

December 21, 2011

Mr. Martin Hession
Chair, CDM Executive Board

Mr. Maosheng Duan
Vice Chair, CDM Executive Board

Members of the CDM Executive Board
c/o UNFCCC Secretariat
P.O. Box 260124
D-53153 Bonn
Germany

Ref: Response to request for review of “Xiaogushan Hydropower Project in People’s Republic of China” (0378)

Mr. Hession,

Mr. Duan,

Honorable Members of the CDM Executive Board,

In response to the request for review of “Xiaogushan Hydropower Project in People’s Republic of China” (0378), we bring to your kind attention the following clarifications and responses.

- 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.**

The reasons for the increase in PLF post implementation of this project activity are not within control of the project participant and difficult to predict at the investment decision making time and hence following Section 5(d) of the “Guidelines on assessment of different types of changes from the project activity as described in the registered PDD” (Annex 67, EB 48), such changes would not fall into the category of changes that may impact the additionality of the project activity. The detailed reasoning is as follows.

a) The water flow estimation at the time of design stage followed the national design codes and industry practices based on best available information

The estimation of electricity generation potential during the project design was based on the historical water flow data of 1944-2000 from Yingluo Gorge Hydrological Observation Station. The accredited (Class A) design institute¹, Gansu Province Water Conservancy & Hydraulic Power Survey Design Institute, following the standard industry practices, used this time series

¹ Accreditation Certificate by the national Ministry of Construction

historical data and estimated the best possible water flow availability for the project and hence the electricity generation potential².

The design calculations including the water flow and electricity generation were estimated based on the best available information and the procedures complied with the procedures prescribed in relevant industry standards – Design code for hydropower projects (SL76-94) and Hydroelectric power station hydrological calculation specification (SL77-94) and industry common practice³. As per the standard procedures outlined in the standard codes and specifications, the design institute collected the historical time series data on water flow for 57 years and then ranked the available inflow years and selected the representative years for the hydro-energy potential calculations for the project. Furthermore, the Feasibility Study Report for Xiaogushan Hydropower Plant was approved by both Gansu Province Development and Reform Commission and China Hydropower Engineering Consulting Co., Ltd along with the Asia Development Bank that provided financing to the project activity. This confirms that the energy generation potential was estimated based on the best available information available during the design stage and following the applicable industry standards.

b) The period from 2005 to 2010 falls in a wet period in term of water flow in Heihe River. It was the first wet period since the start of the historic water record in 1944 and thus was not predictable at the time of project design when the Heihe River had been historically at its normal or dry periods in the previous 57 years (1944-2000).

The increase of PLF is due to the increase of electricity generation given that the installed capacity remains unchanged. This increase is mainly due to the unforeseeable increase of the water flow in the Heihe River as compared to the best possible estimate of water flow based on the time series of historical annual water flow for 57 years (1944-2000) during the project design stage.

During the period of 57 years (1944-2000), the Heihe River was statistically at its normal and dry periods in term of its water flow. The average annual runoff from 1944 to 2000 is $1.58 \times 10^9 \text{ m}^3$ and the annual water flow is $50.2 \text{ m}^3/\text{s}$. And the average annual water flow during the period of year 2005-2010 is $60.1 \text{ m}^3/\text{s}$ and exceeds the 57-year average value by 19.7%.

According to the recorded hydrological data the annual average water flow of the Heihe River increased significantly during the period of year 2005 and year 2010 compared to the average water flow during past 57 years. Most of the period prior to 2005 either be considered as normal (1944-1967, 1983-2004) or dry (1968-1982)⁴ when compared with the historical average water availability. But the period from between 2005 and 2010 falls in a wet period, the first wet period since the water survey bureau started monitoring water flow, where the average water flow rates are considerably higher than historical average due to high precipitation and heavy snow melting. Consequently, the electricity generation has been higher than the volume estimated in the project design during the concerned period. This pattern of increase in water flow and power generation was not at all anticipated at the time of project design.

² Source: Statement on Adoption of Hydrological Data for Preliminary Design of Xiaogushan Hydropower Plant by Gansu Province Water Conservancy & Hydraulic Power Survey Design Institute

³ Source: Xiaogushan Preliminary Engineering Design, Gansu Province Water Conservancy & Hydraulic Power Survey Design Institute

⁴ Source: Statement on Water Flow Increase of Heihe River in Recent Years by Zhangye City Hydrology and Water Resource Survey Bureau

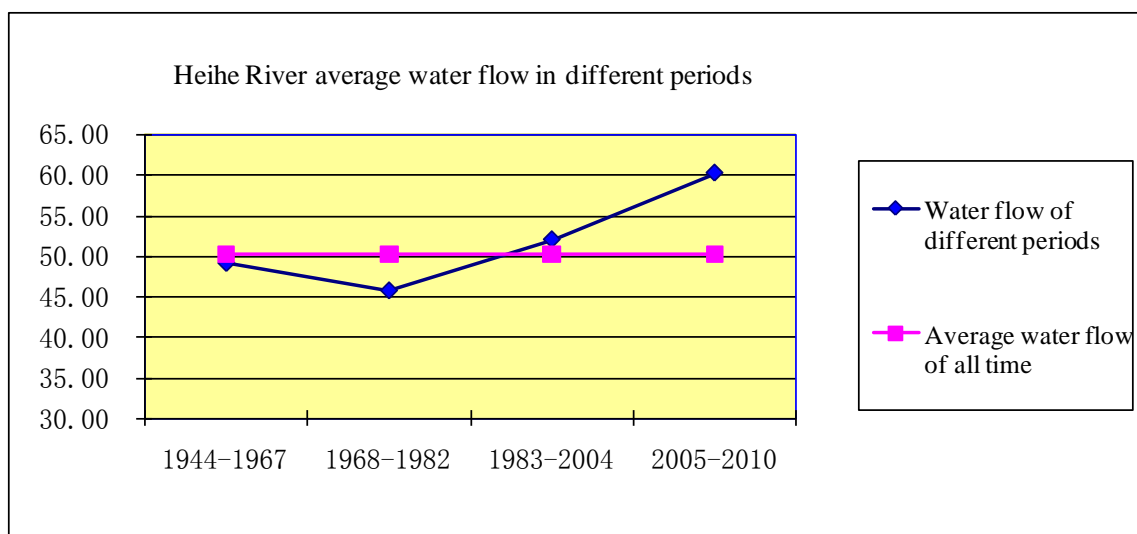


Figure 1 Historic annual average water flow for Heihe River⁵

c) Heavy precipitation and snow melting has resulted in high water flow rates in the river. The increase in water flow and power generation is a phenomenon consistent across the Heihe River and surrounding area. This pattern is not within the control of the project participant.

The precipitation has increased significantly and ice-melting phenomenon from upstream has also accelerated due to warmer weather in recent years, according to Heihe River water flow statistics performed by Zhangye City Hydrology and Water Resource Survey Bureau. Consequently, the annual runoff and annual average water flow keep increasing. As a result, the average annual water flow during the period of year 2005-2010 exceeds the 57-year average value by 19.7%.

During the period of 1994-2004, the ranges of annual precipitation in deep and shallow mountain areas were 400-500mm and 250-450mm, respectively. During the period of 2005-2010, these figures have increased to 460-560 mm and 300-500mm, respectively. This increase in precipitation is a major cause of the increase of the runoff. In addition to this, more even distribution of the runoff throughout the year was observed as a result of combination of increased precipitation and increased snow melting. Monitoring of temperature data in the region shows that the temperature in Qilian Mountains region (origin of Heihe River) only rose 0.1 °C between 1960s and 1980s. In 2005, the increase of the temperature reached 1.17 °C. A study from the Chinese Academy of Sciences also shows that due to climate change, glaciers in Qilian Mountains (source of the Heihe River) has melt 6 meters in recent years, the volume of melting ice and snow each year is about 1 billion cubic meters⁶. This phenomenon is likely to continue in near future and hence expected more water flow availability to the hydro projects on the river.

Xiaogushan Hydropower project is not an exceptional case in term of increase in power generation due to greater water flow. As a matter of fact, the power generation data (2005-2010) for the two other hydropower plants (Longshou and Xiliushui), which are located in the downstream of Heihe river shows a very consistent pattern with the generation data of the Xiaogushan power plant and the hydrological statistics of the Yingluo Gorge, which is illustrated

⁵ Source: Statement on Water Flow Increase of Heihe River in Recent Years by Zhangye City Hydrology and Water Resource Survey Bureau

⁶ <http://news.cn.yahoo.com/newspic/news/13762/4/>, http://www.xinhuanet.com/chinanews/2010-07/20/content_20383860.htm, Xinhua News Agency, 22/4/2011
<http://news.cn.yahoo.com/newspic/news/13762/4/>, Xinhua News Agency, 20/7/2010

in Figure 2 below. The increased water flow has been consistently the case for all power plants along the same river.

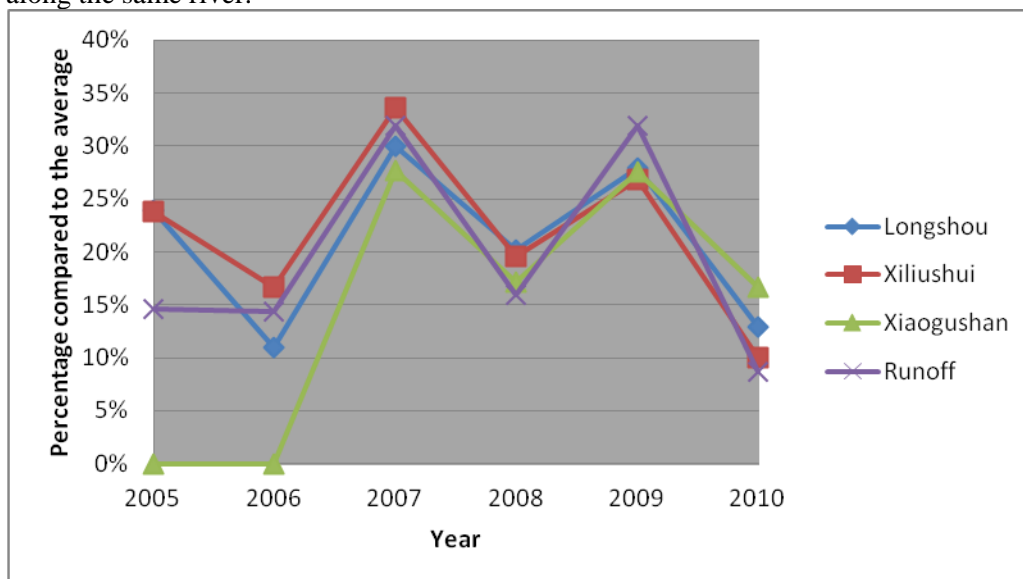


Figure 2 Analysis of neighboring hydropower plants' Electricity Generation

This phenomenon is not only common in the Heihe River area, but also consistent across the region. Besides the Heihe River, there are other rivers in the surrounding areas which experienced the same pattern of increased water flow and runoff during the concerned period of time. For instance, the water flow in the Yellow River increased by 15% in 2004-2009 compared to the historical average.⁷ The Taolai River shows very similar water flow statistics according to the Bureau of Water Resources in Gansu Province⁸: the annual average water flow in 2005-2010 is 32.5% higher than the annual average during the period of 1991-2004.

Based on the above, it can be concluded that the design calculations were done based on the best available information according to the national design codes and industry practice. The increase in the PLF and power generation was not anticipated at the time of project design nor within the control of the project participant. The investment decision was thus made in accordance with the outcome of the financial analysis using the best available information available and barrier analysis demonstrated in the registered PDD, which remain entirely valid and sound.

2. Several prohibitive barriers remained significant to prevent the project activity from being implemented without the CDM.

A number of barriers identified in the registered PDD were prominent at the time of investment decision regardless of the financial (benchmark) analysis.

a. Financing Barrier

Access to Financing is one of the most significant barriers the project participant faced at the time of decision making. In fact, the project participant, Heihe Hydro Development Shareholding Co.,

⁷ Source: http://www.china.com.cn/news/local/2010-01/26/content_19307189.htm China News

⁸ Source: Taolai River water flow statistics provided by Bureau of Water Resources in Gansu Province

Ltd did not qualified for domestic bank's loan⁹ due to the limited assets of 108 million CNY prior to the ADB's involvement. When the project participant was negotiating with ADB for the loan in 2002, as the project guarantee agency, Gansu Finance Bureau perceived high project risk and required US dollar-denominated CDM fund to be seriously sought as a way to mitigate the high project risk and insisted on this as the condition to approve and provided guarantee to the proposed ADB loan¹⁰. This soundly demonstrates that CDM is a decisive factor enabling the breakthrough of the prohibitive financing barrier the project faced.

b. Other perceived high project risks

Several project risks (i.e. capital cost overrun, regulatory risk for tariff, significant foreign exchange risk, etc) were clearly envisaged at the time of investment decision and could have prevented the project from being implemented.

Notably, the regulatory risk for tariff has materialized as the provincial Price Bureau published the new tariff (0.24778 CNY/kWh) on December 12, 2006¹¹ and further decreased the tariff in year 2009¹². 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). The reduced tariff is out of project participant's control, similar to the increased power generation and it adversely impacts the project investment return.

In summary, the additionality of the project is not affected by the increase in PLF because:

- 1) the financial analysis has remained valid and sound and the increase in PLF was unanticipated at the time of project design and beyond the project participant's control and**
- 2) the barriers to the project activity were significant and could prevent the project from being implemented.**

Furthermore, in the context of this project activity, the increase in PLF does not trigger notifying or requesting approval of changes from the registered PDD as the value change of this operational parameter is NOT within the control of the project participant following para 5(d) of the "Guidelines on assessment of different type of changes from the project activity as described in the registered PDD" (EB 48, Annex 67). As demonstrated above, increase in PLF is beyond the project participant's control, not possible to predict during the design stage and therefore falls out of the category of changes that may impact the additionality. The project has been implemented, operated and monitored as described in the registered PDD and monitoring plan.

Besides, the project activity is still meeting all the applicability criteria of the selected methodology and the scale of the project remains the same.

Therefore, the procedures for notifying and requesting approval of changes from the project activity as described in the registered PDD do not apply.

⁹ Loan application letter to Agricultural Bank of China and Bank of China, the two major financier in Gansu Province, registered PDD, page 23

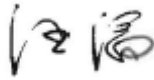
¹⁰ The minutes of the meeting held on Dec 2, 2002 in Lanzhou Feitian Hotel, registered PDD, page 23

¹¹ Gansu Province Price Bureau "Notice on feed-in tariff for hydropower plants in Gansu", December 12, 2006

¹² http://www.cpn.com.cn/ylic/200905/t20090508_279458.htm Gansu Price Bureau and Power Grid Policy No.60

Sincerely,

Tao Wang,

A handwritten signature in black ink, appearing to be the Chinese characters '王涛' (Wang Tao).

Senior Operations Officer
Carbon Finance Unit
The World Bank