

21 December, 2011

Attn. CDM Executive Board

Ref: Validation opinion to the Response by project participant to the request for review of "Xiaogushan Hydropower Project in People's Republic of China" (0378)

Dear Sirs,

JACO CDM has been informed that the request for issuance for CDM project activity "Xiaogushan Hydropower Project in People's Republic of China" (0378) for the monitoring period of 1 January to 31 December, 2010 is under consideration for review.

JACO CDM would like to submit the validation opinion to the response by the project participant as below.

**PP response 1: "The financial analysis demonstrated at the time of registration remains valid and sound. The reasons for increase of PLF or the increase of power generation were not within the control of the project participant to anticipate at the time of project design and investment decision."**

**JACO CDM comments:**

During the actual operation, as mentioned in the verification report, JACO CDM observed that the electricity generated during the 5th monitoring period (01/01/2010 – 31/12/2010) was 16.6% higher than the estimate in the PDD and there is an average increase in PLF of 22.3% compared to the PDD estimate during the last four full year monitoring periods<sup>1</sup> (2007: 27.7%, 2008: 17.2%, 2009: 27.6%, 2010: 16.6%).

Regarding this increased electricity generation (and PLF), JACO CDM validated the PP response based on the "Guidelines on assessment of different types of changes from the project activity as described in the registered PDD". (EB48 Annex 67)

JACO CDM confirms that there are no changes that are within the control of the project participant which may impact the validity of additionality analysis established at the time of project registration as concluded below.

1. There have not been any changes in the installed capacity, increased number of units and technologies described in the registered PDD since the start of the project operation in May – July, 2006. Also, there have not been any additions of components and extension of technology. Further, the project does not have multiple sites. (EB48 Annex 67 Section 5(a),(b),(c))
2. The increase in electricity generation and thus PLF is due to the water flow increase in the Heihe River since 2005. Such increase could not be predicted at the project design stage and was not observed in the historic time series flow data; hence the reasons of the

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<sup>1</sup>The generation in year 2006 was not a full year. Given the variability and seasonality of the water flow by month, the prorated value does not represent the overall pattern.

increase of PLF and electricity generation were not within the control of the project participants as explained in the PP response.

Therefore, the changes do not fall in the category of changes as per the Section 5(d) of EB48 Annex 67.

3. The assumptions underlying the original data/information are correct. (EB48 Annex 67 Section 7)

## Explanations for the above item 1-3.

1. Throughout the verification period for 2006 to 2010, JACO CDM confirmed that the changes corresponding to EB48 Annex 67 Section 5 (a) and (b) are not found. The project always has one site, so no concern exists related to Section 5 (c).

2. Different values of actual operational parameters: Not within the control of the PP

(1) The FSR of the project had been carried out from August, 2001 by the design institute, Gansu Province Water Conservancy & Hydraulic Power Survey Design Institute which is the class A design institute accredited by the national Ministry of Construction.

The FSR is based on the best available information available during the feasibility study stage applying the national design codes for hydropower projects (SL76-94) and Hydroelectric power station hydrological calculation specification (SL77-94).

The FSR was approved by the Gansu Province Development and Reform Commission on 4<sup>th</sup> April, 2002. The FSR was also approved China Hydropower Engineering Consulting Co., Ltd. along with the Asia Development Bank that provided financing to the project activity.

In the FSR, following the guidelines in the design codes documents, the design institute used the historical data of water flow statistics of the Heihe River for 57 years (1944-2000) from Yingluo Gorge Hydrological Observation Station which is located approximately 30km down stream of the Xiaogushan Hydropower Plant and this is also the base of the registered PDD. The water statistics of FSR is up to 2000 and in the time series period considered for evaluation, there is no indication of the water flow increase observed from year 2005. Moreover, the calculation and estimation of water flow availability and hence the electricity generation potential follows the standard industry practice.

(2) The PDD version 1 was made in June, 2005 and the validation had been conducted to the PDD based on the above FSR. The project was registered on 11 August, 2006 (Request for registration in April, 2006).

As seen in the Heihe River water flow statistics up to 2004, the best available data at the time of validation, the water flow of the Heihe River does not indicate any pattern of significant increase. The increase in water flow of the Heihe River took place after 2005 and this increase was not possible to predict during the project design and validation stage in 2005-1<sup>st</sup> quarter of 2006.

(3) The water flow increase after 2005 is due to climate change such as increase of precipitation and increased snow melting in Qilian Mountain region (origin of Heihe River) as explained in PP response. In the verification for the period of 2009, JACO CDM confirmed by the interview with the Zhangye City Hydrologic and Water Resource Survey Bureau that the water flow is caused by the similar phenomena such as (a) rain fall in the watershed (b) undercurrent water which is affected by rainfall (c) melting of glaciers of Qilian Mountain.

The power generation data (2005-2010) for the two other hydropower plants (Longshou and Xiliushui), which are located in the down stream of Heihe River shows a very consistent pattern with the generation data of Xiaogushan power plant and the hydrological statistics of the Yingluo Gorge as shown in the PP response and the verification report for 2010 monitoring period.

By above (1)-(3), it is concluded that the reasons of the increase of PLF and power generation were not anticipated at the time of project design nor within the control of the project participants

### 3. Correctness of the assumptions underlying the original data/information:

The essential document and data for electricity generation are FSR and the water flow statistics in the Heihe river. The FSR are made by class A design institute and approved as described above. The water flow statistics of Yingluo Gorge is an official data provided by Zhangye City Hydrologic and Water Resource Survey Bureau.

It is confirmed that:

- (1) The water flow data in the FSR is based on the water flow statistics of the Yingluo Gorge of the Heihe River for 57 years (1944 to 2000).
- (2) The description of the PDD is consistent to the description of the FSR. Also, it is not possible to foresee the water flow increase after 2005 at the validation stage.

Therefore, it is concluded that the assumptions underlying the original data/information are correct.

## **PP response 2: Several prohibitive barriers remained significant to prevent the project activity from being implemented without the CDM.**

### **JACO CDM comments:**

#### a. Financial barrier

The project site is located in Xishui, one of the poorest townships of Zhangye Prefecture in Gansu province which is the second poorest province in China and the access to financing was one of the most significant barriers at the time of decision making as stated in the PDD and the PP response.

#### b. Other perceived high project risks

As explained in the registered PDD (p23-25), the project envisaged several barriers, including regulatory risk for tariff, capital cost overrun, and significant foreign exchange risk. The reduction in tariff was one of the risks perceived at the time of investment decision, which could prevent the project from being implemented and the actual situation proves that the risk has materialized.

In the financial analysis, the tariff of 0.29 CNY/kWh from the PPA was applied (PDD p21). However, the actual tariffs decided by the Gansu Price Bureau superseded it. During the monitoring periods of 2007 -2010, the actual tariffs were much lower than this value, as shown in table 1 below. The average tariff of the 4 years (2007 – 2010) is 0.245 CNY/kWh, which is 15.5% lower than the tariff applied in the investment analysis (0.29 CNY/kWh).

Also, similar to the increased water flow and power generation, the decreased tariff was out of the project participant's control while it negatively impacts the project investment return.

Table 1: Actual average tariff for year 2007-2010

Year	2007	2008	2009	2010	Average of 4 years
Tariff (CNY/kWh)	0.24778	0.24778	0.237*	0.2478	0.245

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Year	2007	2008	2009	2010	Average of 4 years
Tariff (CNY/kWh)	0.24778	0.24778	0.237*	0.2478	0.245
Electricity to the grid (MWh)	472,849.7	433,920.2	472,444.2	432,088.6	452,825

\* The tariff in 2009 was slightly further decreased due to temporary adjustment based on the policy issued by the provincial price bureau. This value is the total revenue in 2009 divided by the total electricity delivered to the grid in 2009. ( $111,951,845 \text{ CNY} / 472,444,264 \text{ kWh} = 0.237$ )

Note: These data are taken from the power purchase settlement notices of Gansu Power Grid for each year submitted along with the monitoring report available in the UNFCCC web site.

## Conclusion

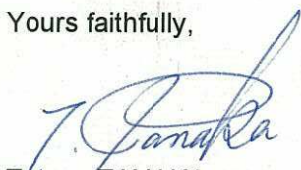
Based on above assessment to PP response 1 and 2,

- (1) JACO CDM confirms that the increase of water flow could not be predicted and was not observed in the historic time data series at the project design stage; hence the reasons of the increase in PLF and power generation were not within the control of the project participants and do not fall in the category of changes as per the Section 5(d) of EB48 Annex 67 and hence there is no requirement for reevaluating the investment analysis and the additionality argument.
- (2) JACO CDM also confirms that there were significant barriers such as financial barriers and other project barriers (such as tariff) that could pose high risk to the project.

Therefore, JACO CDM confirms that the increase in PLF does not affect the additionality of the project activity.

We sincerely hope that the Board accepts aforementioned validation opinion and we look forward to the CER issuance of the project activity.

Yours faithfully,



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JACO CDM