



VALIDATION REPORT

Qinghai Maqin Gequ Level 2 Hydropower Station

REPORT No. CDM-VAL-0044

Revision No. 3.1

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Report No.	Date of first issue	Revision No.	Date of this revision
CDM-VAL-0044	05/03/2012	3.1	28/09/2012

Project name: Qinghai Maqin Gequ Level 2 Hydropower Station
Client: Carbon & Energy Capital Co. Ltd
Host country: China
Methodology: ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources. Version 12.3.0
GHG reducing Measure/Technology: Renewable energy from hydropower plant.
CER estimate: 177,166 t CO₂e/year
Size: ☒ Large Scale ☐ Small Scale
Validation Status:
☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and Submission for Registration
☐ Rejected

Summary of the Validation Opinion:

☒ The review of the project design documentation and the subsequent follow-up interviews have provided CEPREI with sufficient evidence to determine the fulfillment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence CEPREI will recommend the project for registration by the CDM Executive Board in case letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.
☐ The review of the project design documentation and the subsequent follow-up interviews have not provided CEPREI with sufficient evidence to determine the fulfillment of all stated criteria. Hence CEPREI will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.

Report title: Validation Report_v3.1_Qinghai Maqin Gequ Level 2 Hydropower Station

Report No.: CDM-VAL-0044

Date of this revision: 28/09/2012

Rev. No.3.1

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The revision history of the Validation Report is shown in following table:

Version No.	Date	Description and reason of revision
1.0	05/03/2012	Findings established.
2.0	05/06/2012	Draft validation report has been completed.
3.0	13/07/2012	Submit to UK's DNA for LoA. All of the CARs and CLs have been closed except CAR-2.
3.1	28/09/2012	Final version. This is the only change that has been made to the version referred to in the LoA from UK.

Abbreviations:

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CEPREI	CEPREI certification body
CER	Certified Emission Reduction
CL	Clarification Request
CM	Combined Margin
CO ₂ e	Carbon dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EIA	Environmental Impact Assessment
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MP	Monitoring Plan
NCV	Net Calorific Value
NDRC	National Development and Reform Commission
NGO	Non-governmental Organization
NWPG	Northwest China Power Grid
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
CNY	Renminbi, Chinese Currency (yuan)
UNFCCC	United Nations Framework Convention on Climate Change
VAT	Value-added Tax
PIRR	Project Internal Return Rate

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1 INTRODUCTION

Carbon & Energy Capital Co. Ltd has commissioned CEPREI Certification Body (hereafter referred to as “CEPREI”) to perform a validation of the proposed CDM Project entitled “Qinghai Maqin Gequ Level 2 Hydropower Station” (hereafter referred to as “the project”).

This report summarizes the findings of the validation of the Project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan (MP), and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

2 METHODOLOGY

The validation is consisted of the following three phases:

- i. The desk review of the project design documents.
- ii. The follow-up interviews with project stakeholders.
- iii. The resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

2.1 The Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

2.1.1 Methodologies, tools and other guidance by the CDM EB

Table 2-1 Document list

Reference No.	Reference Document
/1/	Validation and Verification Manual, version 01.2
/2/	Methodology, ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable resources, version 12.3.0.
/3/	Tool to calculate the emission factor for an electricity system, version 02.2.1
/4/	Tool for the demonstration and assessment of additionality, version 6.0.0
/5/	Guidelines on the assessment of investment analysis, version 05.0
/6/	Glossary of CDM terms, version 06.0
/7/	Guidance on the demonstration and assessment of prior consideration of the CDM, version 04
/8/	Guidelines for the Reporting and Validation of Plant Load Factors version 01 (EB48),
/9/	Guideline on common practice (version 01.0)

/10/	Information note on the highest tariffs applied by the executive board in its decisions on registration of projects in the People's Republic of China, EB61 Para 78, 03 June 2011.
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2.1.2 LoA

Reference No.	Reference Document
/11/	Letter of Approval issued by China DNA on 28/03/2012.
/12/	Letter of Approval issued by the United Kingdom DNA on 24/09/2012.

2.1.3 Documentation provided by the PP

Reference No.	Reference Document
/13/	Project Design Document for Qinghai Maqin Gequ Level 2 Hydropower Station, version 01 12/12/2011 and version 3.0 of 12/06/2012.
/14/	IRR Calculation Spreadsheet.
/15/	The FSR of Qinghai Maqin Gequ Level 2 Hydropower Station prepared by Qinghai Province Water Conservancy And Hydropower Survey Design Institute in February 2010.
/16/	Approval of FSR (No. Qing Fa Gai Neng Yuan [2010]1519) issued by Development and Reform Commission of Qinghai Province dated 27/10/2010.
/17/	The EIA of Qinghai Maqin Gequ Level 2 Hydropower Station by Environmental Science Research Institute Of Qinghai Province in August 2010.
/18/	Approval of the EIA (No. Qing Huan Fa No. 657-2010) issued by Qinghai Environment Protection Bureau on 15/09/2010.
/19/	CDM Consultant Agreement with Hangzhou Carbon Trade Environmental Engineering Co., Ltd. on 07/02/2011.
/20/	ERPA signed with Carbon & Energy Capital Co. LTD on 25/11/2011.
/21/	Resolution of board meeting to make decision of financial solution dated 02/12/2010.

/22/	The Prior Consideration of the CDM Form, received by EB on 01/11/2011: http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html
/23/	The Prior Consideration of CDM Form, approved by China DNA dated 02/11/2011.
/24/	Local Stakeholders' comments questionnaires.
/25/	Approval of construction land of Gequ Level 2 hydropower station (No. Qing Zheng Tu Han [2011]30) issued by Qinghai provincial people's government dated 11/05/2011.
/26/	Grid agreement about Gequ Level 2 hydropower station (No. Fa Zhan Zi [2010]18) issued by Grid Corporation of Qinghai province dated 20/05/2010.
/27/	Construction contract of power house and booster station C3 tenders signed with Fujian East Yu Construction Co., Ltd on 08/10/2011.
/28/	Construction contract of Gequ Level 2 hydropower station dam project signed with Zhejiang Jinhua hydropower construction Co., Ltd. on 04/07/2011.
/29/	Construction contract of Intake and diversion tunnel signed with Zhejiang Jinhua hydropower construction Co., Ltd. on 28/08/2011.
/30/	The loan contract signed with China Development Bank dated 16/05/2011
/31/	Geological Hazard Assessment Report made by Qinghai 906 Engineering Survey and Design Institute in October 2010.
/32/	Approval of water permit of Gequ Level 2 hydropower station (No. Qing Shui Zi [2010]860) issued by Department of Water Resources of Qinghai Province dated 20/09/2010.
/33/	Approval of Soil and Water Conservation program of Gequ Level 2 hydropower station (No. Qing Shui Nong [2010]396) issued by Department of Water Resources of Qinghai Province dated 07/05/2010.
/34/	Approval of the water resources assessment report of Qinghai Maqin Gequ Level 2 Hydropower Station (No. Qing Shui Zi [2010]353) issued by Department of Water Resources of Qinghai Province dated 28/04/2010.

2.1.4 Documentation used to validate and cross-check the information of the project

Reference No.	Reference Document
/35/	China NDRC, the emission factor calculation for each power grid of China, published on 20 October 2011, NDRC official website: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2720.pdf
/36/	Economic evaluation code for small hydropower projects (SL16-95), issued by Ministry of Water Resources on 06/06/1995 and started effective since 01/07/1995.
/37/	Economic evaluation code for small hydropower projects (SL16-2010), issued by Ministry of Water Resources on 22/10/2010 and started effective since 22/01/2011.
/38/	Notice on adjust the feed-in grid tariff in Qinghai Province(Qingfagaijiage No.[2009]1181), issued by Qinghai Province Development and Reform Commission on 24/11/2009
/39/	China Energy Statistical Yearbook
/40/	China Electric Power Yearbook
/41/	China Statistics Yearbook (Website: http://www.stats.gov.cn/tjsj/ndsj/)
/42/	Technical administrative code of electric energy metering (DL/T448-2001), issued by State Economic and Trade Commission on 03/11/2000 and started effective since 01/01/ 2001.
/43/	Notice on Issuing Electric Power Sector Reform Program (No. Guofa[2002]5), issued by the State Council dated 10/02/2002.
/44/	Interim Rules for Economic Assessment of Hydropower Construction Projects (ShuiGui[1994]0026), issued by Ministry of Water Resources and Ministry of Electric Power dated 14/06/1994.
/45/	Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects (GuoDianFa[2002]623), issued by State Power Corporation dated 10/09/2002.
/46/	Hydro energy design code for small hydropower projects (SL76-94), issued by Ministry of Water Resources on 28/03/1994 and started effective since 01/05/1994.

/47/	Classification & design safety standard of hydropower projects (DL5180-2003), issued by State Economic and Trade Commission in 2003.
/48/	Enterprises Income Tax Law of the People's Republic of China, published on 16/03/2007 and started effective since 01/01/2008.
/49/	Regulation on the Implementation of the Enterprise Income Tax Law of the People's Republic of China, published on 06/12/2007 and started effective since 01/01/2008.
/50/	Interim Regulation of the People's Republic of China on Value Added Tax (2008 Revision), published on 10/11/2008 and started effective since 01/01/2009.
/51/	Notice on the Application of Low Value Added Tax Rates and Policies on Collecting Value Added Tax by the Simple Approach to Some Goods (No. CaiShui[2009]09), issued by Ministry of Finance and State Administration of Taxation dated 19/01/2009.
/52/	Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax (GuoFa[1985]19), issued by State Council dated 08/02/1985.
/53/	Law of the People's Republic of China on Appraising of Environmental Impact, issued by Standing Committee of the National People's Congress dated 28/10/2002.
/54/	The Provisional Regulations on educational surtax (Third Revision), issued by State Council dated 08/01/2011.(National Surtax for education)
/55/	Financial system for industrial enterprises (CaiGongZhi 574), issued by Ministry of finance on 30/12/1992 and started effective since 01/07/1993.
/56/	Notice on easing on-grid tariff contradictions in the northwest China Power Grid(NDRC Price [2004]no.1125) issued by the Chinese National Development and Reform Commission"on 18 June 2004.
/57/	Views on the adjustment of the water resource fee collection standards issued by Qinghai Province Development and Reform Commission in May 2005
/58/	Regulation on the management of house fund, issued by State Council on 24/03/2002.
/59/	Decision on establish a unify basic old-age insurance system for enterprise employees(No. Guofa[1997]26), issued by State Council on 16/07/1997.



Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration are:

- 1) The VAT deduction considered in calculating the project IRR.
- 2) Update of applied baseline methodology ACM0002 into version 12.3.0
- 3) Deeper description of the monitoring plan.
- 4) Changes related to the CARs and CLs identified in the CEPREI's draft validation protocol.

After reviewing the PDD version 3.0 of 12/06/2012, CEPREI issued this final validation report and opinion.

2.2 Follow-up Interviews with Project Stakeholders

On 10/01/2012, the representatives of the project owner, Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd, and the project consultant, Hangzhou Carbon Trade Environment Engineering Co., Ltd were interviewed to resolve the issues identified during the desk review of the PDD. Identified documents and information, PDD, FSR, EIA and additional background documents related to the project design and baseline were effectively assessed as a part of the validation. Table below provides the information regarding the issues discussed during the site visits:

Table 2-2: Information of Interview.

Date	Name	Organization	Topic
10/01/2012	Zhu Chuanrong Hua Jinhua Xu Wenxiu	Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd	➤ Project background information; ➤ Project technology, operation, maintenance and monitoring capability; ➤ Project additionality; ➤ Project monitoring and management plan; ➤ Project approval status (incl. EIA approval, CDM project approval status); ➤ Stakeholder consultation process.
10/01/2012	Hu Ye Chen Tao	Hangzhou Carbon Trade Environment Engineering Co., Ltd.	➤ Applicability of selected methodology; ➤ Baseline determination; ➤ Emission reduction; ➤ Monitoring plan.
10/01/2012	Li Shengcheng	Development and Reform Bureau of Guoluo Zang Autonomous Prefecture.	➤ Approval Procedure; ➤ Electricity Tariff; ➤ ODA; ➤ Power Factor of hydropower plants; ➤ Local applicable laws and regulations on hydropower Projects; ➤ Other similar projects in the region; ➤ Sustainable development.

10/01/2012	Luo Sanggangdeng	Environmental Protection Bureau of Guoluo Zang Autonomous Prefecture.	➤ EIA Approval; ➤ Environmental Impact; ➤ Sustainable Development; ➤ Monitoring of ecosystem during the implementation of the Project.
10/01/2012	Cai Rangjie Ga dai	Governmental agencies of Guoluo Zang Autonomous Prefecture.	➤ Immigration; ➤ Production Settlement; ➤ Arrangement of land using; ➤ Compensation to affected people.
10/01/2012	Cai Rangpengcuo Song Zhongyong Peng Jianxun	Villages of Dawu countryside.	➤ Local stakeholder consultation process; ➤ Opinion of the Project.

2.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which need be clarified prior to CEPREI's positive conclusion on the project design. In order to ensure transparency a validation protocol is customized for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of four tables.

Table 1: validation requirements based on the CDM validation and verification manual (EB55 annex 1);

Table 2: resolution of GSP comments;

Table 3: resolution of Corrective Action and Clarification Requests;

Table 4: Forward Action Requests.

The completed validation protocol for Qinghai Maqin Gequ Level 2 Hydropower Station is enclosed in ANNEX 1 to this report.

Findings established during the validation can either be seen as a non-fulfillment of CDM criteria or where a risk to the fulfillment of project objectives is identified.

A Corrective action request (CAR) is issued, where:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

2.4 Internal Quality Control

The validation report underwent a technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with CEPREI's qualification scheme for CDM validation and verification.

2.5 Validation Team

On the basis of a competence analysis and individual availabilities a validation team, consisting of 1 team leader was appointed. Furthermore also the personnel for the technical review and the decision making were determined. The composition of the validation team has been communicated the PP on 26/12/2011. No rejection was received and no changes were happened. The validation team consisted of the following personnel as following:

Table 2-3 Validation Team Information

Name	Function ¹	Role ²	Technical area competence	Type of involvement						Appointment date
				Desk review	On-site visit/interview	Reporting	Supervision of work	Technical review	Expert input	
Guo Zhiyuan	TL	V	X	☒	☒	☒	☒			26/12/2011
Chen Chunyan	TR	--	X					☒		26/12/2011
Wang Xiuci	TCD/FA	--	--							

¹⁾ Function: TL: Team Leader; TM: Team Member; TR: Technical review; FA: Final Approval TCD: Technical Committee Director

²⁾ Role: V : Verifier; E : Expert; T : Trainee

³⁾ Selection of TR and TR procedural administration

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Annex A.

The final validation findings relate to the project design as documented and described in the project design documentation version 3.0 of 12/06/2012.

3.1 Participation Requirements

The project participants include Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd of China and Carbon & Energy Capital Co. Ltd of United Kingdom.

Host party P.R.China and the Annex I Party United Kingdom meet the requirements to participate in the CDM.

A letter of approval (LoA) was issued by the DNA of China on 28/03/2012, authorizing Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd of host Party as project participant and confirming that the project assists in achieving sustainable development.

A LoA was issued by the DNA of United Kingdom on 24/09/2012, authorizing Carbon & Energy Capital Co. Ltd as project participant.

The table given as below illustrates the authenticity of both letters of approval which has been validated by validation team. These LoAs are therefore regarded as valid and as meeting the requirements.

Table 3-1 the information of LOA

Project participants	Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd	Carbon & Energy Capital Co. Ltd
Parties involved	People's Republic of China(Host Party)	United Kingdom
APPROVAL		
Date received of LoA	28/03/2012	24/09/2012
LoA Received from	PP	PP
Reference to document	No. 3862	EA/CECC/11/2012

Validation of authenticity	A list of LoAs issued by the DNA of China is available on the DNA's website. (http://cdm.ccchina.gov.cn). The LoA of the proposed project activity is on the list.	The validation team wrote a clarification mail to the official mailbox of UK DNA (CDM@environment-agency.gov.uk) about the issuance of LoA and received a confirmation letter from UK DNA.
Validity of LoA	Valid	Valid
PARTICIPATION		
Party is party to Kyoto Protocol	Yes (China ratified the Kyoto Protocol on 30/08/2002.)	Yes (United Kingdom ratified the Kyoto Protocol on 31/05/2002.)
Voluntary participation	Yes	Yes
Project contribution to SD	Yes	NA
The LoA is unconditional with above	Yes	Yes
Diversion of official development aid towards host country	NA	No

During the site-visit, Zhu Chuanrong who is the man in charge of Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd and the officer of local DRC did confirm that the project activity is fully funded by the project owner and the credit from the bank.

Therefore, the project does not involve public funding, and the validation team did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

3.2 Project Design

The “Qinghai Maqin Gequ Level 2 Hydropower Station” is a newly-built greenfield hydropower project, located in the Manqin County, Guoluo Zang Autonomous Prefecture, Qinghai Province, P.R. China. The project is developed and operated by Qinghai Maqin Gequ River Cascade Hydropower Development Co., Ltd.

Based on the information contained in the FSR, validation team was able to verify that the

Project is a diversion type hydropower project with a total installed capacity of 48MW consisting of 2×24 MW units. The expected annual operating hours of the Project is 5,226 hours per annum generating expected annual electricity generation of 250,870 MWh. Of this generation figure, 223,525MWh is expected to be delivered net of transmission loss and auxiliary power use to the Qinghai provincial power grid, part of the Northwest Power Grid (NWPG).

The validation team checked the “*Construction contract of Gequ Level 2 hydropower station dam project*” signed with Zhejiang Jinhua Hydropower Construction Co., Ltd on 04/07/2011 which is the earliest contract related to the construction of the project activity. So the starting date of the project activity is deemed to be 04/07/2011.

Based on CEPREI’s sector knowledge and the review of the FSR, the proposed technology is similar to the technology used in the existing hydropower projects in China and represents current good practice.

Table 3-2 Design information of the proposed project

No.	Parameter	Description in the Final PDD	Determination by Validation Team
1.	Location of Project Activity	Manqin County, Guoluo Zang Autonomous Prefecture, Qinghai Province, P.R. China. The coordinates of the Dam are: 100°15' 06" E 34°46' 50" N The coordinates of the Plant are: 100°13' 32" E 34°50' 35" N	By on-site assessment the Validation team confirms the Project location as described in the PDD to be correct.
2.	Installed Capacity	48MW (2*24MW)	Confirmed by reviewing of FSR and Approval–2 sets of power units, the output capacity of each generator is 24MW, hence total capacity is 48MW.
3	Key technical specification of HydroTurbine	Model: CJA237-L-155/6*14 # Units: 2 Rated Output:24MW Rated Rotation Speed:500 r/min Rated head:376.7m	Confirmed by review of feasibility study report.

		Rated flow: 7.96 m ³ /s Equipment life time:20years	
4	Key technical specification of Generator	Model: SF24-12/3300 # Units: 2 Rated Output:24MW Rated Voltage: 10.5 kV Rated current: 1649.6 A Rated frequency: 50 Hz Rated Power Factor: 80% Rated Rotation Speed:500 r/min Equipment life time:20years	Confirmed by review of feasibility study report.
5.	Expected Project Operational Lifetime	20 years	According “Interim Rules for Economic Assessment of Hydropower Construction Projects (ShuiGui[1994]0026)”, the operational lifetime from 20 to 30 years is appropriate.
6.	Crediting Period	3*7 years (renewable)	Based on the progress of validation, the starting date of the crediting period is appropriate

Detailed technical parameters of key equipment are specified in the PDD and the corresponding FSR. Refer to (3.6.5 Investment analysis: Input parameters) below for more information.

The validation team considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant forms and guidance for completing the PDD.

3.3 Justification of the Choice of Baseline and Monitoring Methodology

The project correctly applies the approved baseline methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (version 12.3.0).

The applicability criteria and fulfillment of consolidated baseline methodology for grid-connected electricity generation from renewable sources are as follows:

Table 3-3 Applicability

No.	Applicability Criteria of ACM0002 Version 12.3.0	Determination by validation team	Criteria fulfilled
1	This methodology is applicable to grid-connected renewable power generation project activities.	Following desk review and conducting site visit to the Project, it can be confirmed that the proposed project will be connected to Qinghai Grid which is the part of the Northwest Power Grid (NWPg).	☒ Yes ☐ No
	The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	Following desk review and conducting site visit to the Project, it can be confirmed that the Project is a newly built, run-of-river hydropower Project.	☒ Yes ☐ No
2	The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m ² .	The project activity results in new reservoirs and the power density of the power plant is 195.2W/m ² , which is greater than 4 W/m ² .	☒ Yes ☐ No
3	The methodology is not applicable to the following: ● Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; ● Biomass fired power plants; ● A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the power plant is	Following document review and the on-site assessment conducted by the Validation team, it is able to confirm that: ● The proposed project is a greenfield hydropower project that does not involve any switching from fossil fuels to renewable energy ● No biomass fired power generation will take place at the proposed project ● The power density of the proposed project is 195.2W/m² which is well in	☒ Yes ☐ No

	less than 4 W/m^2 ."	excess of the stipulated level of 4 W/m^2 .	
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Therefore, the proposed project activity meets the applicability conditions of ACM0002 (version 12.3.0) and the various methodology tools referred to within the methodology.

3.4 Project Boundary

The project boundary is delineated by the physical, geographic site of the renewable generation source, which includes the dam on the river, diversion canal, factory buildings, booster station, transmission project and residential area. The spatial extent of the Project boundary also includes all the power plants physically connected into the Northwest Power Grid (NWPG).

The NWPG is a regional power grid in China. Provincial Grids included in the NWPG are: Shannxi provincial grid, Gansu provincial grid, Qinghai provincial grid, Ningxia provincial grid and Xinjiang provincial grid. The designation of the NWPG has been made by the National Development and Reform Commission of China. The Grid Connected Agreement has been checked by the validation team. Emission sources and gases included in the project boundary are as below table 3-4:

Table 3-4 Description of sources and gases in the boundary

variety	GHGs involved	Justification / Explanation
Baseline emissions	CO_2	As per the calculation of expected emission reductions as a result of displacing electricity which would otherwise been supplied by power plants connected to the NWPG.
Project emissions	No project emissions	The project is a hydropower activity with new reservoirs with power density greater then greater than 10 W/m^2 . $\text{PD}=195.2 \text{ W/m}^2$
Leakage	No leakage	No leakages that need to be considered when applying this methodology ACM0002, version 12.3.0

The selected sources and gases are justified for the project activity. The baseline determination is transparent and reasonable.

3.5 Baseline Determination

According to Methodology ACM0002 (Version 12.3.0), if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

The validation team confirms that the proposed project activity is a new grid connected hydropower plant. Therefore, the baseline scenario as prescribed in the ACM0002 (version 12.3.0) is applicable to the proposed project activity and the validation team considers the baseline scenario realistic and credible, complying with the selected methodology and all the relevant tools.

3.6 Additionality

The additionality of the proposed project activity, as required by ACM0002, is demonstrated by applying the “*Tool for the demonstration and assessment of additionality (Version 06.0.0)*.”

3.6.1 CDM consideration and continued action to secure CDM status:

According to the “*Glossary of CDM terms, version 6.0*”, “The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins.”

The validation team checked the “*Construction contract of Gequ Level 2 hydropower station dam project*” between the project owner and the construction company on 04/07/2011 and has been confirmed to be earliest contract signed related to the construction of the project activity. Thus the starting date of the project activity is deemed to be 04/07/2011 which was after 02 August 2008 and validation team is able to conclude that the project is a new project activity.

According to Guidelines on the demonstration and assessment of prior consideration of the CDM version 04 (EB 62 annex 13), the following evidences are checked on site, and the following table 3-5 lists the historical information of the project timeline.

- “Prior consideration of the CDM Form” of the project has been received by EB on 01/11/2011.
- “CDM notification form of the project activity” of the project was issued by NDRC of China, confirmed by NDRC on 02/11/2011.

The Validation team also checked the official websites of UNFCCC and found out that the date received by EB for the project is: 01/11/2011.

Table 3-5 Timeline of the project

PDD Date	Event	Evidence reviewed by the team
February 2010	Finalization of FSR	FSR doc. reviewed
August 2010	Finalization of EIA	EIA doc. reviewed
15 September 2010	EIA approval	EIA approval reviewed
27 October 2010	Approval of the project	Project approval reviewed
02 December 2010	Board meeting minute– investment decision based on CDM	Meeting minute reviewed
07 February 2011	CDM development agreement	Agreement doc. reviewed
16 April 2011	Stakeholder meeting was held	Meeting minute reviewed
04 July 2011	Starting date	Construction contract of Gequ Level 2 hydropower station dam project
01 November 2011	Notification to UNFCCC	EB website observed
02 November 2011	DNA notification for the project	<i>“CDM notification form of the project activity”</i> .doc observed
25 November 2011	ERPA with Carbon & Energy Capital Co., Ltd	EPRA doc. observed
28 March 2012	LoA issued by China DNA	China LoA doc. reviewed
24 September 2012	LoA issued by UK DNA	UK LoA doc. reviewed

It has been demonstrated by the timeline of events that the CDM revenues were seriously considered in the decision of proceeding with the Project prior to start of the Project.

In conclusion, the implementation of the Project as a CDM project is fully in line with “Guidelines on the demonstration and assessment of prior consideration of the CDM” version 04.

3.6.2 Identification of alternatives to the project activity:

In accordance with the methodology, the project activity and the current practice of generation by other power plants in the NWPG have been selected as the alternatives. Therefore, no further analysis is needed according to Para105 of VVM (version 01.2).

3.6.3 Investment analysis: Choice of approach:

As the project generates financial and economic benefits other than CDM related income through the sales of electricity and the alternative for the baseline scenario of the project is not a similar investment project, a benchmark analysis (option III) is justified for conducting the investment analysis.

3.6.4 Investment analysis: Benchmark selection:

The 10% IRR (after tax) was used as benchmark value as a common value for small-scale project in China, which is stated clearly in Economic Evaluation Code for Small Hydropower Projects issued by the Ministry of Water Resources (Document No: SL16-95). SL16-95 is applicable for hydropower project under 25 MW and 50MW in rural area. During the on-site assessment and consultation with local government, it is confirmed that the project activity is located in the rural area and the installed capacity is 48 MW, thus the SL16-95 is applicable for the project activity. When the FSR of the project was prepared and the investment decision was made the document of Economic Evaluation Code for Small Hydropower Project has remained the old version. Now the version of Economic Evaluation Code for Small Hydropower Project has been modified (SL16-2010, became effective from 22/01/2011) and the value of benchmark for all hydropower projects with installed capacity below 50 MW is still 10% (after tax), hence the value is applicable.

At present, this benchmark of total investment, financial internal rate of return (IRR), is widely accepted and applied normally for small hydropower projects in China as indicator for investors, commercial banks and other stakeholders and there is no alternative benchmark. Thus the validation team is able to confirm the suitability and applicability of this benchmark.

3.6.5 Investment analysis: Input parameters:

Before reviewing the IRR calculation, the validation team has validated the basic parameters listed in the PDD in accordance with the Guidance of Para. 113 of the VVM.

3.6.5.1 The validity of FSR:

A FSR in China is required to be developed by a third party accredited of this task directly by the government. An approval letter of the FSR is issued by the government only after it passes the public assessment of the sector experts designated by the government. A FSR can thus be regarded as an accurate and trustworthy source of information coming from a recognized entity once it has the approval letter from the government.

The input parameters used in the financial analysis of the Qinghai Maqin Gequ Level 2 Hydropower Station are taken from the FSR by Water Conservancy And Hydropower Survey Design Institute in February 2010, which is an independent officially accredited entity with level B hydropower design qualification. The approval of the project was approved by Development and Reform Commission of Qinghai Province dated 27/10/2010. The FSR can thus be considered

information provided by an independent and recognized source.

The validation team has 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 and IRR calculation sheets and were found to be correct.

The finalization date of FSR is February 2010, the approval of the project issued by Development and Reform Commission of Qinghai Province dated 27/10/2010. And the Director Board decided to invest the project based on CDM was dated on 02/12/2010. Given the relatively short period of time between the approval of the project and the decision to proceed with the project activity it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the cited documents have been the basis of the decision to proceed with the investment in the project.

3.6.5.2 Total static investment:

In the FSR and final PDD, it is 355,156,000 CNY and the installed capacity is 48MW, hence the unit static investment cost of the Project was 7,399 CNY/kW.

The project activity is still under construction. According to the investment planning in FSR, the budgeted investment cost in the first year of the Project is 71,133,000 CNY. The validation team has checked the available investment cost according to the current contracts for construction and found the contracted value of the current contracts is 93,080,902 which is higher than the first year's budgeted construction cost in FSR.

Table 3-7: Available investment cost of the Project

Actually occurs in the contract				Budgeted cost in FSR
Signed date	Contract	Contractor	Value (CNY)	First year (CNY)
04/07/2011	Construction contract of Gequ Level 2 hydropower station dam project	Zhejiang Jinhua hydropower construction Co., Ltd.	36,087,302	71,133,000
28/08/2011	Construction contract of Intake and diversion tunnel	Zhejiang Jinhua hydropower construction Co., Ltd.	33,600,000	
08/10/2011	Construction contract of power house and booster station C3 tenders	Fujian East Yu Construction Co., Ltd	23,393,600	

Amount	93,080,902	
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Furthermore, by comparison with other similar registered CDM projects in Qinghai, the unit investment cost of other hydropower projects varies from 4687.1 CNY/kW (Ref. 1467) to 8104.2 CNY/kW (Ref. 2871). The total investment cost of the project activity is within the range of similar projects in the region. Therefore the estimated value in the FSR is assessed to be reasonable. (Refer to section 3.6.5.8 below).

Hence, the validation team confirms that the investment estimated is reasonable and conservative.

3.6.5.3 Annual O&M costs

The annual operation costs mainly include repair cost, labor cost, maintenance cost, insurance cost, water resource fee, material expense and other cost. Annual O&M costs are reasonable for a small hydropower project, and the input values for annual operation cost were justified as following table 3-8:

Table 3-8: Data source of O&M

Every item of Annual O&M	PDD&IRR Calculation	FSR	unit	Determination by Validation Team
Repair rate	1.0	1.0	%	According to "Economic evaluation code for small hydropower projects (SL16-95 & SL16-2010)", the rate of Annual Repair Fee is 1% of construction investment. Hence, the value adopted in FSR and investment analysis is reasonable and applicable for the project activity.
maintenance fee for reservoir	1.0	1.0	CNY/MWh	According to "Interim Rules for Economic Assessment of Hydropower Construction Projects", the Reservoir maintenance fee is 1 CNY/MWh. Hence, the value adopted in FSR and investment analysis is applicable and reasonable for the project activity.
Staff	27	27	persons	According to "Interim Rules for Economic Assessment of Hydropower Construction Projects", the Number of Employees is 3.2/MW

				for a hydropower station with installed capacity of less than or equal to 250MW. Hence, the value adopted in FSR and investment analysis is applicable and conservative for the project.
Salary	22,000	22,000	CNY /Year	According to "China Statistics Yearbook 2009, 2010 and 2011", the annual average salary of electricity industry employee (exclusive of benefits) in Qinghai Province was 36,495 CNY(2008), 39,404 CNY(2009) and 44,721CNY(2010). Hence the 22,000 CNY adopted in FSR and investment analysis is applicable and conservative.
Rate of employee welfare	41	41	%	The employee welfare is composed of three parts: basic welfare of 14%, labor insurance of 17% and housing fund of 10%. The basic welfare is in accordance with SL16-95 which indicates the basic welfare is 14%. The labor insurance is based on "Decision on establish a unify basic old-age insurance system for enterprise employees" issued by state council which indicates the labor insurance should not exceed 20% of the salary. The house fund is based on "Regulation on the management of house fund" issued by state council which indicates the house fund should be greater than 5% of the salary. Hence, 41% adopted in FSR and investment analysis is conservative and applicable.
Water resource fee	1.0	1.0	CNY/M Wh	According to "Views on the adjustment of the water resource fee collection standards" issued by Qinghai Province Development and Reform Commission in May 2005, the Water resource fee in Qinghai province is 2 CNY/MWh. Hence, the value adopted in FSR and investment analysis is reasonable and conservative for the project activity.
Insurance rate	0.2	0.2	%	According to the opinions of hydropower industry experts and common practice for

				hydropower industry, the rate of 0.2% adopted in FSR and investment analysis is applicable and reasonable for the project.
Material fee	5.5	5.5	CNY/KW	According to “Interim Rules for Economic Assessment of Hydropower Construction Projects”, the Annual Material Costs is 5 CNY/KW. The value adopted in FSR is 5.5 CNY/KW, considering the long distance between the project site and Dawu town which is the main materials resources location, and the roads are all mountain road, thus, 5.5 CNY/KW is reasonable. Furthermore, there is no change on IRR even 5 CNY/KW is used. Hence, the value 5.5 CNY/KW adopted in FSR and investment analysis is reasonable and applicable for the project activity.
Other fee	15	15	CNY/KWh	According to “Interim Rules for Economic Assessment of Hydropower Construction Projects”, the Other fees is 24 CNY/KW for a hydropower station with installed capacity of less than or equal to 250MW. Hence, the value adopted in FSR and investment analysis is conservative and applicable for the project activity.

Having the data used in revised FSR and PDD crosschecked, the team can confirm that the annual O&M cost estimated in FSR is appropriate. Furthermore, the project annual O&M cost was compared with data reported for registered CDM hydropower projects in Qinghai Province in the below table 3-11. The range of the ratio of annual O&M cost to total static investment for other CDM projects was found to be 1.46% - 2.62% in Qinghai Province. With a ratio of 1.9%, the project is within the range of O&M cost for other similar projects in Qinghai Province.

In addition, the validation team also checked the most conservative situation in case that the O&M costs are considered to be zero. The project IRR works out to be 7.87% which is less than the benchmark 10%. However, in our experience, there is little probability for this situation.

In summary, the O&M costs were valid at the time of project owner’s investment decision making and is convinced to be appropriate.

3.6.5.4 Annual Electricity Supply/PLF/Operational Hours

The annual electricity supply figure used in the IRR calculation of 223,525MWh is based on the assumption of 1.0% self-consumption rate and a coefficient of effective electricity of 0.9. The plant load factor is calculated under the EB 48 Annex 11 “GUIDELINES FOR THE REPORTING AND VALIDATION OF PLANT LOAD FACTORS”, is based on the FSR of the Project and was determined by a third party contracted by the project participants.

Table 3-9: Annual Electricity Supply and PLF List

Parameter	PDD	FSR	Determination by Validation Team
Installed capacity	48 MW	48 MW	In the FSR, the determination of Installed Capacity and Annual electricity generation discussed sufficiently in relation to the water resources based on the long term meteorological data of the water resources in the local area, for 48 years (1959-2006) water resource measurement.
Annual designed electricity generation	250,870 MWh	250,870 MWh	
Annual average operational hours	5,226 hrs	5,226 hrs.	According to official statistics from the “China Electric Power Yearbook”, in 2006, 2007, 2008, 2009 and 2010, the average PLFs of hydropower plants located in Qinghai Province is 31.5%, 42.9%, 42.0%, 42.0% and 44.3% respectively. Therefore, the PLF of the project is conservative.
PLF	59.7%	59.7%	
Coefficient of Effective Electricity	90%	90%	According to “Economic evaluation code for small hydropower projects (SL16-95 & SL16-2010)”, the Coefficient of Effective Electricity for a grid-connected run-of-river power plant with a function of daily adjustment is a value of 0.82 to 0.90, hence 0.90 used for this project is conservative.
self-consumption rate	1.0%	1.0%	According to “Hydro energy design code for small hydro power project (SL76-94)”, the onsite electricity consumption rate can be 0.5%~1.0%. Hence, the value is reasonable and appropriate for the project.
Net electricity delivered to the grid	223,525 MWh	223,525 MWh	Calculated in accordance with the parameters above.

As elaborated in the table above, the expected net electricity delivered to the grid used for investment analysis in the PDD is reasonable and conservative with respect to the calculation of the IRR of the propose project. Furthermore, the net electricity delivered to the grid of 223,525MWh used for calculation the estimated GHG emissions is reasonable and applicable. Refer 3.8 below.

Given the requirements for determination of the PLF factor from EB 48 described in annex 11, it can be concluded that the PLF value (0.597) applied in the PDD is in line with CDM requirements. According to official statistics from the China Power Yearbook, in 2006, 2007, 2008, 2009 and 2010, the average PLFs of hydropower plants located in Qinghai Province is 0.315, 0.429, 0.420, 0.420 and 0.443 respectively. Although the PLF used for investment analysis in the PDD is above average, which is conservative and with respect to the calculation of the IRR of the Project.

3.6.5.5 Feed-in Tariff

The average tariff of 0.23CNY/kWh (incl. VAT) of the Project used in the PDD is taken from the approved FSR, which was completed by a qualified third party in February 2010. The validation team has studied the relevant tariff policies of hydropower projects in Qinghai Province and summarized as follows:

According to the latest tariff document issued by Qinghai Province Development and Reform Commission (Qingfagaijiage No.[2009]1181) on 24/11/2009, the electricity tariff for small hydropower plant in Qinghai province was 0.229 CNY/kwh (Inc. VAT). The value 0.23 CNY/kwh used in the PDD and IRR calculation is 0.4% higher than the document (Qingfagaijiage No.[2009]1181), thus can be deemed more conservative.

Furthermore, according to “INFORMATION NOTE ON THE HIGHEST TARIFFS APPLIED BY THE EXECUTIVE BOARD IN ITS DECISIONS ON REGISTRATION OF PROJECTS IN THE PEOPLES REPUBLIC OF CHINA (Version 02)” issued in EB 61 meeting, the highest tariff for large scale hydropower projects in Qinghai Province is 0.21 CNY/ kWh (incl. VAT) which is lower than the project activity.

In summary, the tariff of 0.23 CNY/kWh (incl.VAT) was available and applicable at the time of investment decision and was in accordance with the tariff regulation for hydropower projects in Qinghai Province. Thus, the tariff of 0.23 CNY/kWh (incl.VAT) applied in the PDD is conservative and deemed applicable.

3.6.5.6 Basic parameters used in the calculation of the financial indicators of Parameter Value are as following table:

Table 3-10: Basic Parameters List

Parameters	Source of data	Team's assessment
Total static investment 355,156,000	FSR performed by Qinghai Province Water Conservancy And Hydropower Survey Design Institute.	Document reviewed , Proper parameter referenced
Interest of long-term loan 5.94%	According to the interest rate published by the People's BANK of China, the interest rate is 5.94% during the	Document reviewed, Proper parameter referenced

	preparation of the FSR and investment decision. http://www.pbc.gov.cn/publish/zhengcehuobisi/631/2012/20120706181352694274852/20120706181352694274852_.html	
Electricity Tariff (inclusive of VAT) 0.23 CNY / KWh	The latest tariff document issued by Qinghai Province Development and Reform Commission (Qingfagaijiage No.[2009]1181) on 24/11/2009	Document reviewed, Proper parameter referenced
VAT rate 17%	The State Council: Provisional Regulations of the People's Republic of China on Value-Added Tax, No.538 on 10 November 2008.	Document reviewed, Proper parameter referenced
Education Tax Rate 3%	According to "The Provisional Regulations on educational surtax (Third Revision)", National Surtax for education rate of 3% is applicable and accurate.	Document reviewed, Proper parameter referenced
City Construction Tax Rate 7%	According to "Provisional Regulations of the People's Republic of China on City Maintenance and Construction Tax", City Construction & Maintenance Tax Rate of 7% is applicable and accurate.	Document reviewed, Proper parameter referenced
Income Tax Rate 25%	According to "Enterprises Income Tax Law of the People's Republic of China", the Income Tax Rate of 25% is applicable and accurate.	Document reviewed, Proper parameter referenced
CER Price 8.5 Euros / CER	ERPA signed with Carbon & Energy Capital Co. Ltd on 25/11/2011.	Document reviewed, Proper parameter referenced
Estimated Annual O&M Cost 658.5 m CNY	Financial analysis in FSR; A more conservative value applied.	Document reviewed, Proper parameter referenced
Depreciation Rate 4.7%	According to the Industrial Enterprise Financial System issued by Ministry of Finance People's Republic of China, the residual value rate for calculating the depreciation fluctuates from 3% to 5%, which are in line with the FSR.	Document reviewed, Proper parameter referenced

Residual value 5%	According to “Financial system for industrial enterprises”, the Residual Value Rate is values of 3% to 5%. Hence, 5% used for this project is reasonable and applicable.	Document reviewed, Proper parameter referenced
Working capital: 460,000CHY	According to “Economic evaluation code for small hydropower projects (SL16-95)”, the working capital rate is 10CNY/KW; the project is installed of 48MW, hence, 460,000CHY is conservative.	Document reviewed, Proper parameter referenced

As elaborated in above table, validation team was able to conclude that the value used in the investment analysis is reasonable.

3.6.5.8 Similar registered CDM hydropower projects

The validation team has compared the key input parameters used in the financial analysis with all registered CDM hydropower projects with the installed capacity fluctuated around $\pm 50\%$ in Qinghai Province, including installed capacity, Total static investment, Annual Electricity Supply, annual O&M cost, annual operation hours, Static Investment per kW and Electricity price were compared with the data from other similar registered hydropower CDM projects in Qinghai Province in the following table.

Table 3-11: Registered project information in Qinghai Province.

Ref. No.	Project name	Installed capacity (MW)	Operating hours	Investment per kW	Ratio of Annual O&M cost to total static investment (%)	Tariff in PDD (CNY)
1467	Qinghai Jinshaxia 70MW Hydropower Project	70	3,564	4,687.10	2.05	0.23
1474	Qinghai Qinggangxia 43.8MW Hydropower Project	43.8	4,017	6,394.50	1.46	0.24
2871	Zequ River Gakong 30MW Hydropower Project	30	4,676	8,104.20	1.56	0.21

2769	China Qinghai 42MW Jiangyuan hydropower project	42	4,171	6,968.10	2.44	0.22
2409	Nanshankou Cascade I 12 MW Hydropower Project in Geermu City of Qinghai Province, the People's Republic of China.	12	5,103	7,653.30	1.82	0.21
2841	Dangshun 15.1 MW Hydropower Project	15.1	3,906	8,104.20	1.7	0.23
3540	Qinghai Jiading Hydropower Project	12	4,210	8,098.30	1.75	0.21
5605	Qinghai Nazixia 87MW Hydropower Project	87	3,570	8,032.90	1.66	0.23
4872	Xiangtang Erji 17MW Hydropower Project in Qinghai Province, China	17	5,200	5,873.20	2.62	0.23
/	Max	87	5200	8104.2	2.62	0.24
/	Min	12	3564	4687.1	1.46	0.21
/	Average	36.54	4269	7102	1.90	0.22
/	The Proposed project	48	5226	7399	1.85	0.23

By comparing in the table above, the related evaluation index of the Project is reasonable.

Furthermore, even if the average unit investment cost (7102 CNY/KW) applied, the PIRR still lower than the benchmark.

Hence, the validation team was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the proposed project activity.

3.6.6 Investment analysis: Calculation and conclusion

In summary, by comparing in the table of the similar registered CDM hydropower projects in Qinghai Province, the validation team was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the proposed project activity.

The project-IRR calculations for the operation lifetime of 20 years provided in the spreadsheets were verified to be correct. The assumptions used in the calculations are also deemed to be correct by the validation team. The project-IRRs with or without CDM revenues for the individual projects are:

Table 3-12: PIRR list

Item of name	PIRR Without CER revenues in final PDD	Benchmark	PIRR With CER revenues in final PDD
PIRR	6.58%	10%	10.66%

Therefore, the validation team can confirm that in the absence of CDM benefits and when compared to the benchmark, the project was not financially attractive.

3.6.7 Investment analysis: Sensitivity analysis

Sensitivity analysis was carried out for parameters contributing more than 20% to revenues or costs in order to check the robustness of the financial analysis. Reasonable variations of the parameters:

- Static Investment
- Annual operational cost
- Annual electricity generation
- Electricity tariff

were taken as uncertain factors to do sensitivity analysis, and $\pm 10\%$ variation of above factors was considered in the sensitivity analysis. Therefore, Validation team confirms that the variables with $\pm 10\%$ variations performed for sensitivity analysis is deemed to be appropriate for the Project. The PDD reflects the information appropriately.

The validation team checked the final IRR calculation spreadsheet/ final PDD and concluded that $\pm 10\%$ variation of the four main factors would not result in the PIRR to exceed the benchmark. Further comparisons can be listed in Table 3-12 and Figure 3-1;

Table 3-13: The Variation in the values of Parameters and its effects on the IRR of the Project

Parameters	-10%	-5%	0%	5%	10%
Benchmark	10.00%	10.00%	10.00%	10.00%	10.00%
Static investment	7.75%	7.14%	6.58%	6.05%	5.56%
Annual operational cost	6.75%	6.66%	6.58%	6.49%	6.40%

Electricity tariff	5.42%	6.01%	6.58%	7.13%	7.68%
Annual electricity generation	5.43%	6.01%	6.58%	7.13%	7.66%

The PP also made a critical point analysis. Reasonable variations of the four factors were checked by calculating the variations necessary to reach the benchmark and then discussing the likelihood for that to happen. None of the parameters in the sensitivity analysis are considered to have any significant positive correlation.

Table 3-14: Variation of the parameter needed to reach benchmark

Variable parameters	Static Investment	Annual operational cost	Annual electricity generation	Electricity tariff
Project IRR=benchmark	-25.45%	-215.30%	33.10%	32.70%

Static Investment: According to the Statistics Bulletin of the National Economic and Social Development of Qinghai Province, the price of raw material, fuel & power increased 10.4%, -0.2%, 8.6% and 8.9% in year 2008, 2009, 2010 and 2011 respectively. This demonstrates that there is upward price pressure due to inflation within China, making the possibility of the Static Investment being reduced by 25.45% versus the planned cost in the FSR very unlikely.

Annual operational cost: There is an inherent cost involved in operating a hydropower station. Therefore it is impossible for the Annual operational cost to decrease 100% of the estimated value in the published FSR of February 2010. In addition, the validation team also checked the most conservative situation in case that the O&M costs are considered to be zero. The project IRR works out to be 7.87% which is less than the benchmark 10%. However, in our experience, this situation may not be happened.

Annual electricity generation: As for annual generated electricity amount, the certificated Design Institute calculated the annual electricity supply based on 48 years hydrological data of the water resource in the local area (1959-2006), It's credible and stable. The FSR of the project has been approved by the related designate entity of government. Additionally, as a newly-built power plant with reservoir, the project's power generation will not fluctuate much through the whole operational period. Therefore, the average annual electricity output of the project is unlikely to increase by 33.10%

Electricity tariff: The electricity tariff in china is strictly regulated by China government; If the tariff increases by 32.70%, the project IRR would reach the benchmark. However, it is unlikely that the tariff would increase by 32.70%, which should be 0.31 Yuan/KWh. According to the latest tariff document issued by Qinghai Province Development and Reform Commission (Qingfagaijiage No.[2009]1181) on 24/11/2009, the electricity tariff for small hydropower plant in Qinghai province was 0.229 CNY/kwh (Inc. VAT). Thus, 0.31CNY/kwh can not happen in Qinghai province for small hydropower stations.

Therefore, the grid-in tariff is unlikely to increase by 32.70%.

In summary, the above analysis by altering four critical parameters clearly demonstrates that without CDM support, the proposed project cannot be implemented. The activities in the same province have the similar grid structure, geological and transportation conditions, economic developing states; hence the validation team considered that delineating Qinghai province as the border is reasonable.

3.6.8 Common practice analysis:

According to “*Tool for the demonstration and assessment of additionality (version 06.0.0)*” issued by EB, the projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc. The validation team conducted the assessment as follows:

3.6.8.1. Determination of applicable output range —step1

Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity. The proposed project activity has an installed capacity of 48 MW, hence $\pm 50\%$ range of the capacity of the proposed project is from 24MW to 72MW.

3.6.8.2. Identification of N_{all} —step2

I. Determination of applicable geographical area

Geographical region for the common practice analysis of hydropower projects is Qinghai Province, the activities in different Province/Region have different grid structure, geological and transportation conditions, economic development states. To verify the appropriateness of this choice, it has been requested to project participants to demonstrate why, as written in the PDD, the projects located in different provinces cannot be included in the analysis; With this perspective, the differences of Qinghai Province in terms of investment conditions and natural conditions like water resources availability have been demonstrated considering the amounts of the total investment in water resources projects among the different provinces in Northwest China Grid. Hence the validation team considers that delineating Qinghai Province as the border is reasonable.

II. Starting date

The starting date of the proposed project is 04/07/2011 which is the signed date of the construction contract of dam and confirmed by the validation team. Hence all plants that deliver the same capacity (24-72MW), within Qinghai Province, and its commercial operation is before 04/07/2011, other than CDM registered projects, are identified as N_{all} .

III. Analyze other activities similar to the proposed project activity

According to “Tool for the demonstration and assessment of additionality (*version 6.0.0*)”, PDD provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc.

According to “Tool for the demonstration and assessment of additionality (*version.06.0.0*)”, it’s identified that all plants deliver the same output (electricity generation) in Qinghai Province and started commercial operation before the start date of the Project (04/07/2011) without registering as CDM projects. So, two categories of projects are identified as follow.

-Category 1: Hydropower projects between 24 MW to 72 MW in Qinghai Province. Note their number $N_{all,hydropower}$

-Category 2: Power generation projects other than hydropower with the applicable output range in Qinghai Province. Note their number $N_{all,other}$

Therefore, the $N_{all} = N_{all,hydropower} + N_{all,other}$

IV. Identification of N_{all}

Referring to the China Energy Statistical Yearbook, China Electric Power Yearbook and the website of State Power Information Network, all the hydropower plants were identified in Qinghai Province. Among the projects identified according to situation described above and criteria, there are 2 similar non-CDM hydro power project with installed capacity between 24 MW and 72 MW operated before 04/07/2011 (the start date of the proposed project) within Qinghai Province.

Table 3-15: Identified hydropower projects

No	Project name	Installed Capacity (MW)	Year of construction
1	Geermu Xiaogangou	32	1991
2	Delingha Bayin River	30	2008

Therefore, the $N_{all} = N_{all,hydropower} + N_{all,other} = 2 + N_{all,other}$

3.6.8.3. Identification of N_{diff} —step3

Essential distinctions have been analyzed in the PDD, identified to be investment climate. The data source has been reviewed by validation team through accessing to the website referenced. All of the compared projects are deemed to be distinction. The two projects differ from the proposed project in investment climate.

Assessment of the Essential Distinctions between the proposed CDM Project and the similar projects

-Category 1 projects:

Geermu Xiaogangou project which operated in 1991:

There is essential distinction between projects whose construction started in and after 2002 and projects before 2002 due to the reform of electric system in China. The validation team reviewed the “Notice on Issuing Electric Power Sector Reform Program (No. Guofa[2002]5)”, issued by the State Council, confirms that power plants and electricity grids shall be separately operated after 2002. Therefore, investment climate for hydropower projects before and after this reform was fundamentally different. Hence, this project is considered as one part of the N_{diff} .

Delingha Bayin River Project:

This is a Cumulative Gorge Reservoir Engineering project. The main function of this project is irrigation, flood control and water supply, the auxiliary function is electricity generation. Thus, except the revenues from electricity purchase, there are also revenues from water supply fee, which makes this project more financial attractive, and the IRR of this project is 11.02% which is much higher than the proposed project thus has no financial barriers. Furthermore, this project is developed by state owned company while the proposed project is developed by private company, in China, the state owned companies have greater access to financial support from banks, while the private companies often have financial difficulties as the bank is reluctant to grant a loan to them. Thus, this project has obvious financial advantage than the proposed project. Hence, this project is considered as one part of the N_{diff} .

-Category 2 projects:

The energy sources of projects in category 2 are different from the proposed project which uses water sources for power generation. So the projects in Category 2 apply technologies different that the technology applied in the proposed project activity. So $N_{diff,other}$ is included in N_{diff} .

As analysed above,

Thus, $N_{diff,other} = N_{all,other}$

$N_{diff} = N_{diff,hydropower} + N_{diff,other} = 2 + N_{diff,other}$

3.6.8.4. Calculation of Factor F—step4

As per “Tool for the demonstration and assessment of additionality (version 6.0.0)”, the factor F can be calculated as:

$$F = 1 - N_{diff} / N_{all} = 1 - (2 + N_{diff,other}) / (2 + N_{all,other}) = 1 - 1 = 0 < 0.2$$

$$N_{all} - N_{diff} = (2 + N_{all,other}) - (2 + N_{diff,other}) = 0 < 3$$

3.6.8.5. Conclusion

As per “Tool for the Demonstration and Assessment of Additionality (version 06.0.0)” if “ $N_{all}-N_{diff}<3$ ”, or “ $F<0.2$ ”, it is concluded that the proposed project is not a “common practice”.

Since $F=0<0.2$ and $N_{all}-N_{diff}=0<3$, the validation team can conclude that the Project is not a common practice and is adequately additional.

3.6.9 Conclusion of assessment of additionality

On the basis of all the analysis in the paragraph 3.6 above, the validation team confirms that:

- The CDM was seriously considered by the PP prior to the starting date of the project activity,
- Investment analysis and sensitivity analysis clearly demonstrate that the proposed project activity is financially unattractive.
- Common practice analysis was carried out showing that the proposed project activity is not common practice.
- All of the evidences were transparently reviewed by the validation team and considered to be effective.

In summary, the proposed project is thus additional and it is not financially attractive without CDM support.

3.7 Monitoring

The project applies the approved monitoring methodology ACM0002 version 12.3.0. The selected monitoring methodology is applicable for the project. The project monitoring plan is in accordance with the monitoring methodology ACM0002 version 12.3.0. The monitoring plan has been drafted to focus on monitoring the electricity delivered to and bought from Northwest Power Grid by the project. The monitoring plan will give opportunity for real measurements of achieved emission reductions and contains principles and concepts on which it is based, operational and monitoring obligations of the project owner like resources involved in the monitoring process, training, support activities, calibration and collection data, quality assurance procedures, data management, electronic support tools, etc.

The application of the monitoring methodology is transparent. It is the opinion of the Validation team, that the project participants are able to implement the monitoring plan as described in the PDD.

3.7.1 Parameters determined ex-ante

The PDD was published on 12/12/2011, and the calculation of the grid emission factor has been updated to the latest data available at the commencement of validation. The data used in the emission factor calculation is in accordance with data in the "Baseline Emission Factors for Regional Power Grids in China" published by China DNA on 20/10/2011, China Electric Power Yearbook from 2008 to 2010 (published annually) and the China Energy Statistical Yearbook from 2008 to 2010.

Ex-ante emission factor in year y $EF_{grid,CM,y}$ (tCO_2/MWh) is determined as combined margin (CM), which is combined from operating margin (OM) and build margin (BM) according to the "Tool to calculate the emission factor for an electricity system version 02.2.1" and it will be fixed in the first crediting period. NWPG was determined as the relevant grid system.

Table 3-16: Parameters determined ex-ante

Data and Parameters	Unit	Value applied	Source of data used
Operational Margin ($EF_{grid,OM,y}$)	tCO_2/MWh	1.0001	Baseline Emission Factors for Regional Power Grids in China published by China DNA on 20 October, 2011. China Energy Statistic Yearbook(2008-2010), China Power Yearbook(2008-2010)
Build Margin ($EF_{grid,BM,y}$)	tCO_2/MWh	0.5851	
CM EF ($EF_{grid,CM,y}$)	tCO_2/MWh	0.7926	

The validation team can confirm that the data sources are reliable and that the calculation and results are correct.

3.7.2 Parameters monitored ex-post

The following parameters were identified to be monitored ex-post:

- $EG_{facility, y}$;
- Cap_{PJ} ;
- A_{PJ} .

Due to the Power Density of the project being much greater than $10W/m^2$, there is no need to monitor the total power generation of the project.

Because the baseline emission factor is ex-ante calculated, the data to be monitored continuously by the electricity meters only refers to electricity delivered to the grid by the project activity and electricity consumed by the project activity. The main electricity meter (M2, bi-direction) will be installed at the inlet of the substation of grid company and the backup electricity meter (M1, bi-direction) will be installed at the project site. The backup electricity meter (M1) will be used in case of the failure of the main electricity meter (M2).

Electric energy measuring equipment of the Project Activity should be collocated and installed according to “Technical Administrative Code of Electric Energy Metering” (DL/T448-2000, issued by State Economic and Trade Commission of the People’s Republic of China on Nov.3rd, 2000 and implemented on Jan.1st, 2001).

The installed capacity of the hydro power plant after the implementation of the Project Activity and area of the reservoir measured in the surface of the water after the implementation of the Project Activity will be monitored yearly, whichever the more frequent.

3.7.3 Management system and quality assurance

The monitoring arrangement for the CDM project has been described in the PDD:

- The accuracy of electric meter (not less than 0.5s) and record frequency have been identified in the PDD appropriately.
- Monitoring frequency of surface area of the reservoir (A_{PJ}) and installed capacity of the project activity (CAP_{PJ}) has been indicated in the PDD appropriately.
- The operation and management structure of the monitoring have been described appropriately.
- The electric meters will be annually calibrated by a qualified third party according to relevant

regulations and standards.

- The emergency procedure and the correctness action have been identified appropriately.

In summary, a formal set of monitoring procedures are expected to be in place prior to the start of the crediting period, with details on the organization, data control, QA/QC procedures, procedures for calibration of metering equipment and training. Hence, the validation team is convinced that the application of monitoring methodology is transparent and the participant is able to implement the monitoring plan.

3.8 Estimate of GHG Emissions

For Greenfield hydropower plant:

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

$$ER_y = BE_y - PE_y - LE_y$$

$PE_y = 0$, as following:

Power Density of the Project (PD)

$PD = \text{Installed Capacity of Project (W)} / \text{Surface Area of Reservoir (m}^2\text{)}$

$$PD = 48,000,000 \text{ W} / 245,900 \text{ m}^2$$

$$= 195.2 \text{ W/m}^2$$

As we can see the results above, the PD of the project is much greater than 10 W / m², Hence, the emissions of project are equal to zero.

$LE_y = 0$, As per ACM0002, version 12.3.0, no leakage emissions are considered.

$$\text{Thus, } ER_y = BE_y = EG_{BL,y} * EF_{CO_2,grid,y}$$

$$= (223,525 \text{ MWh} - 0) \times 0.7926$$

$$= 177,166 \text{ tCO}_2\text{e.}$$

($EG_{\text{facility},y}$ = quantity of net electricity, refer 3.6.5 above, $EF_{\text{grid,CM},y}$ = combined margin CO₂ emission factor of NWPG, refer 3.7.1 above).

7×3 renewable crediting periods have been chosen for the project. Thus, the total estimated reduction is 1,240,161 tCO₂e.

In summary, the GHG calculations are complete and transparent, and the data accuracy has been verified.

3.9 Environmental Impacts

The EIA is required in China. The project developer commissioned a third party, Environmental Science Research Institute Of Qinghai Province to conduct the required Environmental Impact Assessment (EIA) (guo huan ping zheng jia zi di NO.3901) in August 2010 and the EIA report of the projects was approved by the Qinghai Environment Protection Bureau (Qing Huan Fa No. 657-2010) on 15/09/2010.

It has been analysed potential environmental impacts of three phases, which is Construction Phase, Operation Phase, Mitigation measures respectively:

- **Construction Phase;**

- Water Environment
- Air environment
- Acoustical Environment
- Ecological environment
- Solid waste

- **Operation Phase;**

- Impact on climate
- Impact on water environment
- Impact on inundated area

- **Mitigation measures;**

- waste water
- air environment and noise
- Solid waste
- Ecology

have been sufficiently identified based on the EIA report of the environmental impact resulting from the project and corresponding taken by the project owner indicates that the project will not

have significant negative impacts to the local environment on the whole. In conclusion, construction and operation of the project will not significantly impact the environment.

3.10 Comments by Local Stakeholders

Before the construction of the project activity, the project owner carried out a survey of local stakeholders with the purpose of collecting opinions about the impact of the proposed project activity.

The validation team assessed the adequacy of the local stakeholder consultation as bellows:

I. Identification of local stakeholders

The local stakeholders involved in the project activity are identified as local authorities and affected local residents. The validation team deems that identification local stakeholders are appropriate.

II. Invitation of comments of relevant local stakeholders

Comments of relevant local stakeholders were invited by means of distribution of questionnaires. Totally, 50 questionnaires were distributed to the local stakeholders and with a response rate of 100%. The validation team deems that invitation of comments of relevant local stakeholders is appropriate.

III. Timing of stakeholder consultation process

The local stakeholder consultation process was carried during 16/04/2011 which is before 04/07/2011 of the starting date and 06/04/2011 of the project owner has published a notice on its Bulletin board to invite potential stakeholders to attend the meeting and give comments. The validation team deems the timing is appropriate.

IV. Summary of comments provided

Comments received from the local stakeholders have been addressed in section E.2 of PDD. By means of reviewing questionnaires returned by local stakeholders and interviewing 7 local stakeholders (include 3 residents impacted by this project and 4 officials of Maqin County) on site, the validation team confirms that the PDD reflects comments received appropriately.

V. How due to account was taken of the comments received?

No residents have to be resettled due to the project activity and no negative comments from the local stakeholders have been received by the validation team during the on-site assessment.

No negative comments from the local residents or officials have been received by the validation team during the on-site assessment. The proposed project doesn't result in any re-settled person.



In summary, the validation team was able to confirm the adequacy of the local stakeholder consultation process.

3.11. Comments by Parties, Stakeholders and NGOs

The PDD (version 01) dated 12/12/2011 was made publicly available on UNFCCC's website (<http://cdm.unfccc.int/Projects/Validation/DB/1CSUAHHREJQPGV9D73U8QPT6Y6REVG/view.html>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 24/12/2011 to 22/01/2012.

No comments were received.

4 VALIDATION OPINION

CEPREI Certification Body (CEPREI) has performed a validation of the **“Qinghai Maqin Gequ Level 2 Hydropower Station”** in China on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of Kyoto Protocol, the CDM modalities and procedures and the subsequent decision by the CDM Executive Board.

The review of the project design documentation and the subsequent follow-up interviews has provided CEPREI with sufficient evidence to determine the fulfillment of stated criteria.

The host Party is China and the Annex I Party is United Kingdom. Both Parties fulfill the participation criteria. The DNA from China issued the Letter of Approval of the project activity confirming that the project assists in achieving sustainable development, approved the project and authorized the project participant. The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.

The project correctly applies the methodology ACM0002 version 12.3.0 *“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”*.

The project generates renewable energy from hydropower plant. As a result, the project results in reductions of CO₂ emissions that is real, measurable and gives long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The annual emission reductions from the **“Qinghai Maqin Gequ Level 2 Hydropower Station”** are estimated to be on the average 177,166 tCO_{2e} per year over the selected 7 years crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project’s emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is CEPREI’s opinion that the project participants are able to implement the monitoring plan.

In summary, it is CEPREI’s opinion that the **“Qinghai Maqin Gequ Level 2 Hydropower Station”** in China as described in the PDD, version 3.0 of 12/06/2012, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 12.3.0. CEPREI thus requests the registration of the project as a CDM project activity.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature: 

Name: Wang Xiuci

Date: 29/09/2012

CEPREI CERTIFICATION BODY



ANNEX A

Validation Protocol



ANNEX A: CDM PROJECT VALIDATION PROTOCOL

VALIDATION PROTOCOL

Table 1: validation requirements based on the CDM validation and verification manual (EB55 annex 1)

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS		Draft Concl.	Final Concl.
1.Approval Have All Parties involved approved the project activity?	VVM44	DR	Country A	Country B		
1.1 Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval?(If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participant or directly from the DNA)	VVM45		<i>CAR-1: Letter of Approval from DNA of China has not been provided.</i> <i>Conclusion:</i> <i>The LoA issued by DNA of China has been provided by the PP.</i> <i>Issued No.: 3862</i> <i>Issued authority: The National Development And Reform Commission of The People's Republic Of China.</i> <i>Issued Date: 28/03/2012</i> <i>Hence, this CAR has been closed.</i>	<i>CAR-2: Letter of Approval from DNA of United Kingdom has not been provided.</i> <i>Conclusion:</i> <i>The LoA issued by DNA of UK has been provided by the PP.</i> <i>Issued No.: EA/CECC/11/2012</i> <i>Issued authority: Environment Agency</i> <i>Issued Date: 24/09/2012</i> <i>Hence, this CAR has been closed.</i>	CAR-1 CAR-2	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS		Draft Concl.	Final Concl.
1.2. Does the letter of approval from DNA of each Party involved:	VVM45		<i>Pending on closure of CAR-1.</i> Conclusion: OK	<i>Pending on closure of CAR-2.</i> Conclusion: OK	Pending	OK
i. Confirm that the Party is the Party of the Kyoto Protocol?			P.R.China has ratified the Kyoto Protocol.	United Kingdom has ratified the Kyoto Protocol.	OK	OK
ii. Confirm that participation is voluntary?			<i>Pending on closure of CAR-1.</i> Conclusion: Yes, the LoA stated the participation is voluntary.	<i>Pending on closure of CAR-2.</i> Conclusion: Yes, the LoA stated the participation is voluntary.	Pending	OK
iii. Confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?			<i>Pending on closure of CAR-1.</i> Conclusion: Yes, the LoA confirmed the project contributes to the sustainable development of the country.	N.A.	Pending	OK
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?			<i>Pending on closure of CAR-1.</i> Conclusion: Yes.	<i>Pending on closure of CAR-2.</i> Conclusion: Yes.	Pending	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS		Draft Concl.	Final Concl.
1.3 Is (are) the letter(s) of approval unconditional with respect to (a) to (d) above?	VVM46		<i>Pending on closure of CAR-1.</i> Conclusion: Yes, the LoA is unconditional with respect to 1.2 above.	<i>Pending on closure of CAR-2.</i> Conclusion: Yes, the LoA is unconditional with respect to 1.2 above.	Pending	OK
1.4 Has (have) the letter(s) of approval has been issued by the respective Party's designated national authority (DNA)? The letter of approval is valid for the proposed CDM project activity under validation?	VVM47		<i>Pending on closure of CAR-1.</i> Conclusion: Yes, the LoA is issued by the DNA of China and it is valid.	<i>Pending on closure of CAR-2.</i> Conclusion: Yes, the LoA is issued by the DNA of United Kingdom and it is valid.	Pending	OK
2.Participation			PP1 (Qinghai Maqin Gequ River Cascade Hydropower Development Co.,Ltd.)	PP2(Carbon & Energy Capital Co. Ltd)		
2.1 Have all project participants been listed in a consistent manner in the project documentation?	VVM51		Yes, the project participant has been listed in a consistent manner in tabular form.	Yes, the project participant has been listed in a consistent manner in tabular form.	OK	OK
2.2 Has the participation of the PPs in the project activity been approved by a Party to the Kyoto Protocol?	51		<i>Pending on closure of CAR-1.</i> Conclusion: Yes, the participation of the PP has been	<i>Pending on closure of CAR-2.</i> Conclusion: Yes, the participation of the PP has	Pending	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS		Draft Concl.	Final Concl.
			approved in this LoA.	been approved in this LoA.		
2.3 Are the project participants listed in tabular form in section A.3 of the PDD?	52		Yes. The project owner, one of the Project Participants, has been listed in section A.3.	Yes. The project buyer, the other Project Participant, has been listed in section A.3.	OK	OK
2.4 Is this information consistent with the contact details provided in annex 1 of the PDD	52		Yes. This information is consistent with the contact details provided in annex 1 of the PDD.	Yes. This information is consistent with the contact details provided in annex 1 of the PDD.	OK	OK
2.5 Has the participation of each project participant been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation?	52		<i>Pending on closure of CAR-1.</i> Conclusion: Yes, the PP has been approved by China DNA in the LoA provided.	<i>Pending on closure of CAR-2.</i> Conclusion: Yes, the PP has been approved by United Kingdom DNA in the LoA provided.	Pending	OK
2.6 Are any entities other than those approved as project participants are included in these sections of the PDD?	52		No. There is no entity other than those approved as PP included in these sections.	No. There is no entity other than those approved as PP included in these sections.	OK	OK
2.7 Has the approval of participation been issued from the relevant DNA?	53		<i>Pending on closure of CAR-1.</i> Conclusion: Yes, LoA is issued by NDRC, the DNA of China.	<i>Pending on closure of CAR-2.</i> Conclusion: Yes, LoA is issued by Environment Agency, the	Pending	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			DNA of United Kingdom.		
3.Project design document					
3.1 Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM55		Yes. The PDD is in accordance with the latest template version 03.2 and the "Guidelines for completing the Project Design Document (CDM-PDD)".	OK	OK
3.2 Is the PDD in accordance with the applicable CDM requirements for completing PDDs?	VVM56		Yes.	OK	OK
3.3 Are the following provided in CDM-PDD section A.1? i. Title of project ii. Current version number and date of document	EB41 Ann12		Yes. The Title of project and the relevant information to the version has been provided in section A.1 of PDD. Title of project: Qinghai Maqin Gequ Level 2 Hydropower Station PDD version 3.0, date 12/06/2012	OK	OK
3.4 Is the explanation on how the GHG emission reductions are effected provided in CDM-PDD section A.2?	EB41 Ann12		Yes, Greenhouse gas (GHG) emission reductions will occur through the power generation of the Project displacing fossil fuel-dominated power generation of the Northwest Power Grid (NWPGR), the estimated annual GHG emission reductions will be 177,166 tCO ₂ e.	OK	OK
3.5 Are the following provided in CDM-PDD section A.3?	EB41		Yes.	CAR-3	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
i. List of project participants and parties. ii. Identification of Host Party iii. Indication whether the Party wishes to be considered as project participant	Ann12		The private entities involved in the project are listed at section A.3 of the PDD. Host Party (China): Qinghai Maqin Gequ River Cascade Hydropower Development Co.,Ltd Party (U.K.): Carbon & Energy Capital Co. Ltd Neither Party wishes to be considered as project participant. <i>CAR-3: Name of Party involved of Isle of Man is not included in Annex I countries.</i> <i>Conclusion:</i> <i>Name of Party involved has been revised to United Kingdom.</i> <i>Hence, this CAR has been closed.</i>		
3.6 Are the following provided in CDM-PDD section A.4.1? i. Location, host party(ies) and address as required? ii. Detailed physical location with unique identification of the project activity (eg. Longitude/Latitude)- not to exceed one page	EB41 Ann12		CL-1: Please further describe the location of the project and the geographical coordinate of the dam and plant. <i>Conclusion:</i> City/Town/Community etc has revised Maqin county, Guoluo Zang Autonomous Prefecture. The geographical coordinate of the dam and plant has been revised according to FSR. Dam: 100°15' 06" E, 34°46' 50" N. Plant: 100°13' 32"E, 34°50' 35"N.	CL-1	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Hence, this CL has been closed.		
3.7 In CDM-PDD section A.4.2, is the list of Category(ies) of project activity provided?	EB41 Ann12		Yes. The Project falls within the sector scope 1: Energy industries (renewable sources) – Hydropower Project.	OK	OK
3.8 In CDM-PDD section A4.3 are the following provided? i. a description of how environmentally safe and sound technology, and know-how to be used, is transferred to the Host Party(ies) ii. explanation of purpose of the project activity with scenario existing prior to the start of project, scope or present activities and the baseline scenario iii. A list and the arrangement of the main manufacturing/production technologies, systems and equipments involved iv. The emissions sources and the GHGs involved	EB41 Ann12		i. Yes, the Project utilizes all domestic made technologies and facilities, the Project involves no technology transfer from abroad. ii. The scenario existing prior to the implementation of the project is NWPG provide the same electricity as the Project, which is same as the baseline scenario. There was no change compared to the PDD. iii. The project will install two hydro turbines and two generators. The technical specifications of which has been listed in the PDD. iv. Yes. Section A.4.3 of PDD cited the emission sources and how the Project reduces.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
3.9 In CDM-PDD section A4.4 is the estimation of emission reductions provided as requested in a tabular format?	EB41 Ann12		Yes. It was chosen 3*7 renewable crediting periods; Annual emission reductions of 177,166 tCO ₂ e are estimated for the first crediting period.	OK	OK
3.10 In CDM-PDD section A4.5 is information regarding public funding provided?	EB41 Ann12		No. The responsible person of the project owner has confirmed that the proposed project has no public funding from Annex 1 Parties and the proposed project is all funded by the project owner.	OK	OK
4.Project description					
4.1 A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, present scenario and baseline scenario.	VVM58-60 EB41 Ann12		The purpose, which includes the scenario existing prior to the start of project, present scenario and baseline scenario, was described in the PDD. The proposed project activity is a green-field hydropower project with expected annual emission reduction of 177,166 tCO ₂ e. The PDD covers all relevant elements and the description can provide understanding of the project.	OK	OK
4.2 Does the proposed CDM project activity involve the alteration of an existing installation or process? Or does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM63		A physical site inspection was conducted by validation team of CEPREI on 10/01/2012. By inspecting on site, the proposed project activity is a new run-of-river hydropower projects.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
5. Baseline and monitoring methodology					
5.1 General requirement					
Do the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	VVM65		Yes. It is adopted ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 12.3.0)",and "Tool for the demonstration and assessment of additionality (Version 06.0.0)"and "Tool to calculate the emission factor for an electricity system (Version 02.2.1",that is valid versions of those approved by the Board.	OK	OK
5.2 Applicability of the selected methodology to the project activity					
5.2.1 In CDM-PDD section B.1, were any methodologies or tools which the above approved methodology draws upon and their version number indicated?	EB41 Ann12 PDDb.1		<i>CL-2: The version of ACM0002 is not the latest one.</i> <i>Conclusion:</i> <i>The version of ACM0002 has been updated to 12.3.0 which is an effective version issued by EB 66.</i> <i>Hence, this CL has been closed.</i> The methodologies and tools were draw upon, which is ACM0002-Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 12.3.0) and tool for the demonstration and assessment of additionality (Version 06.0.0) and tool to calculate the emission factor for an	CL-2	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			electricity system (Version 02.2.1).		
5.2.2 Is the methodology correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website	VVM70		Yes. The approved methodology ACM0002 is correctly quoted and consistent with the actual text of the applicable version of the methodology available on the UNFCCC CDM website.	OK	OK
5.2.3 Are the applicability conditions of the methodology are met? Is the project activity not expected to result in emissions other than those allowed by the methodology?	VVM71 PDDb.2		Yes. Document review and on-site observation by the team can confirm that the project fully meets all the applicability requirements of ACM0002, Which is shown below: ✓ The proposed project activity is the installation of a power plant, in the form of a hydro power plant with a run-of-river reservoir ✓ The proposed project activity results in new reservoirs and the power density of power plant , as per definitions given in the project emissions section, is greater than 4W/m² ✓ The proposed project activity is a grid-connected hydropower project which is connected to a regional power grid, NWPG. The geographic and system boundaries for NWPG can be clearly identified and information on the characteristics of this grid is available. ✓ The proposed project activity does not involve switching from fossil fuels to renewable energy sources at the site of the proposed project activity.	OK	OK
5.2.4 Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from	VVM71		Yes.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
sources other than that used in the PDD? If yes, do the DOE cross check the PDD against the other sources to confirm that the project activity meets the applicability conditions of the methodology?			The validation team has checked FSR, EIA and their approvals. Base on the document review and on-site observation, the validation team could confirm that the project meets the applied methodology.		
5.2.5 Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made? If no, clarification of the methodology was request in accordance with the guidance provided by the CDM Executive Board.	VVM72		Validation team can determine that the selected methodology is applicable to the project activity.	OK	OK
5.2.6 If the applicability conditions of the methodology are not met, revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board	73		N.A.	OK	OK
5.3 Project boundary					
5.3.1 Do the description of the sources and gases included in the project boundary comply with the latest version of the guidance for completing the CDM-PDD?	EB41 Ann12 PDDB.3		Yes. The description of all sources and gases included in the project boundary as per the methodology is provided in a table.	OK	OK
5.3.2 Is the delineation in the PDD of the project boundary correct?	78		Yes. The project boundary of the project has been clearly described in the PDD: The spatial extent of the project boundary includes the	OK	OK



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			project site and all power plants connected physically to the NWPG that the project is connected to. This is in line with the delineation of grid boundaries as provided by the DNA of China.		
5.3.3 Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline methodology?	78		Yes. According to the methodology ACM0002, the project boundary physically covers the geographic site of the project, as well as NWPG the project connected.	OK	OK
5.3.4 Have all sources and GHGs required by the methodology been included within the project boundary?	VVM79 PDDb.3		Yes. PDD reviewed and on-site observation over facilities to be completed and equipment to be installed can confirm that the defined project boundary is in line with ACM0002 Version 12.3.0.	OK	OK
5.4 Baseline identification					
5.4.1 Do the description of how the baseline scenario is identified and description of the identified baseline scenario comply with the latest version of the guidance for completing the CDM-PDD?	EB41 Ann12 PDDb.4		Yes. According to the ACM0002, the baseline has been determined.	OK	OK
5.4.2 Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM81		Yes. In accordance with ACM0002, the baseline scenario was clearly identified in PDD B.4 as "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources", as reflected in the combined margin	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			(CM) calculations in Annex 3 of this document, which complied with the "Tool to calculate the emission factor for an electricity system."		
5.4.3 Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM82		No. The ACM0002 has determined the baseline scenario as the project is a new grid-connected renewable power plant/unit, there is no need to take steps to identify the baseline scenarios.	OK	OK
5.4.4 Does the selected methodology require use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario? If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM82		No. There is no need to use tools to determine baseline scenario of a new grid-connected renewable power plant/unit as per ACM0002.	OK	OK
5.4.5 Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario? If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology, reasonable in the context of the proposed CDM project activity? If yes, has any unreasonable alternative scenario been excluded?	VVM83		No. The ACM0002 prescribes the baseline scenario.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
5.4.6 Are documents and sources referred to in the PDD correctly quoted and interpreted?	VVM84		Yes. The ACM0002 and Chinese official EF are correctly quoted and interpreted.	OK	OK
5.4.7 Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM84		Yes. The information has been cross checked with the applied methodology and valid official EF data issued at NDRC's website at the time of validation and found consistent.	OK	OK
5.4.9 Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity, including "relevant national and/or sectoral policies and circumstances?"	VVM85		N.A.	OK	OK
5.4.10 Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM85		N.A.	OK	OK
5.4.11 Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM86		The ACM0002 prescribes the baseline scenario.	OK	OK
5.5 Algorithms and/or formulae used to determine emission reductions					



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
5.5.1 Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology?	VVM89		Yes. The steps taken and the equations applied complying with the latest version of the methodology ACM0002 (version 12.3.0) and the "Tool to calculate the emission factor for an electricity system".	OK	OK
5.5.2 Have the equations and parameters in the PDD been correctly applied by comparing them to those in the selected approved methodology?	VVM90		The equations and parameters applied complying with the latest version of the methodology ACM0002 (version 12.3.0) and the "Tool to calculate the emission factor for an electricity system".	OK	OK
5.5.3 Does the methodology provide for selection between different options for equations or parameters? If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)? If yes, have the correct equations and parameters been used, in accordance with the methodology selected?	VVM90		Yes. According to ACM0002, in the calculation of the project emission, there are two equations for calculating the emissions from water reservoirs of hydro power plants (PE HP, y), which should be determined by the power density of the project activity.	OK	OK
5.5.4 Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity? If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions: i. Appropriate and correct?	VVM91		The emission factor is determined ex-ante for the project, and will remain fixed throughout the crediting period. The equations and parameters are consistent with the official calculation of baseline emission factor, "2011 Baseline Emission Factors for Regional Power Grids in China", issued on 20/10/2011 by Chinese DNA. They are in accordance with the methodology selected. The calculation is appropriate and correct, applicable to the project and resulting in a conservative estimate of emission	CL-3	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
ii. Applicable to the proposed CDM project activity? iii. Resulting in a conservative estimate of the emission reductions?			reductions. <i>CL-3: Determination of the emission factor for electricity generation ($EF_{EL,j,y}$) is not clear, it is not found the value of CM and OM.</i> <i>Conclusion: The related section has revised in the PDD.</i> <i>The related section has revised in the PDD.</i>		
5.5.5 Will data and parameters be monitored on implementation and hence become available only after validation of the project activity? If yes, are the estimates provided in the PDD for these data and parameters reasonable?	91		The data and parameters in B.7.1 will be monitored throughout the crediting period. The validation team has checked FSR, EIA, their approvals. Base on the document review and on-site observation, the estimates provided in the PDD for these data and parameters are reasonable. Annual Electricity Supply will be monitored and its estimated value is reasonable.	OK	OK
6. Additionality of a project activity					
6.0.1 Are all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality, reliable and credible?	95		Yes, refer to 6.1 to 6.5 below.	OK	OK
6.0.2 Does the CDM-PDD state the latest version of the additionality tool being used?	96		Yes. "Tool for the demonstration and assessment of Additionality"	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Version 6.0.0 has been used.		
6.1 Prior consideration of the clean development mechanism					
6.1.1 Is the project activity start date prior to the date of publication of the PDD for stakeholder comments If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	98		Yes. The start date of the project activity is 04/07/2011, which is prior to the date of publication of the PDD for stakeholder comments. Yes. As shown in Feasibility Study Report (FSR) of the project activity, the additional financial support of the CDM makes a significant difference to the project finance. Therefore, the CDM benefit has been considered seriously in the decision to proceed with the project activity and was the most important decision-making factors for the investment of the project activity. <i>CL-4: Please list all the key events of the project in Table B.4 of PDD.</i> <i>Conclusion: All these events have been added to the timeline in Table B.4.</i> <i>Hence, this CL was closed.</i>	CL-4	OK
6.1.2 Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the	99		Yes. The starting date of the project is 04/07/2011, which is the date of construction contract was signed of the project activity. It is in accordance with the "Glossary of CDM terms".	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
implementation or construction or real action of a project activity begins.”?					
6.1.3 Does the project activity require construction, retrofit or other modifications? If yes, is it ensured that the date of commissioning can't be considered as the project activity start date?	99		N.A.	OK	OK
6.1.4 Is it a new project activity (project activities with starting date on or after 02 August 2008) or an existing project activity (project activities with a start date before 02 August 2008)?	100		Yes. This is new project activity with a start date after 02 August 2008.	OK	OK
6.1.5 For a new project activity, and for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the Executive Board before the project activity start date, had PPs informed the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? And when did they provide the notification? (Provide reference to such confirmation from Host Party DNA and UNFCCC secretariat)	101		The validation team has checked the notification of the commencement of the project activity and of their intention to seek CDM status submitted to and confirmed by the UNFCCC secretariat on 01/11/2011. The confirmation was issued by China NDRC (host party DNA) on 02/11/2011.	OK	OK
6.1.6 For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided: i. evidence that must indicate that awareness of the CDM	102		N.A.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity. ii. Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia: a. Contracts with consultants for CDM/PDD/methodology services? b. Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)? c. Evidence of agreements or negotiations with a DOE for validation services? d. Submission of a new methodology to the CDM Executive Board? e. Publication in newspaper? f. Interviews with DNA? g. Earlier correspondence on the project with the DNA					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
or the UNFCCC secretariat?					
6.2 Identification of alternatives					
6.2.1 Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	105		Yes. It has prescribed the baseline scenario directly as per ACM0002. i.e. Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”. The selected methodology prescribes the baseline scenario, thus no further analysis is required. <i>CL-5: The Identification of alternatives to the Project is not sufficient.</i> <i>Conclusion: The related section has revised in the PDD.</i> <i>Hence, this CL has been closed.</i>	CL-5	OK
6.2.2 If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	105		N.A.	OK	OK
6.2.3 Does the list of alternatives given in the PDD ensure that:	106		N.A.	OK	OK
i. The list of alternatives includes as one of the					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
options that the project activity is undertaken without being registered as a proposed CDM project activity? ii. The list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity? iii. The alternatives comply with all applicable and enforced legislation?					
6.3 Investment analysis					
6.3.1 Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	108		Yes. Investment analysis has been used to demonstrate the additionality of the proposed CDM project activity.	OK	OK
6.3.2 If yes, does the PDD provide evidence that the proposed CDM project activity would not be: i. the most economically or financially attractive alternative? ii. economically or financially feasible, without the revenue from the sale of CERs?	108		Yes. As shown in Table 7. the IRR before CDM consideration is 6.58%, which is less than the financial benchmark(10%). Therefore, the project IRR of the Project is obviously not financially attractive due to its low profitability. By taking into account the CDM revenue, CDM revenues could help the Project reduce the financial risk, and investment barrier, thus the project owner decided to take this project as CDM project.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
6.3.3 Was this show through one of the following approaches i. Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity. ii. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative. iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	109		Yes. The approaches iii is selected to This project activity produces revenue from generation, so approach iii is selected to demonstrate the additionality. As shown above, the post-tax project IRR is lower than benchmark 10% set up in Economic Evaluation Code for Small Hydropower Project, without the revenue from the sale of CERs.	OK	OK
6.3.4 Is the period of assessment be limited to the proposed crediting period of the CDM project activity?	EB62 Ann5		No. PDD, FSR and IRR calculation sheet show that the assessment period is 24 years (including 4 year of construction and 20 years of operation), which is not limited to the crediting period of the project.	OK	OK
6.3.5 Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity	EB62 Ann5		The project IRR calculation reflects the period of expected operation of the underlying project activity (4 years for construction period and 20 years for operational period). The Hydro-generating unit purchasing contract reflects that its	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
assets at the end of the assessment period?			lifetime is expected as 20 years.		
6.3.6 Was the fair value of any project activity assets at the end of the assessment period included as a cash inflow in the final year?	EB62 Ann5		Yes. At the end of the assessment period, the residual value of the project activity assets is included. The residual value rate of 5% was in compliance with relevant regulation in China, i.e. (SL 16-95). The assessment period covers the whole technical lifetime, 20years.	OK	OK
6.3.7 Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB62 Ann5		Yes. The residual value rate of 5% was justified by the PP. The residual value is correctly applied. The residual value rate of 5% was in compliance with relevant regulation in China, i.e.(SL 16-95)	OK	OK
6.3.8 Does project participants supply spreadsheet versions of all investment analysis in which all formulas used in this analysis be readable and all relevant cells be viewable and unprotected?	EB62 Ann5		Yes. A spreadsheet to calculate the project IRR has been provided by the PPs.	OK	OK
6.3.9 Whether the cost of financing expenditures (i.e. loan repayments and interest) is included in the calculation of project IRR.	EB62 Ann5		Yes. The cost of financing expenditures (i.e. loan repayments and interest) is included in the calculation of project IRR.	OK	OK
6.3.10 In the calculation of equity IRR only the portion of investment costs which is financed by equity should be	EB62		N.A. The proposed project applies the project IRR.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
considered as the net cash outflow, the portion of the investment costs which is financed by debt should not be considered a cash outflow.	Ann5				
6.3.11 when a project IRR is calculated to demonstrate additionality if a pre-tax benchmark is applied. In cases where a post-tax benchmark is applied the DOE shall ensure that actual interest payable is taken into account in the calculation of income tax.	EB62 Ann5		According to SL16-95, the benchmark, 10%, is a post-tax benchmark for project, so validation team checked the calculation of income tax and concluded that interest payable was considered in the spreadsheet.	OK	OK
6.3.12 Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB62 Ann5		Yes. The major maintenance cost is included in IRR calculation.	OK	OK
6.3.13 Do project participants justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?	EB62 Ann5		Yes. The technical lifetime is selected to assess in the PDD which is consistent with FSR.	OK	OK
6.3.14 Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator conducted? And were the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices determined?	VVM111		The parameters and assumptions are accuracy and suitability in relevant accounting practices. <i>CAR-4: Clarification is required on the impact of the VAT refund policy issued in the Notice of Taxation on Several Issues concerning the National Implementation of Value-added Tax Reform (CaiShui[2008]170) at the time of investment decision.</i> Conclusion: The VAT refund for the main equipment has been	CAR-4	OK



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			taken into account in the final PDD and IRR calculation spreadsheet. Hence, this CAR has been closed.		
6.3.15 Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM111		<i>CAR-5: The Annual Electricity Generation and Net electricity delivered to grid described in the PDD is inconsistent with the values in FSR and IRR calculation sheet.</i> <i>Conclusion: The values have been revised according to the FSR.</i> <i>CAR-6: Some parameters used for calculate IRR in PDD and IRR calculation sheet is inconsistent with the values in FSR, e.g. material price and other price.</i> <i>Conclusion: All of the parameters used for calculate IRR has been revised according to the FSR.</i> <i>Hence, this CAR has been closed.</i> <i>CL-6: Please further describe the main parameters for the financial analysis in Table B-3 of PDD.</i> <i>Conclusion: The Grid price, Loan rate and Annual O&M cost etc. was added in the Table B-3 of PDD.</i> <i>Hence, this CL has been closed.</i> Yes. The parameters have been checked against the actual	CAR-5 CAR-6 CL-6	OK



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			regulations, rules or industry practice etc. Refer to section 3.6 of this report for detailed analysis.		
6.3.16 Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM111		Yes. The FSR has been reviewed	OK	OK
6.3.17 Was the correctness of computations carried out and documented by the project participants?	VVM111		Yes. The validation team checked the input data of IRR calculation sheet for their consistence and rationality with PDD. The formulae used for IRR calculation was reviewed. Checking-calculations were carried out to verify the correctness of the computations (with and without CDM). The output data to demonstrate the additionality were consistently referenced in PDD.	OK	OK
6.3.18 Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur and the likelihood of these conditions assessed?	VVM111		Yes. The critical points of these four key parameters have been analyzed in the PDD. Four main variable factors are identified for sensitivity analysis of the project, including Static investment, Annual operational cost, Annual electricity generation, and Electricity tariff with a variation range from -10% ~ +10%. Each positive condition for IRR is analyzed in PDD.	OK	OK
6.3.19 Whether variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues are subjected to	EB 62 Ann5		Four key parameters are selected to make sensitivity analysis: 1) Static investment	CL-7	OK



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reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and whether the results of this variation are presented in the PDD and be reproducible in the associated spreadsheets.			2) Annual operational cost 3) Annual electricity generation 4) Electricity tariff And the calculations and results are presented in the PDD and the IRR calculation spreadsheet. <i>CL-7: The result of sensitivity analysis of Different Financial Indicators of the Project in TableB-5 of PDD is disordered.</i> <i>Conclusion: The related section has revised in the PDD.</i> <i>Hence, this CL has been closed.</i>		
6.3.20 Whether there is variable which constitute less than 20%, Validator considers has a material impact on the analysis. Whether Validator raises a corrective action request to include this variable in the sensitivity analysis.	EB 62 Ann5		There is no need to analyze the other variable than the four key parameters mentioned above.	OK	OK
6.3.21 To confirm the suitability of any benchmark applied in the investment analysis by that: i. is the type of benchmark applied suitable for the type of financial indicator presented? ii. do any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity? iii. is it reasonable to assume that no investment would	112		The 10% IRR (after tax) was used as benchmark value as a common value for small-scale project in China, which is stated clearly in Economic Evaluation Code for Small Hydropower Projects issued by the Ministry of Water Resources (Document No: SL16-95). SL16-95 is applicable for hydropower project under 25 MW and 50MW in rural area. During the on-site assessment and consultation with local government, it is confirmed that the project activity is located in the rural area and the installed capacity is 48 MW, thus the SL16-95 is applicable for the project	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark			activity. When the FSR of the project was prepared and the investment decision was made the document of Economic Evaluation Code for Small Hydropower Project has remained the old version. Now the version of Economic Evaluation Code for Small Hydropower Project has been modified (SL16-2010, become effective from 22/01/2011) and the value of benchmark for small hydropower project is the same hence the value is applicable.		
6.3.22 Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities?	113		Yes. The project participants rely on values from FSR, which was approved by local DRC, the Issued No. is [2010]1519.	OK	OK
If yes: (EB38 para.54)					
6.3.23 i. Has the FSR 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?	113		Yes. The finalization date of FSR is in February 2010. The approval date of FSR is 27 October 2010. And the date that board meeting was held and decided to develop the proposed project as a CDM project is on 02 December 2010. The period of time between the two dates is not longer than 10 months. Thus, the validation team considers that it's sufficiently short.	OK	OK
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR? If not, was the appropriateness of the values validated?	113		The values used in the PDD and the IRR calculation spreadsheet are fully consistent with the FSR.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
iii. Was the input values from the FSR valid and applicable at the time of the investment decision? (confirm that by cross-checking or other appropriate manner)	113		The total static investment, the applied tariff, the O&M cost and the annual Power Generation in the FSR are valid and applicable	OK	OK
6.4 Barrier analysis					
6.4.1 Has barrier analysis been used to demonstrate the additionality of the proposed CDM project activity?	115		No.	OK	OK
If yes:				OK	OK
6.4.2 i. <i>Are the barriers real</i>	115		N.A.	OK	OK
6.4.3 ii. <i>Do the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives?</i>	115		N.A.	OK	OK
6.5 Common practice analysis					
6.5.1 Is this a large-scale CDM project activities, or first-of-its kind?	119		Yes. The project is a large-scale project activity and not first-of-its kind.	OK	OK
6.5.2 If yes, was common practice analysis be carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	119		Yes. Common practice analysis was carried out in the section B.5. to assess additionality.	OK	OK



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6.5.3 Was it assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be transnational/global)	120		Yes. The geographical scope (Qinghai Province) has been chosen for the assessment of common practice.	OK	OK
6.5.4 Was a region other than the entire host country chosen?	120		Yes. The geographical region for the common practice analysis of hydropower projects is Qinghai province, a province of China	OK	OK
6.5.5 If yes, was the explanation why this region is more appropriate assessed?	120		Yes. The activities in the same province have the similar grid structure, geological and transportation conditions, economic developing states; hence the validation team considered that delineating Qinghai province as the border is reasonable.	OK	OK
6.5.6 Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	120		The official sources, China Power Yearbook, China Water Resource Yearbook and Qinghai Yearbook are used and all plants within Qinghai Province and also within the specified range of installed capacity and prior to the start date were identified.	OK	OK
6.5.7 Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	120		Yes. There are 2 similar and operation projects were identified, so $N_{all}=2+ N_{other}$	OK	OK
6.5.8 If yes, was it assess whether there are essential distinctions between the proposed CDM project activity	120		Yes.	OK	OK



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and the other similar activities?			Taking into consideration of “Tool for demonstration and assessment of additionality Version 6.0.0”. Essential distinctions have been analyzed. $N_{diff}=2$. The calculate factor F as below: $F=1-N_{diff}/N_{all}=1-(2+N_{other})/(2+N_{other})=0$ $N_{all} - N_{diff} = (2+N_{other}) - (2+N_{other})=0<3,$ Therefore, the Project is adequately additional.		
7. Monitoring plan					
7.1 Does the PDD include a monitoring plan? Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	122		Yes. The PDD includes a monitoring plan. The monitoring plan based on the approved baseline and monitoring methodology ACM0002 (version 12.3.0).	OK	OK
7.2 Was the list of parameters required by the selected methodology identified?	123		Yes. Parameters required were listed in PDD B7.1	OK	Ok
7.3 Does the monitoring plan contain all necessary parameters?	123		Yes. Based on desk review, the monitoring plan contains all necessary parameters against the ACM0002.	OK	OK
7.4 Are the parameters clearly described?	123		Yes.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
7.5 Do the means of monitoring described in the plan comply with the requirements of the methodology?	123		Yes.	OK	OK
7.6 Are the monitoring arrangements described in the monitoring plan are feasible within the project design?	123		Yes. The detailed monitoring arrangements are described. The validation team confirms that the MP is feasible within the project design. <i>CL-8: Please further describe the monitoring system with an appropriate diagram in PDD B.7.2.</i> <i>Conclusion: It has been added in B.7.2 of PDD.</i> <i>Hence, this CL has been closed.</i> <i>CL-9: Please further describe the relationship of M1 and M2.</i> <i>Conclusion: The relationship of M1 and M2 has been described in B.7.2 of PDD.</i> <i>Hence, this CL has been closed.</i>	CL-8 CL-9	Ok
7.7 Are the following means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	123		Yes. The data management procedure, the quality assurance procedures and the quality control procedures are considered complete and sufficient.	CL-10	Ok



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
i. data management procedures? ii. quality assurance procedures? iii. quality control procedures?			<i>CL-10: Please further describe Quality Assurance and Quality Control procedures.</i> <i>Conclusion: The related section has revised in the PDD.</i> <i>Hence, this CL has been closed.</i>		
8. Sustainable development					
8.1 Do CDM project activities assist Parties not included in Annex I to the Convention in achieving sustainable development?	125		Yes. As described in A.2 of the PDD, the proposed project will assist the region in achieving sustainable development.	OK	OK
8.2 Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	126		<i>Pending on closure of CAR-1.</i> Closed: Yes, the LoA issued by China DNA confirms the contribution of the project to the sustainable development of the host Party.	Pending	OK
9. Local stakeholder consultation					
9.1 Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC	128		Yes. On 16/04/2011, 50 questionnaires were randomly distributed to 50 stakeholders around the project site for commenting the construction of the Project, prior to the publication of the PDD on the UNFCCC website.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
website?					
9.2 Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, been invited?	129		Yes. All 50 copies of questionnaires were received 100% of respondents support the implementation of the proposed project. The validator team sampled four gentlemen person for conversation on the project. These person, as shown by their ID, are all original inhabitants at the site of the project. The project did not lead to any migration. All the persons interviewed were confident that the project will be beneficial to local economy development.	OK	OK
9.3 Is the summary of the comments received as provided in the PDD complete?	129		Yes. PDD has summarized all comments received and analyzed the survey. Yes. PDD has summarized all comments received and analyzed the survey. See E1, E2, E3 of the PDD.	OK	OK
9.4 Have the project participants taken due account of any comments received and described this process in the PDD?	129		In PDD section E.3, it is claimed that No significant comment was received in the survey, therefore, no major changes of the design, construction and operation of the proposed project will be considered.	OK	OK
10. Environmental impacts					
10.1 Have project participants submitted documentation to CEPREI on the analysis of the environmental impacts of the project activity?	131		Yes. EIA report for the project has been provided. which was prepared by legally qualified 3rd organization in August 2010. The validator	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			has reviewed the EIA and its approval.		
10.2 Have the project participants undertaken an analysis of environmental impacts?	132		Yes.	OK	OK
10.3 Does the host Party require an environmental impact assessment?	132		Yes. The Chinese government requires an environmental impact assessment.	OK	OK
10.4 If yes, have the environmental impact assessment approved by local government?	132		Yes. The EIA was approved by Qinghai Environment Protection Bureau (Qing Huan Fa No. 657-2010) on 15/09/2010.	OK	OK
11. Stakeholder consultation process					
Have Parties, stakeholders and UNFCCC accredited NGOs been invited to comment on the validation requirements for minimum 30 days? (large A/R project for minimum 45 days) Have the project design document and comments been made publicly available?	40-42		CEPREI has made the PDD version 01, dated 01 November 2011 of the project activity publicly available on the web of UNFCCC.	OK	OK
12. Project design of small-scale CDM project activities					
12.1 Does the project activity fall within the thresholds of the three possible types of Small-scale project activities?	136		N.A. This is a large-scale CDM project activity.	OK	OK



CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
12.2 Does the project activity conforms to one of the approved small-scale categories and applies the relevant tool or methodology?	136		N.A.	OK	OK
12.3 Is the project activity a debundled component of a large-scale project?	136		N.A.	OK	OK
12.4 Is an assessment of the environmental impacts required by the host party?	136		N.A.	OK	OK
12.5 Does the additionality of small scale project activities conform to relevant specific requirements of additionality?	137		N.A.	OK	OK



Table 2: Resolution of GSP comments

NO.	Topics	Standpoints	PP's Response	Validator's Conclusion
N.A. No comments were received during the GSP.				

Table 3: Resolution of CARs and CLs:
Table 3.1: List of Requests for Corrective Action (CAR)

No.	CAR	Reference to Validation Protocol	Summary of project owner response	Validation team conclusion
1.	Letter of Approval from DNA of China has not been provided.	1.1	The LoA from China DNA has been provided to DOE.	The LoA issued by DNA of China has been provided by the PP. Issued No.: 3862 Issued authority: The National Development And Reform Commission of The People's Republic Of China. Issued Date: 28/03/2012 Hence, CAR-1 was closed.
2.	Letter of Approval from DNA of United Kingdom has not been provided.	1.1	The LoA from UK DNA has been provided to DOE.	The LoA issued by DNA of UK has been provided by the PP. Issued No.: EA/CECC/11/2012 Issued authority: Environment Agency Issued Date: 24/09/2012
3.	Name of Party involved of Isle of Man is not included in Annex I countries	3.5	Name of Party involved has been revised to United Kingdom.	The revised PDD has been checked OK. Hence, this CAR has been closed.

4.	VAT deduction should be taken into consideration according to “ <i>Notice of Taxation on Several Issues concerning the National Implementation of Value-added Tax Reform (CaiShui[2008]170)</i> ”. IRR calculation sheet should be revised accordingly.	6.3.14	The VAT refund for the main equipment has been taken into account in the final PDD and IRR calculation spreadsheet.	The revised IRR calculation process has been checked and the validation team confirms that the VAT refund for the main equipment has been taken into account in accordance with the regulation (CaiShui [2008]170). Hence, this CAR has been closed.
5.	The Annual Electricity Generation and Net electricity delivered to grid described in the PDD is inconsistent with the values in FSR and IRR calculation sheet.	6.3.15	The values have been revised according to the FSR.	The revised PDD has been checked OK. Hence, this CAR has been closed.
6.	Some parameters used for calculate IRR in PDD and IRR calculation sheet is inconsistent with the values in FSR, e.g. material price and other price.	6.3.15	All of the parameters used for calculate IRR has been revised according to the FSR.	The revised PDD and IRR calculation sheet has been checked OK. All the parameters were accurate and applicable. Hence, this CAR has been closed.

Table 3.2: List of Requests for Clarification (CL)

No.	CL	Reference to Validation Protocol	Summary of project owner response	Validation team conclusion
1.	Please further describe the location of the project and the geographical coordinate of the dam and plant.	3.6	City/Town/Community etc has revised Maqin county, Guoluo Zang Autonomous Prefecture. The geographical coordinate of the dam and plant has been revised according to FSR. Dam: 100°15' 06" E, 34°46' 50" N Plant: 100°13' 32"E, 34°50' 35"N.	The revised PDD has been checked OK. Hence, this CL has been closed.
2.	The version of ACM0002 is not the latest one.	5.2.1	The version of ACM0002 has been revised to be the version 12.3.0.	The version of ACM0002 has been updated to 12.3.0 which is an effective version issued by EB 66. Hence, this CL has been closed.
3.	Determination of the emission factor for electricity generation ($EF_{EL,j,y}$) is not clear, it is not found the value of CM and OM.	5.5.4	The related section has revised in the PDD.	The revised PDD has been checked OK. Hence, this CL was closed.
4.	Please list all the key events of the project in Table B.4 of PDD.	6.1.1	All these events have been added to the timeline In Table B.4.	The revised PDD has been checked OK.



				Hence, this CL was closed.
5.	The Identification of alternatives to the Project is not sufficient.	6.2.1	The related section has revised in the PDD.	The revised PDD has been checked OK. Hence, this CL was closed.
6.	Please further describe Main parameters for the financial analysis in TableB-3.	6.3.15	The Grid price, Loan rate and Annual O&M cost etc. were added in the Table B-3 of PDD.	The revised PDD has been checked OK. Hence, this CL was closed.
7.	The result of sensitivity analysis of Different Financial Indicators of the Project in TableB-5 of PDD is disordered.	6.3.19	The related section has revised in the PDD.	The revised PDD has been checked OK. Hence, this CL was closed.
8.	Please further describe the monitoring system with an appropriate diagram in PDD B.7.2.	7.6	It has been added in B.7.2 of PDD.	The revised PDD has been checked OK. The detailed monitoring arrangements are described. Hence, this CL was closed.
9.	Please further describe the relationship between the main table M1 and backup table M2.	7.6	The relationship of M1 and M2 has been described in B.7.2 of PDD.	The revised PDD has been checked OK. The validation team confirms that the MP is feasible. Hence, this CL has been closed.
10.	Please further describe Quality Assurance and Quality Control procedures.	7.7	The related section has revised in the PDD.	The revised PDD has been checked OK. Hence, this CL was closed.



Table 4: Forward Action Requests

Table 4: List of Forward Action Requests (FARs)

No.	FAR	Reference	Summary of project owner response	Validation team conclusion
N.A. There is no FAR for the project.				

ANNEX B

Certificate of Appointment

