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CDM Executive Board

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Response to the Review of project "Body Coal and Clamp Kiln Fuel Switch at Allbrick, South Africa**" (Ref. no. 6461)**

Dear Honourable Members of the CDM Executive Board,

Please find attached the response of TÜV NORD to the review of the above mentioned project No. 6461.

The PP has authorized us to submit their review response in the attached consolidated document. The content of this response remains in the sole responsibility of the PP.

In so far as actions from the PP were to be taken the TÜV NORD response has taken those actions into account.

If you have any questions do not hesitate to contact us.

Yours sincerely,

Rainer Winter
Head TÜV NORD JI/CDM Certification Program

Review Issue # 1	
Original text of the issue raised:	**The DOE is requested to describe how each applicability condition of the methodology/ies is fulfilled by the project activity as per VVM v1.2 paragraph 76.** **The DOE is requested to provide further validation opinion on the applicability of utilization of charcoal produced from renewable biomass as fuel in the proposed project activity in accordance with AMS III Z version 03.** **In doing so, the DOE shall also explain how the project methane emissions (if any) due to the production of charcoal will be accounted in the emission reduction calculation.**

PP´s Response

Promethium attached a table with recommended responses to "how" all the applicability criteria was assessed.

The use of the stockpiled wood waste avoids methane emissions generated during the anaerobic decomposition of the biomass; therefore the overall effect of the methane emissions due to the production of charcoal is not significant.

DOE´s Response

All applicability conditions for the applied methodology AMS III. Z version 03 have now been revised and described in the final validation report section 5.2.1 as follows:-

The methodology AMS III Z is applicable under the following conditions:	**Assessment by the validation team**
1. The methodology comprises shift to an alternative brick production process or partial substitution of fossil fuels with renewable biomass (including solid biomass residues such as sawdust and food industry organic liquid residues) in existing brick production facilities. 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: (a) *Bricks that are the same in the project and baseline cases; or* (b) *Bricks that are different in the project*	The validation team has determined that the bricks are the same type and quality in the project and baseline cases. The bricks are produced using the same raw materials and process. The project proposes only switch from coal to renewable biomass fuel. The validation team carried out onsite inspection of the charcoal retorts, checked the SANS 227:2007 from the South African Bureau of Standards as well as the quality testing results done by a third party/ONSITE//SANS//IM03//PDD/.

case versus the baseline case due to a change(s) in raw materials, …	
2. *The measures may replace, modify or retrofit systems in existing facilities or be installed in a new facility.*	The project fuel switch takes place at an existing brick manufacturer. The fuel switch entails the following process modifications: The technique used in the packing of the clamp kilns is altered based on the research and development work done at Allbrick. Retorts are erected on site for the purpose of producing charcoal. This is evidenced by erected retorts, production data and site visit by the validation team/REF/ONSITE/allbrick/.
3. *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.*	The Allbrick facility has been operational before the start of the project activity. This is evidenced by erected retorts, onsite production data and site visit by the validators. The DOE conducted onsite interviews/IM03/ and reviewed plant and other relevant documents/REF//CBA/EIA/CI/. A formal statement from Allbrick was also received stating that the fuel switch will not change the production capacity/ACL/.
4. 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.	This is evidenced by site visit by the validators to inspect equipment/ONSITE/. Formal statement from Allbrick also received stating the remaining clay reserves and equipment lifetime/ACL//MD/. Due to the nature of the equipment, its lifetime is infinite.
5. *In the case of existing facilities, this category is only applicable if it can be demonstrated, with historical data, that for at least three years prior to the project implementation, only fossil fuel (no renewable biomass) was used in the brick production systems, which are being modified or retrofitted.*	The validation team inspected the cola consumption records/TC/, The environmental management programme and the technical installation to determine that only coal was combusted in the brick manufacturing process. Interview with Allbrick staff was also done/IM03//CBA/. The Registration Certificate concerning Scheduled processes as per the atmospheric pollution prevention Act, 1965 was also inspected.
6. *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:*	The DOE conducted interviews during the validation site visit with a local expert (saw mill owner) in the surrounding area regarding biomass supply/IM06/. Supporting documents was also obtained/SSA/ from the project implementers to indicate the current situation

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. *Step 2: The current supply situation for each type of raw material to be utilized is assessed and their availability abundance is demonstrated using one of the approaches below:* 1. *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.* 2. *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.*	of biomass utilization in the area. The document 'South African Sawmilling Industry' demonstrates that there is between 1,000,000 to 1,500,000 tons of woodwaste available in South Africa for energy production.	
7. This methodology is applicable under the following conditions: (a) *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*	This is evidenced by erected retorts, production data and site visit by the validation team /ONSITE//SANS//PDD//IM03/.	

interval (at a minimum) and test certificates on compressive strength are made available for verification; (b) *The existing facilities involving modification and/or replacement shall not influence the production capacity beyond ±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;* (c) *Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.*	
8. 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.	This was confirmed with supporting documentation that was checked by the validators/EIA/.

According to § 4 of EB 23, Annex 18 (Definition of Renewable Biomass), biomass is renewable if it is sourced from biomass residues that do not result in the decrease in carbon pools. In this project activity, charcoal is produced using wood waste from local sawmills which would be left dumped to undergo natural anaerobic decomposition. Hence, the charcoal produced from this waste is deemed renewable and hence applicable to the project activity and § 1 of the approved and applied methodology.

In line with § 65-67 of the VVM v1.2, the project activity has applied the correct methodology and version as well as correct formulae for emission reduction calculations. AMS III. Z, version 03 is valid till 2013-01-25 (VVM v1.2 § 68). In Paragraph 13 of the methodology, project emissions consist of only ***emissions associated with the use of fossil fuels or electricity consumption or both***. The Project activity has accounted for possible emissions from fossil fuel use as well as electricity from motors as required by both tools and as defined by version 03 of the methodology. Therefore, it is the DOE's opinion that the project conforms to requirements of the methodology version 03.

Review Issue # 2	
Original text of the issue	**The DOE is requested to state if all assumptions/ data/references used in the PDD for emission reduction calculations are in line with the methodology as per VVM v1.2 paragraph 92(a).**

raised:	**The DOE is requested to provide validation opinion on the parameters used in the ex-ante calculation of baseline and project emission such as the annual net production of the facility in year y (PPJ,y), quantity of fuel type i combusted in the process j during the year y (FCi,j,y) and quantity of electricity consumed by the project electricity consumption source j in year y (ECPJ,j,y) in accordance with para 91 of VVM version 1.2.**

PP´s Response

All the assumptions, data used, and references were checked to be in line with the methodology as per VVM v1.2 paragraph 92(a)

DOE´s Response

The DOE hereby confirms that all assumptions/ data/references used in the emission reduction calculations have been determined conservatively using the stipulations of the applied methodology, as follows:-

$P_{PJ,y}$:

This is the estimated annual net production (in Kg) of the facility as monitored daily and consolidated into monthly production data. The average amount between April 2006 and March 2009 was used after positive test results and a definitive decision was taken (2009-02-26) to pursue the CDM project. The validation team assessed the baseline production records recorded and stored at Allbrick over the same period (2006-2009) during the onsite visit and determined its consistency and correctness of the values/CBP//XLS/.

$FC_{BL,i,j}$:

The figure of 6,562 tons was computed using data of the three-year average coal consumption in brick production by the Allbrick facility/CBP//XLS/. The records have been checked and calculations verified by the DOE in accordance with the VVM v1.2 and methodology requirements. Nevertheless, actual values are to be determined during monitoring.

$NCV_{,j}$:

The NCV value of 0.0258 TJ/t was derived from 2006 IPCC values for bituminous coal. This is justified as bituminous coal has similar characteristics of coal predominat in South Africa, which includes the coal used in the facility as demonstrated by lab reports compared with IPCC guidelines/LR/.and the South African Quality Reference/QR/. Hence, PP has applied the IPCC values which were cross-checked for correctness and accepted by the validation team/ipcc/.

$EF_{CO2,j}$:

The emission factor for the baseline coal 94.6 tCO2/TJ was also derived from 2006 IPCC

values for bituminous coal. This is justified as bituminous coal has similar characteristics of the coal used in the facility[/LR//QR/].Hence, , his is deemed correct as the applied value was cross-checked for correctness and accepted by the validation team[/ipcc/].

$P_{H,y}$:

The average annual historical baseline brick production was computed from plant records (April 2000-March 2009)[/CBP/] which are monitored daily and consolidated monthly. The records were verified during onsite visit and interview was carried out on the site[/IM03/]. This is in line with the applied methodology and VVM v1.2

$EC_{PJ,j,y}$:

The average quantity of electricity used is a monitored parameter and baseline consumption was estimated based on the three-year historical data preceding April 2009. The calculation are based on maximum operational hours (8,760/year) and hence conservative. This information was cross-checked during onsite visit and deemed conservative in the context of the project activity.

$EF_{EL,j,y}$:

The emission factor for the south African grid[/GEF/]was calculated using data from Eskom[/eskom/] by applying the *Tool to calculate the emission factor for an electricity system (v2.2.1).* The data used is in the public domain. Hence, the data used for FE_{EL} and calculations therewith were assessed as correct and transparent.

$TDL_{,j,y}$:

Average technical transmission and distribution losses for providing electricity in year is used when determining PEy. This value of 0.067 was sourced from Eskom[/eskom/], the main electricity utility in South Africa and no other public sources available. Eskom supplies 95% of electricity in South Africa and therefore a reliable source. This was cross-checked for the time of investment decision by the validation team and found to be correct.

I conclusion, emission reduction estimations were deemed correct, conservative and compliant with the methodology and tools.

CAR B3 and CL B4 were raised and successfully closed. The same is now included in the final validation report section 5.2.4

All ex-ante parameters were verified; assumptions were found to be appropriate and calculations correct and applicable as per AMS III. Z version 03 and tools.
As explained above, the annual net production of the facility in year y (PPJ,y), quantity of fuel type

i combusted in the process j during the year y (FCi,j,y) and quantity of electricity consumed by the project electricity consumption source j in year y (ECPJ,j,y) are all based on three-year historical data from the existing process and was checked by the DOE during the validation site visit and supported by documentation received from Allbrick. Where actual usage data was not available conservative assumptions were made and correct calculations done. The values and calculations will result in conservative estimates of emission reductions.

Review Issue # 3	
Original text of the issue raised:	**The DOE is requested to state whether the data and parameters are conservative and appropriate if they are fixed ex-ante (not need to monitor) during the project activity crediting period as per VVM v1.2 paragraph 91.** **a). The DOE is requested to provide validation opinion on the parameter, EFBL (the annual production specific emission factor for year y, in t CO2 / kg or m3) which has been calculated to be 0.000220 t CO2/kg as mentioned in the PDD and ER calculation spreadsheet. In doing so, the DOE shall validate all assumptions/parameters used to calculate EFBL such as average annual baseline coal consumption in body coal and clamp kilns (FCBL,prod,coal), average net calorific value of coal combusted (NCVcoal), CO2 emission factor of coal combusted (EFCO2,coal), average annual historical baseline brick production (PHy) in accordance with para 91 of VVM version 1.2.** **b). The DOE is requested to validate the emission factor for the South African national grid in accordance with the 'Tool to calculate the emission factor of an electrical system (Version 2.2)'. In particular, please explain how it was validated that the EFgrid, OMy and EFgrid, BMy are based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.**
PP´s Response	
a) All the parameters were verified; assumptions were found to be appropriate and calculations correct and applicable. Emission reduction calculations will result in conservative estimates. FCBL,prod,coal is based on historic usage at the site and are conservative and appropriate. For the NCVcoal and EFCO2, coal the IPCC default values for other bituminous coal was used. This was deemed conservative and appropriate as the decision made was based on lab reports for the actual coal compared to the IPCC guidelines, and the predominance of bituminous coal in South Africa. The PHy was based on historical production figures from the Allbrick site and were checked during the validation site visit and supporting documentation provided. It was found to be correct and appropriate. b) All the references were checked at the time that the project was uploaded for GSC. The website of Eskom (the electricity utility in South Africa) contains all the latest available data	

on power generation and is updated on an annual basis. There are no other publications in the public domain that contain the information required for the calculation of the GEF.

DOE´s Response

a) Ex-ante data used in the estimation of emission reductions were derived from the historical plant records as dictated by the applied methodolology. The DOE has established the correctness and integrity of the data, and cross-checked that calculations are both correct and conservative using average values and the correct sources, as required by §91 of the VVM v1.2.

a) By reference to the publicly available data in the Eskom website[/eskom/], the validation team checked the timing and correctness of the data used. the Simple Operating Margin is calculated based on the three years generation weighted average (04/2005 to 03/2008) whereas the Build Margin is calculated in line with steps underlined in the "Tool to calculate the emission factor for an electricity system", (version 02.2.1). Out of other 3 options for calculating OM, PP has correctly selected simple OM emission factor calculation as the share of low cost / must run resources of the selected grid over the five prior most recent years constituted less than 50% of the gross grid generation[/ESKOM/]. The values for both, Simple Operating Margin and Build Margin, are selected under an ex-ante approach. The grid boundary w.r.t. the connected grid is the South African National Grid. All the data sources from Eskom as well as calculations as included in the GEF calculation worksheet[/GEF/] are now submitted with the project documents.

In accordance with the "Tool to calculate the emission factor for an electricity system", version 02. weight factors of OM i.e. w_{OM} = 0.5 and BM i.e. w_{BM} = 0.5 have been correctly used. The resultant grid emission factor ($EF_{GRID,CM}$) for the South African National Grid therefore works out to be 1.02 tCO_2/MWh. The validation team is confirms the correctness of data and equations, and transparency of the same[/GEF/].

Review Issue # 4	
Original text of the issue raised:	**The DOE is requested to describe the steps undertaken to assess if the monitoring arrangements are feasible to be implemented within the project design as per VVM v1.2 paragraph 124(b).** **The DOE is requested to validate all parameters listed in section B.7.1 of the PDD in accordance with applied methodology, AMS III Z version 03 and paragraph 123 (a) of VVM version 1.2.**
PP´s Response	

The correct parameters were identified for the project activity and all the parameters are clearly defined according to the applicable methodology.

DOE´s Response

The monitoring parameters outlined in section B.7.1 of the final PDD have been determined as per the requirements of AMS III.Z version 03, and tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 01). Also, the General guidance on leakage in biomass project activities (version 03) was also checked in the investigation of possible leakage. Through the review of the project design documents and onsite visit, the validation team determined that all necessary parameters to be monitored for emission reductions have been accounted for as listed in Section B.7.1 of the PDD.

Required parameters as per methodology and tool used: $P_{PJ,y}$, $FC_{BL,prod,coal}$, $NCV_{coal,y}$, $EF_{CO2,coal,y}$, P_{Hy}, $FC_{BL,prod,LPG}$, $NCV_{LPG,y}$, $EF_{CO2,LPG,y}$, $EC_{PJ,grid,y}$, $TDL_{grid,y}$, and weight of bricks

No parameter has been omitted. Hence, the monitoring arrangements outlined in section B.7.1 and in the monitoring plan clearly described and are feasible within the project design.

The same is now included in Section 5.2.7 of the Validation Report