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| | IS-CMS-MUC/Mu<br>Javier Castro | +49 89 5791-2686<br>javier.castro@tuev-sued.de | +49 89 5791-2756 | 2008-11-19 | 1 of 6 |

**Response to Request for Review**

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project (1891): Animal Manure Management System (AMMS) GHG Mitigation Project , Shandong Minhe Livestock Co. Ltd., Penglai, Shandong Province, P.R. of China.
http://cdm.unfccc.int/Projects/DB/TUEV-SUED1214574673.61/history

In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

Javier Castro
Carbon Management Service

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## Response to the CDM Executive Board

**Question 1:**

The PP/DOE shall clarify:

a) the action taken in 24 November 2006, project start date, refering to the 'CDM Glossary' and b) the prior consideration of the CDM as per EB 41, Annex 46 guidance.

DOE Response:

This starting date was revised in order to arrive at full consistency with the definitions of the CDM glossary, which is "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins".
The starting day has been changed to the actual day of construction start, which is 17 July 2007. This is underlined by the documented evidence on the contracting of the construction company one day prior to this date.

The DOE underlines that the change of dates, from the planned date of construction after receipt of permits to the actual construction start date as available by the end of the audit process, does not impact the aspect of early CDM consideration. In any case the project start occurred after the initiation of the audit process (contracts, GSP, onsite visit). The latter underlines CDM consideration. Furthermore CDM consideration is demonstrated through documents such as the Letter of Intent on the purchase of CERs by the Worldbank signed on October 17, 2006. Correspnding evidence was received and reviewed by the audit team.
Thus, compliance with the requirements of CDM consideration prior the start of the project activity as defined by EB 41, Annex 46 is assured.

PP Response:
The timeline for the PP to take investment decision and prior consideration of the CDM is as follows and supported by document evidence as separate annex.

| Timeline | Activity | Evidence |
|---|---|---|
| October 17, 2006 | The PE and the Community Development Carbon Fund that the World Bank act as trustee and the PE signed Letter of Intent to seek CDM support | Appendix 1: Letter of Intent |
| Nov 24, 2006 | The PE obtained domestic approval of Environmental Impact Assessment | Appendix 2: EIA approval |
| March 22, 2007 | China DNA signed Letter of Approval | Appendix LOA |
| July 16, 2007 | The PE signed construction contract with Hangzhou Environment and Energy Company to start civil work construction | Appendix 3: Construction contract |
| November 2007 | The PE signed generator supply contract with GE | Appendix 4: Generator supply contract |

The original PDD established the Nov 24 2006 as the starting date because it can only start material preparation work after obtaining domestic approval. However, the PDD revised the project starting date to be July 17, 2007 as the project starting date in order to be in compliance with the "CDM Glossary".

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**Question 2:**
The DOE shall justify how it has validated the calculation of the annual average nitrogen per head, NEXsite. In doing so, the leakage calculation should also be adjusted.

DOE Response:

In regard to the calculation of NEXsite in the validation context (ex-ante estimates), the calculation was based on the data described below. Compare also Clarification Request 27 of the Validation Protocol.

- N pop. (number of animals per livestock category broilers and layers), were confirmed with local Livestock census data in the farm as descriebed in the validation report and attached checklists.
- NEXrate (default N excretion rate) was adequately chosen based on IPCC defaults (compare validation report and PP response below). As the characteristics of the Livestock are similar to the conditions found in developed countries, the use of the defaults is considered adequate (compare Reference List of validation report).
- TAM (average animal mass) defaults were applied in consistency with IPCC defaults (IPCC 2006 Guidelines, chapter 10), that are applicable due to the same reasons as indicated in the item above.
- NEX t (annual N excretion for livestock category) was calculated in line with corresponding IPCC equations.
- VS (Volatile Solids) was applied based on the IPCC defaults (Option 4 of ACM0010),without scaling due to weight as the conditions for the use of this options were demonstrated to be complied with.
  - Genetic Source (see Reference List),
  - FFR applied and validated FFR (the project host operates an own feedplant wich was visited and FFR applied were reviewed, see Reference List ),
  - Animal weights more similar to developed country defaults (base on sample of weights, compiled in Appendix 5 of PP response).
- Rn (Reduction Factor for VS), a conservative default of 40% was used as per Annex of 1 of the methodology.
- EF= In regard all remaining Emission Factors (EF1 / for direct emssions of N2O from soils; EF5 = for indirect emssions of N2O from soils; EF 4 / for atmospheric deposition) to be applied as per Leakage formula, applicable IPCC defaults were used in the calculations.

In regard to the scaling of the $NEX_{site}$ with site specific LT weight it is underlined that the current approch of non-scaling of this parameter for the ex-ante emission reductions estimates is more conservative. The calculations presented by the PP below confirm this.

It is underlined that for monitoring the parameter $W_{site}$ was included specificly for the purpose to allow in the course of project implementation the scaling of corresponding defaults according to weight.

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PP Response:

Bird's growth is a dynamic process. In this context, the broiler's and layer's weight has to be an averaged result of weight at starting and ending of the production cycle, as well as a weighted average of different groups . Calculation results show that the broiler has an averaged weight of 0.9 kg, close to the defaults values in Table 10A-9 of IPCC 2006 Guidelines. So no further adjustment is needed. The layer population has an averaged weight of 2.4 kg, while IPCC 2006 Guideline has a default as 1.8 kg in Table 10A-9 (see the averaged weight in Table of Weight Calculation in the attached appendix 5).

According to ACM0010 Version 2 , VS has to be adjusted as well, if NEXsite was corrected with the site average weight. Calculation results show that under the condition that both NEXsite and VS are adjusted, the final emission reduction will be higher even than the emission reduction that was unadjusted and was calculated based on IPCC default value. Please find the results of baseline, project, and leakage emissions adjusted to the site average weight in the following Table.

The weight of a bird in an actual production process may not necessarily agree with the currently assumed weight. Furthermore, the layer chicken account for only 15% of the animal population. The Project Proponent and the DOE suggest not to adjust $NEX_{site}$ according to weight scaling in order to be conservative. However, B7.2 of the PDD already defined that $W_{site}$ will be monitored ex-post, i.e. *0.2% of broiler and layers (about 10,000) will be weighed weekly to obtain average site weight. Archive electronically during project plus 5 years.(Page 52).*

In conclusion, for the sake of conservative calculation of emission reduction, the revised PDD only include modified formula of VS and NEX with site weight correction without modifying the expected emission reduction. In addition, the monitoring plan has a task to monitor the bird's weight ( see B7.1 and B7.2), the certified emission reduction will be calculated based on the modified VS and NEX with monitored site weight correction.

The PP would be happy to do so, if EB requests the recalculation of the emission reduction adjusted to the site average weight. Please see modified PDD with the modified emission reduction adjusted to site average weight. In revised PDD, Both VS and NEX calculations are made with a readjusted weight, VS is calculated using formula 2 in ACM0010 VERSION 2, and NEX is calculated using formula 2 in Appendix II of ACM0010 VERSION 2 (see Appendix 6 the modified PDD after adjusting ER according to site average weight and Appendix 7: Minhe ER Calculation with site weight adjustment).

The following tables summarize the step-by-step calculation of Emission Reduction with site weight scaling.

Table B8' Baseline GHG emissions by source in $CO_2$ equivalents with site weight scaling

| Baseline GHG emissions ( t $CO_2e$ ) | | | |
|---|---|---|---|
| $CH_4$ | $N_2O$ | $CO_2$ | Total |
| | | | |

| | | | |
|---|---|---|---|
| 66,523 | 3,457 | 16,762 | 86,742 |

Table B9' Project activity emissions with site weight scaling

| GHG emission from project activities ( t $CO_2e$ ) | | | |
|---|---|---|---|
| $CH_4$ | $N_2O$ | $CO_2$ | Total |
| 6,378 | 3,630 | 1,041 | 11,049 |

Table B10' Leakage emissions with site weight scaling

| Leakage ( t $CO_2e$ ) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Baseline | | | Project Activity | | | Change | | |
| $CH_4$ | $N_2O$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2$ | $CH_4$ | $N_2O$ | $CO_2$ |
| 30,330 | 5,185 | 0 | 30,321 | 9,420 | 0 | 0 | 4,235 | 0 |

Table B11' Total project activity emission reductions with site weight scaling

| Sources GHG emission ( t $CO_2e$ ) | | | |
|---|---|---|---|
| Baseline emissions | Project activity emissions | Estimate of leakage | Emission reduction |
| 86,742 | 11,049 | 4,235 | **71,458** |

**Question 3:**

The DOE should confirm if there are not other fuels to generate power.

DOE Response:
As far as this confirmation is possible at the typical design stage of a CDM focussed on in validation, the DOE has confirmed that the project will not use any other fuels.
The technical design of the generators to be applied (Jenbacher biogas engines) is specific for biogas.

Among others in order to ensure full tracebility on the fuels used in this proejct, farm sites that would have included the transport of biogas were excluded during the validation process. One reason for this was that gas input is more reliablly controlled in a closed system.
The confirmation that the there is no actual option to use other fuels rests with verification.

PP Response:
The Generator Supply contract (Appendix 4) specified that the Jenbacher engine is designed only to burn cleansed biogas. The generator is not possible to mix other fossil fuel. In addition, DOE validated that there is no other pipe that will be connected to the generator. This is also to be monitored and verified ex-post in verification process.