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	IS-CMS-MUC/RZ Rachel Zhang	+49 89 5791-3038 rachel.zhang@tuev-sued.de	+49 89 5791-2756	2009-01-05	1 of 7

Request for Review

Dear Sirs,

Please find below the response to the review formulated for the CDM project with the registration number 2192. In case you have any further inquiries please let us know how we can kindly assist you.

Yours sincerely,

Rachel Zhang
Carbon Management Service

Annexes:
Annex 1: Information reference list

Enclosure:
Enclosure 1: Financial report as of December 2008

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Response to the CDM Executive Board

Request 1:

How the DOE has validated the source of benchmark as the DOE has previously validated the benchmark from the same source as 10%.

Response by DOE:

The applied benchmark for the proposed project is 8% which is referred to the benchmark as specified in chapter 13.1.2.3 of the approved Feasibility Study Report (FSR)

10% benchmark as specified by SL16-95 (Document title: "Economic evaluation code for small hydropower projects) issued in 1995 is common practice in China for the small hydropower projects with installed capacity of less than 25MW (all newly-built, expansion, modification or retrofit projects). Besides, projects with a capacity of less than 50MW in rural areas can refer to this code too." (Article 1.2) (Refer also to Annex 1, Information reference list, IRL2).

However, in the approved FSR, 8% is applied as the benchmark which is lower than 10%. For the purpose of conservativeness, the validation team agree on PP to implementing the lower benchmark (8%) while preparing the PDD.

In summary, TÜV SÜD confirmed that the benchmark applied in the proposed project was more conservative and suitable for the underlying project activity.

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Request 2:

The PP/DOE is requested to clarify how the reported values of annual electricity generation and power supply to grid are appropriate in the context of the underlying project activity.

Response by DOE:

The power generation was calculated by multiplying the installed capacity with operation hours. The operation hours were determined based on 46 years (from year 1956-2001) of historical hydrological data. Evidence is available for the Audit team. On the other hand, The DOE also compared parameter output/installed capacity of the proposed project with the statistical database from about 250 CDM projects validated by TÜV SÜD. The result as for the PDD of 4,613 hours is higher than the average figure of the TÜV SÜD statistical data base of 3,871 hours. Hence, the applied amount for the operational hours is deemed to be appropriate and conservative

The coefficient for effective supply to the grid mentioned in the PP's comment above was derived in the Feasibility study report which could be evidenced by *Economic Evaluation Code for Small Hydropower Project* (Document No.SL16-95) (IRL2).

Table. Effective factor

Type of hydropower station	Effective Factor
1.Grid connected, annual/pluriennial regulating stations	0.95-1.00
2.Grid connected, seasonal regulating stations	0.90-0.95
3. **Grid connected, monthly/weekly/daily/none regulating stations**	
The grid will take all electricity generated in rainy season and night	0.80-0.90
The grid will only take part of the electricity generated in rainy season and night	0.70-0.80
4. Not connected to the grid, Daily/No regulating capacity	0.60-0.70

Source: SL 16-95

The project qualifies as project type with monthly/weekly/daily/none regulating capacity; more precisely the project qualifies as daily regulating type, as could be evidenced by the feasibility study, which was prepared by an independent third party, namely Sichuan Provincial Water Conservation and Hydro Electric Power Survey and Design Institute. As such it should apply an effective factor of 0.70-0.90, depending on the projects specific circumstance. In case of project 2192 a factor of 0.88 is applied, which is at the higher and of the range, thus considered as conservative.

The other parameters: internal use rate and transmission loss rate drawn from the Feasibility study report could be confirmed by Hydroenergy Design Code for Small Hydro Power (Document No.SL 76-94) as well (IRL3).

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The power supplied to the power grid was calculated by multiplying the power generation with the coefficient for the effective supply to the grid then deduct the power loss for internal use and transmission loss. The project owner calculated the power supply to the power grid as the following formula: Power supplied to the power grid=power generation* the coefficient for the effective supply to the grid power generation (1-internal power use) * (1-transmission losses)
= power generation *0.88*0.99*0.99=power generation * 0.86. That means that the difference between the power generation and power supply to the power grid is 14%.

Recently the meth panel was requested to elaborate guidance on ACM0002, in particular how to arrive at an accurate plant load factor taking into account the variability of the wind parameters and gaps of data. Though this guidance was not yet discussed by the EB due to time constraints, and bearing in mind that this guideline is addressing wind power plants in particular, it is considered useful to assess effective power generation estimates also for hydro power. Among others, the following two recommendations were made (compare Meth panel report 35, para 37):

"After considering the case, the panel recommends the EB to consider the following options:

> *(a) The DOE should validate that the estimate in the CDM-PDD on the annual electricity generation is consistent with the estimate provided to banks and/or equity financiers while applying for project financing, or to the government while applying for implementation approval;*
>
> *(b) The expected annual electricity generation of the project should be determined by a third party contracted by the project participants (e.g. an engineering company);"*

Regarding recommendation (a) it can be confirmed by the DOE that the same net annual electricity generation was provided to the government while applying for the implementation approval, as could be evidenced by the approval document of the feasibility report, by Development and Reform Committee of Ya'an Municipality on 9th, May, 2005. Referring to recommendation (b) it can also be confirmed that the estimate was made by a third party which was contracted by the project participants, Sichuan Provincial Water Conservation and Hydro Electric Power Survey and Design Institute, holding a A degree in Survey and Design in the hydro power and water conservancy industries.

Finally we like to stress that, even considering an effective power factor of 1, which would imply a +14% improved performance, the benchmark would be far from being crossed. In fact a variation of +43% is needed to only meet the benchmark, please refer to the response to issue 3, where the sensitivity analysis is discussed in more detail.

As a result, TÜV SÜD validated that the calculation process for power supplied to the power grid was correct and transparent, and 14% difference between power generation and power supply to the power grid was corrected.

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Request 3:

The DOE is requested to further clarify the suitability of the input values to the investment analysis as per the requirements of EB 38 paragraph 54(c) guidance.

Response by DOE:

All input data except the tariff in the investment analysis are taken from FSR (Feasibility Study Report), which was completed in July, 2004 and approved on May 9, 2005. The project owner got the confirmation regarding the power tariff in 2004 and 2005 from local power grid on August 7, 2005 (IRL15 of the validation report). Lower tariff than that expected in FSR leads to a low IRR without financial attraction. After seriously considering the revenue of CDM, the project owner hold a board meeting to establish a CDM team for the proposed project (IRL26 of the validation report). The project owner made the investment decision of the proposed project along with the construction permission issued (i.e. March 18, 2006). In other words, the date when the construction permission has been issued by the supervision company is considered by the PP as the date to make the investment decision. These periods are relatively short and it is unlikely that the input values from the FSR would have materially changed.

TÜV SÜD has experienced local experts to confirm that the input values from the FSR are valid and applicable at the time of the investment decision. The input values have also been validated by comparing the figures with statistical figures from 250 projects in China (validated by TÜV SÜD).

Total Static Investment

It is presumed to be 185 million RMB in the FSR. The investment per MW was calculated at about 7.7 million RMB/MW, which are slightly higher than the average cost of 6.7 million RMB/MW , but the difference is still less than the average deviation. Three contracts including the turbine and generator purchasing contract, civil engineering contract, and electrical equipment purchasing contract are provided and compared with the investment cost listed in FSR. The respective actual investment cost for turbine and generator purchasing, civil engineering, and electrical equipment purchasing contract is 25.56 Million RMB, 54.73 Million RMB and 15 Million RMB are higher than corresponding estimated investment as 22.11 Million RMB, 54.63Million RMB and 11.58 Million RMB in the FSR. Evidence was available for the Audit team.

On the other hand, according to a confirmation letter on investment cost issued by the supervision company on 29/Dec/08 that was available for the Audit team and is attached to this response (IRL4), the actual static investment is approximately 194 million RMB, which is higher than the estimated static total investment of about 185 million RMB in FSR and the project is still under construction and the established cost is about 202 million RMB. So the investment will be more than the estimated static total investment in FSR. Based on the amount of the already realized investment it can be concluded that the assumptions are within a reasonable range. Therefore the far lower unit investment of the proposed project is conservative and reasonable.

As evidence, the 3 contracts and confirmation letter on investment cost (IR) Lare verified by the local audit team of the DOE.

Annual O&M costs

The annual operation costs of static total investments are 2.66%. The components of costs are all from FSR based on the Economic Evaluation Code for Small Hydropower Projects (SL16-95) .Equipment depreciation and employee number and are specified in SL16-95 respectively is 5% and 58~98 are higher than or same as the corresponding data in FSR as 3.33% and 58. The results of the sensitivity analysis also demonstrated that even if the project incurred zero operating costs - which are not feasible - the IRR of the project was 5.65% would remain below the benchmark 8%.

Power supply of the plant

The plant is estimated to operate about 4613 hours per year. The annual operating hours in the FSR were calculated based on the water resource of the river in past 46 years (1956~2001). The river-flow data evidence was provided to the DOE. TÜV SÜD checked the applied values thoroughly and based on local and sectoral expertise, TÜV SÜD confirms that these values are realistic and credible and appear to be valid at the time the investment decision was made.

Tariff

The electricity tariff used in the PDD was in accordance with the tariff policy of local grid company- Tianquan Power Company on 7th August 2005 (IRL15 in validation report), which is only 13 days before 20th, August, 2005, when the board meeting was held to decide to apply for CDM for the proposed project. Hence, the electricity tariff applied in the PDD can be taken as appropriate. The local price bureau confirmed in its letter that the average power tariff in Tianquan County is 160 RMB/MWh in the wet season and 180 RMB/MWh in the dry season in 2004 and 2005; the project owner selected 180 RMB/MWh as the power tariff in IRR calculation as a more conservative method. Hence, TÜV SÜD deems that the applied tariff in the PDD is appropriate and valid.

In summary, TÜV SÜD checked the applied values thoroughly and based on its local and sectoral expertise, TÜV SÜD confirms that the criteria of EB38, §54 c) is also fulfilled successfully.

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Annex 1: Information reference list;
it lists the major documents which were used for the response. All documents have been validated by TUV-SUD.

Ref. No.	Issuance and/or submission date(dd/mm/yyyy)	Title/Type of Document	Author/Editor/ Issuer	Additional Information (Relevance in CDM Context)
1	07/2004	River Flow-EG Calculation	Sichuan Provincial Water Conservation and Hydro Electric Power Survey and Design Institute of the National Water Conservation Bureau	
2	02/06/1995	Economic Evaluation Code for Small Hydropower Projects	Ministry of Water Resources of PR. China	
3	28/03/1994	Hydro energy design code for hydro power projects	Ministry of Water Resources of PR. China	
4	29/12/2008	Clarification of the investment on the Tianquan Xiacun Hydro Power Project	Hubei Zhongge Project Management Co.ltd	Investment analysis