can be calculated *ex ante* as follows:

$$EF_{BL} = \sum_{j,i} (FC_{BL,i,j} \times NCV_j \times EF_{CO_2,j}) / P_{Hy} \quad (\text{AMS.III.Z: 2})$$

Where:

Parameter	Description	Unit	Value	Explanation
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$FC_{BL,i,j}$	Average annual baseline fossil fuel consumption value for fuel type j combusted in the process i , using volume or weight units	Ton	Shall be determined at CPA level.	Official reliable data shall be used.
NCV_j	Average net calorific value of fuel type j combusted, TJ per unit volume or mass unit	TJ/ton	Shall be determined at CPA level.	Official reliable data shall be used.
$EF_{CO_2,j}$	CO ₂ emission factor of fuel type j combusted in the process i in t CO ₂ / TJ	tCO ₂ /TJ	Shall be determined at CPA level and will be fixed ex-ante for the entire crediting period of the specific CPA.	Official reliable data shall be used.
P_{Hy}	Average annual historical baseline brick production rate in units of weight or volume, m ³	m ³	Shall be determined at CPA level.	Official reliable data shall be used.

Table E.6.2.2

Project emissions

As per approved methodology AMS.III-Z Version 03 “*project activity emissions (PE_y) consist of those emissions associated with the use of electricity or fossil fuel or both and are calculated in accordance with the “Tool to calculate baseline, project and /or leakage emissions from electricity consumption” and/or “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” (tCO_{2e})*”.

The CPAs of the PoA mainly consume electricity from the grid. However, in a few cases, diesel based generators are standby in order to overcome intermittent power breakdowns. In addition, boilers may be installed to generate thermal energy for autoclaving (steam curing) in technology scenario 2. This boiler uses fossil fuels.

Project emissions from electricity consumption

A typical CPA of the PoA will consume electricity at the project site to run various equipment. The emission on the account of electricity (PE_{EC,y}) consumption has been designed to calculate in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption” (version 01).

As per the tool, the tool is applicable if one out of the following three scenarios applies to the sources of electricity consumption:

- Scenario A: Electricity consumption from the grid
- Scenario B: Electricity consumption from (an) off grid fossil fuel fired captive power plant
- Scenario C: Electricity consumption from the grid and fossil fuel fired captive power plant.



The project plant would consume electricity from the grid. Thus, the applicable scenario is Scenario A.

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y}) \quad (1)^{44}$$

Where:

Parameter	Description	Unit	Value	Explanation
$PE_{EC,y}$	Project emissions from electricity consumption in year y	tCO ₂ e/yr	CPA Specific	--
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project electricity consumption source j in year y	MWh	CPA Specific	--
$EF_{EL,j,y}$	Emission factor for electricity generation for source j in year y	tCO ₂ /MWh	Shall be determined at CPA level and will be fixed ex-ante for the entire crediting period of the specific CPA.	--
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y	%	20%	Default T&D loss value for Scenario A according to the Tool applied

Table E.6.2.3

Project emissions from fossil fuel consumption

Since fossil fuel (diesel, coal or FO) may be consumed for the operation of diesel generators in case of grid power failure and or operation of a steam boiler, etc., CO₂ emission from fossil fuel combustion ($PE_{FC,y}$) should be calculated using the latest approved version of the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” Version 02 (EB 41, Annex 11). According to this Tool, CO₂ emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO₂ emission coefficient of those fuels, as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y} \quad (1)^{45}$$

Where

⁴⁴ Equation numbering maintained as shown in “Tool to calculate baseline, project and/or leakage emission from electricity consumption” (version 01)

⁴⁵ Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion



Parameter	Description	Unit	Value	Explanation
$PE_{FC,j,y}$	Are the CO ₂ emissions from fossil fuel combustion in process <i>j</i> during year <i>y</i>	(t CO ₂ e/yr)	CPA specific	Calculated with formula defined above
$FC_{i,j,y}$	Is the quantity of fuel type <i>i</i> combusted in process <i>j</i> during year <i>y</i>	(mass or volume unit/year)	CPA Specific	--
$COEF_{i,y}$	Is the CO ₂ coefficient of fuel type <i>i</i> in year <i>j</i>	(t CO ₂ /mass or volume unit)	CPA Specific	Please refer to table E.6.2.5
<i>i</i>	Are the fuel types combusted in process <i>j</i> during the year <i>y</i>		CPA Specific	--

Table E.6.2.4

As the data on the chemical composition of the fossil fuel type *i* used by the project activity is not available. Thus, the option B of the Tool is adopted for calculation of the CO₂ emission coefficient $COEF_{i,y}$. The $COEF_{i,y}$ is calculated based on net calorific value and CO₂ emission factor of the fuel type *i*, as follows:

$$COEF_{i,y} = NCV_{i,y} \times EF_{CO_2,i,y} \quad (4)^{40}$$

Where:

Parameter	Description	Unit	Value	Explanation
$COEF_{i,y}$	Is the CO ₂ coefficient of fuel type <i>i</i> in year <i>y</i>	(t CO ₂ /mass or volume unit)	CPA specific	Calculated with above defined formula
$NCV_{i,y}$	Is the weighted average net calorific value of the fuel type <i>i</i> in year <i>y</i>	(GJ/mass or volume unit)	Shall be determined at CPA level and will be fixed ex-ante for the entire crediting period of the specific CPA.	--
$EF_{CO_2,i,y}$	Is the weighted average CO ₂ emission factor of fuel type <i>i</i> in year <i>y</i>	(t CO ₂ /GJ)	Shall be determined at CPA level and will be fixed ex-ante for the entire crediting period of the specific CPA.	--
<i>i</i>	Are the fuel types combusted in process <i>j</i> during the year <i>y</i>	Type	CPA specific	--

Table E.6.2.5

Fossil fuel consumption will be estimated ex-ante based on parameters available in the feasibility study report or a declaration from the technology supplier of each CPA. Actual fossil fuel consumption will be part of the monitoring plan of each CPA.



Leakage

As per paragraph 12 of AMS.III.Z the applicable small scale methodology leakage have to be accounted in the following case:

“In the case of project activities involving change in production process or a change in type or quantity of raw and/or additive materials as compared to the baseline, the incremental emissions associated with the production/consumption and transport of those raw and/or additive materials consumed as compared to baseline, shall be calculated as leakage.”

Leakage will be considered per CPA based on the specific quantities of additive materials used and the incremental emissions associated with the use of these materials.

The applicable equations for leakage are:

$$LE_y = LE_{rm,prod,y} + LE_{TR,y}$$

Where:

Parameter	Unit	Description
LE_y	tCO ₂ e	Leakage emission from raw material production/processing and transportation in the year y
$LE_{rm,prod,y}$	tCO ₂ e	Leakage emission from raw material production/processing in the year y
$LE_{TR,y}$	tCO ₂ e	Leakage emission from raw material transportation in the year y

Leakage emissions due to raw material production/processing:

$$LE_{rm,prod,y} = \sum_m RMC_{m,y} * COEF_{m,y}$$

Where:

Parameter	Unit	Description
$LE_{rm,prod,y}$	tCO ₂ e	Leakage emission from raw material production/processing in the year y
$RMC_{m,y}$	Ton	Quantity of raw material type <i>m</i> consumed for producing bricks in the year y
$COEF_{m,y}$	tCO ₂ e/ton	CO ₂ emission factor for production/processing of raw material type <i>m</i> in year y
<i>m</i>		Type of raw material utilized in CPA

Leakage emission due to (each) raw material transportation:

Leakage emissions due to raw material transportation are accounted for based on the Option B described in the methodological tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0) (EB 63, Annex 10). Option B relies on conservative default emission factors to estimate project or leakage emissions from road transportation of freight.



$$LE_{TR,y} = \sum D_{m,y} \cdot FR_{m,y} \cdot EF_{CO_2,TRANS} \cdot 10^{-6} \quad (1)^{46}$$

Where:

Parameter	Unit	Description
$LE_{TR,y}$	tCO ₂ e	Leakage emissions from road transportation of freight during the year y
$D_{m,y}$	km	Return trip road distance between the origin and destination of freight transportation activity during the year y
$FR_{m,y}$	t	Total mass of the raw material / additive type “m” transported in the year y
$EF_{CO_2,TRANS}$	g CO ₂ e/t km	Default CO ₂ emission factor for freight transportation activity (As a simplified and conservative approach, emission factor of the light vehicles shall be considered at the CPA level).

Emission reductions

Emission reductions (ER_y) achieved by the CPA will be calculated as the difference between the baseline emissions and the sum of project emissions and leakage as follows:

$$ER_y = BE_y - PE_y - Leakage \quad (\text{AMS.III.Z: 3})$$

Where:

ER_y Emission reductions in year y (t CO₂e/yr)

BE_y Baseline emissions in year y (t CO₂e/yr)

PE_y Project emissions in year y (t CO₂/yr)

LE_y Leakage emissions in year y (t CO₂/yr)

E.6.3. Data and parameters that are to be reported in CDM-SSC-CPA-DD form:

Data / Parameter:	TDL _y
Data unit:	%
Description:	Average technical transmission and distribution losses for providing electricity to source in year y
Source of data used:	“Tool to calculate baseline, project and/or leakage emissions from electricity consumption” Version 01, (EB39, Annex 7)
Value applied:	20
Justification of the choice of data or description of	The CPA would consume electricity from the grid. Thus, the applicable scenario is Scenario A. The default value of 20% is therefore used, as defined in the Tool for project or leakage electricity consumption for

⁴⁶ Equation of the tool “Project and leakage emissions from road transportation of freight” Version 01.0.0 has been modified to have clear identification for the emissions related to transportation of the raw materials / additives in the CPAs of the PoA.



measurement methods and procedures actually applied :	scenario A.
Any comment:	

Data / Parameter:	EF_{BL}
Data unit:	in tCO ₂ /m ³ of produced brick;
Description:	Baseline emission factor
Source of data used:	Official reliable data source published by independent third party, for example VABM.
Value applied:	Shall be determined by each CPA
Justification of the choice of data or description of measurement methods and procedures actually applied :	Justification shall be provided at CPA level.
Any comment:	Value shall be fixed for the entire crediting period for the CPA.

Data / Parameter:	$EF_{EL,i,y}$
Data unit:	tCO ₂ / MWh
Description:	Emission factor for grid electricity consumed in the project activity in year y
Source of data used:	Calculated in accordance with the latest approved version of the “Tool to calculate the emission factor for an electricity system”.
Value applied:	This value shall be calculated by each CPA during CPA inclusion.
Justification of the choice of data or description of measurement methods and procedures actually applied :	The latest grid emission factor approved by the DNA of Viet Nam, available when during CPA inclusion shall be used. CPAs of the PoA shall calculate the combined margin emission factor at the time of inclusion and that emission factor shall be fixed ex-ante for the CPA.
Any comment:	The grid emission factor fixed ex-ante at the time of CPA inclusion shall be fixed for the entire crediting period.

Data / Parameter:	$COEF_m$
Data unit:	tCO ₂ /ton of raw material type “m”
Description:	Emission factor for the production / processing of raw material type “m”
Source of data used:	Third party published literature or website.
Value applied:	Shall be determined by each CPA
Justification of the choice of data or description of measurement methods and procedures actually applied :	Each type of raw material for which leakage needs to be accounted for a particular CPA shall be mentioned in the CPA-DD separately. The data of emission factor for the production/processing of raw material type <i>m</i> shall be based on official literature or website.



Any comment:	Value shall be fixed for the entire crediting period or updated in case of any change.
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Data / Parameter:	$EF_{CO_2, TRANS}$
Data unit:	g CO ₂ /t km
Description:	Default CO ₂ emission factor for freight transportation activity
Source of data used:	Methodological Tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0)
Value applied:	245
Justification of the choice of data or description of measurement methods and procedures actually applied :	As per Methodological Tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0)
Any comment:	This shall be used for the calculation of emission associated with transportation of raw materials. As a simplified and conservative approach, emission factor of the light vehicles shall be considered at the CPA level.

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

E.7.1. Data and parameters to be monitored by each SSC-CPA:

Data / Parameter:	P_{PJy}
Data unit:	m ³
Description:	Net production of the bricks in the facility in year y;
Source of data to be used:	Onsite measurements
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Value to be used for ex ante CER estimation for the CPA shall be based on the data available at the time of CPA inclusion.
Description of measurement methods and procedures to be applied:	To be reported at the time of CPA inclusion.
QA/QC procedures to be applied:	The amount of bricks manufactured at the end of each crediting period will be cross checked with the invoices for the sale of bricks and the stock in the plant.
Any comment:	The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	$RMC_{m,y}$ (= $FR_{m,y}$ – in case of calculation of leakage on the account of transportation of raw materials / additives)
Data unit:	ton



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Description:	Quantity of principal raw material and additive material type “m” purchased / transported on monthly basis.
Source of data to be used:	On site measurement / Invoices / transportation receipt.
Value of data applied for the purpose of calculating expected emission reductions of the CPA	Value to be used for ex ante CER estimation for the CPA shall be based on the data available at the time of CPA inclusion.
Description of measurement methods and procedures to be applied:	To be reported at the time of CPA inclusion.
QA/QC procedures to be applied:	To be reported at the time of CPA inclusion for the respective raw materials / additives.
Any comment:	At the time of the CPA inclusion, for each of the relevant raw material / additives, separate tables shall be provided. The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	<i>Compressive Strength</i>
Data unit:	N/mm ² ;
Description:	Performance of project brick/block in terms of Compressive Strength
Source of data to be used:	External laboratory testing results
Value of data applied for the purpose of calculating expected emission reductions of the CPA	To be determined with respect to each CPA during monitoring period.
Description of measurement methods and procedures to be applied:	Tests will be done according to the applicable Vietnamese Standards for compressive strength at least every six months. The brick/ block will be tested in a Compressive strength Testing Machine (CTM) in any of the laboratories of polytechnics, engineering colleges, building centers, national laboratories etc., and the test certificates are provided by the laboratory.
QA/QC procedures to be applied:	-
Any comment:	The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	Density
Data unit:	kg/m ³
Description:	Average density of the bricks produced
Source of data to be used:	External laboratory testing results
Value of data applied	To be determined with respect to each CPA



for the purpose of calculating expected emission reductions of the CPA	
Description of measurement methods and procedures to be applied:	Tests will be done at least every six months. The brick/ block will be tested in any of the laboratories of polytechnics, engineering colleges, building centres, national laboratories etc., and the test certificates are provided by the laboratory.
QA/QC procedures to be applied:	-
Any comment:	Separate records for hollow and solid bricks will be maintained. The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	FC_{DIESEL,i,y} ; FC_{FO,i,y} ; FC_{COAL,i,y}
Data unit:	ton
Description:	Quantity of fossil fuel combusted in process j during year y
Source of data to be used:	On site measurement
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Value to be used for ex ante CER estimation for the CPA shall be based on the data available at the time of CPA inclusion.
Description of measurement methods and procedures to be applied:	Description of the actual measurement method using any of the three alternatives provide in the “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” shall be provided at individual CPA level.
QA/QC procedures to be applied:	Perform an annual energy/mass balance that is based on purchased quantities and stock.
Any comment:	At the time of the CPA inclusion, for each of the relevant fossil fuel separate tables shall be provided. The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	NCV_{DIESEL,y} ; NCV_{FO,y} ; NCV_{COAL,y}
Data unit:	GJ / ton
Description:	Weighted average net calorific value of the fossil fuel consumed in year y
Source of data to be used:	Any of the four data source in preferential order as mentioned in the Tool to calculate project or leakage CO2 emissions from fossil fuel combustion”.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	To be determined with respect to each CPA at time of inclusion



Description of measurement methods and procedures to be applied:	Any of the four data source in preferential order as mentioned in the Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”. For option a) and b): Measurements should be undertaken in line with national or international fuel standards.
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:	At the time of the CPA inclusion, for each of the relevant fossil fuel separate tables shall be provided. The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	$EF_{CO_2,DIESEL,y}$; $EF_{CO_2,FO,y}$; $EF_{CO_2,COAL,y}$
Data unit:	tCO ₂ /GJ
Description:	CO ₂ emission factor of the fossil fuel used in year y in the CPA
Source of data to be used:	Any of the four data source in preferential order as mentioned in the Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”.
Value of data applied for the purpose of calculating expected emission reductions of the CPA	Value to be determined by each CPA at time of inclusion.
Description of measurement methods and procedures to be applied:	Any of the four data source in preferential order as mentioned in the Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion”. For option a) and b): Measurements should be undertaken in line with national or international fuel standards.
QA/QC procedures to be applied:	-
Any comment:	At the time of the CPA inclusion, for each of the relevant fossil fuel separate tables shall be provided. The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

Data / Parameter:	$EC_{PJ,y}$
Data unit:	MWh
Description:	Amount of electricity consumed in the year y at the project site for the CPA
Source of data to be used:	Measurements records at the plant site.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Value to be used for ex ante CER estimation for the CPA shall be based on the data available at the time of CPA inclusion.



Description of measurement methods and procedures to be applied:	<p>Measurement Procedure and frequency: The quantity of electricity will be continuously measured and recorded monthly.</p> <p>Measuring equipment: Measured using calibrated energy meter of accuracy class 0.5s.</p> <p>Calibration process: Calibration shall be as per the relevant paragraphs of the “General guidelines to SSC CDM methodologies” and be conducted by independent accredited third party.</p> <p>Calibration frequency: As per local/national standard or as per manufacturer’s specifications. If the local/national standards and manufacturer’s specifications is not available, it will be as per international standard, but at least one in 3 years.</p>
QA/QC procedures to be applied:	The measurement results shall be cross-checked with records for purchased energy (e.g. invoices/receipts).
Any comment:	The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later

Data / Parameter:	$D_{m,y}$
Data unit:	km
Description:	Return trip road distance between the origin and destination of freight for raw materials / additives type “m” for the transportation activity during the year y.
Source of data to be used:	Records of vehicle operator or records by project participants
Value of data applied for the purpose of calculating expected emission reductions of the CPA	Value to be determined with respect to each CPA.
Description of measurement methods and procedures to be applied:	<p>Determined once for each freight transportation activity f for a reference trip, using the vehicle odometer or any other appropriate sources (e.g. on-line sources). To be updated whenever the road distance changes.</p> <p>As per Methodological Tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0).</p>
QA/QC procedures to be applied:	As per Methodological Tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0)
Any comment:	The data will be archived electronically and kept for minimum of two years after the end of the crediting period or the last issuance of CERs for the project activity, whichever occurs later.

E.7.2. Description of the monitoring plan for a SSC-CPA:

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In order to ensure all CPAs are monitored and verified as per the applied monitoring methodology, the CME has prepared a comprehensive monitoring plan for all the CPAs to be included in the PoA. Furthermore, the CME will conduct periodical inspection of units randomly at any given time in a year. For this purpose the CME will deploy trained monitoring personnel who will visit the CPAs sites, review their records and take corrective actions if required. The monitoring personnel would duly attest the



records as a mark of satisfactory inspection. The CME would randomly check the visits of monitoring personnel in order to ensure due compliance of registered monitoring plan.

Templates (as a part of monitoring manual) are made to record the data to be monitored. The monitoring personnel of the CME would be provided with such templates. In-house training shall be imparted to plant personnel (at the CPA site) for the efficient monitoring/recording of the data and to translate the same into the computation of emission reductions.

Based on the monitoring requirements of AMS III-Z, Version 03 as described under Table of E.7.1, following records would be verified by the CME's inspectors:

Raw materials inwards:

Criteria	Documents checked for annual consumption	Cross checked validity with
Each type of raw material/additive to be utilised in the CPA	Purchase invoices / Inventory records	Transportation records

Table E.7.1.1 – Raw material monitoring

Production Output:

Stock register showing daily production and sales (Cross checked with the sales invoices or bills)

Fossil fuels and/or Power Consumption and calorific value data

The consumption of fuel for boiler/genset and/or power has to be recorded on monthly basis. In the case of fuel, the purchase bills would be verified. In the case of power, the meter reading on power payment would be taken as record. As an additional and alternate source, the CPAs are asked to provide monthly statement of electricity consumption for every three months to the CME. The CPAs are asked to maintain records in either of the case.

S. No.	Parameter	Documents checked for annual consumption	Cross checked validity with
1.	Coal	Purchase invoices Inventory records	Transportation records
2.	Fuel Oil	Purchase invoices Inventory records	Transportation records
3.	Diesel	Purchase invoices Inventory records	Transportation records
4.	Electricity	Purchase invoices Electricity meter	Production records

Table E.7.1.2 – fuel and power consumption monitoring

The other relevant data will be recorded by the CPA owners and would be provided on quarterly basis to the CME. The data received will be archived electronically for computations of emission reductions on annual basis. Such archived data will be kept until two years after the end of the crediting period or the issuance of CERs whichever is later. Each small scale CPA shall follow all the provision of the PoA



including that related to monitoring. Only those CPA implementers who confirm to sign an agreement in this context shall be included in the PoA, as this is a part of eligibility criteria.

The NCV of the fuel used will be based on default values of the IPCC or the information provided by the fuel supplier, based on availability of the specific information. In case the information is used by fuel supplier, this will be crosschecked with the values from appropriate national standards and the IPCC.

Transportation of materials

To determine leakage emissions due to the transportation of raw materials, option B of the Methodological Tool “Project and leakage emissions from road transportation of freight” (Version 01.0.0) shall be used. As such the quantity of raw materials/additives and the round trip distance between origin and destination shall be monitored.

Performance criteria by testing Compressive Strength

The methodology requires making available the test certificates on the strength performance of bricks tested at a minimum of six-months interval. In the context of testing of bricks, the SSC WG, at its 22nd meeting clarified that the testing can be undertaken based on the national/regional standards or guidelines applicable to the type of project activity bricks. Testing can also be undertaken as per the procedures provided by the technology provider as long as the testing methods can be substantiated with reference to peer reviewed literature i.e. relevant international journal publications, publications of national/international building research centres etc. As long as the testing procedures in the guidelines/standards are met, the testing itself can be undertaken in polytechnics, engineering colleges, building centers, national laboratories etc. The bricks tested by the CPA owners through third party laboratories shall be done at least every six month and would be provided to the CME.

Each CPA and the CME shall retain all monitored data required for verification and issuance for two years after the end of the crediting period or the last issuance of CERs, for this programme, whichever occurs later.

Procedures for emergency preparedness for cases where emergencies cause unintended emissions:

No events are expected that can lead to unintended emissions.

Procedures for review of the reported results/data: To minimize the possible errors in the process of data collection, the entry of data gathered during onsite visits by the monitoring personnel of the CME will be compared with the data submitted by CPA implementers throughout the year. The data will be reviewed by the CME and a comparison between the data sent by the CPA implementers and the data obtained during the onsite visit by the monitoring personnel shall be performed to ensure that the data are consistent and correct.

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

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Date of completion: 17/11/2010

Responsible persons/entity for completion of the application of the baseline and monitoring methodology:



Mr. Hoang Anh Dung and Mr. Ywert Visser

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Annex 1

**CONTACT INFORMATION ON COORDINATING/MANAGING ENTITY and
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The “**Green Brick Development Programme of Activities Managed by INTRACO**” will not receive any public funding from Parties included in Annex I of the UNFCCC.



Annex 3

BASELINE INFORMATION

Shall be provided at individual CPA level.



Annex 4

MONITORING INFORMATION

Please refer to section E.7.2.
