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DAP-PL-2885.99 DAP-IS-2886.00 DAP-PL-3089.00 DAP-PL-3089.00 DAP-PL-2722 DAP-IS-3516.01 DPT-ZE-3510.02 ZLS-ZE-219/99 ZLS-ZE-246/99

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Request for Review

Dear Sirs,

Please find below the response to the review formulated for the CDM project with the title "*Fu-jian Pingnan Daixi 50MW Hydropower Project*" with the registration number 1998. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

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Javier Castro Carbon Management Service

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Response to the CDM Executive Board

<u>Issue 1</u>

Further clarification is required on how the DOE has validated the suitability of the input values to the investment analysis as per the requirement of EB 38 paragraph 54(c) guidance.

Response from the Project Participant

The guidance of EB 38 paragraph 54(c) demonstrates that the input values from the FSR should be confirmed to be valid and applicable at the time of the investment decision by crosschecking or in other appropriate manners on the basis of its specific local and sectoral expertise.

The input values used for the IRR calculation were all derived from the Economic Analysis Report (EAR), which was completed by Fujian Design Institute of Water Conservancy and Hydroelectric Power. Fujian Design Institute of Water Conservancy and Hydroelectric Power is a thirdindependent party institute with the qualification (Accredited as "A" by the government) of planning of rivers and power system, investigation of water resources and hydropower, construction, municipal, environmental protection, and other geotechnical engineering projects¹. It is a chair member of China Water Resources and Hydropower Planning and Design General Institute, and has been engaging in designing and researching since 1958. As have been assessed in the PDD, the discussion of total investment, Operational hours, O&M cost, and Tariff is further demonstrated as follows:

1) Total investment

From the Annual Audit Report 2007 of Fujian Tongda Hydropower Co., Ltd., issued by Mingdong Yuanda Certified Public Accountants Ltd., the actual total investment of the proposed project reaches 377.894 million Yuan, 20.60 million higher than the one used for IRR calculation from EAR. The statements of construction process of the proposed project are submitted with this response, showing that there have been continuous further construction investment and costs occurring in 2008. Furthermore, from the Assessment Report, issued by Fujian Kaicheng Assets Assessment Co., Ltd. on October 20, 2008², the asset of the project reaches 422.336 million Yuan. Hence, the amount used in the IRR calculation is reasonable and conservative.

2) Operational hours

The operational hour of the proposed project is 2861, which is based on the hydro source observation data analyzed in the FSR. The value is derived by Fujian Design Institute of Water Conservancy and Hydroelectric Power, from a 45-year monthly average flow records (from 1958 to 2002). The historical on-site flow data is gathered from three different sites on the ver³, and then investigated by the design institute. Fujian Design Institute of Water Conservancy and Hydroelectric Power is an expertise institute with Class A qualification on engineering investigation, engineering designing of hydropower, and surveying and mapping⁴.

¹ <u>http://www.fjwater.gov.cn/html/7/25/407_20077191058.html</u>

² The Assessment Report was asked by the bank for reference value of mortgage loan.

³ "Distribution diagram of hydrological data gathering"

⁴ "Qualifications of Fujian Design Institute of Water Conservancy and Hydroelectric Power"



This value is approved by Fujian Development and Reform Commission⁵. And in the "Comments of FSR of Daixi by Economic and Trade Commission of Fujian Province" ⁶, the annual output generation (143,050MWh) and annual operational hour (2861h) were also approved. Furthermore, according to the "Notice on the Control and Planning of Power Generation of Year 2009 of Fujian Province" issued by Economic and Trade Commission of Fujian Province on October 22, 2008, the planned and approved power supply of the proposed project will only be about 134,000 MWh in 2009.

3) Annual operation cost

The operational cost is consisted with:

Parameter	Charge Rate	Reference
Maintenance	1% of Investment on Fixed Assets ⁷	EAR
Salary and welfare	25 thousand/Year/person*fixed 30	EAR
	persons	
Materials	10Yuan/kW	EAR
Water resources	0.0025Yuan/kWh ⁸	EAR
Reservoir maintenance	0.001Yuan/kWh ⁹	EAR
Supporting fund for	4.4 thousand Yuan/Year	EAR
migrant		
Insurance	0.25% of Investment on Fixed As-	EAR
	sets	
Other costs	20Yuan/kW	EAR

In PDD, annual O&M cost from EAR is 7.19 Million RMB/Year, which is 2.25% of Investment on Fixed Assets. The charge rates of the parameters are compared with the average value of some sample hydropower projects analyzed by Fujian Price Bureau¹⁰, and it turns out that all these values are below the average values. Thus, the annual O&M cost in PDD is reasonable and conservative for the IRR calculation.

4) Tariff

In the IRR calculation of PDD, the tariff of the proposed project was the one approved by Fujian Provincial Electric Power Company in May, 2005. Since the proposed project was put into operation in October, 2008, the actual tariff could be crosschecked by the VAT invoice of the power sales¹¹, issued by Fujian Provincial Electric Power Company.

⁵ "Approval of FSR of Daixi Hydropower Station, by Fujian Development and Reform Commission", deriving the annual operational hours by the average annual output generation and installed capacity.

⁶ Comments of FSR of Daixi by Economic and Trade Commission of Fujian Province in April, 2004.

⁷ Meet the requirement from "Notice on Fixing the Depreciation and Maintenance Rate of Hydropower Projects", issued by Ministry of Water Resources and Electric Power, and Ministry of Finance

⁸ Below the charge rate of Water resources from "Measures on Charging Water Resources of Fujian Province", published by Fujian Water Resources Department

⁹ the same as <u>http://www.fjym.gov.cn/XContentView.Xform?CataLogCode=1070&Flowid=626</u>, "Notice on Charging Reservoir Maintenance from Generation Cost"

¹⁰ "Analysis Report on O&M Cost of Hydropower Projects", published by Fujian Price Bureau on August 22, 2008

¹¹ VAT Invoice of Power Sales, issued by Fujian Provincial Electric Power Company



<u>Response by TÜV SÜD</u>

EB 38 paragraph 54(c) guidance:

"On the basis of its specific local and sectoral expertise, confirmation is provided, by crosschecking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision."

The Feasibility Study Report (FSR) was developed in March 2004 by Fujian Design Institute of Water Conservancy and Hydroelectric Power, which is a qualified third party. And an independent Economic Analysis Report (EAR) was completed in September 2005 by the same institute due to a signed agreement with low on-grid tariff between Fujian Tongda Hydropower Co., Ltd. and Fujian Provincial Electric Power Company on 6 May 2005. Both reports were approved by the local DRC. The investment decision was made at the board meeting on 18 November 2005, by considering the prerequisite of CDM application as the IRR value was lower than benchmark in EAR. Hence, TÜV SÜD is strongly convinced that applied input values (total investment, operational hours, tariffs and O&M costs) from FSR and EAR for IRR calculation is appropriate in the context of the project activity. And all the values have been cross-checked as follows:

1. Total investment

The investment cost has been validated by comparing the figures with statistical figures from 240 CDM hydro projects registered and under validation. The value of the proposed project was 7.1 Mio. RMB/MW, which was slightly higher than the average of 6.7 Mio. RMB/MW of the statistics, but still less than the average deviation.

In addition, DOE has cross-checked other available sources. The actual investment for the project listed in the Annual Audit Report 2007 by Mingdong Yuanda Certified Public Accountants Ltd. was higher than the figure in EAR. DOE has verified the qualification of Mingdong Yuanda Certified Public Accountants Ltd. and is confident with its credibility. Further materials were submitted to DOE to evidence the construction costs occurring in 2008. And they had been verified as well. In conclusion, the total investment applied in EAR has been assessed and the value for IRR calculation was credible and conservative.

2. Operational hours

The designed operational hours of the proposed project in FSR was based on the records of average monthly flow from 1958 to 2002 at the dam site of Daixi. This value, 2861h, was approved by the local DRC in "FSR Audit Opinions of Daixi Hydropower Station" (MJMHDL [2004] 90) in 5 April 2004. Moreover, the same value was officially published by Fujian Economic and Trade Commission on 22 October 2008 in "Notice on the Control and Planning of Power Generation of Year 2009 of Fujian Province" (MJMNY [2008] 504). And in consequence 2861h of operational hours was confirmed by DOE.

3. Annual O&M cost

The EAR was completed in September 2005 and the investment decision was made based on this EAR on 18 November 2005. DOE compared annual O&M cost in EAR with the aver-



age values in "Analysis Report on O&M Cost of Hydropower Projects in Fujian Province", which were on the basis of the investigation from 2005 to 2007 and published by Fujian Price Bureau on 22 August 2008. All items of the annual O&M cost applied for the proposed project are slightly below *the average values*. Thus, DOE confirmed the values for IRR calculation is applicable and conservative.

4. Tariff

The On-grid Electricity Tariff Agreement was signed between Fujian Tongda Hydropower Co., Ltd. and Fujian Provincial Electric Power Company on 6 May 2005, in which the tariff was fixed no more than 0.31 RMB/kWh (with VAT). The EAR was prepared based on this crucial indicator and therefore it affected the investment decision later on. In China, the electricity tariff is strictly controlled by the government and will not change significantly during the project operational lifetime. Therefore it is appropriate to apply the tariff from the Agreement with Power Company for IRR calculation.

Issue 2

Further explanation is required on how DOE has validated the net electricity generation value used in the IRR calculations.

Response from the Project Participant

According to point 2) of response of Issue 1, the operational hour of the proposed project is 2861, which is derived by Fujian Design Institute of Water Conservancy and Hydroelectric Power, from the on-site historical flow records over 45-year average monthly statistic data (from 1958 to 2002). This value is well found and approved by Fujian Development and Reform Commission and Economic and Trade Commission of Fujian Province. Furthermore, according to the "Notice on the Control and Planning of Power Generation of Year 2009 of Fujian Province" issued by Economic and Trade Commission of Fujian Province on October 22, 2008, the planned and approved power supply of the proposed project will only be about 134,000 MWh in 2009.

<u>Response by TÜV SÜD</u>

The electricity generation value in FSR is the product of installed capacity and the designed operational hours for the proposed project. The installed capacity has been verified by cross-checking the *Purchasing Contract of Generation Units*. The designed operational hours of the proposed project in FSR was based on the records of average monthly flow from 1958 to 2002 at the dam site of Daixi. This value, 2861h, was approved by the local DRC in "FSR Audit Opinions of Daixi Hydropower Station" (MJMHDL [2004] 90) in 5 April 2004. Moreover, the same value was officially published by Fujian Economic and Trade Commission on 22 October 2008 in "Notice on the Control and Planning of Power Generation of Year 2009 of Fujian Province" (MJMNY [2008] 504). In addition, all electricity self-consuming and losses were assessed and correctly deducted from annual electricity generation. DOE deemed the net electricity generation value used in the IRR calculations was accurate.



<u>Issue 3</u>

Further clarification is required on how the DOE has validated the common practice analysis, in particular, (a) the exclusion of hydropower plants consisting of individual generator capacities below 25 MW, and (b) the exclusion of similar projects under construction.

Response from the Project Participant

In PDD, "Tool for the demonstration and assessment of additionality (version 05)" was used. Thus:

(a) The total installed capacity of the proposed project is 50MW, with two sets of 25MW generator units working together for its power supply. The existing similar projects (total installed capacity between 25MW to 250MW)¹² in Fujian province were selected from all available sources for comparison. They are mainly from Yearbook of China Water Resources 2006 and 2007 and all similar projects are listed in **Table 1**.

No.	Name	Total Installed Capacity (MW)	Commissioning Year	Tariff ¹³ (Yuan/kWh)	Operation Hour ¹⁴	Unit Capacity Investment (CNY/kW)
1	Xiayang	43.8 (3*14.6)	2002	0.3661	3930	
2	Ximen	30 (2*15)	2005	0.34	3718	
3	Zhaokou	60 (3*20)	2006	0.31	<i>4</i> 228 ¹⁵	
4	Niutoushan	100 (2*50)	2006	0.32	3160	6200 ¹⁶
5	Muyangxi	250 (2*125)	2004			4760 ¹⁷

Table 1 Similar Hydropower Stations in Fujian province

(b) All information of similar projects selected for comparison with the proposed project is mainly taken from Yearbook of China Water Resources 2006 and Yearbook of China Water Resources 2007, which are the latest yearbooks including all possible projects' information. According to the "Tool for the demonstration and assessment of additionality (version 05)", since the necessary data/information of the projects under construction are not accessible

¹² The Yearbooks only scaled and included the projects with installed capacity equal and lager than 25MW.

¹³ "Approval of Feed-in-tariff of Hydropower Stations", by Fujian Provincial Bureau of Price http://www.fjjg.gov.cn/fjwjj/zwxxgk/zwgkznjml/jgsfgl/A12410114index_1.htm

¹⁴ P572-573, Yearbook of China Water Resources 2006. "Operation Hour" is derived from the projects' annual power generation and installed capacity.

¹⁵ "Introduction of Huadian Zhankou Hydropower Station", China Huadian Corporation, http://www.mxsd.com/zkgcjj.htm

⁶_http://www.ningde.gov.cn/jrnd/ndyw/19969.html

[&]quot;Invested 620 million Yuan on 100MW", published by Ningde Municipal Government http://www.86ne.com/Ocean/200206/Ocean_29973.html

[&]quot;Invested 1190 million Yuan on 250MW", published by World New Energy Net



to conduct this analysis, these projects are not included in Table 1.

Response by TÜV SÜD

- (a) In China, hydropower plants with the installed capacity below 25MW are classified as small scale projects (the "*Economic evaluation code for small hydropower projects*" [Document No.SL16-95] issued in 1995. The validity for this document was confirmed by Chinese Hydraulic Engineering Society, published on 9 September 2006 with all valid standards for hydraulic industry.), which apply with different benchmark, different tax rate and so on. Thus the common practice analysis for the proposed project was carried out by comparing all available data of middle scale hydropower projects (with installed capacity of 25MW ~ 250MW) in Fujian Province.
- (b) The DOE assessed all evidence documents and data sources from PP submission and confirmed the statement of the PP.