CDM: Recommendation Form for Small Scale Methodologies (version 01)

(To be used for presenting questions/proposals/amendments to the simplified methodologies for small-scale CDM project activity categories)

Date of SSC WG meeting:	15–18 March 2011, SSC WG 30
Title/Subject (give a small title or specify the subject of your submission, maximum 200 characters):	Clarification on AMS-III.Z for brick manufacturing involving Autoclave Aerated Concrete technology
Indicative methodology to which your submission relates (refer the items of Appendix B of the Simplified Modalities and Procedures), if applicable.	AMS-III.Z "Fuel switch, process improvement and energy efficiency in brick manufacture"
Name of the authors of the query:	Dr. Dhanya M. Nambiar Institution: Centre for Environment Education and Development Pvt. Ltd., India cdm@ceedindia.com, project@ceedindia.com

Summary of the query:

Please use the space below to summarize the query related to SSC methodologies/categories SSC Modalities and Procedures provide recommendation/analysis of the SSC WG.

Original text from PP:

This submission seeks to clarify the following issues which we have came across while applying the Methodology AMS III Z for one of our project.

Background :

The project under reference is setting up of a new brick manufacturing facility by using Autoclave Aerated Concrete (AAC) technology. AAC blocks serve as an alternative building material to the traditional burnt clay bricks and serve the same purpose as of clay bricks used for construction. Production process of AAC Blocks does not involve sintering (firing) as required in the clay brick manufacturing, but involves autoclaving. The steam required for this purpose is produced from use of biomass based boiler thus the production process of AAC blocks completely eliminate burning of coal as required in the clay brick production, ultimately contributing to the reduction of greenhouse gas emissions.

AAC blocks are manufactured from Fly ash (68%), Cement (22%), Lime (8%), Gypsum (2%) and a small amount of Aluminium paste at the weight ratio given in bracket. The production process involves the use of aerated concrete which is made by introducing air or other gas to a slurry of flyash, lime, cement and gypsum so that when the mixture is set hard after autoclaving, a uniform cellular structure is obtained.

AAC masonry has many advantages than the traditional bricks due to its strength and structural stability, durability, fire resistance, insulation and sound absorption etc. Although superior in quality, the commercial production of AAC blocks is quite costly and elaborate in practice, hence it could not make enough headway in the Indian market. On the contrary, Fal G technology which is extensively used in India is simple in principle and is more cost effective as far as the selling price of the brick is concerned.

While referring to all the earlier submission to SSC Working Group regarding clarifications on AMS. III. Z (SSC_433, SSC_412, SSC_385, SSC_347, SSC_322, SSC_298, and SSC_297) it came to our notice that CDM EB has recommended AMS. III. Z to use for Fal G technology.

However for the application AMS. III. Z for AAC technology, we seek your further clarification on following issues:

Clarification No. 1

Para 1 footnote 1 of Methodology AMS III Z version 03, defines brick as ***"Brick in the context of this methodology includes solid bricks and blocks as well as hollow blocks used in building construction."*** Also Para 1 (b) states that ***"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."***

Usually AAC masonry building units are made in sizes and shapes that fit different construction needs. Masonry building units include blocks, corner, double corner, partition blocks, and concrete floor as well as panels with steel reinforcement. These serve the purpose of load bearing and non load bearing function.

Clarification is required whether all such masonry building units as mentioned in the above paragraph can be considered as "brick" as per the definition in AMS III Z version 03

Clarification No. 2

As per paragraph 6 of the methodology, the abundance of the raw material needs to be demonstrated by using two step processes. Clarification is required on the Approach 1 and 2 given under the step 2.

- *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.*

Clarification is required as to how such a trend can be demonstrated? To our understanding, such a demonstration means:

{(quantum of production of the material in the region – the exports from the region + imports into the region) } is greater than 25% of the consumption in the region.

That is, such surplus over the year is accumulated in the inventory. Such an event is highly unlikely in a production/consumption situation, where information on inventory, production, sales etc is online available to a decision maker on a daily basis.

- *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.*

Clarification is required as to how to demonstrate such an annual trend? To our understanding, the suppliers will adjust their production/imports/exports in the region to the sale on timely basis. Hence, unsold/unutilised material stored in the inventory or disposal of produced material is an unlikely situation.

Clarification No. 3

Under Para 12, methodology insist to include the leakage as below:

"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".

However clarity is required on whether this leakage should include the emission due to production of all raw materials such as cement, lime, gypsum, fly ash and aluminium paste.

Does the word "***production/consumption"*** given in the above Para means both ***production*** and ***consumption*** or is it either of ***production*** or ***consumption*** . For example, in the case of cement the possible leakage emissions are:

Emissions due to production of cement + Emissions due to consumption of cement
OR
Emissions due to consumption of cement only.

Which one will apply?

Does the above Para give provision to exclude the emission due to flyash production and consumption, since it is a waste material?

Clarification No. 4

The clarification is also required as to whether it is necessary to include the emission associated with the production of raw material under leakage, in spite of demonstrating that the availability of raw material is 25 % greater than the demand as per Para 6 of the methodology.

Responses from Stakeholder to additional queries:

(a) How will it be ensured that the requirements of paragraph 7 a) of AMS-III.Z are met - for example, demonstration that the service/performance level of the project bricks to be compared are better than the baseline bricks through comparison of dry compressive strength, wet compressive strength, density, etc?

To prove that the project bricks are not inferior quality compared to baseline brick, we propose to conduct regular (at six month intravel) test for the project brick for dry compressive strength, wet compressive strength and density, as per the procedure set out in the standard IS 2185 (Part 3):1984, from a nationally approved laboratory. This will be then compared with the baseline brick for the same properties tested by using the standard IS 3495 (Part 1):1992. (The copy of both the IS standards are attached for your reference).

In addition to the physical properties you may note the following superiority of AAC over the traditional burnt clay bricks:

1. Due to bigger size of the AAC blocks there are less number of joints in the masonry which saves considerable amount of cement and sand used in consruction

2. Incresed carpet area within the same built up area due to lesser thickness of walling used

3. Due to light weight, dead load on the foundation as well as on supporting structures reduces thereby saving concrete and steel.

4. Excellent heat insulation

5. Increased fire resistivity help to reduce fire hazards

6. Higher sound absorbancy makes it ideal for offices and theaters

7. Uniform and bigger size of blocks enable speedy construction: 3 times faster than traditional masonry

8. Mass manufacture in factory under strict supervision ensures total quality

(b) Which appropriate national standards would you apply/use to identify the strength class of the bricks?

The national standards used for identifying the strength class of project bricks are:

IS 2185 (Part 3) 1984 :Indian Standard; Specification for Concrete Masonry Units (Part 3) Autoclaved Cellular (Aerated) Concrete Blocks

IS 6441(Part 5) 1972 : Indian Standard; Methods of test for autoclaved cellular concrete products: Part 5 Determination of compressive strength

The national standards used for identifying the strength class of baseline bricks are:

IS 1077 : 1992 : Indian Standard; Common burnt clay building bricks - Specification

IS 3495 (Part 1):1992. Indian Standard; Methods of tests of burnt clay building bricks: Part 1 Determination of compressive strength

Recommendation by the SSC WG:

Please use the space below to provide amendments/change (in your expert view, if necessary).

Please refer to paragraph 36 of the meeting report of the SSC WG 30 <http://cdm.unfccc.int/Panels/ssc_wg>.

Answer to authors of query by the SSC WG:

Please use the space below to provide answer to the authors of the above query.

The small-scale working group of the CDM Executive Board would like to thank the author for the submission.

The SSC WG agreed to clarify as follows:

AAC blocks are in principle eligible. A key criteria of the methodology is that the service level of the project product is comparable to or better than the baseline bricks i.e. AAC blocks shall meet or exceed the performance level of the baseline bricks (e.g. dry compressive strength, wet compressive strength, density) as per the paragraph 7 (a) of AMS-III.Z. Furthermore, it should be confirmed that in the project region the most commonly used fuel in brick manufacturing is fossil fuel.

The underlying rationale regarding the requirement on demonstration of the availability abundance of the raw materials is that the alternative raw materials used in the manufacturing of alternative bricks are "waste products". The assessment as per paragraph 6 of the methodology is not intended for industrial products with commercial value used as raw materials or additives. The author is invited to submit a revision of the methodology proposing an alternative approach that needs to address the following issues:

- How the upstream emissions associated with the production of the raw materials will be accounted for;
- What is the approach to assess whether the project activity demand results in increased production trends of the raw materials used or whether other users may shift from the same raw materials to more carbon intensive products resulting in emission due to competing use.

The group further agreed to clarify that:

- The production related emission in cement manufacturing should be included and if its utilization (consumption) generates additional emissions the incremental emissions shall be calculated as leakage. For example production related emission of lime associated with lime kiln and consumption related emission if crusher used on site;
- The cement/lime cannot be considered as a waste material similar to flyash, the production emission related to flyash is not required to be considered since it is a waste material.

The SSC WG further agreed to clarify that if the availability abundance of flyash is not demonstrated as per the procedure of paragraph 6 of AMS-III.Z then the leakage shall be accounted for.

It further agreed to clarify that the raw material used for manufacturing of baseline "bricks" as defined in the methodology is fired clay, therefore no associated emission is expected in production of raw materials except for fossil fuel used in clay burning process. The alternative materials under the project, such as cement and other raw materials require substantial amount of energy for their production, therefore even if the availability of raw material is 25 % greater than the demand, for the industrial products utilized as raw materials, production related emissions need to be considered.
Signed by the Chair, Ms. Fatou Gaye Date: 18/03/2011 Signed by the Vice-Chair, Mr. Peer Stiansen Date: 18/03/2011

Information to be completed by the secretariat	
SSC-Submission number	SSC_518
Date when the form was received at UNFCCC secretariat	18 March 2011
Date of transmission to the EB	18 March 2011
Date of posting in the UNFCCC CDM web site	18 March 2011