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Att: CDM Executive Board

Your ref.:
CDM Ref 2199

Our ref.:
/FRZ/

Date:
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Response to requests for review of the project “48 MW Duduluo River Hydroelectric Power Plant” (CDM Reference No. 2199)

Dear Members of the CDM Executive Board,

We refer to the issues raised in the requests for review by three Board members concerning DNV’s request for registration of project activity 2199 “48MW Duduluo River Hydroelectric Power Plant”, and we would like to provide the following clarifications for your consideration and review.

Question 1: Further clarification is required on how the DOE has validated the suitability of the input values to the investment analysis, as per the guidance of EB 38 paragraph 54(c).

DNV’s response:

DNV has validated all the input values to the investment analysis in accordance with “Guidance of EB38 paragraph 54(c)” and can confirm that the resulting project-IRR at the moment of the investment decision is lower than the benchmark of 10%.

Step 1: Assessment of the sources of the used input parameters: All the input parameters used in the financial analysis at the moment of the investment decision are taken from the project Feasibility Study Report (FSR) developed in July 2005 by the Water & Electricity Investigation & Design Institute of Kunming University of Science & Technology, which is an independent officially accredited entity. The FSR input parameters were verified and approved by Yunnan Provincial Development and Reform Committee on the 10 April 2007 and can thus be considered information provided by independent and recognized source.

Step 2: Confirmation that the values used in the PDD and investment analysis are fully consistent with the FSR: DNV compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR, and was able to confirm that the values applied are consistent with the value stated in the FSR.

Step 3: Assessment of the period of time between the finalization of the FSR and the investment decision: The FSR was approved on 10 April 2007, thus only one month prior to the decision to proceed with the project activity, i.e. the project start date is 11 May 2007. Given the short period of time between the approval of the FSR and decision to proceed with the project activity, it is unlikely in the context of the project that the input values would have materially changed. Thus, it is reasonable to assume that the FSR has been the basis of the decision to proceed with the

investment in the project. The power tariff contemplated in the FSR study was 0.1413 RMB/kWh (incl. VAT). On 17 February 2008 the Yunnan Nujiang Grid Company confirmed a power tariff for the whole of the project life of 0.1513 CNY/kWh (incl. VAT). The Project Participant has been updating the project-IRR calculation with the real tariff resulting a IRR value of 7.99% which is still below the benchmark.

Step 4: Cross check of the main input parameters used in the financial analysis with the parameters used by other similar projects: The input parameters used in the financial analysis were compared with the data reported for other similar proposed CDM projects in China.

Table 1 Comparative Input Parameters used in the Financial Analysis

Ref No.	Project Name	Installed Capacity (MW)	Total Investment (RMB)	Annual Electricity Generation (MWh)	Annual Net Electricity Supply (MWh)	Unit Investment (RMB/MW)	Unit Investment (RMB/kWh)	Load Factor (%)	O&M/Total Investment (%)	Power Tariff (RMB/kWh) (incl.VAT)
2057	Shangri-La Langdu River 4th Level Hydropower Station	24	95.622.200	113.141,8	88.764,5	3.984.258	1,08	53,80%	2,53%	0.14
2059	Shangri-La Langtayong Hydropower Station	18	84.533.600	83.664	72.301,9	4.696.311	1,17	53,10%	2,44%	0.14
2055	Shangri-La Langdu River 3rd Level Hydropower Station	18	93.364.500	82.312,5	66.537,2	5.186.917	1,40	52,20%	2,39%	0.14
2054	Shangri-La Langdu River 2nd Level Hydropower Station	22,5	93.409.100	94.110	81.875,7	4.151.516	1,14	47,80%	2,28%	0.14
1862	Yunnan Lushui County Laowohe 25MW Hydropower Project	25	120.871.000	123.520	117.110	4.834.840	1,03	56,40%	2,50%	0.14
1605	Shaba 24MW Hydropower Project in Yunnan Province, China	24	126.600.000	136.420	118.510	5.275.000	1,07	64,90%	2,14%	0.16
2199	The proposed project	48	198.570.000	219.650	197.288	4.136.875	1,01	52,24%	2,97%	0.1513

From the financial analysis point of view, a project has been considered similar if situated in the same Province even if having different capacity. The investment cost per MW, the Load Factor, the percentage of operation and maintenance costs relative to total project investment costs and the electricity tariff are aligned or more conservative than the other analyzed projects. By comparing

the proposed project with similar project in the same Province, and using DNV's experience from a large number of hydropower projects in China, DNV confirms that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the project.

Question 2: Further clarification is required how the DOE has validated the common practice analysis, in particular, the scale of similar project activities and the essential distinction between the project activity and similar projects considered based on higher unit cost. In addition, the DOE should clarify the inconsistency between the PDD and the Validation Report on the common practice analysis.

DNV's response:

The Common Practice Analysis conducted by the Project Participant takes into consideration hydropower projects present in Yunnan Province at the moment of the investment decision with similar scale to the project activity and taken place in a comparable environment with respect to regulatory framework, investment climate and access to financing.

According to *China Hydropower Yearbook 2005*, Hydropower plants with capacity less than 50MW are considered small scale hydropower projects; Hydropower plants with capacity less than 300MW and more than 50MW are considered as middle scale hydropower projects; Hydropower plants with capacity more than 300MW are considered large scale hydropower projects. Small scale hydropower projects have quite different regulatory framework and access to financing from middle scale and large scale hydro projects. On the other hand, projects with installed capacity between 0 MW~15 MW apply a different methodology (AMS-I.D), consequently are not similar to the proposed project with installed capacity of 48MW. For these reasons, projects with capacity between 15 MW and 50 MW were considered of being of similar capacity and having the same regulatory framework and similar access to financing.

In order to clarify the inconsistency between the number of similar projects reported in the PDD (three) and in the validation report (nine), the complete list of Hydro Projects considered in the Common Practice Analysis is presented:

Table 2 Existing Small Scale Hydropower Stations of Yunnan Province

Number	Name of hydropower plant	Installed Capacity (MW)	Location	Project owner/largest stockholder
CDM	Nandihe HydroPower Station	20	Yingjiang County of Dehong State	Yingjiang Nandihe Hydropower Co., Ltd
CDM	Maguan Daliangzi Hydropower Station	32	Maguan county of Wenshan prefecture	Maguan Daliangzi Hydropower Ltd
CDM	Yingjiangxian Mangyahe I	24.9	Yunnan Province Yingjiang County	Yunnan Province Yingjiang County Mangya River Hydropower Co., Ltd.
CDM	Yingjiangxian Mangyahe II	12	Yunnan Province Yingjiang County	Yunnan Province Yingjiang County Mangya River Hydropower Co., Ltd.
CDM	Supahe Sanjiangkou Hydro expansion	32	Tianning Village, Bizhai Town, Longling County, Baoshan City	Yunnan Baoshan Keyuan Silicon Electric Co., Ltd.
CDM	Yingjiangxian Mangzhand Langwaihe	45	Mangzhang Town, Yingjiang County, Dehong	Yingjiang County Binglang River

			Dai-Jingpo Autonomous Prefecture	Hydroelectric Power Co., Ltd.
CDM	Mengjiahe Kachang Muwen	40	Kacha ng Town, Yingjiang County, Dehong Dai-Jingpo Autonomous Prefecture	Yingjiang Mingyu Electric-Power Development Co., Ltd.
CDM	Malipo Maomaotiao power plant	40	Wenshan Prefecture	Malipo County Hongyuan Hydropower Co.,Ltd
CDM	Yunnan Lufeng plant	38	Lufeng County	Yunnan Lufeng Fengyuan Hydropower development Ltd.
CDM	Yunnan Heier plant	25	Shizong County	Shizong Heier Hydro Power Development Co.,Ltd
CDM	Yunnan Wulanghe plant	32	Lingjiang Prefecture	Lijiang Wulanghe Hydropower Development Co.,Ltd
CDM	Dali Yanger plant	49.8	Dali Prefecture	Dali Yang_er Hydropower Development Co.,Ltd
1	Jinghong Farm Hydropower Station	17	Jinghong County	State owned before 2002
2	Luoze River Hydropower Station	25	Zhaotong County	State owned before 2002
3	Xiaohegou Hydropower Station	21	Guangnan County	State owned before 2002
4	Jinghong Liusha River Hydropower Station (seventh phase)	18.5	Jinghong County	State owned before 2002
5	Guangnan Xiyangjiang Hydropower Station	20	Guangnan County	State owned before 2002
6	Supa River Sanjiangkou Hydropower Station	30	Baoshan City Tengchong	State owned before 2002
7	Yisa River Hydropower Station	26.6	Yuxi City Yuanjiang County	State owned before 2002
8	Laohushan II Hydropower Station	25	Chuxiong Perefeture	State owned before 2002
9	Hongshiyuan Hydropower Station	44	Yiliang County	State owned before 2002
10	Jiren River Hydropower Station	30	Diqing Prefeture Shangri-La County	State owned before 2002
11	Wuni River Hydropower Station	30	Baoshan City Longling County	Yunnan Baoshan Supahe Hydropower Development Co., Ltd. (State Owned)
12	Houqiao Hydropower Station	48	Baoshan City Tengchong County	Yunnan Baoshan Binlangjiang Hydropower Development Co., Ltd. (State Owned)
13	Xima Xingyun Aluminium Factory Hydropower Station	26	Dehong Prefecture Yingjiang County	Yunnan Yingjiang Xingyun Co., Ltd.
14	Chongjianghe II Phase (Expansion) Hydropower Station	48	Diqing Prefecture Yulong County	Guodian Diqing Shangri-la Generating Limited Liability Company
15	Nanting River Hydropower Station	34	Wenshan Prefecture Maguan County	Wenshan Electric Power Co., Ltd. (State owned)
16	Mengdianhe II Hydropower	30	Dehong Prefecture Yingjiang County	Yingjiang Mengdian River Second Level Power Station Co., Ltd.
17	Xiashilong Hydropower Station	25	Wenshan Prefecture Guangnan County	Guangnan Xinangjiang Hydropower Development Co., Ltd.

18	Laodukou Hydropower Station	36	Qujing City Luoping County	Yunan Luoping Laodukou Power Co., Ltd. (State Owned)
19	Yanziya Hydropower Station	25	Dali Prefecture Heqing County	Heqing Xinyuan Yanggongjiang Power Co., Ltd. (State Owned)
20	Maomaotiao Hydropower Station	40	Wenshan Prefecture Malipo County	Maomaotiao Power Co., Ltd.
21	Luoshuidong Hydropower Station	20	Wenshan Prefecture Xichou County	Wenshan Electric Power Company (State owned)
22	Gula Tianshengqiao Hydropower Station	40	Wenshan Prefecture Gula village	Gula Hydropower Development Company Ltd (State owned)
23	Xiaopengzu Hydropower Staation	30	Yunan province, Luquan County	Kunming Xiaopengzu Hydroelectric Development Co.Ltd.

Sources: *Yearbook of China Water Resources 2006, Yunnan Statistical Yearbooks 2003-2005 and Chinese DNA website.*

According to the *Tool for the Demonstration and Assessment of Additionally*, projects seeking CDM financing should not be considered in the common practice analysis, hence 23 projects were analysed. The first ten projects (1-10) have been developed by state-owned companies before the Hydro Power Reform was introduced in February 2002 with the main objective of building a competitive and open market for power generation in China. Therefore, these projects cannot be considered similar to the project activity as they have not taken place in a comparable environment with respect the regulatory framework and the investment climate.

The Wuni River Hydropower Station¹ (11) and Houqiao Hydropower Station² (12) have joined the West-East Electricity Transmission Project, a Government sponsored project offering favourable economic conditions to power suppliers participating in the project with the aim to secure transmission of power from West China to East China.

The Xima Xingyun Aluminion Factory Hydro Station³ (13) is a captive station of Yunnan Yingjang Xiingyun Co. Ltd and The Chongjianghe Phase II⁴ (14) is an expansion of an already existing power plant. They should therefore not be considered similar to the project activity for investment and technological reasons.

The existing projects that, according to the *Tool for the Demonstration and Assessment of Additionally*, can be considered similar to the Project Activity are the last nine Projects (15-23) listed in table 2. The unit costs for these three projects are:

¹ <http://www.leica-geosystems.com.cn/newsdetail.asp?l3=0&nid=469>

² <http://www.baoshan.cn/4034/2005/10/25/707@277291.htm>

³ <http://0871.und.cn/small/cpybase.do?companyid=D658A7E06D9B41318F44FBF1B0E6C0E7>

⁴ <http://0871.und.cn/small/cpybase.do?companyid=D658A7E06D9B41318F44FBF1B0E6C0E7>

Table 3 - Unit Cost for Similar Projects to the Project Activity

Number	Name of hydropower plant	Installed Capacity (MW)	Total Investment (10 ⁴ RMB)	Annual electricity generation (MWh)	Unit cost (RMB/kWh)
15	Nanting River Hydropower Station ⁵	34	154,000	195,000	0.7897
16	Mengdianhe II Hydropower ⁶	33	126,000	180,000	0.7000
17	Xiashilong Hydropower Station ⁷	25	101,500	100,545	1,0095
18	Laodukou Hydropower Station ⁸	36	199,700	189,000	1,057
19	Yanziya Hydropower Station ⁹	25	125,000	150,000	0.8333
20	Maomaotiao Hydropower Station ¹⁰	40	132,000	172,280	0.7662
21	Luoshuidong Hydropower Station ¹¹	20	86,000	153,600	0.5599
22	Gula Tianshengqiao Hydropower Station ¹²	40	179,070	172,400	1.0387
23	Xiaopengzu Hydropower Station ¹³	30	165,053	132,000	1.2504
	Proposed project activity	48	198,570	219,650	1.0064

The unit costs of Nanting (15), 0.7897 RMB/ kWh, Mengdianhe (16), 0.7 RMB/kWh, Yangziya (19), 0.8333 RMB/kWh, Maomaotiao (20), 0.766 RMB/kWh and Luosuidong (21), 0.5599 RMB/kWh, are significant lower than the 1.0064 RMB/kWh of the project activity. This is due mainly to the better hydrological resources at the locations of those projects. Therefore, they are not in comparable environment as the proposed project activity. In addition, these projects are owned by state-owned or stock-exchange listed companies and have thus better access to financing than the private project owner of the project activity.

The Xiashilong Hydropower Station (17), Laodukou Hydropower Station (18) and Gula Tianshengqiao Hydropower Station (22) have similar unit costs as the project activity, but these projects are financed by large state-owned or large private shareholders including Guangnan Xinangjiang Hydropower Development Co., Ltd., Yunan Luoping Laodukou Power Co., Ltd., China Hydroelectric 8th Bureau, Yunnan province hydraulic and hydroelectric engineering Co.,

⁵ <http://news.sina.com.cn/c/2004-12-30/09444669685s.shtml>

⁶ <http://finance.memail.net/050110/129,5,571873,00.shtml>

⁷ <http://www.ydxw.com/showinfo.asp?id=32571>

⁸ http://www.7c.gov.cn/color/ContentDisplay_906.aspx?nContentId=21605

⁹ http://www.bhi.com.cn/info/show/Show_N107.asp?ID=78270&Code=R5IDEH

¹⁰ http://www.ynws.gov.cn/docdetail_new.asp?id1=20050321081428

¹¹ http://www.7c.gov.cn/color/DisplayPages/ContentDisplay_455.aspx?contentid=9180

¹² http://www.ynfn.gov.cn/zwgk/zwdt/200605/zwgk_4919.html

¹³ <http://ynepb1.yn.gov.cn/doc/200503/lqxpzsdz.doc>

Ltd., Yunnan Yuxi hydroelectric group Co., Ltd., Kunming Electrical and Mechanical Service Co., Ltd. and Yunnan Wenshan Electricity Co., Ltd. Compared to the proposed project, developed by a small-size private company, these projects have better access to financing.

The Xiaopengzu hydropower station has higher unit costs than the project activity. In fact this project is on sale since it faces large financial difficulties and is hard to be implemented by the former project owner¹⁴. The project is in any case located nearby Kunming City whereas the proposed project activity is located in one of the poorest rural areas of the Yunnan Province making it harder to have access to financing.

Based on the above, DNV has accepted the Project Participant claim that the Project Activity is not a common practice.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS



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¹⁴ <http://www.zj71.com/show.php?id=289>