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Response to Request for Review

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project with the registration number 2003. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

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Tomas Kleiser Carbon Management Service

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Response to the CDM Executive Board

Issue 1:

The DOE is requested to justify the appropriateness of a benchmark of year 1995 when assessing the additionality with an investment decision made in 2005/06.

Response by the Project Participants:

The project, a hydropower station with 20 MW installed capacity, compares the IRR against the 10% benchmark (project IRR post tax) as per the "Economic Evaluation Code for Small Hydropower Projects (SL16-95)", which is applicable to hydropower stations with an installed capacity of up to 25 MW (or up to 50 MW for projects located in rural areas). This document is part of the "Professional Standards of the People's Republic of China¹" and was approved and published by the Ministry of Water Resources of the People's Republic of China in 1995.

Since then, the validity of this benchmark has not been repudiated in any way. In fact, its applicability was confirmed by the Chinese Hydraulic Engineering Society (CHES) in 2002 in the "Bulletin of Valid Hydropower Technical Standards No 07 (2002)".² Additionally, the Ministry of Water Resources of the People's Republic of China confirms that this benchmark is still in effect in 2006³. The 10% benchmark is still ubiquitously applied by stakeholders of hydropower projects with an installed capacity up to 25 MW (or up to 50 MW for projects in rural areas), such as design institutes, investors and government institutions in charge of approving projects) to evaluate the feasibility of these projects. In addition, China DNA's approval of CDM project activities with an IRR below this benchmark indicates it is still valid.

In addition, the fact that the "The Economic Evaluation Code for Small Hydropower Projects (SL16-95)" is still appropriate, is confirmed and reinforced by the fact that the Feasibility Study Report (FSR) of the proposed project activity, which is an officially approved document by Chinese authorities, specifically mentions the benchmark under Section 13.1 on page 229⁴.

For the above reasons, the 10% benchmark is the most adequate that can be and is widely applied by Chinese authorities as well as other registered CDM projects (see Annex 1). Therefore, the project appropriately employs the benchmark of 10%.

Response by TÜV SÜD:

The applied benchmark "Economic evaluation code for small hydropower projects (SL16-95)" is still applicable today, and so it was at the time of the investment decision. It applies to hydropower installations with a capacity below 25 MW, extended to capacities below 50MW if the installation is located in rural areas; the proposed project, with an installed capacity of 20MW, applies the mentioned benchmark document SL16-95.

¹ http://www.cws.net.cn/guifan/bz/SL16-95/

² http://www.ches.com.cn/jishubiaozhun/001.htm

³ http://www.mwr.gov.cn/tzgg/qt/20060926000000479251.aspx

⁴ http://cdm.unfccc.int/UserManagement/FileStorage/QO14HXM5LPBYUWENDC39T80SZJFKAG and http://cdm.unfccc.int/UserManagement/FileStorage/ZMN4ZL09SNVVJO536OZJ6GJ8XJVXSS (translation)



The SL16-95 was issued in 1995 by the Ministry of Water Resources of the People's Republic of China (MWR). Both in 2007 and 2008 the validity of the code has been re-confirmed, as could be evidenced by:

1) The answer to the Request for Review of project 996 - Zhoubai Hydroelectric Project, dated 04/06/2007.

2) The statements of the Research and Design Institute of No.14 China Hydro Engineering Bureau and the National Research Institute for Rural Electrification, accredited by the Chinese Government, which clarified that SL 16-95 is still used by the institutes when assessing the financial feasibility of small hydropower projects, dated 26/11/2008 and 01/12/2008.

Moreover, the DOE has verified that in October 2006 the Ministry of Water Resources of the People's Republic of China have confirmed the validity of the SL16-95, including it into a list of the applicable evaluation standards (pls. see footnote 3 in PPs' response).

Furthermore TÜV SÜD has observed that SL16-95, and hence the 10% benchmark, is still widely

used in recent feasibility studies of hydropower projects in China.

It should be further highlighted that the 8% benchmark which has been applied in case of other projects activities submitted for registration, and was chosen according to the specific condition of those projects, which did not allow the DOE to validate a 10% benchmark as the appropriate one to be used.

In particular in the case of project activity number 1875 (Sanchawan 32MW Hydro Power Project in Guizhou Province China), the 8% benchmark was chosen according to the installed capacity (32MW) and the location of the project which could hardly be considered as a rural area. These considerations lead to apply the "Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project" (China Electric Power Press, 2003) indicating a benchmark of 8% as appropriate in that context.

It is concluded that the applicability of the specific benchmark relies on the specificity of the project. As a consequence, the DOE confirms that for the proposed project activity the benchmark of 10% from the year 1995 is still applicable and that the project meets the applicability criteria required by the SL16-95.



Issue 2:

The DOE should clarify how it has validated that the variations applied in the sensitivity analysis are not likely to occur.

Response by the Project Participants:

In the PDD a sensitivity analysis was applied in line with the additionality tool and relevant EB decisions such as the "Guidance on the Assessment of Investment Analysis" (EB 39, Annex 35) to evaluate if reasonable variations of the main input parameters for the IRR calculation would result in an IRR above the benchmark. It could be shown that within a variation of +/-10%, the IRR could not reach the benchmark. Thus, even under optimistic assumptions, the project is considered to be financially not attractive without CER revenues. The basic input values for the IRR calculation and the sensitivity analysis come from the Feasibility Study Report and were verified by the DOE. The input values and the results of the IRR sensitivity analysis are provided in the following two tables:

Item	Value	Source		
Installed capacity (MW)	20	Feasibility Study Report		
Annual Power supplied to the Grid (MWh)	93,380	Feasibility Study Report		
Total Investment (RMB)	116,303,600	Feasibility Study Report		
Estimated Grid Price (RMB / kWh, with VAT)	0.172 during the repayment period	Feasibility Study Report		
	0.16 when the repayment period is over			
Operation Period (years)	20	Feasibility Study Report		
VAT	6%	Feasibility Study Report		
	18% during the repayment period	Feasibility Study Report		
Corporate Income Tax	33% when the repayment period is over			
Annual Operational Costs (RMB)	2,139,600	Feasibility Study Report		

 Table 2: The Basic Financial Parameters of the Project



	-10%	-5%	0%	5%	10%
Revenue of electricity sale	7.22%	7.87%	8.56%	9.24%	9.84%
Total Investment	9.90%	9.21%	8.56%	7.97%	7.41%
Annual Operation Cost	8.74%	8.65%	8.56%	8.47%	8.39%
Power supplied to the grid	7.21%	7.90%	8.56%	9.21%	9.85%

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The project started operation in June 2008. Therefore ex-post data is available which can be compared to the assumptions in the IRR calculation and the sensitivity analysis. The actual data shows that the assumptions were conservative and that the project is even less attractive than previously thought:

Total investment

The IRR of the project could reach the benchmark of 10% on the basis of a total investment of 99,642,300 RMB, which would be 10.68% lower than the PDD value of 116,303,600 RMB. However, the actual investment costs, certified by the accredited financial auditor of the project company, were 136,313,091.73 RMB as can be seen from the Financial Audit Report from Kunming Xukun Certified Public Accountants Co. Ltd (see attached evidence no. 1). Therefore, the actual investment was 17.2% higher than the assumption in the FSR and PDD. A variation of the total investment in the sensitivity analysis leading to an IRR higher than the benchmark is therefore not possible to occur.

Annual operational cost

Only with a decrease of the annual operational cost by 66% to a value of 1,412,100 RMB the IRR would reach the IRR benchmark of 10%. However, due to increasing costs and salaries across China, the actual situation shows the contrary. Regular and recurring operational costs for the first seven months of project operation (from June to December 2008), as per confirmation from the accounting department of the project company (see attached evidence no. 2), reached 2,117,133 RMB in 2008 before even reaching a full year of operation, which is just 1% lower than the assumed value in the PDD for 12 months of operation (2,139,600 RMB/year). By the time the project completes one full year of operation, operational costs will be definitely higher than the projected figure in the FSR/PDD. It should be noted that the costs listed as operational costs for 2008 are representative for future years and do not include significant extraordinary or non-recurring costs, which have been deliberately excluded from the calculation provided to the DOE. It is therefore neither likely that a decrease of the annual operational cost by 10%, nor that a decrease bringing the IRR above the benchmark, will occur.

Power supplied to the grid

The Feasibility Study Report assumed that the annual power supplied to the grid would be 93,380 MWh in average. This estimation is based on historical hydrological data from over 40 years, performed according to relevant and appropriate standards and methods and officially



approved by the Chinese authorities, hence the FSR values are assumed to be accurate and correct. Actual data from the first seven months of commissioning show a power supply of 62,101 MWh from June to December 2008, which accounts for 66.5% of the assumed value. As can be seen from the hydrological analysis in the Feasibility Study Report (tables 2.7 to 2.9), no matter whether the minimal water supply with a probability of 10, 50 or 90% is considered, the seven months from June to December should account for 87% of the annual water supply (please see the column "% 6-12" in the following table).

Table 4: Annual Distribution of Water Resource

Month	1	2	3	4	5	6	7	8	9	10	11	12	Total	% 6-12
p=10%	12.6	10	8.83	11.2	22.6	54.2	62.5	147	107	35.3	29.3	14.8	515.33	87.34
p=50%	9.29	7.33	5.73	7.58	14.8	30.4	35	67.3	99.6	28.9	27.3	13	346.23	87.08
p=90%	7.47	5.87	4.5	5.56	6.83	19.7	32.5	53.3	30.1	21.3	26.2	12.5	225.83	86.61

The year 2008 was not exceptionally dry as can be seen from the quarterly reports of Yunnan Provincial Bureau of Water Hydrology that have been provided and verified by the DOE. Only with an increase of the annual power supplied to grid by 11.2% to a value of 103,840 MWh the IRR would reach the benchmark of 10%. Actual data after seven months of operation indicate that current electricity generation is 23.6% below the target as per PDD (assuming that 87% of the PDD value should have been delivered to the grid as of January 2009). Hence, it is very unlikely that the optimistic assumptions of the sensitivity analysis can occur.

Revenue of electricity sale

As can be seen from the analysis of the power supplied to the grid above, revenue of electricity sale is very unlikely to increase based on an increased supply of power to the grid. Therefore higher revenues would have to be achieved by a higher electricity price. However, the Chinese electricity market is strongly regulated market, where the electricity price is fixed through power purchase agreements with the grid company. The electricity price used in the PDD is based on such a power purchase agreement signed between the project owner and the grid company on February 16th, 2008, which has been provided to the DOE during validation. Furthermore, considering the actual investment cost of 136,313,091.73 RMB and the actual annual operation cost (as per extrapolation of the actual recurring costs that cumulated in the first seven months of operation) and assuming the same annual power supplied to the grid as in the Feasibility Study Report and PDD, the electricity price would need to be increased by 39% to a value of 0.239 RMB/kWh to reach the IRR benchmark of 10%. This scenario is very unlikely to occur and cannot be considered as a reasonable assumption by the time of the investment decision.

Conclusion

From above analysis of the actual data of the most important input values for the IRR calculation it can be seen that those variations in the sensitivity analysis that are bringing more profit to the project, were and are not likely to occur, without being offset by adversary effects.



Response by TÜV SÜD:

The sensitivity analysis applies variations of +/- 10% to each of the key parameters at the base of the investment analysis. The decision to perform a variation of +/- 10% are based on and can be confirmed by the "Guidance Document for Registered Engineering Consultants in China", a document published by the China Planning Press in 2004.

Depending on the nature of each parameter the IRR increase when the applied variation is negative or positive; for each of the parameters, the most critical results under a CDM-additionality point of view have been met according to the following variations, which lead to the higher values reached by the IRR:

Key parameter	Variation applied	Impact on IRR						
Revenue of electricity sale	+10%	9.84%						
Static Total Investment	-10%	9.90%						
Annual Operation Cost	-10%	8.74%						
Power supplied to the grid	+10%	9.85%						

It should be further noted that under none of the above critical variations the benchmark of 10% is reached by the project.

In order to confirm the robustness of the sensitivity analysis performed and presented in the PDD, the DOE has considered the likeliness that similar or even wider variations might occur.

Revenue of electricity sale (grid price)

An increase in the revenue of the electricity sale due to an increase in the power production will be considered under the parameter "Power supplied to the grid" as below discussed; an increase of the grid price it's therefore here considered as the driver for an increase in the revenue for the electricity sold. The DOE has validated the grid price as stated in the PDD according to the figure as mentioned in the Feasibility Study Report (dated July 2004) which was confirmed by the recent Power Purchase Agreement signed by the project owner on February 16th, 2008 with the local grid company. According to the rigid structure of the market in China and as confirmed by previous experience of Validation and Verification of similar project activities in China, a variation of the agreed electricity prices is highly unlikely to occur. It's therefore confirmed that an increase in the grid price which could lead to meet the benchmark is a remote and improbable event and DOE is confident that no variations to the current price will occur within the crediting period of the CDM project activity.

Static Total Investment

The expected total investment as in PDD has been taken from the Feasibility Study Report (dated July 2004); the DOE has widely experienced that the actual investment costs in the context of construction engineering are generally subject to rise. Given the reasonability of the value used in PDD for this parameter it has been therefore considered highly unlikely a decrease of the figure leading to a lower value for the investment actually undertaken. A confirmation of this has come by a third party evidence which has been verified by the DOE: according to the Finance Audit Report issued by the Kunming Xukun Certified Public Accountants Co. Ltd. (issued on December 2008) the actual investment costs incurred for the project construction have reached more than 136 Mio Yuan RMB which is considerable higher than the figure of about 116 Mio Yuan RMB as expected and considered in the PDD. Thus it's confirmed that no



decrease in this figure was likely to occur and that, conversely, an increase of the same has actually occurred.

Annual Operation Cost

The calculation of the annual operation costs is mainly based on fixed parameters such as the cost of labour, the employee welfare expenses and other costs such as the cost of overhaul and of materials. A decrease in one or more of these parameters has been seen as unlikely to occur for the following reasons: a decrease in the cost for labour, according to the trend observed in China in the last years; the salaries and welfare are in fact subjected to a constant increase and it's widely expected and accepted that this tendency will be confirmed in the future and surely within the crediting period of the proposed CDM project activity. Even the cost of materials usually face an increase compared to the expected values; in the case of the proposed project activity it should be further noted that a decrease of about 66% of these costs would be required in order to meet the benchmark. It's confirmed by the DOE that a similar negative variation is definitely not likely to occur in the context of the project activity.

Power Supplied to the Grid

A variation of this parameter could occur as a variation in the annual operating time. In particular an increase in the operational hours respecting what was estimated in the Feasibility Study Report (dated June 2004) could lead to an increase in the power production and definitely to a different result in terms of Internal Rate of Return.

The DOE is confident that, according to the evidence provided and as verified on-site through the local auditor, the actual average annual utilization hours for the power plant will not differ significantly from the expected one. In particular the value of 4,927 hours has been obtained in the Feasibility Study Report through a deep hydrological study based on 40 years of data related to the Xiyang river basin. An increase of more than 10% of this parameter has been evaluated as unlikely to occur according to the solidity of the prediction model which has furthermore lead to obtain a high value of the annual average operational hours if compared with the values experienced on similar projects in China which is about 3850 hours on average as from TÜV SÜD's internal statistics. The high operating time used to perform the investment analysis leads to an estimation of the power produced by the power plant which is conservative in the view of the Internal Rate of Return (IRR) calculation. Thus, according to these considerations, it's confirmed that a crucial increase of this parameter will be not likely to occur.

In conclusion it can be stated that, both according to the evidences as verified during validation and by the further assessment above presented, any of the reasonable variations of the parameters will not lead to cross the benchmark and that the actual IRR will conversely decrease according to the increased investment and operating costs.