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Att: CDM Executive Board

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Response to request for review of project activity 3183 "Xinjiang Midong Tianshan Cement Co.Ltd's 1600td Utilization Calcium Carbide for Cement Clinker Project"

Dear Members of the CDM Executive Board,

We refer to the issues raised in the requests for review by three Board members regarding project activity 3183 "Xinjiang Midong Tianshan Cement Co.Ltd's 1600td Utilization Calcium Carbide for Cement Clinker Project" and would like to provide the following responses.

Issue 1: The DOE needs to further explain how the input values to the investment analysis for the project activity are suitable in line with the VVM paragraph 109 in particular: (a) the CCR price, as the CCR supplier is transporting and disposing of the CCR to the landfill in the baseline; (b) higher repair cost compared to the baseline scenario; (c) higher 'other manufacture expenditure' and higher 'other management expenditure' compared to the baseline scenario. Furthermore, what expenses are covered under such expenditures; (d) higher coal and electricity consumption compared to the baseline scenario; and (e) more employees compared to the baseline scenario.

DNV Response:

The basis for the project developer (Xinjiang Midong Tianshan Cement Co., Ltd) to make the decision to proceed with the investment in the project was the Project Application Report (PAR)[1], and DNV has confirmed that the finalization of the PAR on 13 February 2007 is only two months prior to the decision to proceed with the project activity on 2 April 2007[2]. Furthermore the PAR was later approved by Economic and Trade Commission of Xinjiang Uygur Autonomous Region on 27 April 2007. Based on the current procedure related to application and approval of projects, the opinion of the validation team is that it is unlikely in the context of the proposed project activity that the input values would have materially changed within this short time period.

Moreover, DNV verified that the input values used in the PDD and associated annexes for the financial analysis are fully consistent with the PAR, and there are no inconsistencies between the input values of PDD and those of the PAR. This means that the proposed project activity is aligned with the guidance of paragraph 111 (a) and (b) of VVM version 1.1.

[1] Xinjiang Building Materials Designing Institute: PAR (Project Application Report) completed in 13 February 2007 and PAR approved by Economic and Trade Commission of Xinjiang Uygur Autonomous Region on 27 April 2007

[2] Main equipment purchase contract between Xinjiang Tianshan Cement Co. Ltd. and Sichuan mining Machine Co. Ltd.on 2 April 2007

The guidance from paragraph 109 (a) to (d) of VVM version 1.1 states as follows:

(a) Conduct a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices;

(b) Cross-check the parameters against third-party or publicly available sources, such as invoices or price indices;

(c) Review feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants;

(d) Assess the correctness of computations carried out and documented by the project participants;"

Using its expertise and the experience of the local auditors, DNV confirms in the following that the input parameters (CCR price, repair cost, other manufacture expenditure, other management expenditure, coal and electricity consumption and the number of employees) used in the financial analysis are reasonable and adequately represent the economic situation of the project at the time of the final investment decision:

(a) <u>The CCR price, as the CCR supplier is transporting and disposing of the CCR to the landfill in the baseline</u>

Without the proposed project activity, the calcium carbide residue (CCR) manufactured from the existing PVC plant owned by Zhongtai Chemical Limited would be considered a waste product. The purpose of the project activity is to utilize the previously land filled CCR. Nevertheless, this utilization will incur both additional costs and cost savings for the supplier (Zhongtai Chemical Limited). While ZCL will save on transportation and labour for the land filling of CCR, they will experience higher costs for pretreatment and transportation of the CCR to the site of the proposed project. Before transporting the wet fluid CCR at 37 % water content by way of conveyor belt, the CCR by-product of the PVC process, which has a 80%~90% water content, needs to be filter pressed. This is explicitly stated in the PAR.

The owner of the proposed CDM project has to compensate Zhongtai Chemical Limited for their costs related to CCR. The CCR price assumed in the PAR was 12.601 RMB/t CCR. In the validation report submitted when requesting registration (version 01 of 7 December 2009), a clarification request CL4 was raised for the assumption of this price of CCR. It was verified by DNV that the cost for CCR was composed of the incremental portion for the investment (dehydration process) and operation cost, after deduction of savings on the transportation and disposal in the baseline scenario.

The assumptions for evaluating the cost for this process was done by an accredited PAR developer and was verified to be based on local standards and norms concerning the cement sector and was valid and applicable at the time of the investment decision taken by the project participant.

The main parameters assumed for calculation of the CCR price are shown in table 1 and detailed calculation is indicated in table 2. The assumed price was further checked against the real price in the supply contract[3], which was 15 RMB/ton CCR.

DNV is therefore of the opinion that the assumed CCR price in the PAR is conservative.

[3] CCR supply contract signed between Zhongtai Chemical Co. Ltd. (CCR supplier) and the project owner, of 8 April 2007

Table 1 Main parameters for calculation of CCR price[4]

Serial No.	Item	Cost and revenue (RMB)
1	plate-frame pressure filtration	30 million
2	Labour expenditure	2.52 million/year
3	Electricity cost	4.77 million/year
4	Repair and maintenance rate	1.05 million/year (3,5% of the fixed asset investment of 30 million)
5	saving from CCR disposing	6.71 million/year
Total		

[4] Xinjiang Building Materials Designing Institute: Further explanation for the proposed project, of June 2010

Table 2 CCR Price Calculation

series	item	Construction	operation period																		
		year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10	year 11	year 12	year 13	year 14	year 15	year 16	year 17	year 18	year 19	year 20
	CCR		430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000	430000
1.1	Total Revenue	0	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000	6708000
1.2	Fixed asset residue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,500,000
1.3	CCR cost		5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381	5,433,381
1	Cash flow in	0	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	12,141,381	13,641,381
2.1	Constructive investment	30,000,000		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2	repair and maintenance		1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000	1,050,000
2.3	employment expenditure		2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000	2,520,000
2.4	electricity expenditure		4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850	4,770,850
2	Cash flow out	30,000,000	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850	8,340,850
3	Net cash flow	-30,000,000	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	3,800,531	5,300,531

(b) Higher repair cost compared to the baseline scenario

The repair cost was assumed in the PAR for the proposed project to be 3 million RMB per year, 2.36% of the fixed assets investment (127 million RMB); while the repair cost was assumed in the PAR for the baseline is 2.7 million RMB per year, 2.66% of the fixed assets investment (101 million RMB).

It is confirmed that the repair and maintenance cost, which normally is set to 3-5% of fixed assets investment[5] can be taken into account when preparing the financial analysis, so for the higher of the repair and maintenance cost of the proposed project, versus that of the baseline, it can be reasonably attributed to the additional investment of 27 million RMB[6], incurred from the belt conveyor and pump, etc.

In the real situation, DNV verified that the proposed project experienced a 7.1% increase from the assumed maintenance cost according to Audited Acceptance Report for the proposed project[7].

(c) Higher 'other manufacture expenditure' and higher 'other management expenditure' compared to the baseline scenario;

Other manufacture expenditure

According to the "Economic Evaluation Methods and Parameters of Construction Project"[8], other manufacture expenditure in the financial analysis involves additional production expenses, administrative expenses and operating expenses. It is the product of the rate taken, which should be <5%, and the fixed assets investment. The Other manufacture expenditure rate is 3.94% of the fixed assets for both the proposed project and baseline scenario, the higher 'other manufacture expenditure' can therefore be attributed to the higher fixed assets investment of the former.
DNV finds that the 'other manufacture expenditure' has been analyzed consistently for the project and the baseline scenarios.

Other management expenditure

The 'other management expenditure' is associated with the management and organization of an entity's production and operation activities. It mainly includes management overhead cost, technology fee, company fee, welfare cost, social service and public welfare expenditure, entertainment fee, insurance of employees, board expenditure, education fee, labor union cost, contingency allowance for bad debt, auditing fee etc. The comparison for the proposed project and baseline scenario is illustrated in table 3.

[5] Chen Bo Cai, Financial Evaluation and Difficult Question Analysis for FSR Research and Bank Loan Project, June 2007
[6] Xinjiang Building Materials Designing Institute: PAR (Project Application Report) completed in 13 February 2007 and PAR approved by Economic and Trade Commission of Xinjiang Uygur Autonomous Region on 27 April 2007
[7] Xinjiang Tianshan Cement CO., Ltd.: Audited Acceptance Report for the proposed project, of 28 July 2009
[8] China Ministry of Construction: Economic Evaluation Method and Parameters for Project Construction, version 3.

Table 3 Comparison of Other Management Cost Ratio

	Employee expenditure(RMB/yr)	Other management cost (RMB/yr)	Other management cost ratio
Proposed project	2 700 000	5 000 000	1.85
Baseline Scenario	2 250 000	4 000 000	1.78

The employee expenditure of the proposed project is higher than that of the baseline scenario. This can be reasonably attributed to more employees (please see answer to (e) below). The other management cost ratio of the proposed project is 1.85 which is a little bit higher than the baseline scenario of 1.78. The reason for this is due to adoption of the new technology and treatment of poisonous CCR.

(d) Higher coal and electricity consumption compared to the baseline scenario;

CCR, mainly $Ca(OH)_2$, does not need the energy consumed for decomposing of $CaCO_3$, nevertheless energy is needed to heat up the CCR in order to reduce the water content of the raw CCR to around 1.5%. Therefore more coal will be used in the proposed project than in the baseline[9].

The higher consumption of the electricity for proposed project than the baseline scenario is due to additional facilities installed for the proposed project, such as belt conveyor and pumps to transport CCR from the PVC plant nearby[10].

(e) More employees compared to the baseline scenario.

The higher number of employees in the project can be explained by the fact that in order to operate and maintain the extra equipments and facilities, including the dryer crusher, dry power silo and belt conveyor and pumps for using CCR, the proposed project needs more staff than the baseline scenario. This assumption was confirmed in the PAR[11].

Issue 2: The DOE shall explain how it has considered the application of the baseline methodology is appropriate, as the approach to determine the relevant baseline emission factors (except the non-carbonate CaO and MgO content) have not been specified for the Greenfield projects, and the Methodology Panel (at its 40th meeting, AM_CLA_0084) did not consider the methodology is applicable to greenfield project, which is further reconciled by the Board at its 53rd meeting.

DNV Response:
The CDM is a rules-based mechanism as stated clearly in paragraph 29 of VVM version 1.1 and also realizing the evolving nature of the CDM, the applicability of methodology will be limited within certain chronological and defined circumstances. DOE should ensure each project activity meets all applicable CDM requirements.

During the validation process of the proposed project activity, DNV firstly considered applicability of the methodology ACM0015 version 1 “Consolidated baseline methodology for project activities using alternative raw materials that do not contain carbonates for clinker manufacturing in cement kilns” to the project activity and secondly the validity of the

[9] Xinjiang Building Materials Designing Institute: PAR (Project Application Report) completed in 13 February 2007 and PAR approved by Economic and Trade Commission of Xinjiang Uygur Autonomous Region on 27 April 2007
[10] Same as footnote 9
[11] Same as footnote 9

methodology. For the purpose of illustration, the time sequence of the validation process is presented before the applicability of the methodology to the proposed project activity.

Time sequence of the validation process, versus the history of the methodology:

The following table gives the full view of the validation process, the history of the methodology ACM0015 version 1, and the relevant clarification AM_CLA_0084:

Item	Chronological sequence				
ACM0015 version 1	Initial adoption: 30 November 2007				Expiry date: 7 December 2009
ACM0015 version 2			Initial adoption:8 April 2009		
AM_CLA_0084				40th meeting: September 2009	
Proposed project		GSP date: 24 February 2009			Request for registration: 7 December 2009

From the above table, we can conclude that the validation process of the proposed project activity was fully in compliance with the validity of the applied methodology ACM 0015, version 1. Furthermore, as shown below, DNV found that the conclusion of the Methodology Panel at its 40th meeting, of September 2009 had no effective immediate influence on the applicability of the methodology ACM0015, version 1 of the proposed project.

The applicability of the methodology was considered by DNV during the validation process, as follows:
The proposed project is a greenfield project activity using 100% calcium carbide residue (CCR) to substitute traditional raw mix (limestone and clay), as reflected in the title of ACM0015 version 1 "Consolidated baseline and monitoring methodology for project activities using alternative raw materials that do not contain carbonates for clinker manufacturing in cement kilns.

Among the applicability criteria of ACM 0015 version 1 were the following points:

- The methodology is applicable to existing as well as to greenfield plants;
- There is sufficient historical information about the clinker manufacturing facility, the raw materials used, and energy performance of the kiln.

The concern of the Meth Panel at its 43rd meeting was: *"The main problem faced by the panel concerns the access to reliable and publicly available databases containing operational parameters related to cement plants that could be used to derive benchmark emission factors required for the application of the methodology to greenfield plants."* For the proposed project, the concern from this meth panel meeting was found not to be relevant; taking account of the particular circumstances of the proposed project activity. That is to say, sufficient and accurate historical information on *e.g.* the raw materials used, and energy performance of the kiln, about the clinker manufacturing facility of the baseline scenario, could actually be identified as required by the methodology ACM 0015 version 1.

After the baseline screen, the following scenario was identified as the baseline:
2000t/d clinker line of Xinjiang Tianshan Cement Co. Ltd has been used as a proxy for the baseline scenario since as required by the methodology, this plant has the "lowest CO_2 emission in the region", namely the Wuchang Region which has a radius of 200 km around the project activity and includes 14 cement plants. This scenario can currently represent *"the continuation of the current practice, i.e. a scenario in which the company continues cement production using the existing technology, fuel materials and raw materials. In case of Greenfield projects, a scenario*

where the company uses raw materials from carbonated sources." as stipulated at page 6 in the methodology ACM0015 version 1.

As the 2000t/d clinker line of Xinjiang Tianshan Cement Co. Ltd, has the same owner as the proposed project activity, the information concerning "the raw materials used, and energy performance of the kiln about the clinker manufacturing facility" of the baseline scenario was available at the time of the onsite visit by a validator from DNV. The information concerning accuracy will be further explained under the question 3 of this response (see below).

Issue 3: The DOE needs to further explain how the requirement of Option 1 to determine the sample of the non-carbonate CaO and MgO in the baseline scenario based on 12 months data has been met, as it was determined based on 11 months data only. Moreover, the DOE needs to further explain how the requirement of the sampling to be statistically significant with a maximum uncertainty range of 20% at a 95% confidence level has been met.

DNV Response:
During the onsite visit on 30 March to 1 April 2009, the production log record, of 2007, for the baseline plant (2000t/d clinker line of Xinjiang Tianshan Cement Co. Ltd), which yield the lowest baseline emissions [12] in the region, using similar input/raw materials, and facing similar economic, market and technical circumstances, was reviewed and it was found that the production of January was particularly low (less than 10,000 tonnes) when compared with those of other months of the same year (normally around 100,000 tonnes). In consideration of the representativeness of the data processing, the validator on site requested the consultant to use 11 months' data to extrapolate the 12 months' data.

Actually if the supplementary raw materials, used as silica (SiO_2), alumina (Al_2O_3), and iron oxide (Fe_2O_3) sources in the raw materials, are from the consistent source with relative same composition, the above mentioned extrapolation is acceptable as the other months can represent the one with abnormal production. Nevertheless PP realised that such omission of one month can not save any effort as the sampling of the non-carbonate CaO and MgO in the baseline scenario was still under normal lab process. The calculation was recalculated based on 12 months' data instead of original 11 months'[13].

It was witnessed during the site visit, from 30 March to 1 April 2009:

a) The laboratory within the 2000t/d clinker line of Xinjiang Tianshan Cement Co. Ltd was an entity with all necessary facilities and competence to perform the analysis for raw material.
b) Sampling and preparation of samples: Based on GB 12573 (Cement sampling method), each sample, not less than 12 kg, was taken from the production line continuously by an automatic sampler in a certain period of time and was fully homogenized after passing a 0.9mm square-bored sieve. The sample was reduced to 100g by quartering method and sieved by a 80μm square-bored sieve. Metal iron in the material on the sieve was magnetized off by a magnet. All the material above the sieve was grinded and passed the 80 μ m square-bored sieve. The sieved sample was fully homogenized and filled in a bottle and sealed. The prepared sample for test is homogeneous and representative.

[12] Xinjiang Building Materials Designing Institute,clarification of all 14 cement production plants (including the highest performance pre_calcining 2000 t/day cement production line of Xinjiang Tianshan Cement Co. Ltd.) completely using CaCO3 as CaO sources in Xin Jiang Wuchang area, dated 12 March 2008.
[13] Xinjiang Tianshan Cement Co. Ltd., Recalculation spreadsheet for the 12 month analysis data, of 30 June 2010

c) Random errors due to sampling size as stated in guideline[14] by EB meeting 50 Annex 30, can be addressed as the laboratory records 30 to 720 samples as required by the national guidance to assure that the monthly average data used to calculate the ER is a normal distribution[15], and thus will not systematically underestimate or overestimate the mean value determined.
d) Major procedures for the determination of non-carbonate CaO and MgO in the baseline scenario are in compliance with *Chemical Analysis Method in Cement Plant (*GB/T176-1996), using the standard sample[16].
e) The record[17] of raw data from the log for the analysis of samples of raw mix of 2000t/d clinker line of Xinjiang Tianshan Cement Co. Ltd was reviewed, and DNV is of the opinion that data of the aggregation spreadsheet attached comes from those records of raw data and the calculation is correct in the opinion of standard deviation method for normal probability density function (PDF)[18].

By the statistics analysis, depending on the data tested from January to December 2007, the average of CaO is 0.6831%, the standard deviation is 0.12%, and the random uncertainty ranges from 0.61% to 0.76% at a confidence of 95%; the average of MgO is 0.4208%, the standard deviation is 0.07%, and the random uncertainty ranges from 0.38% to 0.46% at a confidence level of 95%; those results show there is no significant deviation during the claimed time, while the quality of production keeps stable, the laboratory always follows strictly the process of the National Standards.
The details of measuring data and calculation can be seen in the enclosed spreadsheet.

We sincerely hope that the Board find our elaboration on the above satisfactory.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS

Michael Lehmann
Director for Services and Technologies
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[14] EB 50 Annex 30, General guidelines for sampling and surveys for small scale CDM project activities version 01, http://cdm.unfccc.int/EB/050/eb50_repan30.pdf
[15] When sample number > 30, the sample distribution is regarded to be normal distribution.
[16] GSB 08-1353-2006, Reference material for component analysis of cement raw meal
[17] Record data for chemical analysis for raw meal for the period of January to December 2007
[18] When sample number > 30, the sample distribution is regarded to be normal distribution