

December 17<sup>th</sup>, 2009

UNFCCC Secretariat  
Martin-Luther-King-Strasse 8  
D-53153 Bonn  
Germany

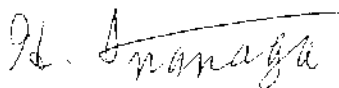
**Response to request for review of project activity "Yunnan Lincang City Nanlinghe  
1st level Small-scale Hydropower Project" (Ref. no. 2812)**

Dear Daniele Violetti and the CDM Team,

We refer to your Request for review of the proposed CDM project activity "Yunnan Lincang City Nanlinghe 1st level Small-scale Hydropower Project " (2812). Please find below the following clarifications for your consideration and review. The clarification is the collective opinion of the project participants and the DOE.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours sincerely,



Hiroshi INANAGA

CEO

Deloitte Tohmatsu Evaluation and Certification Organization (Deloitte-TECO)

## **Response to the CDM Executive Board**

The purpose of this response is to clarify the proposed project activity of "Yunnan Lincang City Nanlinghe 1st level Small-scale Hydropower Project " (2812) and the relevant validation findings, and to answer the request for review, which is notified by the UNFCCC secretariat on 4 December 2009. To ensure clarity of the response to the request for review, Deloitte-TECO requested the project participants to provide their own response for the request for review. Deloitte-TECO and the project participants believe these responses help well understanding of the proposed project activity applying for Clean Development Mechanism.

### **Issue 1**

The DOE should further validate the 0.9 effective electricity coefficient and the 5% transmission loss and internal consumption used in the investment analysis, in line with VVM parag. 109 and 112.

### **Response by Deloitte-TECO**

Deloitte-TECO has validated the effective electricity coefficient and the transmission loss and internal consumption used in the investment analysis, in line with the VVM guideline as mentioned below:

*109. To verify the accuracy of financial calculations carried out for any investment analysis, the DOE shall:*

- (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;*
- (e) Assess the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions.*

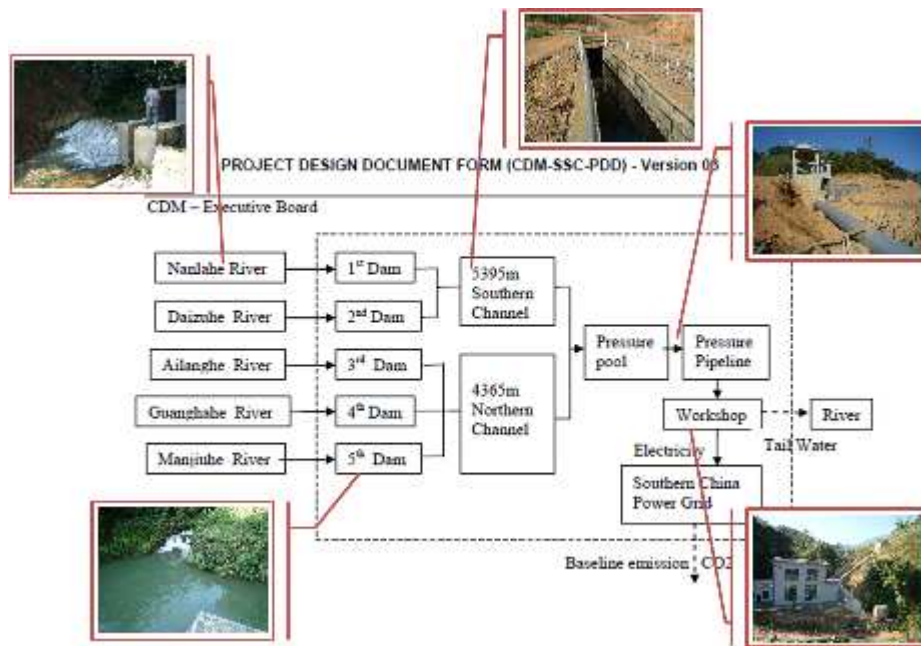
*111. The Board clarified that in cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, DOEs are required to ensure that:*

- (a) *The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed;*
- (b) *The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values;*
- (c) *On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.*

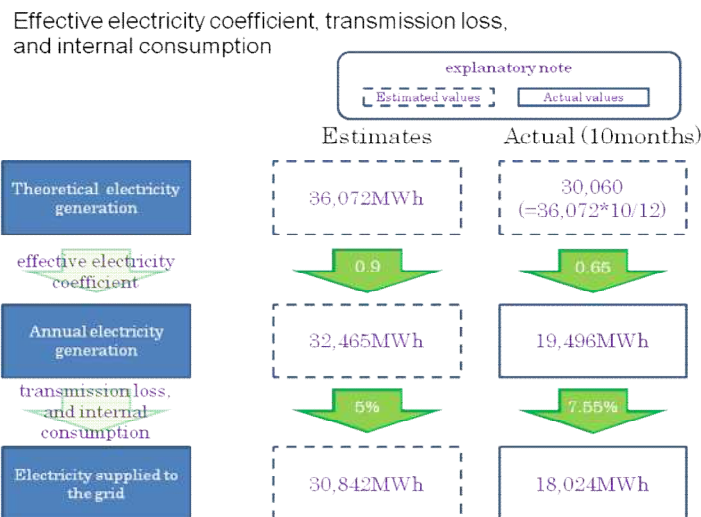
Deloitte-TECO has confirmed that the 0.9 effective electricity coefficient for the proposed project activity is in accordance with the section 3.4 of the “Economic Evaluation Code for Small Hydropower Projects (SL16-95)”. The PPs’ response also referred to the Chinese governmental regulation of the investment assessment for the small scale hydropower project with more circumstance.

Also, it was confirmed that the total 5% of transmission loss and internal consumption were derived by the design institute from grid-connected circumstance, facilities specification, and geographical conditions including a distance of 12 kilometers between hydropower station and the grid. The calculation was conducted under the official code “the Chinese Hydro Energy Design Code for Small Hydropower Projects (SL76-94)” (Reference 7 in the PPs’ response). And the total 5% were not beyond the upper limit of the values described in the official code (11% of the upper limit for comprehensive grid/line loss, and 1.0% of the upper limit for the internal power consumption of the power plant).

Deloitte-TECO conducted the on-site assessment on Dec 2008, as mentioned in the validation report, and it was observed that the project type of the proposed project activity is a grid connected hydropower plant with no regulating hydropower plant. The project site consists with five small dams which are located in five small rivers respectively, and each of dams is categorized into micro hydropower technology with low-level environmental effects. Stream water is diverted away from a portion of the stream with non-regulated continuing overflow. Therefore, Deloitte-TECO concluded that it is reasonable to classify the proposed project activity as no regulating hydropower plants, which is described in the section 3.4 of SL16-95, and as a result, the effective electricity coefficient for the proposed project falls into 0.9 which is the most conservative value within the range. For your reference, an overview flowchart of the project site is attached with some pictures:



Meanwhile, the accuracy and suitability of the parameters were assessed in a cross-check manner. Deloitte-TECO reviewed differences between the estimates and actual values of the annual electricity for the proposed project, which were provided in the PPs' response. The actual data was based on 10 month operation from the start-up (Jan 2009 through Oct 2009). The data was summarized in the following drawing:



Actual values of the above-mentioned electricity supplied to the grid were evidenced by electricity sales invoice, and Deloitte-TECO checked them with satisfactory results. This drawing showed that the effective electricity coefficient calculated from the actual values were 0.65 and more conservative than 0.9 of that calculated from estimated values at the time of FSR. In a similar discussion, the total 7.55% of transmission loss and internal

consumption calculated from the actual electricity supplied to the grid was more conservative than total 5% of those in the FSR. In conclusion, these aspects were considered appropriate in terms of conservativeness.

In addition, Deloitte-TECO has made a conservative calculation of the IRR, assuming the effective electricity coefficient would come to 100% for the proposed project, which would be the most conservative effective electricity coefficient. The result of the IRR recalculation was 9.70%, still below the 10% official benchmark. Therefore, the proposed project activity was still deemed to be financially unattractive, though these conditions are unlikely to occur in reality.

## **Issue 2**

The DOE should validate the operational hours of the project activity, in line with EB 48 Annex 11.

## **Response by Deloitte-TECO**

Deloitte-TECO has validated the operational hours of the project activity, in line with the VVM guideline “GUIDELINES FOR THE REPORTING AND VALIDATION OF PLANT LOAD FACTORS” on Annex11 of EB48, in particular as mentioned below:

3. The plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options:
- (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;
  - (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company);

According to the above-mentioned guideline, in particular para 3(b) on Annex 11 of EB48, it was confirmed that the FSR was completed by a third party local design institute “Water & Hydroelectric Power Investigation, Design and Research Institute of Lingcang City, Yunnan Province”. It is a Grade C license holder in hydropower engineering design, and the license has been authorized by the provincial government (Construction Department of Yunnan Province). It was also checked that the FSR was approved by the local authority “Lingcang City Development and Reform Commission of Lingcang City”. This fact led Deloitte-TECO to the conclusion that the processes of feasibility study for the investment analysis are appropriate and reliable.

Meanwhile, it was confirmed that 4,509 hrs annual operation hour was estimated in the approved FSR for the proposed project activity. The value was estimated by the design institute using local historical hydrological data for 31-year period of time from 1971 through 2002. The calculation method for the annual operation hours by the design institute, based on its design experience and its own common practice analysis, was explained carefully by project participants in the response, and Deloitte-TECO considered the explanation as appropriate, and considering the value of the annual operation hours, the Plant Load Factor (PLF) was calculated as 51.5% (=4,509h/8,760h). As a cross check of the calculated PLF, data of similar capacity projects in the recently registered CDM project activities in Yunnan province was gathered in the table below:

ID	Ref.	Title	Province	Registered	Capacity (MW)	Annual electricity generation (MWh)	Operation hours (hours)	Plant Load Factor
1	2054	Shangri-La Langdu River 2nd Level Hydropower Station	Yunnan	19-Dec-08	22.5	94,110	4,183	47.7%
2	2055	Shangri-La Langdu River 3rd Level Hydropower Station	Yunnan	20-Dec-08	18	82,313	4,573	52.2%
3	2059	Shangri-La Langtayong Hydropower Station	Yunnan	20-Dec-08	18	83,664	4,648	53.1%
4	2050	Shangri-La Langdu River 1st Level Hydropower Station	Yunnan	30-Dec-08	21.6	98,246	4,548	51.9%
5	2057	Shangri-La Langdu River 4th Level Hydropower Station	Yunnan	10-Jan-09	24	113,142	4,714	53.8%
6	1779	Yunnan Jinping Dapo Hydropower Station	Yunnan	13-Jan-09	8.2	42,107	5,135	58.6%
7	2016	Yunnan Yingjiang Xiangbai River Zhina Hydropower Station	Yunnan	31-Jan-09	21	106,800	5,086	58.1%
8	2063	Yunnan Longchuan Nanwanhe 2nd Level Hydropower Station	Yunnan	16-Feb-09	20	106,400	5,320	60.7%
9	1997	Yunnan Yingjiang County Binglang River Mangkang Hydropower Station	Yunnan	24-Mar-09	10.5	51,710	4,925	56.2%
10	1988	Yunnan Yingjiang Zuanshui River Hydropower Station Project	Yunnan	24-Mar-09	14	74,102	5,293	60.4%
11	2003	Yunnan Guangnan Duimen River Hydropower Station	Yunnan	25-Mar-09	20	98,540	4,927	56.2%
12	2000	Yunnan Yingjiang Yinhe Hydropower Station	Yunnan	26-Mar-09	12.6	53,920	4,279	48.9%
13	2015	Yunnan Dayao County Yupao River 3rd Level Hydropower Station	Yunnan	14-Apr-09	20	77,600	3,880	44.3%
14	2376	Yunnan Tengchong Longchuan River Stage I Hydropower Plant, China	Yunnan	25-May-09	24	125,630	5,235	59.8%
15	2429	Yunnan Xinya River 3rd Level Hydropower Project	Yunnan	29-May-09	10	39,000	3,900	44.5%
16	2064	Yunnan Jinping Miao-Yao-Dai Autonomous County Kesikou Hydropower Station	Yunnan	7-Jul-09	17	81,200	4,776	54.5%
17	2116	Yunnan Yingjiang Mangya River 1st Hydropower Station	Yunnan	16-Jul-09	24.9	145,342	5,837	66.6%
18	2106	Yunnan Lianghe Hulukou Hydropower Station	Yunnan	14-Aug-09	20	110,320	5,516	63.0%
19	2238	Yunnan Yingjiang Mangya River 2nd Hydropower Station	Yunnan	12-Oct-09	12.6	71,560	5,680	64.8%
20	2690	Shangri-La Xinglonghe Cascade Hydropower Project	Yunnan	16-Oct-09	24	122,520	5,105	58.3%
21	2903	Yunnan Province Yingjiang County Zhanda River Hydropower Station	Yunnan	23-Nov-09	7.5	37,422	4,990	57.0%
22	2812	Yunnan Lincang City Nanlinghe 1st level Small-scale Hydropower Project	Yunnan	-	8	36,072	4,509	51.5%

It was deemed that the PLF for the proposed project activity falls within the range identified above, such as from 44.3% to 66.6%, and there is no significant deviation from operation hours of registered CDM hydropower projects in Yunnan province.

### **Issue 3**

The DOE is requested to further explain how the proposed tariff for the project activity has been determined, as with the application of the highest tariff issued for similar projects in the province, the IRR crosses the benchmark.

According to the PPs' response, it was confirmed that the tariff, which is higher than 0.18RMB/kWh including VAT on average, is not able to be adopted to the tariff for the proposed project activity, due to constraint conditions described in the "Notification about Issues Regarding Trail Implementation of Rainy and Dry Tariff for Un-centralized Regulating Power within Yunnan Grid (Yunfagajijage [2005] No. 792)" issued on 30/08/2005 (Reference 3 in the PPs' response). It was explained carefully in the PPs' response that uncentralized regulating power is defined as power generated by regional power station which has not concluded any power purchase agreement with any branch grids of Yunnan Province Grid Company, and also has not been under the direct regulation of Yunnan Province Grid Company and the branches. According to the power purchase agreement for the proposed project (Reference 9 in the PPs' response), the project owner concluded the agreement with Lincang City Local Grid Company Cangyuan Branch, not a branch of Yunnan Province Grid. Thus it brought us to a fact that the tariff value for the proposed project activity was determined in advance as 0.18 RMB/kWh including VAT, since the power plant was identified as one of uncentralized hydropower stations in Yunnan province.

For a cross-check, Deloitte-TECO reviewed actual data of tariff for similar hydropower projects, which was explained carefully by Lincang Region Grid Company (Reference 5 in the PPs' response), as well as reviewed tariff comparison data, in the PPs' response, which was conducted by the project participants using all registered and registration requested small scale hydropower projects (lower than 50MW) within Yunnan Province. It was considered reasonable.