



VALIDATION REPORT

for the CDM Project Activity

Yunnan Jiayan Hydropower Project

in
P.R. China

Report No.: 01 997 9105066226

Version No. 01.3, 2012-12-19

TÜV Rheinland (China) Ltd.

I. Project description:

Project title: Yunnan Jiayan Hydropower Project
Host Country: P.R.China
Methodology: ACM0002/ Version 13.0.0 ☒ Large Scale ☐ Small Scale
Annual average emission reductions (estimate): 780,106 tCO₂e/yr
GHG reducing measure/technology: Hydropower

Party	Project Participants	Party considered a project participant
(Host) P.R. China	Yunnan Dianneng Luquan Dianlin Development Co., Ltd	No
(Annex I Country) The Netherlands	Baraka Global Advisors	No

II. Validation:

Contract party: Yunnan Dianneng Luquan Dianlin Development Co., Ltd.

Validation Team:

Validation Team			Role									
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Mr. Minglong Huang	China	1.2, 5.1, 11.1, 12.1	X		X	X	X					
Mr. Harold Hai	China	1.2, 6.1, 13.1										X
Mr. Walter Tang	China	1.1, 1.2, 2.1, 2.2, 3.1, 4.3, 4.5, 13.1								X		

Validation Phases:

- ☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status:

- ☐ Corrective Actions / Clarifications Requested
☒ Full Approval and Submission for Registration
☐ Rejected

III. Validation Report:

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Final approval: <input checked="" type="checkbox"/>	Released by / on: Date: 2012-12-21 By: Mr. Praveen N. Urs	Designated Operational Entity (DOE): TÜV Rheinland (China) Ltd. Unit 707, AVIC Building, No.10B, Central Road, East 3rd Ring Road, Chaoyang District, Tel.: +86 10 6566 6667, E-mail: doe@chn.tuv.com
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Executive Summary – Validation Opinion

The validation team assigned by the DOE -TÜV Rheinland (China) Ltd. has performed a validation of the “Yunnan Jiayan Hydropower Project” in P.R. China on the basis of UNFCCC criteria for Clean Development Mechanism (CDM) projects according to Article 12 of the Kyoto Protocol and the subsequent decisions by the COP/MOP and CDM Executive Board with regard to CDM modalities and procedures and the application of approved methodologies. The validation report and the validation protocol have summarizing the findings of the validation.

The review of the project design documentation and the subsequent follow-up interviews have provided the DOE with insufficient evidence to determine the fulfilment of stated criteria.

The validation was executed in the following steps so far:

- Desk review of preliminary PDD (version 01, 24th August 2011)
- Public stakeholder comment process (2nd September 2011 – 1st October 2011)
- On-site visit with stakeholder interviews (21st September 2011 to 22nd September 2011)
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs) and the draft validation report & protocol (4th November 2011)
- Desk review of revised PDD (version 04.3, 25th Oct. 2012)
- Review of proposed corrections and clarifications
- Issue of the final validation report & protocol

The host country is the P.R. China. The Letter of Approval (LoA) issued in Dec. 2011 by China's DNA – National Development & Reform Commission (NDRC) confirms the voluntary participation of Yunnan Dianneng Luquan Dianlin Development Co., Ltd (as a project participant), and the project assists P.R. China in achieving sustainable development.

The project activity is bilateral CDM-project, with Netherlands identified as the Annex I party. The LoA for confirming Baraka Global Advisors in its capacity as the project participant has been received.

The validation team did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards China.

The project applies ACM0002/Version 13.0.0 – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, in connection with the “Tools 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.

The total emission reductions from the project are estimated to be on the average 780,106 tCO₂e per year over the selected 1st renewable 7-year crediting period.

The monitoring plan and procedures have been prepared and depicted in the PDD according to the monitoring methodology ACM0002/ Version 13.0.0. The Training Plans

concerning CDM monitoring and knowledge as well as the daily operation, maintenance and emergency preparedness had been provided to validation team. The training records and content were checked and verified by validation team. The plant operation manuals and maintenance manuals were available for checking during OSV.

The project proponent has resolved all Corrective Action Requests and Clarification Requests as stated in the draft Validation Report and the Validation Protocol, which has resulted in a revision of the PDD. Thus it is the validation team's opinion that the Yunnan Jiayan Hydropower Project, as described in the PDD of 25th Oct. 2012 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002/Version 13.0.0; The DOE therefore requests the registration of the project as a CDM project activity with the UNFCCC.

Abbreviations

BE	Baseline Emission
BGA	Baraka Global Advisors
BM	Build Margin
CAR	Corrective Action Request
CSPG	China Southern Power Grid
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CHECCK	Kunming Hydropower Investigation, Design & Research Institute, CHECC
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reductions
ERPA	Emission Reductions Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWh	Giga Watt Hours
I	Interview
IPCC	Intergovernmental Panel on Climate Change
kW	Kilo Watt
kWh	Kilo Watt Hours
L _y	Leakage
LoA	Letter of Approval
LoI	Letter of Intent
LRA	Land Resource Administration
MoC	Statements on the Modalities of Communicating with EB and the UNFCCC Secretaries
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
NDRC	National Development and Reform Commission
NGO	Non Government Organisation
NOx	Nitrogen Oxides
ODA	Official Development Assistance
OM	Operating Margin
OSV	On Site Visit
PD	Power Density
PDD	Project Design Document
PO	Project Owner
PDR	Preliminary Design Report
PE	Project Emission
PP	Project Participant
SA	Sensitivity Analysis
SO ₂	Sulphur Dioxide

t	Tonne
VVM	Validation and Verification Manual
YLDCL	Yunnan Dianneng Luquan Dianlin Development Co., Ltd.
YPPC	Yunnan Province Power Co. Ltd

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1 INTRODUCTION

Yunnan Dianneng Luquan Dianlin Development Co., Ltd has commissioned the DOE TÜV Rheinland (China) Ltd to perform a validation of the CDM Project Activity “Yunnan Jiayan Hydropower Project” in the P.R.China (hereafter called “the project”). This report summarises 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. The term “UNFCCC criteria” refers 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, 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 relevant criteria (see above) and 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 rules-based approach, focusing on the requirement of VVM 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 consists of the following four phases:

- I PDD submission for GSP
- II a desk review of the project design documents
- III on-site visit and follow-up interviews with project stakeholders
- IV 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 Desk Review of the Project Design Documentation

The validation team considered it was a common type of CDM project in China without any special situation of the captioned, on-site validation could be arranged before the end of PDD GSP. If there is any comment during PDD GSP, the validation team is still confident to handle or even re-visit again if necessary. The early visit was agreed with the client and the client has been informed the requirement of GSP before on-site visit.

Table 1: The following table outlines the documentation reviewed during the validation

/1/	<i>UNFCCC, Clean Development Mechanism Validation and Verification Manual (Version 01.2), EB55 Annex 1</i>	
/2/	<i>UNFCCC, ACM0002/Version 13.0.0, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", EB67</i>	
/3/	<i>UNFCCC, "Tool for the demonstration and assessment of additionality", Version 06.0.0, EB65</i>	
/4/	<i>UNFCCC, "Tool to calculate the emission factor for an electricity system", Version 02.2.1, EB63</i>	
/5/	<i>UNFCCC, Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM, EB41, Annex 46, Version 01</i>	
/6/	<i>UNFCCC, Guideline on the Assessment of Investment Analysis, EB62, Annex 05, Version 05.0</i>	
/7/	<i>UNFCCC, Guidelines for completing the Project Design Document (CDM-PDD) and the Proposed new baseline and monitoring methodologies (CDM-NM), Version 07, EB41, Annex 12</i>	
/8/	<i>UNFCCC, CDM-PDD – Project Design Document form, Version 03.2, EB25, Annex 15</i>	
/9/	/9.1/	<i>Project Design Document (PDD), GSP version 01, 24th August 2011</i>
	/9.2/	<i>Project Design Document (PDD), version 04.3, 25th Oct. 2012</i>
/10/	<i>Project financial spreadsheet (IRR spreadsheet)</i>	
/11/	<i>Project GHG emission reduction spreadsheet</i>	
/12/	<i>Kunming Hydropower Investigation, Design & Research Institute, CHECC, Feasibility Study Report of the project, Dec. 2008</i>	
/13/	<i>Yunnan DRC, Project Approval, YunFaGaiNengYuan(2009)No. 453, 17th March 2009</i>	

/14/	YLDCL, organizational Chart of YLDCL, 3th September 2009	
/15/	Kunming Hydropower Investigation, Design & Research Institute, CHECC, Environment Impact Assessment Report, December 2008	
/16/	Yunnan Provincial Environment Protection Bureau, EIAR Approval, YunHuanShen(2009)56, 4th March 2009	
/17/	Yunnan Provincial Water Conservancy, Hydropower Survey & Design Institute, Hydro Energy Planning (Cha River to JinShaJiang HuiKou), November 2004	
/18/	Kunming Hydropower Investigation, Design & Research Institute, CHECC, Reconnaissance and Survey Report of Diversion Tunnels of Jiayan Project. No. 3341-K-ZB-3, Oct. 2008	
/19/	Kunming Hydropower Investigation, Design & Research Institute, CHECC, <Explanation on the investment issue of Jiayan Hydropower Station. 13 th March 2012	
/20/	Kunming Hydropower Investigation, Design & Research Institute, CHECC, <Explanation on the determination of the effective coefficient of the electricity of Jiayan Hydropower Station. 13 th March 2012	
/21/	Yunnan Provincial People's Government, Pre-Approval of Land Acquisition, YunGuoTuZiYu[2008](225), 17 th Dec. 2008.	
/22/	Yunnan Province Power Co.(YPPC), Approval of Grid Connection Intention (Ref no.: YunDianJi[2009](340)) , 19 th August 2009	
/23/	/23.1/	Yunnan Province Pricing Bureau, the Tariff Notice in Yunnan Province,RMB0.215Yuan (VAT Incl.) for the plants (Ref. No: YunFaGaiJiaGe [2006](28)), tariff of centralized regulating hydropower during normal season is 0.215 RMB/kWh (VAT included), additional indicates the rainy season tariff is 0.19 RMB/kWh, the dry season tariff is 0.24 RMB/kWh, 6 th Jan 2006 http://www.ynf.gov.cn/canton_model44/newsview.aspx?id=38780
	/23.2/	Yunnan Province Pricing Bureau, the Tariff Notice in Yunnan Province,RMB0.222Yuan (VAT Incl.) for the plants with installation capacity more than 50MW tariff is increased to 0.222 RMB/kWh, the new centralized regulating hydropower (less than 50MW) tariff is adjusted to 0.197(rainy season), 0.222(normal season), 0.247(dry season) RMB/kWh. (Ref. No: YunFaGaiJiaGe [2009](2483)), 3 rd December 2009 http://www.ynf.gov.cn/canton_model47/newsview.aspx?id=1130926
	/23.3/	UNFCCC,"Information Note on the Highest Tariffs Applied by the EB in its Decisions on Registration of Projects in P.R.China. Para 53, EB54, June 2010 http://cdm.unfccc.int/Reference/Notes/reg_note07.pdf
/24/	Luquan Yi & Miao Autonomous County Government, Resettlement Program Approval, LuZhengHan(2008)No. 54, 4 th December, 2008	
/25/	Sichuan Ertan Construction Engineering Supervision Company, Project Commencement Order, JianLi[2009]HeKaiGong No.001, 19 th May 2009	
/26/	YLDCL and Sichuan Ertan Construction Engineering Supervision Company, Supervision service contract for the Head of Pivot for the Project, No.DNJY/JL-03, 15th Dec. 2010.	
/27/	YLDCL and No. 10 Engineering Bureau of China Water Conservancy and Hydropower Co. Ltd., Civil Works Construction and Installation Contract on the left Diversion Tunnel, Power House, Mechanical and Metallic Structure, 17 th June 2011.	

/28/	YLDCL and No. 14 Engineering Bureau of China Water Conservancy and Hydropower Co. Ltd., Civil Works Construction and Installation Contract on the Head of Pivot, No. DNJY/C3, 8th October 2010	
/29/	YLDCL and China Railway 16th Bureau Group Co., Ltd. Right Diversion Tunnel and Metallic Structure Installation Contract. No. DNJY/C1, 10 th May 2009	
/30/	YLDCL and No. 14 Engineering Bureau of China Water Conservancy and Hydropower Co. Ltd., Digging Engineering of Left Diversion Tunnel Contract. DNJY/C2, 26 th May 2009	
/31/	YLDCL and China Railway 16th Bureau Group Co., Ltd. Diversion Tunnel(0+918.000~4+400.000 phase) Civil Work & Metallic Structure Installation Contract. No. DNJY/C4, 17th June 2011.	
/32/	YLDCL, Contracted amount list (totally 24 contracts are listed), Feb. 2012	
/33/	Luquan Yi & Miao Autonomous County Government, Forestry Land use Application, 10 th June 2009.	
/34/	YLDCL and Haerbin Electric Factory Limited Liability Company, Business Contract and Technical specification of hydro turbine and generator units, No.DNJY/JD-01, 17 th January 2011.	
/35/	YLDCL and Kunming Branch of China Mingsheng Bank, Bank Loan Contract, 23 rd December, 2009	
/36/	YLDCL and Accord Global Environment Technology Co., Ltd. Consulting Contract signed, 25 th Sept. 2009.	
/37/	YLDCL, Board Meeting applying for CDM support, 8 th April 2009	
/38/	YLDCL and Baraka Global Advisors, Certified Emission Reduction Purchase and Sale Agreement, 15 th Nov, 2010.	
/39/	/39.1/	YLDCL, Public Comment Survey Notification on the project, 13 rd April 2011.
	/39.2/	YLDCL, Stakeholder Questionnaires, 25th April 2011 (60 copies)
/40/	YLDCL, Operation and Maintenance Manual of Jiayan Hydropower Station, March 2012	
/42/	YLDCL, Training Plan for operational and maintenance staffs, 9 th December 2011	
/43/	YLDCL, CDM Training Plan and CDM Monitoring Manual, 20 th December 2011	
/44/	China National Forestry Bureau, Approval of Forestry Land Use for the project, LinZiXuZhun[2010](294), 17 th September 2010	
/45/	YLDCL and TÜV Rheinland (China) Ltd, Signing of CDM Validation Service Contract, 1 st September 2011	
/46/	Department of Industry and Transport Statistics, National Bureau of Statistics & Energy Bureau, National Development and Reform Commission, People's Republic of China, China Energy Statistics Yearbook 2007 to 2009	
/47/	UNFCCC, GSP information: http://cdm.unfccc.int/Projects/Validation/DB/FOR08MRU2FT5ZVGTA5G7372KEOYKMF/view.html ; 2 nd September 2011 to 1 st October 2011	
/48/	China Electrical Power Press and State Power Corporation, < Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project>, 2003	
/49/	China Electric Power Yearbook Editorial Board, China Electric Power Yearbook 2007 to 2009	

/50/	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Table 1.4, Page 1.24, Chapter 1, Volume 2
/51/	China Water Conservatory and Hydroelectric Press, China Water Conservatory Yearbook 2005, 2006 and 2007
/52/	National Statistical Bureau of China: The procurement price index for material, fuel and power http://www.stats.gov.cn/tjgb/ndtjgb/qgndtjgb/t20060227_402307796.htm
/53/	General Office of the State Council of China, Notice on Strictly Prohibiting the Construction of Fuel-fired power plants with installed Capacity of 135 MW or below, 15 th April 2002
/54/	China Construction Ministry, Construction Survey Certificate of Kunming Hydropower Investigation, Design & Research Institute, CHECC, No. 230005-kj, 23 rd May 2005
/55/	Office of National Coordination Committee on Climate Change, Baseline Emission Factor Calculation Result of China Grids in 2010, 20 th 2010 http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2537.pdf
/56/	YLDCL, Zehei Town Government, the Agreement on the Land acquisition and immigration compensation issue for Jiayan Hydropower Project. (Doc. No. DNJY/BC-15, BC-10, etc.) 19 th September 2010
/57/	Luquan Yi & Miao Autonomous County Government, Business License of YLDCL, No.530128000000462, 4 th September 2003
/58/	YLDCL, Construction Schedule of the project. September 2011
/59/	China DNA, LoA for the project, FaGaiQiHou(2011)No.2849, English Version, No.3406, December 2011. http://cdm.ccchina.gov.cn/website/CDM/pdf/Item_new/Item_new7236.pdf
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/61/	An article, "the relationship between House Service System and Power Generation Output in Hydraulic Power Plant (No.1 2007)" published from Northeast Electric Power Technology,
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/71/	YLDCL, and Accord Global Environment Technology Co., Ltd. CDM consulting contract signed. 25 th September 2009
/72/	Bidding platform of China Construction Ministry, Introduction of 165MW Tukahe Project, July 2007. http://www.zhaobiao.gov.cn/projectinfodetail/23613756.html
/73/	Yunnan Jinyu Ecological Engineering Consultation Co., Ltd., Overall Acceptance Inspection Passed for Tukahe Project, http://www.ynjinyu.cn/newEbiz1/EbizPortalFG/portal/html/InfoContent.html?InfoPublish_InfoID=c373e91dd731b5928ffe639d28fce14a , 12 th Dec. 2008
/74/	http://www.yn.xinhuanet.com , Yanyangshan Hydropower Project put into operation, 9 th Oct. 2006. http://www.yn.xinhuanet.com/newscenter/2006-10/09/content_8206497.htm
/75/	CDM Executive Board, Guidelines for the Reporting and Validation of Plant Load Factors/Version 01, EB 48 Annex 11, 17 July 2009
/76/	UNEP Risoe Center, CDM Pipeline overview, http://cdmpipeline.org/publications/CDMpipeline.xls
/77/	http://www.pbc.gov.cn/publish/zhengcehuobisi/631/2012/20120608192806720164601/20120608192806720164601_.html
/78/	State Administration of Taxation, Notice regarding adjusting implementation time for defining enterprise residual value rate of fixed assets (guoshuihan [2005]883), 14 September 2005
/79/	NL Agency< Ministry of Infrastructure and the Environment, LoA for the project, Ref: 2012ANL721. 24 th Aug. 2012.
/80/	YLDCL and Baraka Global Advisors, MoC signed, 28 th August 2012
/81/	UNFCCC, Guideline On Common Practice, EB69, Annex 8, Version 02.0, 13 th September 2012
/82/	YLDCL and Baraka Global Advisors, MoC re-signed, 13 December 2012

2.2 Follow-up Interviews with Project Stakeholders

Table 2: The personnel who have been interviewed and/or provided additional information to the presented documentation.

	Date	Name and Title	Organization
/I/	21/09/2011	Sheng Rongxiang / Section Head	Development and Reform Commission Bureau of Luquan County
/II/		Wang Bin / Section Head	Immigration Bureau of Luquan County
/III/		Wang Hongmei / Officer	EPB of Luquan County
/IV/		Li Zongfeng/ Project Manager (CDM consultant)	Accord Global Environment Technology Co., Ltd.

/V/	22/09/2011	Shen Ting / Project Manager	Baraka Global Advisors
/VI/		Wang Yanchao/ Expert	Yunnan Dianneng Luquan Dianlin Development Co., Ltd
/VII/		Shi Mingqing / Expert	
/VIII/		Zhao Yong / Chief Engineer	Yunnan Dianneng Luquan Dianlin Development Co., Ltd (Company Representative)
/IX/		Xiao Jiuyun/ Villager	Jilu Village, Yidi
/X/		Yang Dengqi/ Villager	Jilu Village, Yidi
/XI/		Yao Zhengyang/ Villager	Jilu Village, Yidi
/XII/		Wu Youzhong/ Villager	Jilu Village, Yidi

Table 3: Interview topic

	Date	Organization	Topic
/a/	21/09/2011	Luquan County Local Government and Community	<ul style="list-style-type: none"> ➤ Project design ➤ Project related legal issues ➤ Project status ➤ Sustainable development issues ➤ Environmental impacts ➤ Stakeholder process ➤ Issues affecting the local community ➤ Approval by the local governments ➤
/b/	22/09/2011	Yunnan Dianneng Luquan Dianlin Development Co., Ltd (i.e. PP in host country)	<ul style="list-style-type: none"> ➤ Project design ➤ Project related legal issues ➤ Project & CDM development history ➤ Technical equipment ➤ Sustainable development issues ➤ Additionality ➤ Crediting period ➤ Monitoring plan ➤ Training history ➤ Management system ➤ Environmental impacts ➤ Stakeholder process ➤ Approval by the host country

/c/	22/09/2011	Accord Global Environment Technology Co., Ltd. (i.e. CDM consultant)	<ul style="list-style-type: none"> ➤ Project design ➤ Technical equipment ➤ Sustainable development issues ➤ Baseline determination ➤ Additionality ➤ Crediting period ➤ Monitoring plan ➤ Management system ➤ Environmental impacts ➤ Stakeholder process ➤ Approval by the host country
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2.3 Resolution of Outstanding Issues

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

- It organises, 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 two tables. The different columns in these tables are described in the figure below. The completed validation protocol for this project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) CDM and/or methodology specific requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

Herewith, the Validation Team summarizes *major* changes between webhosted PDD and final version of PDD for submission as follows:

	Webhosted PDD	Correction to webhosted PDD in the final PDD submission for registration with DOE acceptance.

Methodologies	ACM0002 Version 12.3.0	ACM0002 Version 13.0.0
CER calculations	780,106 tCO ₂ e/yr	N/A
Additionality	The additionality was demonstrated by Benchmark Analysis: the project IRR is 4.55% without considering the CDM revenue, lower than the benchmark of 8%, and the common practice analysis was correctly done.	The additionality was demonstrated by Benchmark Analysis: the project IRR is 4.50% without considering the CDM revenue, lower than the benchmark of 8%, and the common practice analysis was correctly done.
Monitoring	The Monitoring Plan which is addressed in the GSP-PDD are not clear enough.	Yes, the project monitoring plan are clear enough in revised PDD.

Please refer to Appendix A of this report for details of each change between webhosted PDD and the final PDD for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol. With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team.

It is concluded that the Validation Team has reviewed the project in line with the VVM (version 01.2) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the Validation Team, issuing the positive validation opinion for project registration. No FAR was issued to the DOE verification team to check the implementation and operational completeness during the first verification.

Validation Protocol Table A: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table A are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

Validation Protocol Table B: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table B	Summary of project owner response	Validation conclusion
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table A where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table B, under "Final Conclusion".</i>

Figure 1. Validation protocol tables

2.4 Internal Quality Control

The validation report including the validation findings undergo a technical review before requesting registration of the project activity. The technical review will be performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification.

2.5 Validation Team

Validation Team			Role									
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technicial Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Mr. Minglong Huang	China	1.2, 5.1, 11.1, 12.1	X		X	X	X					
Mr. Harold Hai	China	1.2, 6.1, 13.1										X
Mr. Walter Tang	China	1.1, 1.2, 2.1, 2.2, 3.1, 4.3, 4.5, 13.1								X		

3 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Approval and Participation

Validation Opinion: The project is a bilateral CDM project which involves two project participants (PPs): Yunnan Dianneng Luquan Dianlin Development Co., Ltd (YLDCL) from host party, the P.R. China; Baraka Global Advisors from the Annex I party, Netherlands.

Yunnan Dianneng Luquan Dianlin Development Co., Ltd is a local investment based entity, which was established on 4th September 2003 /57/. The host party, the P.R. China meets all relevant participation requirements in CDM. The Letter of Approval (LoA) /59/ issued by the DNA of the P.R. China (National Development and Reform Commission of the People's Republic of China, NDRC) in December 2011, authorizes YLDCL as a voluntary project participant (PP).

3.1.1 Letter of Approval:

The Letter of Approvals (LoA) /79/ from the DNA of Netherlands authorizes Baraka Global Advisors as a voluntary project participant has been received.

According to Annex 2 of the PDD, the project does not receive any public funding. As advised from the local DRC /i/ and the management representative from the PP /viii/, there is no ODA for the project activity. The project proponent raised funding from internal accrual and loans from bank. From the document reviews (i.e. the company statute report /65/, the bank loan contracts /35/, the ratio of own capital and the bank loan is 20% to 80% which is stated in the PDD /9.2/), the validation team did not observe any information indicating that the project can be seen as a diversion of ODA funding towards China.

Table 4: The below table summarizes the project participant and party involved.

Project participants	Yunnan Dianneng Luquan Dianlin Development Co., Ltd(YLDCL)	Baraka Global Advisors
Parties involved	P.R. China (host)	Netherlands
APPROVAL		
LoA received	Yes	Yes
Date of LoA	December 2011	24 th August 2012
Reference to document	-No.3406 document by NDRC in Dec. 2011/59/	2012ANL721
LoA received from	PP	PP
Validation of authenticity	Yes. Crosschecked from the approval list of official webpage /59/	Yes. Crosschecked to similar LoAs from Netherlands /79/.
Validity of LoA	Yes.	Yes
PARTICIPATION		
Party is party to Kyoto Protocol	Yes. P. R. China ratified the Kyoto Protocol on 30 th August 2002.	Yes, Netherlands ratified the Kyoto Protocol on 9 th July 2003.
Voluntary participation	Yes. In statement 3 of LoA /59/	Yes, in the statement 2 of LoA /79/
Diversion of official development aid towards host country	N/A	No

Project contribution to SD	Yes. In statement 2 of LoA /59/	N/A
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3.1.2 Modalities of Communications:

Requirement of MOC	Criteria fulfilled	Determination by the validation team
Is the focal point identified	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, the MoC /82/ was provided with focal point identified-Carbon Trading Capital Limited.
Is the MOC signed by all project participant (including focal point identified entity/personal)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, validation team confirmed that was correctly signed.
Is the written confirmation obtained by the PP's stating the authorization, specimen signatures and personal details, employment status are valid and accurate?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, validation team confirms the PP's stating the authorization, specimen signatures and personal details, employment status are valid and accurate through document review /82/.
Is MOC received by the validation team from the PP with whom DOE has the contractual relationship?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Yes, validation received the MoC /82/ from contracted party- Baraka Global Advisors through email.

The validation team confirms that the applicable latest template is been employed by the project participant for the MOC/82/. The MOC/82/ was received from the DOE's contractual project participant. All the personal who have duly signed the MOC/82/ has been confirmed from the written communication by the project proponent regarding their personal identity, specimen signatures and employment status.

3.2 Project Design Document

Validation Opinion: The validation team validated that the provided Project Design Document (PDD) is based on the currently valid PDD template /8/ and is correctly completed in accordance with the applicable guidance document /7/.

3.3 Project Description

Validation Opinion: The "Yunnan Jiayan Hydropower Project" is a hydropower project located at the downstream of the Puduhe River, in Luquan County, Kunming City, Yunnan Province, P. R. China; The geographic coordinates for the project are: The coordinate of the dam is at the longitude of 102.7561°E and latitude of 26.1522°N and the coordinate of the powerhouse is at the longitude of 102.7636°E and latitude of 26.2000°N. The validation team crosschecked the environmental impact assessment report (EIAR) /15/ with a public online source (i.e. Google Earth) and confirms it is valid.

The project is a diversion type hydropower project which contains 1 water intake dam (i.e., type: Concrete face rockfill dam; Dam crest elevation: 1,006m; length of dam crest: 418m; Maximum dam height:146m), 1 water intake channel (i.e., Tpye: Underground adit; length: 5,427m; Inner diameter: 8m), 1 pressure regulation well, a power house, a transformer station and administrative building. The project consists of 3 sets of hydro

turbines (Model no.: HLA800-LJ-280) and 3 sets of associated generators (Model no.: SF80-20/6500) with a unit output of 80MW, and Main transformer (Model No.: SSP11-100000/220). A reservoir with a surface of 3,570,000 m² was estimated in the Feasibility Study Report (here after as FSR) /12/, hence a power density is estimated as 67.23W/m². The total installation capacity of the hydro turbines is 240MW. All major equipment of the project is supplied by a domestic manufacturer /34/ without the involvement of foreign technology transfer.

According to the PDD, the net annual electricity output from the project activity is 1,093,505MWh. The electricity generated from the project activity is expected to substitute the power supplied by the China Southern Power Grid (CSPG) which is mainly composed of fossil fuel-fired power plants, and there is no net power import from other grids. The expected GHG emission reductions of the project activity are 780,106 tCO₂e annually during the first 7-years of a 3x7 year renewable crediting period. There is no leakage considered in this project as this is a zero GHG emission project.

The FSR was prepared by Yunnan Kunming Hydropower Investigation, Design & Research Institute, CHECC, (here after as CHECCK) in December 2008. CHECCK was granted by the government for the professional accreditations (Ref no.: Class B certificates no. 230005-ky) /54/ in the fields of general engineering survey. The FSR /12/ was approved by Yunnan Provincial Development and Reform Commission (DRC), on 17th March 2009 /13/.

A “Letter of Intent for grid Connection” for connection of the local power grid with the power generation system of the proposed project has been approved by the Yunnan Provincial Power Co. on 19th August 2009 /22/. The project is allowed to be connected to 220kV Zhongping Substation via Yunnan Lujichang Hydropower Project, finally to Yunnan Power Grid which is part of China Southern Power Grid.

The CER buyer, i.e. *Baraka Global Advisors* had signed the Certified Emission Reductions Purchase Agreement (ERPA) /38/ with the project owner on 15th November 2010. Validation team confirmed it is valid.

According to the on-site interview with YLDCL’s management representative /viii/, it was understood that YLDCL was responsible for organizing the necessary training for the plant daily operation and maintenance, emergency preparedness, and CDM monitoring and implementation. During the on-site visit (OSV), the technical training plan /42/, plant operation and maintenance manuals /40/ were available, and they were checked by the validation team and confirmed to be valid. And the CDM training plan and CDM Monitoring Manual /43/ were available for checking.

During site visit, validation team observed that the dam of project is in construction /58/.

According to the PDD, a renewable crediting period of 7 years is selected. The starting date of project activity was 10th May 2009 (i.e. the signing date of Agreement of Right Diversion Tunnel and Metallic Structure Construction Contract /29/). The Validation team

justified this from several actions such as the signing date of the water turbine and generators purchase contract /34/, and construction commencement order date /25/, and other construction contracts /27/ /28/ /30/ /31/, etc.; and confirmed that the earliest date of these actions was on 10th May 2009 (i.e. the signing date of Agreement of Right Diversion Tunnel and Metallic Structure Construction Contract /29/). The starting date of the first crediting period is expected to be the 1st Feb. 2013 in the latest PDD. The estimated operational lifetime of the project activity is 30 years (excluding the construction period).

Table 5: The critical project description milestones from the PDD are thus tabulated as follows:

Starting date of project	Expected project operational lifetime	Crediting period
10 th May 2009 /29/ the signing date of Agreement of Right Diversion Tunnel and Metallic Structure Construction Contract	30 years	3 x 7 years (renewable) 1 st Feb. 2013 as the 1 st crediting period.

In summary, according to clause 64 of VVM /1/, by means of document review and on-site interviews with stakeholders, the validation team considers that the project description in PDD/Version 04.3 is accurate and complete.

3.4 Baseline and Monitoring Methodology

3.4.1 Applicability of the selected methodology to the project activity

Validation Opinion: The project activity involves electricity generation for a grid through hydro sources where the output capacity is 240MW. It applies the ACM0002/ Version 13.0.0 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, which was available for application since EB67. The approved methodology is also in connection with two methodological tools, “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”.

Applicability criteria for the baseline and monitoring methodology are assessed by the validation team by means of document review and interviews. The proposed project fully met the criteria set out in the methodology and tools as described below:

Applicability criteria of the methodology (ACM0002/Version 13.0.0)	Criteria fulfilled	Determination by the validation team
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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As confirmed during OSV and document review in FSR/12/. The project is a new 240MW hydropower project that uses renewable hydro resources to generate electricity supplied to the China Southern Power Grid (CSPG); validation team

Applicability criteria of the methodology (ACM0002/Version 13.0.0)	Criteria fulfilled	Determination by the validation team
power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;		confirms this clause is applicable.
In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter $EG_{PJ,y}$): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As observed during OSV, the Project does not involve capacity additions, retrofits or replacements. Hence, validation team confirms this option is excluded.
In case of hydro power plants, one of the following conditions must apply: <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; or • 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. 	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The Power density of the Project is 67.23 W/m^2 and is higher than 10 W/m^2 as per the FSR /12/, hence, validation team confirms the item No. 3 of this clause is applicable.
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	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As a newly developed hydropower project, The Project is a greenfield hydropower plant, which does not involve any fossil fuels; hence, this clause is not applicable.

Applicability criteria of the methodology (ACM0002/Version 13.0.0)	Criteria fulfilled	Determination by the validation team
fuels at the site;		
Biomass fired power plants;	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The Project is a greenfield hydropower plant, which does not involve any biomass fuels; hence, this clause is not applicable.
Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m ² .	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As recited above, power density of the Project is far higher than 10W/m ² , no project emission according to ACM0002 (version 13.0.0); hence, validation team confirms this clause is applicable.

Applicability Tool to calculate the emission factor for an electricity system (Version 02.2.1)	Criteria fulfilled	Determination by the validation team
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects);	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per the FSR/12/, the electricity generated from the Project will be delivered to CSPG, and will displace the same amount electricity of CSPG, the tool will be applied to calculating baseline emissions of the Project; validation team confirms it is valid.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants;	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Validation team confirms that the emission factor for the project electricity system can be calculated for CSPG.
In case of CDM projects tool is not applicable If the project electricity system is located partially or totally in an Annex-I country.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	The project was located in P.R.China which is a non-annex I country, hence, it is applicable.

As per the ACM0002 (Version 13.0.0), the additionality of the project activity shall be demonstrated and assessed using the latest version of the “Tool for the demonstration and assessment of additionality” agreed by the Board, which is available on the UNFCCC CDM website. Therefore, validation team confirms that the “Tool for the demonstration and assessment of additionality (Version 06.0.0)” is applicable to the Project. In addition, the “combine tool to identify the baseline scenario and demonstrate additionality (version 03.0.0)” is not applicable, because the project activity is an installation of a Greenfield facility that provides a product to a market (i.e., electricity, cement, etc.) according to foot note 1 of this tool, validation confirms this is valid.

And as the project will not use any fossil fuels during project operation, hence, validation team confirms the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (version 02” is not applicable.

Hence, the validation team considers that the project participant has correctly applied the approved methodology and associated tools for the project activity.

According to the physical inspection of project site, the validation team did not observe any fossil fuel fired equipment at the project location for power supply to the plant or on grid as back-up or emergency purposes. As advised from the project participant /viii/, the project would not contain any fossil fuel fired generator during the whole project period. The validation observed that there is no other greenhouse gas emission occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which is expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology. Apart from this, the validation team observed no other major sources of emission reductions which are not addressed by the ACM0002/ Version 13.0.0. Please refer to Section 3.4.4 for the detailed discussion.

3.4.2 Project Boundary

Validation Opinion: The project boundary is clearly defined as the physical, geographical site of the renewable generation source, which comprises the project power plant and the connected grid electricity system that the project power plant is connected to, which is defined as the CSPG including the Guangdong, Guangxi, Guizhou and Yunnan Provincial Grid, and CCPG has electricity import to CSPG in 2006, 2007 and 2008, hence, the spatial scope of the project boundary covers those fossil fuel-fired power plants physically connected into the China Southern Power Grid and Central China Power Grid, on the basis of information announced by the NDRC /55/ on 20th Dec. 2010.

The validation team has validated the relevant documents, i.e. FSR /12/, approval of FSR /13/, approval of grid connection from Yunnan Provincial Power Co. /22/ and observed nearby Zhongping Substation Station during OSV; and thus confirms that the selected project boundary is correct. The project activity is to construct a new hydropower plant with a 240MW installed capacity that is located at the downstream of Puduhe River, Luquan County, Kunming City, Yunnan Province. The project will only generate electricity by utilizing hydro resources and will supply to the grid, i.e. CSPG via firstly 220kV step-up transformer station and then send to nearby 220kV Zhongping Substation via Yunnan Lujichang Hydropower Project, then send the Yunnan Provincial power grid, and finally to the CSPG according to the project owner /viii/. All project activities are bounded in the CSPG. It is also noted that there is net power import from other CCPG to the CSPG.

Table 6: The system boundary is justified transparently and is presented below.

	GHGs involved	Description
Baseline emissions	CO ₂	Major emission source, which is emitted

		from the electricity generation by fossil fuel-fired power plants connected to CSPG.
Project emissions	----	Yes, but the Project power density is 67.23W/m^2 , i.e. larger than 10W/m^2 , and project emissions are thus considered as zero as per ACM0002.
		The validation observed there is no other greenhouse gas emission occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which is expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.
Leakage	--	Considered negligible as per ACM0002.

3.4.3 Baseline Identification

The project activity is the installation of a new grid-connected hydropower plant. The baseline scenario in accordance with ACM0002/ Version 13.0.0 for grid connected electricity generation from renewable energy sources is the equivalent electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid-connected power plants in the CSPG as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

The baseline determination is considered as transparent and reasonable.

The validation team has checked the following in accordance with the latest version of CDM Validation and Verification Manual /1/, and the results are tabulated as follows. The details can be referred to in Appendix A.

Table 7: Summary of Baseline Discussion.

The approved baseline methodology applicable to the project - explicit criteria - implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per Section II of the ACM0002/ Version 13.0.0, the baseline Scenario is prescribed. Details in Section 3.4.1
PDD includes all assumptions and data used by project participants	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	the baseline scenario was determined based on ACM0002 in PDD.
All the references and documents used	<input checked="" type="checkbox"/> Yes	As per section II of the ACM0002/

are relevant for establishing the baseline scenario	<input type="checkbox"/> No	Version 13.0.0, the baseline scenario is prescribed. Yes, all the reference and documents used are relevant for establishing the baseline scenario, i.e., the relevant regulations and the publications in the raised industry sector.
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per section II of the ACM0002/ Version 13.0.0, the baseline scenario is prescribed. Yes, the validation team verified all the references and documents through crosschecking and found they are correctly cited and conservatively interpreted in the PDD.
All relevant policies / regulations considered are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per section II of the ACM0002/ Version 13.0.0, the baseline scenario is prescribed. All the relevant policies / regulation have been considered and listed in the PDD. It was verified by site validation and desk review for the project.
Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per section II of the ACM0002/ Version 13.0.0, the baseline scenario is prescribed. This project is a new grid-connect Hydropower project which was confirmed from FSR and through site visit.
The baseline scenario selection is appropriate and determined according to the methodology	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per section II of the ACM0002/ Version 13.0.0, the baseline scenario is prescribed.
The approved methodology used is applicable to the identified baseline scenario	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per section II of the ACM0002/ Version 13.0.0, the baseline scenario is prescribed.

3.4.4 GHG Emission Reductions

Validation Opinion: The GHG emissions reduction calculations are transparently documented and appropriate assumptions regarding the expected amount of electricity generated have been used to forecast emission reductions.

According to the selected methodology ACM0002/ Version 13.0.0, the emission reductions (ER_y) by the project activity during the crediting period is the difference between the baseline emissions (BE_y), project emissions (PE_y), which is expressed as follows:

$$ER_y = BE_y - PE_y$$

With regards to the calculation of project emissions, since the power density (PD) of the power density (PD) of the project due to the formation of a reservoir is transparently demonstrated in section B.6.1. of PDD as 67.23 W/m^2 , i.e. greater than 10 W/m^2 ; hence the project emissions can therefore be regarded as zero. The calculation of power density is described below,

$$\begin{aligned} \text{PD} &= \{\text{total installed capacity after implementation of the project (i.e. 240MW)} - \text{total installed capacity before implementation (i.e. 0MW due to Greenfield project)}\} / \\ &\quad \{\text{surface area when full reservoir after implementation of the project (i.e. 3,570,000m}^2, \text{ see table 1-1 of FSR)} - \text{surface area when full reservoir before implementation (i.e. 0 m}^2, \text{ due to the formation of a new reservoir)}\} \\ &= 67.23 \text{ W/m}^2. \end{aligned}$$

According to ACM0002/ Version 13.0.0, the baseline emissions are demonstrated in Section 6 of PDD and are calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{\text{grid,CM},y}$$

Where:

- BE_y = Baseline emissions in year y ($\text{tCO}_2\text{e/yr}$);
- $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr);
- $EF_{\text{grid,CM},y}$ = Combined margin CO_2 emissions factor for grid connected power generation in year y.

The project involves the installation of a new hydropower project, which is defined as a greenfield renewable energy power plant, it means no renewable power plant was operated prior to the implementation of the project, hence:

$$EG_{PJ,y} = EG_{\text{facility},y}$$

Where:

- $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr);
- $EG_{\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr).

Therefore, $EG_{\text{facility},y}$ is equal to the net annual power supply to grid by the project, which is 1,093,505MWh.

$$EG_{PJ,y} = EG_{\text{facility},y} = 1,093,505 \text{ MWh.}$$

The baseline emissions factor (i.e. $EF_{grid,CM,y}$) for the project, using the combined margin (CM) approach, is fixed ex-ante during the first crediting period. According to ACM0002/Version 13.0.0 and the linked tool, "Tool to calculate the emission factor for an electricity system/Version 02.2.1", the default weights for the proposed project are 50% for OM and 50% for BM for the first crediting period, and 25% for OM and 75% for BM for the second and third crediting period. For the calculation of OM emissions factor, the simple OM emissions factor calculation method is chosen because the low cost must run projects constitute less than 50% of the total grid generation and data is not available for applying the dispatch data analysis. According to the EB guidance, the average emissions factor for the grid for each fuel type is calculated ex-ante based on a 3-year full generation-weighted average of the most recent statistics available (data for 2006 to 2008 derived from the China Electric Power Yearbook and China Energy Statistics Yearbook 2007 to 2009 editions, were applied in the PDD). Because plant specific fuel consumption and electricity generation data is not publicly available in China, a deviation of the baseline methodology of AM0005 (later replaced by ACM0002) approved by the EB (as detailed in the PDD) is adopted for using relevant emissions data recently published by the DNA of the P.R. China on 20th Dec. 2010, in which the data of installed capacities of power plants in 2006, 2007 and 2008 were used for the recent increment of 20% installed capacities in the CSPG. It is also noted that since there is net power import from CCPG to the CSPG, thus it is necessary to consider possible emissions that would arise from the other power grids.

It is noted that the China Energy Statistic Yearbook was issued in July 2010 and PDD was for GSP on 1st Oct. 2011. So the vintage 3 years 2006-2008 is the most recent data available at the time of validation.

The validation team has checked the calculations in Annex 3 Baseline Information from the PDD and validated that the calculation is based on the requirements in the "Tool to calculate the emission factor for an electricity system/Version 02.2.1". The validation team has verified the parameters applied in the baseline information according to the data sources, i.e. China Electric Power Yearbook and China Energy Statistical Yearbook 2007-2009 /46/ /49/, 2006 IPCC Guideline for National Greenhouse Gas Inventories, Volume 2 /50/. Precise data was applied in the calculation of emission reductions and presented in the Annex 3 of PDD /9.2/ and Project GHG emissions reductions spreadsheet /11/. The simple OM emissions factor was calculated as 0.9762 tCO₂e/MWh and the BM emissions factor as 0.4506 tCO₂e/MWh, resulting in the CM as 0.7134 tCO₂e/MWh. Therefore, the emissions reductions due to the project activity were estimated ex-ante to be 780,106 tCO₂e per year in the PDD and calculated as follows:.

$$ER_y = BE_y = EG_{PJ,y} * EF_{grid,CM,y} = 1,093,505 \text{ MWh} * 0.7134 \text{ tCO}_2\text{e/MWh} = 780,106 \text{ tCO}_2\text{e}.$$

The ex-ante estimation of emissions reductions is based on the most recent data available at the time of submission of the PDD to the DOE for validation (i.e. GSP, 2nd September 2011 to 1st October 2011), for the net electricity generation and the relevant baseline emissions and project emissions of the project, which is reasonably and transparently carried out.

Table 8: The summary of GHG emission reduction.

All assumptions made for estimating GHG are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD Section B.6
All data used by project participants are listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD Annex 3 Baseline Information & Section B.6
Their references and sources are also listed in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD Annex 3 Baseline Information & Section B.6
Formulas, parameters, values are complete, accurate, transparent and conservative	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD Annex 3 Baseline Information
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per PDD Annex 3 Baseline Information & Section B.6
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emissions reductions	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per ACM0002/ Version 13.0.0 and methodological tool, "Tool to calculate the emission factor for an electricity system/Version 02.2.1"
All the emissions of baseline emissions can be replicated using information provided in the PDD	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	As per ACM0002/ Version 13.0.0 and methodological tool, "Tool to calculate the emission factor for an electricity system/Version 02.2.1"

3.5 Additionality

As per ACM0002/ Version 13.0.0, the project proponent has applied the "Tool for the demonstration and assessment of additionality" Version 06.0.0 approved by the EB to demonstrate the additionality of the project.

3.5.1 CDM consideration

Validation Opinion: According to the latest "guideline on the demonstration and assessment of prior consideration of the CDM" released in EB41, Annex 46, the PP should demonstrate the prior CDM consideration to the project.

Table 9: CDM development progress of the project is as described below.

Date	History	
	Project related	CDM related
Dec. 2008	FSR /12/ Drafted	CDM is suggested on para 15.4 of FSR /12/.

Date	History	
	Project related	CDM related
Dec. 2008	EIAR /15/ Drafted	
4 th March 2009	EIAR approved /16/	
17 th March 2009	FSR Approval,/13/	
8 th April 2009		Meeting minutes of directorial decision on establishment of CDM working group & CDM implementation /37/
10 th May 2009	Right Diversion Tunnel and Metallic Structure Installation Contract /29/	
19 th May 2009	Project commencement order /25/	
26 th May 2009	Left Diversion Tunnel and Metallic Structure Installation Contract /30/	
26 th June 2009		Notification to China DNA /62/
29 th July 2009		A email from UNFCCC on exempting the notification to UNFCCC for the project /64/
25 th September 2009		CDM consulting contract signed /71/
23 rd Dec. 2009	Loan Contract signed /35/	
15 th Nov. 2010		ERPA signed with Baraka Global Advisors /38/
8 th Dec. 2010	Head of Pivot Engineering Contract signed /28/	
17 th Jan. 2011	Hydro-turbine generator purchase agreement signed/34/	
17 th June 2011	Water Diversion Tunnel Construction Contract signed /31/	

Date	History	
	Project related	CDM related
17 th June 2011	Left bank diversion tunnel ,Power house and metal structure contract signed /27/	
1 st September 2011		Signing of CDM Validation Service Contract with TÜV Rheinland (i.e. DOE) /45/
2 nd September 2011		UNFCCC, PDD of project was GSP in UNFCCC website /47/
Dec. 2011		NDRC of China, Letter of Approval for Yunnan Jiayan Hydropower Project /59/

From the above project history of CDM development, it is verified by the validation team that the project starting date is Signing of the Right Diversion Tunnel and Metallic Structure Installation Contract /29/ which is the earliest real action of the project (i.e. other construction contracts /25/ /27/ /28/ /30/ /31/, etc, are signed later, refer to Table 1 of the report) then, PP went to do the Notification to the China DNA on 26th June 2009 /62/, and the notification to UNFCCC was exempted by the email response /64/ from CDM team of UNFCCC, validation team confirms it is valid. All this could comply with the EB41 Annex 46, which was effective during this project starting time. Validation could confirm it is valid.

In conclusion, according to the project's milestones described above and the evidences from the PP, the validation team confirms that CDM has been considered prior to the project implementation.

3.5.2 Alternatives

Validation Opinion: According to VVM (i.e. clause 115), the alternatives of the proposed project is not needed to be identified and analyzed as the baseline scenario has been prescribed in the ACM0002 (Version 13.0.0) applied.

3.5.3 Investment analysis

Validation Opinion: According to "Tool for the demonstration and assessment of additionality", Version 06.0.0, an investment analysis was carried out through applying benchmark analysis method, which is mainly based on the comparison between project IRR and benchmark rate. The selection of "benchmark analysis" is justified in considering that, other than CDM revenue, the proposed project would generate revenue through the sale of electricity to the provincial grid company. Because the project activity will generate economic benefits from the sale of electricity generation other than CDM related income, simple cost analysis method is not applicable; the electricity supply by CSPG isn't a specific investment project, so investment comparison

analysis method is not applicable either. The validation team confirms this judgment is valid.

The PDD applied the economic analysis reference for the China power sector, i.e. “Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects” issued by the State Power Corporation of China in 2002 /48/. The financial benchmark IRR of the Chinese electricity industry from the benchmark reference is 8% (after tax) on total investment (i.e. project IRR = 8%). It applies to the P.R. China power companies for power generation and transmission projects as stated in section 1.15. According to section 1.11, the economic benchmark is regulated as 8% on total investment, and this is deemed an appropriate benchmark reference for the project activity. In addition, the benchmark reference document has been commonly adopted for financial evaluation of power projects for the approved renewable power CDM projects in China.

According to the PDD, the benchmark analysis shows that, without the revenue from CDM, the project IRR would be 4.50%, which is below the benchmark IRR of 8%. Hence, the project cannot be considered as financially attractive in the absence of CDM benefits.

The following is an excerpt extracted from the FSR /12/ and presents the guideline documents referenced in the investment analysis which demonstrates that the input values adopted for the investment analysis are in accordance with the appropriate guidelines and best available market information:

1. *《Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project》*
2. *《Budget Ration Criteria for Hydropower Project (2007)》*
3. *《Hydro Project Engineering Classification and Design Safety Standard》 ; &etc...*

According to Annex 05 of EB62, the validation team considers that the period of time between the finalization of the FSR (i.e. December 2008) and the investment decision (i.e. 8th April 2009, the Board Meeting of applying CDM of the project /37/) is less than 6 months which is sufficiently short. The validation team agrees that it is unlikely the input values of the project finance would have materially changed. Therefore, the input values in the FSR /12/ are considered valid for carrying out the financial analysis. The validation opinion is built upon the local and sectoral expertise of the validation team.

In accordance with the “Guidance on the Assessment of Investment Analysis (Version 05)” EB62, the validation team has independently checked the following critical project and financial input values for the IRR calculation on an Investment Analysis basis. The critical parameters depicted in Table 3, section B.5 of PDD based on the given benchmark reference are tabulated as follows in detail:

Table 10: Validation of input values of project finance.

Parameter	Installed Capacity	Data Source	240MW FSR /12/, Water turbine purchase contract /34/
Validation	There are 3 units of 80MW rated output water turbines (Model no.: HL800-LJ-280) and 3		

Results	sets of associated generators (Model no.: SF80-20/6500). The total installed capacity is 80*3=240MW. Model numbers of all equipment and total numbers of sets were counter-checked with the equipment purchase contract /34/ and they were found to be consistent.																															
Parameter	Total Static Investment	Data Source	2,343.2230 million RMB FSR /12/, approval of FSR /13/, Equipment contracts /34/ Construction Contracts /26/~31/, sum of contracts /32/																													
Validation Results	<p>The value of total static investment stated in section B.5 of the PDD is consistent with that in Chapter 1 & 15 of the FSR.</p> <p>The validation team compared the budget in FSR with those of in the signed contracts /32/:</p> <table border="1"> <thead> <tr> <th></th><th>item</th><th>FSR estimated</th><th>Contracted value</th></tr> </thead> <tbody> <tr> <td>1</td><td>construction works</td><td>1,277.6683</td><td rowspan="4">2,000.1646</td></tr> <tr> <td>2</td><td>equipment & installation</td><td>255.9168</td></tr> <tr> <td>3</td><td>metallic equipment and installation</td><td>60.1533</td></tr> <tr> <td colspan="2">1)+2)+3)</td><td>1,593.7384</td></tr> <tr> <td>4</td><td>temporary works</td><td>295.8396</td><td>198.7726</td></tr> <tr> <td>5</td><td>Other fee</td><td>259.8983</td><td>119.5034</td></tr> <tr> <td>Total</td><td>/</td><td>2,149.4763</td><td>2,318.4406</td></tr> </tbody> </table> <p>We can observe the major cost for the project is higher than the estimated in the FSR. Validation team verified all the related contracts and confirmed the data are real and can be traceable.</p> <p>The unit per kW investment of the project is relatively high (refer to table 11 of this VR) mainly because that the project site is at the edge of the Chuan-Dian Plateau of which the geological condition and landscape are quite complicated and unstable thus make the construction of the project difficult. It is indicated on the chapter 3.2 of Reconnaissance and Survey Report /18/ that the project area has the possibility of occurring 5~6.5 Richter Scale Earthquake. In addition, the diversion tunnel of the project is very long (5,445 meter, FSR p.1-4) due to the special geological condition, all these above increased the per kW investment of the project. The validation team confirms the description is true and can be traceable.</p> <p>The validation team confirms that the estimation of total static investment in the FSR to be traceable and is reasonable.</p>				item	FSR estimated	Contracted value	1	construction works	1,277.6683	2,000.1646	2	equipment & installation	255.9168	3	metallic equipment and installation	60.1533	1)+2)+3)		1,593.7384	4	temporary works	295.8396	198.7726	5	Other fee	259.8983	119.5034	Total	/	2,149.4763	2,318.4406
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Total	/	2,149.4763	2,318.4406																													
Parameter	Annual Utilization Hours	Data Source	4,579 hr/a. FSR /12/																													
Validation Results	<p>The annual utilization hours is shown in the FSR (i.e. Chapter 1.5, 1.12, 1.15). The averaged water flow of the project is determined from the hydrological data based upon 53-year daily records since 1954 to 2006 (see Chapter 3.3.1 of FSR). Under the best water usage rate, the annual utilization hours of the proposed project was obtained to be 4,579 hr/a.</p> <p>The validation team believes that the estimation of the designed annual utilization hours of 4,579 hr/a is reasonable; as it was obtained from a scientific based approach, and thus, is unlikely to have an substantial change in the project lifetime.</p>																															
Parameter	Annual net power Generation	Data Source	1,093,505 MWh FSR /12/ Article in Northeast Electric Power Technology /61/																													
Validation	The validation team was able to check against the FSR that the annual effective power																															

Results	<p>supply is 1,093,505MWh (chapter 1.15 of FSR)</p> <p>Annual nominal power generation = Installed capacity × annual utilization hours = 240 MW × 4,579 hr/ year ≅ 1,098,960 MWh</p> <p><u>Plant effective coefficient</u> The pp stated that the plant effective co-efficiency is 100%, Since it is conservative for the generated electricity power, the validation team confirm it is valid.</p> <p>The auxiliary use (0.5%), validation team observes the range of auxilliary use is from 0.3~2% /61/ indicated in the article, validation team confirms it is valid.</p> <p>The annual net power Generation</p> <p>= 1,098,960 MWh x(1-0%) x (1-0.5%) ≅1,093,505 MWh.</p> <p>From above, validation team considers that the result of the net annual power supply is reasonable and traceable.</p> <p><u>Plant Load Factor</u> The pp demonstrated the load factor: (4,579hr*240MW)/(8,760hr*240MW)=52.3%; As per Guidance for Reporting and Validation of Plant Load Factors/75/, the PLF shall be defined ex-ante in the PDD according to one of the following options:</p> <p>a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval;</p> <p>b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company); Following the guidance, the Validation Team confirms that PLF of the proposed project is</p> <p>a) provided to the government for applying the approval for implementation based on project Approval Letter of the project activity issued by Development and Reform Commission of Yunnan/13/.and;</p> <p>b) determined by a third party, i.e. Kunming Hydropower Investigation, Design & Research Institute /12/, contracted by the PP.</p> <p>In addition, validation team compared the similar projects which were registered in UNFCCC in Yunnan Province, and observed that the PLF value of 52.3% for the project is right in the range from 45.15% to 53.45%, refer to table 11-2 below.</p> <p>Hence the Validation Team confirms the PLF of the proposed project is reasonably determined according to Guidance for Reporting and Validation of Plant Load Factors/75/.</p>		
Parameter	On-grid tariff (including VAT)	Data source	0.215 (CNY/ kWh) FSR /12/ Gov. Tariff regulations /23.1/~23.3/
Validation Results	<p>The tariff of CNY0.215/ kWh (incl. VAT) is indicated in Chapter 1.15.1 of the FSR /12/, which is based on the official document "Tariff Notice in Yunnan Province,RMB0.215Yuan (VAT Incl.) for the plants (Ref. No: YunFaGaiJiaGe [2006](28)), tariff of centralized regulating hydropower during normal season is 0.215 RMB/kWh (VAT included),</p>		

	<p>additional indicates the rainy season tariff is 0.19 RMB/kWh, the dry season tariff is 0.24 RMB/kWh, published on 6th Jan 2006 /23.1/.</p> <p>The tariff is further counterchecked with the approved tariff by YunnanProvince Pricing Bureau /23.2/ on 3rd Dec. 2009, the Tariff Notice in YunnanProvince,RMB0.222Yuan (VAT Incl.) from rural grid to provincial grid (Ref. No: YunFaGaiJiaGe[2009](2483)) /23.2/, This tariff is not avaiable at the time of FSR drafting, it is only for crosschecking.</p> <p>Highest tariff comparison: The validation team also checked against the the highest tariff which was published in the UNFCCC for YunnanProvince is 0.215Yuan (VAT Incl.) /23.3/, the same as the proposed project.</p> <p>The validation team confirms that the applied tariff was the best available information during the decision making and is consistent as presented in PDD.</p>																													
Parameter	Annual O&M cost	Data source	45.3384 (CNY in Million) FSR /12/																											
Validation Results	<p>The annual O&M cost is decribed in Chapter 15.1.3 of the FSR /12/ in a detailed and clear manner. The composition of O&M costs include labour costs & welfare, maintenance, water intake costs, consumable spare parts, and others.</p> <table><tr><td>Item</td><td>Formula in FSR</td><td>FSR Value</td></tr><tr><td>Maintenance fee</td><td>1% of fixed asset value (2551.8682)</td><td>25.1187</td></tr><tr><td>Payroll and welfare</td><td>60 staffs, 30,000RMB/staff; 14% of salary as welfare.</td><td>2.0520</td></tr><tr><td>Insurance</td><td>0.25% of fixed asset value</td><td>6.3797</td></tr><tr><td>Water resource fee</td><td>0.007RMB/kWh*1,093,505MWh Water resource fee /70/</td><td>7.6545</td></tr><tr><td>Reservoir maintenance fee</td><td>1% of maintenance rate, multiply fixed asset value</td><td>1.0935</td></tr><tr><td>Cost of materials</td><td>5RMB/kW, multiplies 240MW</td><td>1.2000</td></tr><tr><td>Miscellaneous Costs</td><td>6RMB/kW, multiplies 240MW</td><td>1.4400</td></tr><tr><td>Total</td><td>/</td><td>45.3384</td></tr></table> <p>The validation team further confirmed with the project owner that the annual O&M costs would actually be even higher than the costs predicted in the FSR due to the increasing labour and material costs.</p> <p>The validation team has cross checked the similar CDM registered hydro power projects located in Sichuan Province in the UNEP Pipeline/76/ and summarized, on the basis of the table 11-2 below, that the annual O&M cost per investment for the project is 1.93%, it is right in the range from 1.70% to 4.17%.</p> <p>Hence, the validation team could confirm the annual O&M cost of 45.3384million CNY is transparant traceable.</p>			Item	Formula in FSR	FSR Value	Maintenance fee	1% of fixed asset value (2551.8682)	25.1187	Payroll and welfare	60 staffs, 30,000RMB/staff; 14% of salary as welfare.	2.0520	Insurance	0.25% of fixed asset value	6.3797	Water resource fee	0.007RMB/kWh*1,093,505MWh Water resource fee /70/	7.6545	Reservoir maintenance fee	1% of maintenance rate, multiply fixed asset value	1.0935	Cost of materials	5RMB/kW, multiplies 240MW	1.2000	Miscellaneous Costs	6RMB/kW, multiplies 240MW	1.4400	Total	/	45.3384
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Parameter	Bank Loan Rate	Data source	FSR/12/ Website of the People's Bank of China /77/																											
Validation Results	<p>The FSR was finished in Dec. 2008 and the long-term loan interest ratio was 6.12% issued by the People's Bank of China. It is the same value of loan interest rate /77/ at the time of project start (i.e, 10th May 2009). The loan ratio among the PDD, IRR sheet and the FSR are consistent.</p> <p>Ratio of debt/equity: Bank Loan: Own Capital=20%: 80%. validation team verified the loan amount in the</p>																													

	signed loan contract/35/ and confirmed the ratio of debt/equity ratio complies with the data in FSR /12/ as well as in the IRR sheet. Hence, the validation confirms it is valid.		
Parameter	Project Lifetime	Data source	30(Year) FSR /12/, benchmark reference /48/ <The notice of the issuance of the Interim Economic Evaluation for Hydropower projects> /68/
Validation Results	According to the benchmark reference, project lifetime is not specified, it can be selected in reasonable manner in respect of the industry. By referring to the chapter 1.0.4 of < The notice of the issuance of the Interim Economic Evaluation for Hydropower projects > on 14 June 1994 by China Hydropower Electricity Ministry, "the financial evaluation period includes construction period and the operation period is from 20 to 30 years...", the validation team checked the Chapter 15.1.3 of FSR and financial spreadsheet, the project lifetime is selected as 30 years. The validation team confirms the choice of 30 years project lifetime is valid.		
Parameter	VAT	Data source	17% of sales FSR /12/, government officials interview during OSV, State Tax Law (Ref.: State Council Order[1993] no.134)
Validation Results	The validation team is able to confirm that the applied tax rate of VAT is 17% according to the State Tax Laws on VAT (see clause 12) and it is applicable to the industry and the project.		
Parameter	Tax of City Construction and Maintenance	Data source	5% of VAT FSR /12/, State Tax Law (Ref.: PRC City Construction and Maintenance Regulation GuoFa[1985]19)
Validation Results	Tax of City Construction and Maintenance (% of VAT) is 5% indicated in Chapter 15.1 of FSR. The validation team checked the clause 4 of the relevant State Tax Laws and found this rate consistent with the law.		
Parameter	Education Tax	Data source	3% of VAT FSR /12/, State Tax Law (Ref.: State Council Order[2005] no.448)
Validation Results	Education Tax (% of VAT) is 3% as indicated in Chapter 15.1 of the FSR. The validation team is able to confirm that the applied education tax is valid and consistent with the relevant State Tax Law.		
Parameter	Income Tax	Data source	25% of income FSR /12/, Corporation Income Tax Law /69/
Validation Results	The validation team is able to confirm that the income tax rate was 25% after 1 st January 2008, which is applicable to this project.		
Parameter	Residual rate	Data source	5% of fixed asset FSR /12/, benchmark reference /48/
Validation Results	The residual rate is shown in 15.1 of FSR (i.e. Cashflow chart) and is 5% of fixed asset. The fair value rate is 5% and is in accordance with Notification regarding determination the fixed asset residue value rate for enterprise (guoshuihan [2005] 883)/78/. Validation team confirms it is valid.		
Parameter	Depreciation rate & depreciation period	Data source	3.17%; & 30 year FSR /12/, benchmark reference /48/ State Tax Law (Ref.: President of the People's Republic of China Order [2007] no.63)
Validation Results	Generally, It is 20 years depreciation period for the hydropower project, however.		

	Justification the IRR compare with 20 years' depreciation period: The validation also compared the project IRRs between the project with 20 years depreciation and 30 years depreciation, the project IRR with 20 years' depreciation is still less than the benchmark value. Hence, the validation team confirms it is valid.
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Fixed values of financial parameters being applied

Fixed values of financial parameters that were applied throughout the whole financial period were validated by the validation team. By reference to the applied benchmark source /48/, it stated that "financial analysis is based on current national financial regulations and price system. For electric engineering projects, price level in the construction year can be applied to calculate project expense and revenue" (i.e. Chapter 3.1.2 of the benchmark /48/). The validation team validates that all the costs have been kept constant. Therefore, the validation team confirms that the fixed values of the financial parameters that were applied are regulated by the applied benchmark for financial analysis.

Table 11-1. Comparison with the projects in the Pudu River developed by same mother co.

The validation team compared the projects in the Pudu River developed by same mother co. All the 2 projects were registered hydro power projects in UNFCCC:

No.	UNFC CC No.	Project Name	Capacity (MW)	Total static investment per kW (CNY/kW) ¹	Annual O&M cost per Investment (%)	Tariff (CNY/kWh) (VAT. Incl.)
1	3101	Lujichang Project	96	5,600.42	3.09	0.201
2	3103	Qianchang Project	114	5,223.68	3.31	0.215
3		The project	240	9,763.43	1.93	0.215

It is observed that the unit investment of the project is higher than those of compared project, and the operational cost is lower than those of them, and the tariff is the same level as the compared projects.

Compared with the registered projects in the UNFCCC in Yunnan Province

The validation team also reviewed the parameters applied in all other registered hydro power projects in the Yunnan Province (32 nos.) for comparison with the proposed project.

Table 11-2: comparison with the registered projects in UNFCCC in Yunnan Province

No.	UNFC CC No.	Project Name	Capacity (MW)	Total static investment per kW (CNY/kW) ²	Annual O&M cost per Investment (%)	Tariff (CNY /kWh) (VAT. Incl.)	PLF (Plant Load Factor) (%)
1	2133	Nansha Hydro Power Project in Yunnan Province China	150	6,515.53	2.40	0.215	53.45
2	2580	Yunnan Yunpeng Hydropower Project	210	5,582.54	2.51	0.184 (excl. VAT)	48.64
3	2877	Yunnan Sinanjiang Hydropower Project	201	6,498.76	2.16	0.2208	52.23

² Currency Ratio Assumption: 1USD=8.20CNY

4	3390	Yunnan Baoshan Songshanhekou Hydropower Station	168	4,490.16	4.17	0.1578	46.82
5	3497	Sujiahekou Hydropower Station	315	5,961.76	2.72	0.215	47.23
6	4133	Yunnan Tianhuaban Hydropower Project	180	5,730.28	3.45	0.215	52.60
7	4189	Yunnan Huize Niulan River Xiaoyantou 130MW Hydropower Project	130	5,699.31	3.02	0.201	51.54
8	4476	Madushan Hydropower Project on Honghe River in Yunnan Province, China	288	6,947.09	2.27	0.215	52.10
9	4859	Yunnan Longjiang 240MW Hydropower Project, in P.R. China	240	7,024.38	1.70	0.215	48.89
10	5282	Diqing Prefecture Niru River Muxingtu Hydropower Station Project	120	6,560.58	2.52	0.215	49.69
11	5611	Yunnan Baoshan Dengke Hydropower Project	120	6,364.00	2.36	0.215	45.15
Proposed project			240	9,763.43	1.93	0.215	52.30
				Max: 9,763.4 Min: 4,490.16	Max: 4.17 Min: 1.70	Max: 0.2208 Min: 0.1578	Max: 53.45 Min:45.15

It is found that the total static investment per installed capacity of the proposed project (9,763.43 RMB/kW) which is the highest among the compared projects, this is because that the project is located on the seismic belt /18/ (chapter 3.2 of Reconnaissance and Survey Report), the project area has the possibility of occurring 5~6.5 Richter Scale Earthquake. Hence the earthquake resistant design was considered during FSR stage. For the ratio of annual O&M cost per Investment is 1.93%, it is within the range of the register projects (from 1.70% to 4.17%); For the tariff issue, please refer to the below paragraph for detailed discussion.

Sensitivity Analysis

A sensitivity analysis is presented in the PDD which demonstrates that the project activity is unlikely to be financially viable under reasonable variations in the critical assumptions, i.e. fluctuation range of $\pm 10\%$, in four selected financial parameters, incl. (i) total Static Investment (ii) annual O&M cost, (iii) Bas-bar tariff (VAT incl.) and (iv) Feed-in electricity. The selection of the sensitivity test parameters focuses mainly on those parameters which are considered more likely to be varying along the project implementation with reference to the "Guidance on the Assessment of Investment Analysis (Version 05)" EB62. It states, "The parameters analysed shall at least include that which contribute more than 20% of either total project costs or total project revenue". Under the 10% fluctuation range, the project IRR is still lower than benchmark IRR in each situation.

In the PDD, each parameter that may reach the benchmark (i.e. 8% project IRR) is presented and analyzed. The validation team checked each parameter as follows;

- Static Total Investment decreases by 31.10%: The PP demonstrated that the static total investment could not be decreased by 31.10% since the project faced further investment due to the increase of indices of purchasing prices of raw materials & fuels in past few years. According to the data as shown in the table 10 of this report, the actual investment in the appraisal report is 2,318.4406 million CNY. Therefore, the validation team confirms that the 31.10% decrease of Total Static Investment is unlikely to happen.
- Feed-in electricity is increased by 48.85%: The PP claimed that the annual electricity output is calculated based on 53 years' of hydrological data. The accuracy of the hydrological data is reliable. The hydrological situation is therefore not likely to vary significantly during the project lifetime (30 years' operation). The validation team validated the FSR /12/ and confirmed that the best option for utilizing hydro resources in the project location was selected for this project (i.e. 240MW & annual utilization hours of 4,579 hr/a) under the average water flow from 53-years of hydrological data. Therefore, the significant increase of annual utilization hours (also represents the annual grid-in electricity) is unlikely to happen.
- Bas-bar tariff (VAT incl.) is increased by 44.40%: the validation team reviewed the official document, *Notification of Electric Power Tariff Reform* by the Office of national council issued on 09/07/2003, and confirmed that the on-grid tariff is strictly regulated by the government and could not be decided between the PP and the power company. By reviewing the Tariff Notice in Yunnan Province approved by Yunnan Province Pricing Bureau, the hydropower tariff in Yunnan grid is very stable /23.1/~23.2/. It is also indicated the highest tariff in Yunnan Province published by UNFCCC in June 2010 for the same scale project is also 0.215CNY (VAT incl.) /23.3/. In general, it is a fixed approved tariff and could not be changed by PP and the signed power company. Thus, the validation team believes it is difficult for the PP to predict the change of the tariff and it is also highly unlikely for the tariff to increase by 44.40% under the stable tariff policy in China;
- Annual O&M cost is decreased to ZERO: the validation team realizes that it is highly unlikely to decrease in annual O&M costs to ZERO for the project. Even the Annual O&M cost is 0, the other parameters were maintained, the project IRR is still under the benchmark value.

Under such circumstances, the project IRR under each situation is still lower than the benchmark, i.e. project IRR of 8%.

From above, the investment analysis and sensitivity analysis have clearly demonstrated that the project activity is unlikely to be the most financially attractive option. Subject to provision of further supporting information from the project proponent, the above investment analysis could not yet demonstrate that the project activity is additional.

3.5.4 Barrier analysis

As per the "Tool for the demonstration and assessment of additionality" Version 6.0.0, the barrier analysis is not necessarily required. In the PDD, the project participant did not carry out the barrier analysis for the project activity, but provided an explanation to show that the project activity would not have occurred anyway due to the investment barrier only.

3.5.5 Common practice analysis

Validation Opinion: The PP implements a Stepwise approach for Common Practice Analysis in accordance with “Guidelines on Common Practice (Version 02.0)” /81/. validation team confirms the approach is valid:

Step 1: The selected range of installed capacity ($\leq 360\text{MW}$, $>120\text{MW}$) is also considered appropriate as it complies with the applicable capacity or output range $\pm 50\%$ of the design installation capacity or output of the proposed project activity (i.e. 240MW).

Step 2: Identify similar projects (both CDM and non-CDM) which fulfill all of the following conditions:

a) The projects are located in the applicable geographical area;

The validation team agrees that the chosen geographical scope (i.e. Yunnan Province) is appropriately determined, considering that all the identified projects take place in Yunnan Province, and share a comparable environment with respect to regulatory framework, investment climate, access to technology and financing, and other local policies, including tariff assessment/approval procedure and policies, etc.

b) The projects apply the same measure as the proposed project activity;

And year 2002 is considered as a time boundary in China, since Before 2002, the hydropower plants were mainly developed by the state-owned enterprises (i.e., 5 national power generation companies); Power plants were constructed with national or local government funds, or governments provided the loan guarantee for the companies, the developers didn't have financing difficulties. After 2002, the electricity tariff will be determined on the basis of average costs of power generation using the same advanced technology and building within the same period under the provincial power grids. Thus projects operated after 2002 are considered as similar projects to the proposed project since they were operated under the same policy scheme.

c).The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity; hence, validation team agrees it is hydropower projects the guideline focused on.

d)The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant; the validation team agrees that the hydropower plant produce electricity are comparable as similar projects.

e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1; validation team agrees that the projects whose installed capacity range is between $120\text{MW} \sim 360\text{MW}$ should be included in similar projects.

f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

The Project was published for global stakeholder consultation on 02/09/2011, which is later than the start date of the Project (10/05/2009). Therefore, validation team agrees

that the projects which started commercial operation before 10/05/2009 should be include in similar projects.

As recited above, validation team agrees that the projects whose installed capacity range is between 120MW~360MW should be included in similar projects. The projects whose electricity generated self-consumption or other purposes face different promotional policies and are technologically different. Further, the proposed project activity is newly built. The expansion projects are distinct in the newly installed capacity completely, therefore, they are technological different from the proposed project.

Based on the analysis above, the applicable conditions for the analysis of N_{all} is listed as below:

- Locate in Yunnan;
- Started commercial operation after 2002 and before 10/05/2009;
- power projects with installed capacity range between 120MW~360MW;
- Newly built project.

Step 3: within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all} .

The validation team has checked the reference source (i.e. China Water Conservatory Yearbook 2005, 2006, 2007, 2008 and 2009 /49/, the published official statistics), and confirmed that $N_{all}=2$, in which is the best available information at the start date of the Project (10/05/2009). They are “Tukahe Project” and “Yayangshan Project”.

Step 4: within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff} .

As per the guideline /81/, **Different technologies** are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed clean development mechanism (CDM) project activity and applicable geographical area):

- (a) Energy source/fuel (example: energy generation by different energy sources such as wind and hydro and different types of fuels such as biomass and natural gas);
- (b) Feed stock (example: production of fuel ethanol from different feed stocks such as sugar cane and starch, production of cement with varying percentage of alternative fuels or less carbon-intensive fuels);
- (c) Size of installation (power capacity)/energy savings:
 - (i) Micro (as defined in paragraph 24 of decision 2/CMP.5 and paragraph 39 of decision 3/CMP.6);

- (ii) Small (as defined in paragraph 28 of decision 1/CMP.2);
- (iii) Large.
- (d) Investment climate on the date of the investment decision, inter alia:
 - (i) Access to technology;
 - (ii) Subsidies or other financial flows;
 - (iii) Promotional policies;
 - (iv) Legal regulations;
- (e) Other features, inter alia:
 - (i) Nature of the investment (example: unit cost of capacity or output² is considered different if the costs differ by at least 20 %).

Difference between proposed project and “Takahe Project”, “Yayangshan Project”:

Table 12: The discussion of the 2 projects for comparison:

Project name	Tukahe project /72/ /73/	Yayangshan project /74/	Proposed project
Installed capacity (MW)	160	120	240
Annual electricity generation (MWh)	706,600	499,000	1,099,000
Investment per kW(CNY/kW)	8,333	8,109	10,643
investment per kWh (CNY/kWh)	1.95	1.97	2.32

The validation team has checked the reference source, and confirmed that the reference source (e.g., /72/~74/, etc) which was publicly available, provided the best available information to the PP for conducting the common practice analysis. All listed hydropower projects in the PDD were consistent with the projects in the reference source.

From the table above, we can observe that the investment per kw and investment per kwh of the Project are 27.72% and 18.97% higher than Tukahe Project, 29.95% and 17.77% higher than Yayangshan Project, which are justify that Tukahe Project and Yayangshan Project have much stronger investment abstraction than the Project, and they can be operational without the help from CDM revenue. Hence, $N_{\text{diff}}=2$.

Step 5: Calculate factor $F=1-N_{\text{diff}}/N_{\text{all}}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

$$F=1-N_{\text{diff}}/N_{\text{all}}=1-\frac{2}{2}=1-1=0.$$

According to the “Guidelines on Common Practice (Version 02.0)”, the proposed project activity is a “common practice” within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all}-N_{diff}$ is greater than 3.

For the Project, $F=0$ and $N_{all}-N_{diff}=0$, validation team confirms the Project is not common practice in the applicable area.

According to the clause 97 of VVM /1/, based on the above analysis, the project is thus additional.

3.6 Monitoring

Validation Opinion: The monitoring plan is included in the PDD Section B.7 based on the approved monitoring methodology ACM0002/ Version 13.0.0 titled “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, and was correctly applied to the proposed CDM project activity. Monitoring of GHG emission reduction is based on measuring the net quantity of electricity supplied to the CSPG which is transparently presented in B.7. of the PDD.

3.6.1 Parameters determined ex-ante

Validation Opinion: The project adopts the ex-ante calculation of emission factor of the grid. The parameters for determining the GHG emissions reductions have been clearly demonstrated in section B.6.2. of the PDD. The validation team has verified the parameters by means of document review (i.e. FSR /12/, IPCC 2006 /50/, China Electric Power Yearbooks /49/, China Energy Statistics Yearbooks /46/, and the applied methodology ACM0002/ Version 13.0.0), and interviews during the OSV. Please refer to section 3.4.4 of this report for details.

Therefore, the validation team can conclude that all relevant parameters to calculate the GHG emissions reductions of the project have been sufficiently considered and the value of the parameters are real, measureable and conservative.

3.6.2 Parameters monitored ex-post

Validation Opinion: According to the methodology ACM0002/ Version 13.0.0, there are 7 parameters that have to be monitored during the crediting period, i.e. (i) net electricity supply to the grid by the project ($EG_{facility,y}$), (ii) feed-in electricity of Lujichang Project and the Project ($EG_{output,A}$), (iii) electricity imported from the grid to the project ($EG_{input,A}$), (iv) Output electricity of Lujichang Project and the Project ($EG_{output,B}$), (v) Output electricity of the Project ($EG_{output,C}$), (vi) Installed capacity of the hydro power plant after the implementation of the project activity. (vii) the surface area of the reservoir. All the parameters are described in detail in the monitoring plan, in Section B.7 of the PDD.

The net supplied electricity to grid by this project is measured by other parameters in the following equation:

$$EG_{facility,y} = (EG_{output,C} / EG_{output,B}) * EG_{output,A} - EG_{input,A}$$

(where:

$EG_{facility,y}$, in year y	Quantity of net electricity generation supplied by the project plant/unit to the grid
$EG_{output,C}$	Output electricity by the Project to the grid in year y
$EG_{output,B}$	Output electricity by the Project and Lujichang Project to the grid in year y
$EG_{output,A}$	Feed-in electricity by the Project and Lujichang Project to the grid in year y
$EG_{input,A}$	Imported electricity via meter A in year y .

The validation team confirms the monitoring equation in the PDD is valid though OSV and the statement from the project owner /viii/.

The parameters above are monitored and measured through the following 6 meters:

Table 13: the meters outlined in the monitoring plan

Meter	Location	Function	Owner ship	Preci sion	Calibration frequency
A and A'	Connection Point to the Grid (220kV Zhongping Substation)	Measure Electricity supplied to and backup from the Grid Co.	Grid Co.	0.2s	Once/Year
B and B'	Lujichang Project	Measure Output electricity by the Project and Lujichang Project to the grid	PO	0.2s	Once/ year
C and C'	Lujichang Project	Measure Output electricity by the Project	PO	0.2s	Once/ year

As stated in the PDD, all the meters are bidirectional. The monitoring frequency of these meters is continuously measurement and at least monthly recording.

The validation team confirms the formula for the calculation of the net eletricity to the Grid is correct, and the project owner states that all the meters used in the monitoiring comply with "Technology & Management Regulations for Power Metering Devices" (DL/T448-2000).

From the formula above, We can see that the whole imported electricity $EG_{input,A}$ is deducted, the net electricity supplied by the project will be lower than the actual power delivered to the grid by the project activity thus the result can be regarded conservative;

The surface area of the reservoir will be measured via topographical survey or maps yearly by an independent and qualified party; the installed capacity will also be monitored yearly.

The import and export of electricity will be directly measured by metering equipment. The frequency will be measured continuously and recorded monthly. As stated in the PDD, all the 6 meters will be calibrated once per year. The validation team considers that the monitoring plan has complied with the requirements in the approved methodology.

3.6.3 Management system and quality assurance

Validation Opinion: Monitoring of sustainable development indicators is not required by the DNA of the P.R. China. The environmental impacts are considered minor and will be monitored by the local environmental authority during the project lifetime. According to the PDD, the project's monitoring plan outlines the followings:-

- Purpose of the monitoring plan;
- Monitoring Structure: the responsibility and authority of the monitoring structure;
- The information of Monitoring Equipment: monitoring equipment and the connection diagram: meter type, location, calibration frequency and meter precision;
- Calculation of net electricity generation supplied by the project: formula showing in connection to the actual monitoring scheme figure;
- Data collection: all data collection manner;
- QA/QC: emergency procedures when meter malfunctions; calibration arrangement for the meters; CDM training arrangement.
- Data management: Monitoring data management manner
- Verification: to achieve it with co-operation to DOE.

Steps undertaken to assess the monitoring plan

According to document review in the PDD, on-site interviews with the representatives from the PP, the monitoring arrangements described in the monitoring plan were assessed. Procedures have been developed and the implementation of these will enable subsequent verification of the project's emission reductions. The management team for monitoring of the project is identified in the PDD. Clear and detailed monitoring procedures, monitoring structure, monitoring items and functions were clearly demonstrated in the PDD and were crosschecked via document review of the approved grid connection /22/.

3.7 Sustainable Development

Validation Opinion: The validation team validated that the project is considered to be contributing to sustainable development (SD) in the host country, by on one hand utilizing renewable hydro resources available in the project region, and on the other hand eliminating the environmental pollution caused by the operation of fossil fuel-fired plants. In addition to CO₂ emissions reductions, the project would mitigate other pollutants, such as SO₂, NO_x and particulates associated with power generation from fossil fuels. Other benefits that would be expected from the implementation of the proposed project, includes the improvement in the local and regional economic development, by the generation of additional tax income for the local government from electricity sales of the proposed project. The project can provide 102 permanent working opportunities to societies in normal operation and many temporary employment opportunities to the local residents during construction time. In addition, the local transportation conditions have been improved due to the newly built roads and road improvements by the project proponent. As confirmed by the local government officials /i/ /ii/ /iii/ during the on-site interview, sustainable development in social, environmental and economic aspects will be achieved by the implementation of the proposed project.

In addition, the validation team has checked the LoA /59/ from the DNA of the P.R. China for confirming the contribution of the proposed project to sustainable development of China.

3.8 Environmental Impacts

Validation Opinion: The environmental impacts (including land use, air pollution, noise, waste water, ecological impact, ecological flow, compensation issue) of the project have been reported in Section D of the PDD. It is reported that the project activity is not expected to cause significant environmental impacts during the construction and operation stage as there will be the implementation of mitigating and preventive measures. The environmental impacts of the project were sufficiently assessed by means of an Environmental Impact Assessment Report(EIAR) study according to the P.R. China laws & regulations. The EIAR /15/, which was prepared by *Kunming Hydropower Investigation, Design & Research Institute, CHECC*, in December 2008, has been approved by the Yunnan Provincial Environment Protection Bureau (EPB) on 4th March 2009 /16/ and was inspected by the validation team, and confirmed to be valid.

It is stated that the project activity is not expected to cause significant environmental impacts during the construction and operation stage as there will be the implementation of mitigating and preventive measures as described in the D.1 of the PDD. The EIAR listed the minor issues (i.e. water quality, air quality, noise, solid waste, ecological environment and human health, etc.) which will impact the local stakeholders and a series of measures have been taken as confirmed by the local officials /i/ /ii/ /iii/, villagers /ix/~xii/ as well as the representative /viii/ from the PP.

During the OSV, no significant environmental impacts was identified from the project activities since relevant mitigation measures addressed in the approved EIAR /15/ were properly implemented. It is determined that an ecological flow of 0.84m³ will be maintained in the Puduhe River in approved EIAR /15/. The environmental impact mitigation and prevention measures were satisfactory as confirmed by the interview with the representatives of the local EPB /iii/ and local villagers /ix/~xii/. The representative of the local EPB /iii/ confirmed that several regular on-site inspections had been conducted during the construction period and no significant environmental impacts were found.

There is totally 242 people involved in the resettlement caused by the project as per the resettlement program approval /24/, this program was properly implemented. By reviewing < Agreement on the Land aquisition and immigration compensation issue for Jiayan Hydropower Project >/56/. The compensation on resettlement and land acquisition was agreed by the affected villagers, and the agreement /56/ was signed between the project proponent and affected villagers in 2010. It is also noticed that 588 directly affected people was noticed and some of them participated in the stakeholder consultation as stated in PDD. The validation team has checked the signed agreements and the compensation records /56/ during the OSV and confirmed them to be valid. In addition, as revealed in the on-site interview with the representatives of the affected villagers; they have already received the compensation payment in year 2010-2011 and they

expressed satisfaction on the overall arrangement.

3.9 Local Stakeholder Consultation

Validation Opinion: The first public consultation was held in Aug. and Nov. of 2008 during EIAR writing process, no negative comments were received in this Stakeholder consultation.

The 2nd public consultation was voluntarily conducted by the PP on 25th April 2011 by a meeting as well as distribution of questionnaires; before this a Public Comment Survey Notification for the project was announced to local stakeholders on 13th April 2011 /39.1/. As a result, totally 60 stakeholders involved in this consultation, almost all villagers living nearby the project location were invited to express their opinions about the project. 60 questionnaires /39.2/ were received. Almost all respondents expressed their support to the implementation of the project activity and considered that the project would improve their living and working environment. The stakeholders' comments from the questionnaires were summarized and recorded in the PDD, Section E. All the returned questionnaires /39.2/ were checked, and confirmed to be valid by the validation team. The surveyed stakeholders included representatives from different genders, age groups, educational levels and occupations. From the background of the stakeholders, it was reasonably believed that the survey could reflect the general attitudes towards the project from the local residents who were possibly affected by the project.

The results of the questionnaire survey were counter-confirmed with the general opinion given by the villagers during the OSV. The representatives from the local community (i.e. Jilu Village /ix/~xii/) were interviewed. In general, the interviewees showed adequate understanding of the nature of the project and are satisfactory with the arrangements on compensation & relevant environmental impact mitigation measures. As confirmed by the government officials from Luquan County DRC /i/, Immigration Bureau /ii/ and EPB /iii/ during the OSV, the residents living near the project location consider that they would benefit from project implementation due to the improvement in local social, economic and environmental development. The response is overall supportive towards the implementation of the project. Therefore, the validation team can conclude that the public consultation held in April 2011 were effective and reflects the opinions of the affected stakeholders.

3.10 Comments by Parties, Stakeholders and NGOs

Validation Opinion: The PDD/ Version 01 of 24th August 2011 was made publicly available on UNFCCC website

(<http://cdm.unfccc.int/Projects/Validation/DB/FOR08MRU2FT5ZVGTA5G7372KEOYKMF/view.html>)

and parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 2nd September 2011 to 1st October 2010; where no comment was received.

Appendix A

CDM VALIDATION PROTOCOL

based on CDM Validation and Verification Manual, Annex 1 of EB55 report

Yunnan Jiayan Hydropower Project
in P.R. China

Report No. 01 997 9105066226
Version No. 01

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
1. Approval					
<p>1.1 Have Letters of Approval have been provided from all involved Parties?</p> <p>If yes, indicate:</p> <ul style="list-style-type: none"> – when and by which Party the LoA has been issued, with a clear reference to the LoA itself and any supporting documentation; – whether the LoA was provided to the DOE by the project participants or directly by the DNA; – the means of validation employed to assess the authenticity of the document; and – by a clear statement, that the DOE considers the LoA to be valid. 	/1/	DR	<p>The proposed project is bi-lateral project. LoA from host country, i.e. P.R. China and the Annex I parties (i.e. Netherland) have not been received yet.</p> <p>CAR01</p> <p>Please provide the LoA from China DNA and provide the LoA from Netherlands DNA respectively.</p>	CAR01	OK
<p>1.2 Are all Parties, who issued the LoA, Parties to the Kyoto Protocol <u>and</u> is this stated in the LoA?</p>	/1/	DR www	<p>Yes.</p> <p>NDRC of P. R. China is the host party to issue the LoA of P.R. China ratified the Kyoto Protocol on 30th August 2002.</p> <p>Netherlands ratified the Kyoto Protocol on 31st May 2002.</p>	OK	OK
<p>1.3 Is every LoA from the Parties involved issued by an organisation listed as Designated National Authority (DNA) on the UNFCCC web site?</p>	/1/ UNFCCC	DR www	<p>Yes.</p> <p>DNA of China: National Development and Reform Commission, P.R. China;</p>	OK	OK

³ MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<i>Indicate the official name of the DNA and contact person name.</i>			Contact Person: Mr. Su Wei Director General of Climate Change DNA of Netherlands: Ministry of Infrastructure and the Environment Contact Person: Mr. Hugo von Meijenfeldt		
1.4 Is the participation in the CDM project activity voluntary <u>and</u> is this stated in all LoAs? <i>Indicate the source of proof.</i>	/1/	DR	Please refer to 1.1 of Table A for details.	CAR01	OK
1.5 Is the LoA unconditional with respect to 1.2 to 1.4?	/1/	DR	Idem.	CAR01	OK
1.6 Is the title of the CDM project activity as given in the PDD identical with the title given in all LoAs and Modalities of Communication? <i>Provide Yes/No answer, and include details into Tables 2, 3 and 4 accordingly.</i>	/1/	DR	Idem	CAR01	OK
1.7 If any of provided LoAs contains additional specification of the CDM project activity (PDD version number, validation report version number, amount of ER, etc.) are those specifications valid and consistent with other documents?	/1/	DR	Idem	CAR01	OK
1.8 Does the project activity involve any public funding from Annex I Parties? <u>If yes</u> , has	/1/	DR I	CAR02 Please indicate the capital composition	CAR02 CL01	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
Annex I Party provided a written confirmation that the use of such funding does not lead to the diversion of the official development assistance.			in the chapter A.4.5 in the PDD. CL01: Please provide supporting information for further confirming the financial structure of the project activity so as to clarify the no diversion of ODA within the project activity.		
2. Participation (VVM E.2)					
2.1 Are the Parties and project participants (PP) listed in the section A.3 of the PDD correctly <u>and</u> is this information consistent with the contact details provided in Annex 1 of the PDD?	/9/	DR	Yes. The project participants are correctly listed in the section A.3. of the PDD and they are consistent with the contact details provided in Annex 1 of the PDD.	OK	OK
2.2 Has every Party involved approved the participation of each corresponding PP, either by means of a LoA or by a separate written document? <i>Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.</i>	/1/	DR	Please refer to 1.1 of Table A for details.	CAR01	OK
3. Project Design Document (VVM E.3)					
3.1 Is the PDD presented for validation based on the latest template available at the UNFCCC website? <i>Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4</i>	/7/ /8/ /9/	DR	The PDD is based on the latest template /5/ available at the UNFCCC website in accordance with the applicable guidance document /7/.	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<i>accordingly.</i>					
3.2 Has the PDD been established in accordance with the CDM requirements for completing PDDs issued by the CDM EB?	/7/ /8/ /9/	DR	The PDD has been established in accordance with CDM requirements.	OK	OK
4. Project Description (VVM E.4)					
<p>4.1 Does the PDD contain a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?</p> <p>4.1b) Is the description (incl. any process flow-charts, Spreadsheets etc.) complete, coherent and consistent with the provisions of the monitoring plan?</p>	/9/	DR I	<p>A description is contained in PDD but some clarifications of the precise nature of the project activity and technical aspects of its implementation are required.</p> <p>CAR03</p> <p>Please describe detailed project locations according to the FSR and river basin plan; (e.g., there is no Xueshan Town and Luquan County on the map).</p> <p>CL02</p> <p>-Which substation does this project supply electricity to? and the class of electric voltage of the substation, the length of the transmission line and the corresponding class of electric voltage. The above mentioned information should be described in the section A.4.3 of the PDD.</p> <p>For current Footnote 4 which is the feed-in electricity calculation. The criteria for each parameters should be provided to validation team.</p> <p>CL03</p>	<p>CAR03</p> <p>CL02</p> <p>CL03</p>	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			Please provide the training plan and training materials for the coming CDM monitoring process; Please provide the training plan for the daily operation & maintenance for the staffs as well as the Operation and Maintenance Manual to validation team.		
4.2 In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals? <i>Provide Yes/No answer and indicate the documents which have been reviewed in relation to the issue.</i>	/9/	DR OSV	Not applicable	OK	OK
4.3 Does the project activity reflects current good practices, uses state of the art technology or would the technology result in a significantly better performance, than any commonly used technologies in the host country? <i>Provide the description of how validation has been carried out and what comparisons have been made.</i>	/9/ /12/	DR	The technical specifications have been provided to the validation team for inspection. The FSR /12/ was prepared by <i>Kunming Hydropower Investigation, Design & Research Institute</i> . The technology used for the project reflects current good practices where renewable hydro source would be utilized for clean power generation.	OK	OK
4.4 In cases where the project activity involves the alteration of an existing installation or process, does the PDD provide a clear description of the differences between the project and the pre-project scenario?	/9/	DR I	N/A. According to validation team's physical inspection and on site interview with project participant, the project activity did not involve the alternation of existing	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<i>Please, provide Yes/Now answer and update Tables 2, 3 and 4 accordingly, if there is anything unclear in the provided description.</i>			installation or process.		
4.5 Has physical location of the project been described sufficiently and do presented coordinates allow for unambiguous identification of the project site(s).	/9/	DR I	No, please refer to CAR03	CAR03	OK
5. Baseline and Monitoring methodology					
5.1 General requirements					
5.1.1 Is the methodology used in the project activity approved by the CDM EB <u>and</u> is the selected version still valid?	/2/ /9/	DR UNFCCC	Yes. The methodology used in the project activity is approved by the CDM EB and the selected version is still valid.	OK	OK
5.2 Applicability of the selected methodology					
5.2.1 Does the project activity qualify under the criteria for small-scale CDM project activities set out in § 6 (c) of decision 17/CP.7 and Annex II of the Modalities and Procedures for the CDM? Please provide Yes/No response and description of how this was validated. In case of calculated emission reductions varying over time, SSC-applicability limits must be met for every single year in any of the max. 3 subsequent crediting periods.	/9/	DR	Not applicable. The project activity is a large scale project.	OK	OK
5.2.1.1 If yes, does the PDD extensively demonstrates and confirms that the small-scale project activity is not a debundled	/9/	DR	Not applicable. The project activity is a large scale project.	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
component of a larger project? <i>Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures taken and data found during the procedure. Otherwise amend the Tables 2, 3 and 4 accordingly.</i>					
5.2.2 Are all applicability conditions of the selected baseline and monitoring methodology and all tools involved satisfied by the project activity? <i>Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures. Otherwise amend the Tables 2, 3 and 4 accordingly.</i>	/2/ /3/ /4/ /9/	DR	Yes. The project applies the approved baseline and monitoring methodology ACM0002/Version 13.0.0 together with the “Tool to calculate the emission factor for an electricity system” Version 02.2.1, and “Tool for the demonstration and assessment of additionality” Version 06.0.0. Applicability criteria for the baseline methodology are assessed by the validation team by means of document review and interview. It is agreed in the validation team’s opinion that the project activity fully met the criteria set out in the methodology.	OK	OK
5.2.3 Is the selection of the applied baseline and monitoring methodology justified?	/2/ /9/	DR	Yes. The selected methodology is correctly quoted in PDD.	OK	OK
5.2.4 Is the selected methodology correctly quoted	PDD	DR	Idem.		OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
in all related documents?	UNFCCC	www		OK	
5.2.5 Does the PDD sufficiently describe all the GHG emission sources or sinks occurring as a result of project activity, which have not been accounted for under the selected methodology and are expected to contribute more than 1% of the overall expected average annual emission reductions? <i>Provide Yes/No answer. Indicate the sources or sinks of GHG, which were proved to be negligible. Otherwise amend the Tables 2, 3 and 4 accordingly.</i>	/1/ /2/ /9/	DR I OSV	Yes. The GHG emission sources or sinks occurred in the project boundary were sufficiently described. However, A CL is raised: CL04 Please clarify whether there is any GHG emission source which have not been accounted for under the selected methodology but will contribute more than 1% of the overall expected average annual emission reductions.	CL04	OK
5.3 Project boundary					
5.3.1 Does the PDD correctly describe the project boundary? <i>Provide Yes/No answer. And amend the Tables 2, 3 and 4, if needed.</i>	/1/ /2/ /9/ /20/	DR I OSV	Yes. As per ACM0002/Version 13.0.0, the project boundary is correctly described in PDD as the physical, geographical site of the renewable generation source, i.e. the hydropower plant and the connection point, grid substation to the China Southern Power Grid (CSPG). Refer to CL01	CL01	OK
5.3.2 Does the PDD correctly indicate and describe the emission sources and sinks of GHG gases that are included in the project boundary?	/2/ /9/	DR I	Yes. The PDD correctly describes the project emissions that are included in the project	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
		OSV	boundary as a result of project activity. It is clearly described in the table 3 of the PDD. According to the approved methodology ACM0002 Version 13.0.0 the CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity is the main emission source. As the power density of the project is 67.23W/m2, which is higher than 10W/m2 thus CH4 emissions due to the new reservoir should not be considered.		
5.3.3 In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, is the choice explained and justified by PPs?	/2/ /9/	DR I OSV	Not applicable	OK	OK
5.4 Baseline identification					
5.4.1 Has the procedure contained in the selected methodology to identify the most reasonable baseline scenario been applied correctly and documented in the PDD?	/1/ /2/ /3/ /9/	DR	Yes. As per ACM0002/Version 13.0.0, the baseline is applied correctly and documented in the PDD.	OK	OK
5.4.1.1 Is the identified baseline scenario plausible?	/1/ /2/ /3/ /9/	DR	Idem	OK	OK
5.4.1.2 Are all assumptions stated in a transparent and conservative manner?	/1/ /2/ /3/ /9/	DR	Yes. As per ACM0002/Version 13.0.0, all assumptions stated are in a transparent and conservative manner.	OK	OK
5.4.2 Does the selected methodology require the	/2/ /3/ /4/	DR	Yes. The selected methodology requires	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
use of tools <u>and</u> does PDD reflects that correctly?	/9/		the use of “Tool to calculate the emission factor for an electricity system” and “Tool for the demonstration and assessment of additionality”, that are correctly reflected in the PDD.		
5.4.2.1 Were all the tools applied correctly?	/2/ /3/ /4/ /9/	DR	Idem.	OK	OK
5.4.3 In case the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, have all scenarios been considered <u>and</u> have no reasonable alternative scenario been excluded?	/1/ /2/ /3/	DR	The methodology does not require alternatives scenarios to be considered in the identification of the most reasonable baseline scenarios.	OK	OK
5.4.3.1 Has the choice of the baseline scenario been done using conservative assumptions?	/1/ /2/ /3/ /9/	DR	Yes. As per ACM0002/Version 13.0.0, the baseline is chosen.	OK	OK
5.4.4 Is the identified baseline scenario reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources?	/1/ /2/ /3/ /9/	DR	Yes. As per ACM0002/Version 13.0.0, the baseline is identified reasonably according to the assumptions, calculations and rationales in reference sources.	OK	OK
5.4.6 Does the PDD describe how the national and sectoral policies relevant to the baseline scenario have been identified and considered in the PDD?	/1/ /2/ /3/ /9/	DR	Yes. As per ACM0002/Version 13.0.0, the baseline is identified as the kWh produced by the net electricity supplied to Grid from the project multiplied by an emission coefficient (measured in kg CO ₂ e/kWh) of	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			the CSPG, in which the spatial distribution is determined by NDRC.		
5.4.7 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 project activity?	/1/ /2/ /3/ /9/	DR	Yes. As per ACM0002/Version 13.0.0, the PDD provides a verifiable description of the identified baseline scenario.	OK	OK
5.5 Algorithm and/or formulae used to determine emission reductions					
5.5.1 Are all calculations applied and documented according to the selected methodology and in a complete and transparent manner? 5.5.1b) Are correct units applied and consistency between parameter dimensions and parameter value ensured? See also Question 4.1.b) with respect to consistency of parameter values between calculation spreadsheets and PDD.	/2/ /3/ /9/ /54/ /55/ /56/ /49/	DR	Yes. The calculation is documented according to “Tools to calculate the emission factor for an electricity system”, and in a complete and transparent manner that was checked by the validation team. The baseline emission has been estimated as the emissions from fossil fuel-fired power plants connected to the electricity systems.	OK	OK
5.5.2 In case the methodology allows a selection between different options for equations or parameters, has adequate justification been given and have the correct equations and parameters been used, in accordance with the methodology selected?	/2/ /3/ /9/ /54/ /55/ /56/ /49/	DR	Yes. Validation team has cross-checked the calculation of GHG emission reduction in PDD via document review of official national and international source and confirmed it is valid.	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
5.5.3 In case some data and parameters will not be monitored throughout the crediting period, but have already been determined and fixed, are all data sources, assumptions and calculations correct, applicable to the proposed CDM project activity and conservative?	/2/ /3/ /6/ /54/ /55/ /56/ /49/	DR	Yes. The parameters for determining GHG emission reduction have been discussed in B.6.2. of PDD in details.	OK	OK
5.5.4 In case data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters reasonable?	/2/ /3/ /4/ /9/	DR	According to the methodology ACM0002/ Version 13.0.0 and methodological tool, there are only four parameters that have to be monitored during the crediting period, i.e. (i) net electricity generation supplied to the grid by the proposed project; (ii) Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full; (iii) Installed capacity of the hydropower plant after the implementation of the project activity. All parameters are described in details at section B.7. of PDD.	OK	OK
5.5.5 Have the major risks and uncertainties, which can influence the emission reduction estimates, been identified and addressed in the PDD?	/2/ /3/ /4/ /9/	DR	Yes. There is no significant risk identified to the baseline. Project emission and leakage have been identified as the methodology ACM0002/Version 13.0.0 required. Neglected GHG emissions come from project emission and leakage.	OK	OK
5.6 Leakage					
5.6.1 Has the leakage been identified and calculated	/2/ /9/	DR	Yes. It is noted during OSV there is no	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
according to the approved methodology?		I	transfer of energy generating equipment from another activity and the project participant did not transfer any existing equipment to another activity because the hydropower plant is a new facility. As per ACM0002/Version 13.0.0, leakage is identified as not required to be considered and is assumed as zero.		
5.6.2 Have the leakage been addressed in complete, conservative and substantiated manner?	/2/ /9/	DR	Idem	OK	OK
5.6.3 Are uncertainties in the leakage emission estimates properly addressed?	/2/ /9/	DR	Idem	OK	OK
6. Methodology-related issues for afforestation or reforestation CDM project activities					
Add specific A/R requirements – if applicable!	/9/ UNFCCC	DR www	Not applicable for this CDM project activity	OK	OK
7. Additionality					
7.1 Prior consideration of the CDM (VVM E.6.III.a)					
7.1.1 Is there documented evidence provided by the project participants on how and when the decision to proceed with the project activity was taken?	/5/ /9/ /39/	DR I	Yes. The validation team has got sufficient evidence provided by the PP on how and when the decision to proceed with the project activity.		
7.1.2 Is the starting date of the project activity, reported in the PDD, in accordance with the	/5/ /9/ /23/ to	DR I	Yes, the starting date of the project was reported in the GSP-PDD, this is in	CL05	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<p>“Glossary of CDM terms” <u>and</u> CDM VVM (§97)?</p> <p>Note: Confirm the starting date indicated in C.1. is consistent within the PDD, in particular with respect to the project implementation history.</p>	/26/		accordance with the “Glossary of CDM terms” and CDM VVM (§97). However, refer to CL05		
<p>7.1.3 Is the date stated in the provided evidence consistent with other available evidence (e.g. dates of construction, purchase orders for equipment)?</p>	/5/ /9/ /23/ to /26/	DR	<p>Yes, the date stated on the provided evidence is consistent with the available evidences.</p> <p>CL05</p> <p>However, how the pp identified the earliest real action of the project should be stated in the PDD. Please submit all the evidences which were used to identify the earliest date of the project implementation events as per the Glossary of CDM terms, version 05.</p>	CL05	OK
<p>7.1.4 If the project was not published and the starting date is on or after 2nd August 2008, was it possible to receive from UNFCCC secretariat and/or DNA a written confirmation that PPs previously informed the above entities on commencement of the project activity and of their intention to seek CDM status?</p>	/1/ /5/ /9/	DR	<p>Yes, the project was started on 10/05/2009, which is later than 2nd August 2008, the notification to China DNA and UNFCCC have been done accordingly.</p> <p>CL06</p> <p>Please provide the evidences of the notification to China DNA and UNFCCC to validation team.</p>	CL06	OK
<p>7.1.5 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were previously</p>	/5/	DR	N.A.	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
aware of CDM?					
7.1.6 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that CDM benefits have been a decisive factor in the decision to proceed with the project activity?	/1/ /5/	DR	N.A.	OK	OK
7.1.7 Does the individual or body that took the decision to proceed with the project activity have/had the authority to do so?	/12/ /13/	DR	Yes. According to the approval of project /13/, PP has the right to proceed with the project activity.	OK	OK
7.1.8 For the project activities with a starting date before 2 nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were taking continuing and real actions to secure CDM status for the project in parallel with its implementation?	/1/ /5/ /9/	DR	N.A.	OK	OK
7.1.9 In case there is a significant gap between the start date of the project activity and the commencement of validation, how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion?	/1/ /5/ /9/	DR	CL07 The project was started on 10th May 2009, why there is a delay of the CDM validation, how can the PP be sure to have a positive validation opinion in advance at the time of the investment decision making.	CL07	OK
7.2 Identification of alternatives					
7.2.1 Does the PDD identify and list credible alternatives to the CDM project activity in order	/1/ /2/ /3/ /9/	DR	Yes. 4 creditable alternatives are listed out in PDD and discussed in details. Please	CL08	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
to determine the most realistic baseline scenario, unless selected approved methodology prescribes/identifies the baseline scenario and no further analysis is required?			refer to 5.4.1. CL08: As recited during OSV with the local officials, the solar power projects have been in consideration in Luquan County in Yunnan Province by some investors, please re-explain the alternative by evidences.		
7.2.2 Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a CDM project activity?	/1/ /2/ /3/ /9/	DR	Yes. Alternative 1 - "The proposed project undertaken without being registered as a CDM project activity;" is included.	OK	OK
7.2.3 Does the list contain all realistic/credible 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 project activity? <i>Note: All alternatives listed in the selected methodology should be included, as well as those not covered by the methodology.</i>	/1/ /2/ /3/ /9/	DR	The four alternatives contain all creditable alternatives that have been validated by the validation team. Refer to CL08	CL08	OK
7.2.4 Is the exclusion of the alternatives for legal reasons justified? <i>Note: Some alternatives might be illegal, according to the local regulations, but still widely practiced due to lack of enforcement. It should be verified.</i>	/1/ /2/ /3/ /9/ /50/	DR	Yes. Alternative 2 - Construction of a fossil fuel-fired power plant with equivalent amount of annual power generation is illegal in P.R. China, which is confirmed by the official document released.	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
7.3 Investment Analysis					
7.3.1 Are all sources of revenues (including savings) have been considered in the PDD and all calculations?	/6/ /9/ /12/	DR I	Yes. Other than CDM revenue, the proposed project would generate revenue stream through sale of electricity to the provincial grid, which has been verified by validation team via document review and interviews on-site.	OK	OK
7.3.2 Is the type of investment analysis selected correctly in the PDD?	/6/ /9/	DR	<p>From the PDD, the investment analysis was correctly selected and based on the comparison between project IRR and industrial benchmark (i.e. Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project).</p> <p>CL09</p> <p>Please describe the appropriateness of the chosen benchmark in the PDD.</p> <p>The PPs should provide an formal announcement that the FSR version which is provided to DOE for validation is the same version as that provided to local authority for approval;</p> <p>Please describe why the fixed values were used in the benchmark investment analysis.</p>	CL09	OK
7.3.3 Is the selected financial indicator chosen and applied correctly?	/6/ /9/ /51/	DR	The PP has applied with the economic analysis reference, i.e. "Interim Rules	CL09	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			on Economic Assessment of Electrical Engineering Retrofit Project". The benchmark Internal Rate of Return (IRR) for total investment for a hydropower project with the installed capacity of over 25 MW is 8% (after tax) which is quoted correctly in the benchmark reference. However, refer to CL09		
7.3.4 Is the guidance on IRR calculation and assessment correctly applied? <i>Note: Means of validation should be recorded.</i>	/6/ /9/ /12/ /51/	DR I	<p>In accordance with the "Guidance on the Assessment of Investment Analysis (Version 05)" EB62, the validation team has independently checked the financial input values for the IRR calculation as Investment Analysis basis and found that the guidelines have been applied but subject to clarifications.</p> <p>CL10</p> <p>Please analyse how the trend of electricity tariff will influence the IRR in the whole lifetime based on the historical, official and statistical data source.</p> <p>CL11</p> <p>Please calculate how much has been spent so far compared with the budgetary in the FSR. third party appraisal report is preferred.</p>	CL10 CL11	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
7.3.5 In case project participants use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?	/6/ /9/ /12/ /31/	DR	From December 2008 (FSR draft) /12/ to April 2009 (CDM consideration by Board) /31/, less than 6 months, it can be thought that between the FSR date and investment decision was reasonably short and FSR values did not change materially.	OK	OK
7.3.6 Are all the values consistent between FSR and PDD and are inconsistencies properly justified?	/6/ /9/ /12/	DR	Yes. Please refer to 7.3.4 and 7.3.5 of this Table A. <u>Refer to CL9, CL10 and CL11</u>	CL9 CL10 CL11	OK
7.3.7 Were all the values from FSR applicable and valid at the time of the investment decision?	/6/ /9/ /12/	DR	Yes. Please refer to 7.3.4 and 7.3.5 of this Table A. <u>Refer to CL9, CL10 and CL11</u>	CL9 CL10 CL11	OK
7.3.8 Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have led to a change in the benchmark?	/41/	DR I	As per the benchmark reference, the project is financially feasible only when the IRR is above or equal to benchmark IRR of 8% for hydro projects (>25MW). It also states that "the project is feasible when the investment analysis is feasible; if the investment analysis is unfeasible, but is feasible in National economic assessment, extra fund may be raised from the country in order to make the project becoming financial feasible." However, the local DRC official advised that there was no national fund provided to the proposed bundled project. In general, the local DRC will only	CL15	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			<p>approve the projects which are financially feasible. Therefore it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark.</p> <p>CL15</p> <p>Since the PP developed several Hydropower Projects on the Puduhe River Basin. Please compare them with the project.</p>		
7.3.9 Is the Investment Analysis prepared in compliance with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM EB?	/6/ /9/ /12/	DR	<p>Yes. But clarifications are required to meet the “Guidance on the Assessment of Investment Analysis”</p> <p><u>Refer to CL9, CL10and CL11</u></p>	<p>CL9</p> <p>CL10</p> <p>CL11</p>	OK
7.4 Barrier analysis					
7.4.1 Are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis?	/3/ /9/	DR	Not applicable	OK	OK
7.4.2 Do the listed barriers exist <u>and</u> is their existence substantiated? Note: (a) by independent sources of data such as	/3/ /9/	DR	Not applicable	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
relevant national legislation, surveys of local conditions and national or international statistics and/or (b) by interviews with relevant individuals: including members of industry associations, government officials or local experts if necessary?					
7.4.3 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of the identified baseline scenario?	/3/ /9/	DR	Not applicable	OK	OK
7.5 Common practice analysis					
7.5.1 If the PPs claim in the PDD that CDM project activity is the “first of its kind”, is it justified?	/1/ /3/ /9/	DR	As claimed by PP in the PDD, the proposed project is not the “first of its kind” and thus common practice analysis is applied as per “Tool for the demonstration and assessment of additionality”	OK	OK
7.5.2 Are the geographical boundaries of the project activity identified correctly?	/1/ /3/ /9/	DR	Yes. The geographical boundary has been clearly identified according to the additionality tool. Sichuan Province is defined as the region and the boundary of the project activity for common practice analysis.	OK	OK
7.5.3 Does the PDD provide an explanation why this	/1/ /3/ /9/	DR	Yes. The hydropower projects with the	CL12	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
region was selected and deemed more appropriate <u>and</u> is this explanation traceable and reliable?			criteria, (i) similar project scale, (ii) similar technology, (iii) not CDM projects in Sichuan Province are identified for common practice discussion in the PDD. However, the explanation is not comprehensive enough. CL is given. CL12 Please revise the section of common practice in the PDD as per the EB63 Annex 12 and provide the reader a clear understanding that the proposed project is not a business-as-usual project in Yunnan Province.		
7.5.4 Are there similar operational project activities, other than CDM activities, “widely observed and commonly carried out” in the defined region? <i>Note: Use official sources and local and industry expertise.</i>	/1/ /3/ /9/	DR	Idem	CL12	OK
7.5.5 In case there are similar commercially operated project activities, other than CDM activities, already “widely observed and commonly carried out” in the defined region, are there essential distinctions between the CDM project activity and the other similar activities?	/1/ /3/ /9/	DR	Idem	CL12	OK
8. Monitoring plan					

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
<p>8.1 Are all parameters required by the selected approved methodology or tool identified <u>and</u> listed in the PDD?</p> <p>Note: not all methodologies indicate monitoring parameters in tabular form or by reference to the variables used in formulae; Nonetheless, all parameters indicated in the methodology and applicable to the project must be listed in the PDD, omissions due to non-applicability be justified.</p>	/2/ /4/ /9/	DR	Yes. All parameters required by the selected approved methodology or tool identified and listed in the PDD.	OK	OK
<p>8.2 Is the measurement method clearly stated for each value to be monitored and deemed appropriate?</p> <p>Does the monitoring plan record data in the original form as generated, providing QA/QC procedures to be used on the measurement method?</p> <p>Note 1: if the measurement unit is different from the unit to be applied in the methodology, describe the actual measurement and any according conversion method to match the unit used in the methodology.</p> <p>Example: liquid fuels may be monitored as weight or volume. If measured as volume, the measurement method and equipment including the according unit (e.g., liter) shall be described in B.7.1, as well as the conversion into weight units as needed.</p> <p>Note 2: Data on invoices / delivery slips may be used for QA/QC purposes, but do not</p>	/2/ /4/ /9/	DR	<p>CAR04</p> <p>During OSV, the Project owner had demonstrated that the electricity produced by the project will be sent to Yunnan Power Grid via other power project, PP is requested to clearly demonstrate the monitoring plan according to actual situation.</p>	CAR04	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
constitute an actual means of monitoring and thus cannot be applied as a source of data.					
8.3 Are values of the ex-ante parameters / monitoring parameters selected correctly and conservative in accordance to methodology or tools? See the NOTE in section 3.6.1 above!	/2/ /3/ /9/ /42/ /43/ /44/	DR I	Yes. The project adopts the ex-ante parameters for calculation of emission factor as detailed in PDD Annex 3.	OK	OK
8.4 Is the measurement equipment for each parameter described and deemed appropriate?	/2/ /4/ /9/	DR	Yes. The measurement equipment for monitoring parameters shall be adopted for the national standard, thus it is deemed as appropriate. Refer to CAR04	CAR04	OK
8.5 Is the measurement accuracy addressed and deemed appropriate?	/2/ /4/ /9/	DR	Yes. The measurement accuracy shall follow the national standard, thus it is deemed as appropriate.	OK	OK
8.6 Are procedures in place on how to deal with erroneous measurements <u>and</u> are the corrective actions identified?	/2/ /4/ /9/	DR	Yes. As reported in PDD and advised from PP, there is a back-up meter in order to deal with erroneous measurements. In additional, there are quality assurance and quality procedures as corrective actions by doubling checking of sales receipt. Refer to CAR04	CAR04	OK
8.7 Is the frequency of measurement identified and deemed appropriate?	/2/ /4/ /9/	DR	Yes. The measurement recording frequency is identified in PDD, in which	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			this fulfils the requirement in ACM0002/Version 13.0.0. Thus the measurement frequency is deemed as appropriate.		
8.8 Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/2/ /4/ /9/	DR	Yes. The monitoring plan is documented in PDD Section B.7, according to ACM0002/Version 13.0.0. but refer to CAR04	CAR04	OK
8.9 Are the sampling, measurement methods and procedures defined?	/2/ /4/ /9/	DR	Refer to CAR04	CAR04	OK
8.10 Are procedures identified for maintenance of monitoring equipment and installations?	/2/ /4/ /9/	DR	Yes. The procedures are identified for maintenance of monitoring equipment as per the national standard.	OK	OK
8.11 Are the equipment calibration intervals identified and justified?	/2/ /4/ /9/	DR	Yes. The equipment calibration intervals are identified as calibrated per year, and justified according to national sector norm.	OK	OK
8.12 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/2/ /4/ /9/	DR	Yes. There is a data management procedure identified in PDD for collection, handling, and storage of monitoring records.	OK	OK
8.13 Are the monitoring arrangements described in the monitoring plan feasible within the project design?	/2/ /4/ /9/	DR	Yes. The validation team has checked the monitoring plan in PDD and considered that the monitoring arrangements can reflect the actual situation. However, refer to CAR04	CAR04	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
8.14 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified?	/2/ /4/ /9/	DR	Yes. Through the implementation of monitoring plan, the electricity data from/to the grid can be monitored for sufficiently reporting and verifying the emission reduction ex-post. However, see CAR04	CAR04	OK
8.15 Do the PPs make provisions for personnel training needs?	/2/ /4/ /9/	DR	Refer to CL02	CL02	OK
8.16 Is the authority and responsibility of overall project management clearly described?	/2/ /4/ /9/	DR	Yes. The management structure for monitoring is clearly described in the PDD with the responsibility of overall project management.	OK	OK
8.17 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/2/ /4/ /9/	DR	Not applicable. According to the project design, such emissions are not expected to occur.	OK	OK
8.18 Are procedures identified for review of reported results/data?	/2/ /4/ /9/	DR	Yes. The quality assurance and quality control procedure is identified in the PDD for review of reported results/data.	OK	OK
8.19 Is the data archiving period for this project activity stated in the PDD and appropriate? <i>Note: All archived monitoring data, required for verification and issuance, should be kept for at least two years after the end of the crediting period or the last issuance of CER.</i>	/2/ /4/ /9/	DR	Yes. In PDD, PP describes the data archiving period for this project activity for two years after the end of the last crediting period.	OK	OK
8.2 Monitoring of the leakage					

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
8.2.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/2/ /9/	DR	According to the methodology ACM0002/ Version 13.0.0, no leakage monitoring is required for a new hydropower plant such as this project activity.	OK	OK
8.2.2 Is the choice of project leakage indicators made according to selected methodology in a reasonable and conservative manner? <i>Note: local knowledge and sectoral expertise shall also be considered.</i>	/2/ /9/	DR	Idem	OK	OK
8.2.3 Is the measurement method clearly stated and deemed appropriate for each leakage value?	/2/ /9/	DR	Idem	OK	OK
9. Sustainable development					
9.1 Does the LoA from the Host country DNA contain the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party?	/1/ /9/	DR	Refer to CAR01	CAR01	OK
9.2 If PDD indicates any additional environmental benefits of the project, other than GHG emission reductions, were those benefits properly substantiated?	/9/	DR I OSV	Yes. Validation team has cross-checked via interviews of local community, on-site observation and document review that economic, social and environmental benefits were brought by the project. Those benefits have been described in section A.2 of PDD.	OK	OK
10. Stakeholders' consultation and comments					
10.1 Were the stakeholders identified in appropriate and complete manner?	/9/ /15/ /33/	DR I	Yes. The public consultation was voluntarily conducted by PP in April 2011	CL13	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
			<p>by questionnaire. 60 stakeholders, almost villagers nearby the project location were invited to express their opinions to the project consultation. 60 questionnaires were received. Almost respondents expressed their support to the implementation of the project activity and considered that the project would improve their living and working environment. The stakeholders' comments from the questionnaires were summarized and recorded in the PDD, Section E.</p> <p>CL13 Please indicate the composition of minority race participated in the stakeholder consultation process.</p> <p>Please clarify how many people were impacted directly and were resettled by the project activity with supporting evidence.</p>		
10.2 Are the identified stakeholders plausible?	/9/ /15/ /33/	DR I	<p>Yes. But similar as 10.1.</p> <p>See CL13</p>	CL13	OK
10.3 Does PDD describe the means being used to invite local stakeholder's comments?	/9/	DR	<p>Yes. The PP did invite the stakeholders to have their comments through distributing the questionnaires.</p>	OK	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
10.4 Were those means appropriate?	/9/ /15/ /33/	DR	Yes. These means were appropriate.	OK	OK
10.5 Was the project presented to the stakeholders in unbiased manner?	/9/ /15/ /33/	DR	Refer to CL13	CL13	OK
10.6 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/15/ /16/	DR I	Yes. A stakeholder consultation process is mandatory part of EIAR for a construction project in China. The PP conducted the public consultation process through the qualified institute who was responsible for preparing the EIAR and it conducted following the guidelines for completing EIAR based on state laws and regulations.	OK	OK
10.7 Is a summary of the stakeholder comments provided in the PDD?	/9/ /15/	DR	But refer to CL13	CL13	OK
10.8 Has due account of any stakeholder comments been taken by PPs and reflected in the PDD?	/9/ /15/	DR	Yes. It is clearly reported in Section E.3 of PDD	OK	OK
11. Environmental impacts					
11.1 Is the documentation supplied by the PPs regarding environmental impacts relevant and accurately reflected in the PDD?	/9/ /15/	DR	Yes. An EIA study was carried out and approved, and the environmental impacts have been accurately reflected in the Section D of PDD. CL14 The impact of land acquisition by the project should be discussed in Section D of the PDD.	CL14	OK

Table A: Validation requirements

(based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)

Checklist question	Ref.	MoV ³	Findings, comments, references, data sources	Draft conclusion	Final conclusion
11.2 Is an environmental impact assessment (EIA) required for the CDM project activity? Note: determine by using a review of relevant legislation and local expertise.	/9/ /15/	DR	Yes. The EIAR is a must for each project in China.	OK	OK
11.3 In case an EIA is required, has the EIA has been approved by local authorities and is the outcome accurately reflected in the PDD?	/9/ /15/ /16/	DR	Yes. The EIAR of the project is approved Liangshan Yi Minority Autonomous Region Environmental Protection Bureau.	OK	OK
11.4 Does the PDD include a brief description of the environmental effects of the project, including transboundary?	/9/ /15/ /16/	DR	Yes. The identified environmental impacts in EIAR have been briefly described in section D of PDD, but some parts in terms of land acquisition impact are missing. <u>See CL14.</u>	CL14	OK
11.5 Are those effects properly addressed in the design of the project activity?	/9/ /15/ /16/	DR I	Yes. All identified environmental impacts with prevention and/ or mitigation measures have been written on EIAR and approval EIAR before the construction of project activity. <u>See CL14.</u>	CL14	OK
11.6 Does the project comply with environmental legislation in the host country?	/9/ /15/ /16/	DR	Yes. The approval of EIAR of the project indicates the compliance of environmental legislation of China.	OK	OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

No.	CAR/CL	Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1. 1	✓	CAR01 Please provide the LoA from China DNA and provide the LoA from Netherlands DNA respectively.	1.1, 1.4~1.7, 2.2	The LoA from China DNA is available, and the LoA from Netherlands DNA will apply after acquiring FVR of the Project.	The LoAs from China DNA and Netherland DNA were received. This CAR is closed.
2.	✓	CAR02 Please indicate the capital composition in the chapter A.4.5 in the PDD.	1.8	The capital composition in the section A.4.5 is added in the PDD.	Yes, it is indicated the A.4.5 of the PDD the capital composition, this CAR is closed.
3.	✓	CAR03 Please describe detailed project locations according to the FSR and river basin plan; (e.g., there is no Xueshan Town and Luquan County on the map). Follow-up 1: I still did not catch Luquan County on the map.	4.1	The map is changed for showing the Xueshan Town and Luquan County. 2nd response from PP: The map with Luquan County is added in the PDD.	Conclusion: The revised map is clearly shown the location of the project. This CAR is closed.
4.	✓	CAR04 During OSV, the Project owner had demonstrated that the electricity produced by the project will be sent to Yunnan Power Grid via other power project, PP is requested to clearly demonstrate the monitoring plan according to actual situation. Follow-up 1:	8.2	Monitoring plan is demonstrated according to actual situation. And the corresponding information is added in the PDD. 2nd response from PP: Zhongping Substation is added in the project boundary map.	Yes, the monitoring plan is revised and Zhongping Substation is added in the project boundary map. This CAR is closed.

			Where is the Zhongping Substation on the map?			
5.	✓		CL01: Please provide supporting information for further confirming the financial structure of the project activity so as to clarify the no diversion of ODA within the project activity.	1.8	The capital of the Project is from the shareholders of Yunnan Dianneng Luquan Dianlin Development Co., Ltd., and others is from bank loan, therefore, Project owner has no diversion of ODA with the project activity.	Yes, the validation team verified the company statute, and find the capital for the project were come from the shareholders, hence, no diversion of ODA were involved in the project activity, this CL is closed.
6.	✓		CL02 -Which substation does this project supply electricity to? the length of the transmission line and the corresponding class of electric voltage. The above mentioned information should be described in the section A.4.3 of the PDD. For current Footnote 4 which is the feed-in electricity calculation. The criteria for each parameter should be provided to validation team. Follow-up 1: -The length of the transmission line is not indicated. -FSR did not refer to SL16-95, please use other reference for the explanation for effective coefficient.	4.1	The name of the substation, length of the transmission line and the corresponding class of electric voltage is added in the section A.4.3 of the PDD. The criteria for each parameter is follows as: (1) annual average electricity generation annual average electricity generation of the Project is 1,099,000MWh, which is determined based on 53years (1954-2006) hydrological data according to the Section 3.4.3 of the FSR(P3-19); (2) effective coefficient of the electricity According to Page 15-1 of FSR, effective coefficient of the electricity of the Project is 1. According to Page 15-1 of FSR, the reservoir of the	Yes, the substation and the line length have been defined in revised PDD. Based on <explanation on the determination of effective coefficient of the electricity> by the original design Institute, the value of 1 is the co-efficiency of the plant is acceptable. This CL is closed.

					<p>Project owns the function of quarter adjustment, and according to SL16-95, effective coefficient of the electricity of quarter adjustment hydropower station connected into grid should adopt 0.9~0.95, therefore, the value of 1 is conservative. pls refer to CL02.2_SL16-95.</p> <p>(3) auxiliary power ratio</p> <p>For auxiliary power ratio , which sources from page 15-5 of FSR. According to “the relationship between House Service System and Power Generation Output in Hydraulic Power Plant (No.1 2007)” published from Northeast Electric Power Technology, which is an Authoritative Power Periodical in P.R. China, Self-consumption is one of major economic indicator of plant operation. In general, auxiliary power of (i) condensed gas type thermal power plant is 5-8%; (ii) thermal power plant is 8-10%, (iii) hydropower plant is 0.3-2%; The self-consumption of the Project falls into the range, so that auxiliary power rate of 0.5% applied in the Project is</p>	
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					<p>appropriate. Please refer to CL02.3_auxiliary power rate.</p> <p>2nd response from PP:</p> <p>According to page 7-18 of FSR, total transmission line is about 36km, of which, the length from the Project to Lujichang Hydropower Project is about 14km, and the length from Lujichang Hydropower Project to Zhongping Substation is about 22km.</p> <p>According to the explanation on the determination of the effective coefficient of the electricity of Jiayan Hydropower Station from Kunming Hydropower Investigation, Design & Research Institute, CHECC, the quarter adjustment capability of the reservoir, operation manners of Jiayan Hydropower Station (undertaking base- and middle-load in flood season, middle- and peak- load in dry season) and local power load are considering comprehensively during the process of determination of the effective coefficient of the electricity, it is reasonable that the effective coefficient of the electricity is determined to be 1.</p>	
7.		✓	<p>CL03 Please provide the training plan and training</p>	4.1	<p>Training manual for CDM monitoring is available;</p>	<p>Yes, relevant document were provided to validation</p>

			<p>materials for the coming CDM monitoring process;</p> <p>Please provide the training plan for the daily operation & maintenance for the staffs as well as the Operation and Maintenance Manual to validation team.</p> <p>Follow-up 1:</p> <p>Does the PP provide the Operation and Maintenance Manual?</p>		<p>The training plan for the daily operation & maintenance for the staffs as well as the Operation and Maintenance is available.</p> <p>2nd response from PP:</p> <p>The document “Jiayan Hydropower Station Equipment Maintenance and Quality Management Regulation” is provided.</p>	<p>team and to be confirmed valid. This CL is closed.</p>
8.		✓	<p>CL04</p> <p>Please clarify whether there is any GHG emission source which have not been accounted for under the selected methodology but will contribute more than 1% of the overall expected average annual emission reductions.</p>	5.2.5	<p>The project emissions due to the implementation of this project is strictly calculated based on methodology ACM0002 and no other GHG emission which are not addressed by the applied methodology occurring within the project boundary.</p> <p>In the meanwhile, project owner will not adopted diesel generator during the operation of the Project, which will not result in GHG emission source from fossil fuel consumption.</p>	<p>Yes, during OSV observation and desk review in FSR, the validation team did not observe other GHG emission sources which have not been accounted for under the selected methodology but will contribute more than 1% of the overall expected average annual emission reductions, hence, this CL is closed.</p>
9.		✓	<p>CL05</p> <p>However, how the pp identified the earliest real action of the project should be stated in the PDD. Please submit all the evidences which were used to identify the earliest date of the project implementation events as per the Glossary of CDM terms, version 05.</p> <p>Follow-up 1:</p> <p>All the main contracts and events should be listed in table B.10 of PDD for identification</p>	7.1.2 7.1.3	<p>According to contract list & statistics table, The signed date of Diversion Tunnel for Right Bank and Metal Contracture Installation Engineering Contact is earliest date of the project implementation events.</p> <p>2nd response from PP:</p> <p>More two main contracts are added in the Table B.7 Timeline of</p>	<p>Yes, all the main events were listed in table B.10 of PDD, and the earliest date of the project implementation events has been correctly identified. This CL is closed.</p>

			of the project starting date.		the Project Implementation for determining the starting date.	
10.		✓	CL06 Please provide the evidences of the notification to China DNA and UNFCCC to validation team.	7.1.4	The evidence of the notification to China DNA is available. Project owner did not make the notification to UNFCCC, "The Board decided that for project activities with a starting date on or after 02 August 2008, the project participant must inform a Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM stat" according to GUIDELINES ON THE DEMONSTRATION AND ASSESSMENT OF PRIOR CONSIDERATION OF THE CDM (Version 01, EB 41, Annex 46, 2 August 2008). And project owner can make notification to the host party DNA only before "published date of the Guidelines (Version 02, EB 48, Annex 61, 17 July 2009)", which was confirmed by EB secretariat.	Yes, the explanation is acceptable. The PP only informed the China DNA for the project activity. This CL is closed.
11.		✓	CL07 The project was started on 10th May 2009, why there is a delay of the CDM validation, how can the PP be sure to have a positive validation opinion in advance at the time of the investment decision making.	7.1.9	Project owner have been securing CDM supporting: project owner made the notification on CDM implementation to NDRC in about 3 months after start of the Project; and signed contract with CDM consultant company for acquiring	Yes, the main reason for delay is the ERPA was signed a little bit later than expected, hence, the site validation is delayed. From the timetable (Table B.10), we can see the that continuing and real actions were taken from the Project

				<p>professional supporting in 5 months; but signed Emissions Reduction Purchase Agreement in about 16 months after signing Consultant Contract because of downturn carbon market environment; and PDD of the Project was made be available publicly on UNFCCC CDM website in about 8 months after signing Emissions Reduction Purchase Agreement; and the Project has approved by NDRC according to "the CDM projects approved by NDRC published on 02/12/2012 on Clean Development Mechanism in China website" in about 2 months after approving by NDRC. Please refer to "CDM consideration" in PDD.</p> <p>According to item (a), paragraph 8, GUIDELINES ON THE DEMONSTRATION AND ASSESSMENT OF PRIOR CONSIDERATION OF THE CDM (Version 03, EB 49, Annex 22, 11 September 2009</p> <p>), "there is less than 2 years of a gap between the documented evidence the DOE shall conclude that continuing and real actions were taken to secure CDM status for the project activity",</p> <p>According to description above, the progress of the Project securing CDM supporting</p>	<p>owner to secure CDM status for the project activity, this CL is closed.</p>
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					experienced a little barrier, and is smooth generally, and project owner believe that the Project will register successfully.	
12.		✓	CL08 As recited during OSV with the local officials, the solar power projects have been in consideration in Luquan County in Yunnan Province by some investors, please re-explain the alternative by evidences. Follow-up 1: Evidence needed and recite also in the PDD, please.	7.2.1	Some investors make the tests for solar power projects in Luquan County in Yunnan Province at present, said a local official. Solar power of the project location is about 5000MJ/m ² ·y, which is very low level in China, therefore it is not abstractive financially. 2nd response from PP: Supplementary evident is added in PDD. The annual average global solar radiation of the project location (1978~2007), which is published by CMAWIND AND SOLAR ENERGY RESOURCES ASSESSMENT CENTER on 10th August 2011, is about 900~1000 kwh/m ² , which is justified to be at very low level according to Article 5.1 of Assessment Method for Solar Energy Resources.	Yes, the PP raised public available evidence to show the poor solar energy distribution in Yunnan Province and recite that in the PDD. The alternatives revised complies with the real status in Luquan County in Yunnan Province, this CL is closed.
13.		✓	CL09 Please describe the appropriateness of the chosen benchmark in the PDD. The PPs should provide an formal announcement that the FSR version which is provided to DOE for validation is the same version as that provided to local authority for approval;	7.3.2	According to the Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project formulated by State Electric Power Corporation, the financial benchmark rate of return adopted by the Project is 8% for the IRR of total investment(after tax), which was widely used in the	Yes, the benchmark of "Interim Rules on Economic Assessment of Electrical Engineering Retrofit Project" formulated by State Electric Power Corporation is correctly used by the PP on the project. And the formal

			<p>Please describe why the fixed values were used in the benchmark investment analysis.</p> <p>Follow-up 1: But the fixed asset investment is used in PDD, not total investment, please explain.</p>		<p>power industry in China. Financial assessment is made basing on the current price system according to nterim Rules on Economic Assessment of Electrical Engineering Retrofit Project (page 5).</p> <p>2nd response from PP: The formal announcement that the FSR version which is provided to DOE for validation is the same version as that provided to local authority for approval is provided. The fixed assets investment is revised to be static total investment.</p>	<p>announcement that the FSR version which is provided to DOE for validation is the same version as that provided to local authority for approval is provided. This is confirmed by validaiton team.</p> <p>And the static total investment were used for the investment analysis.</p> <p>This CL is closed.</p>
14.		✓	<p><u>CL10</u></p> <p>Please analyse how the trend of electricity tariff will influence the IRR in the whole lifetime based on the historical,official and statistical data source.</p>	7.3.4	<p>The tariff of hydropower project in Yunnan is 0.215 yuan/kwh in01/2006, and increased to be 0.222yuan/kwh 2009. The tariff keeps stable in past 4 years since 2006. And the tariff increased 3.25% only in 12/2009.</p> <p>The tariff was managed strictly by government department; therefore, the tariff of hydropower project in Yunnan will not rise greatly in whole lifetime of the Project. So trend of electricity tariff will have little impact on the IRR in the whole lifetime of the Project.</p>	<p>Yes, the explanation on the tariff trend in Yunnan Province in China is clear, this CL is closed.</p>
15.		✓	<p><u>CL11</u></p> <p>Please calculate how much has been spent so far compared with the budgetary in the FSR. third party appraisal report is preferred.</p>	7.3.4	<p>According to contract list & statistics table, the investment value of signed contracts is 2,379.73 million yuan, which is</p>	<p>Yes, the contracted amounts are summed and verified to be valid. This CL is closed.</p>

					higher than fixed assessment investment budgetary (2,343.44 million yuan) in FSR stage.	
16.		✓	<p>CL13 Please indicate the composition of minority race participated in the stakeholder consultation process. Please clarify how many people were impacted directly and were resettled by the project activity with supporting evidence.</p>	<p>10.1 10.2 10.5 10.7</p>	<p>The project owner made the publication on CDM implementation of the Project, and composition of minority race was counted according to the documents from project owner. 588 persons were impacted directly by the Project, and 242 were resettled by the Project.</p>	<p>Yes," 588 persons were impacted directly by the Project, and 242 persons were resettled by the Project" the information has been added to "land use" para of D1. of PDD. this CL is closed.</p>
17.		✓	<p>CL14 The impact of land acquisition by the project should be discussed in Section D of the PDD.</p>	<p>11.1 11.4 11.5</p>	<p>The impact of land acquisition by the Project is discussed in Section D of the PDD.</p>	<p>Yes, the land acquisition by the Project is discussed in Section D of the PDD. This CL is closed.</p>
18.		✓	<p>CL15 Since the PP developed several Hydropower Projects on the Puduhe River Basin. Please compare them with the project.</p> <p>Follow-up 1: Please explain why the investment per kW is much higher than those of compared projects with evidence.</p> <p>Follow-up 2: The provided information is insufficient; Please also compare the similar projects the 3 parameters in Yunnan with a scale range 240MW+/-50%MW</p>	<p>7.3.8</p>	<p>The parameters mentioned by you are compared between other projects and the Project by the Project owner.</p> <p>2nd response from PP: According to the explanation on the investment issue of Jiayan Hydropower Station, the higher investment of Jiayan Hydropower Station is attributed to the following as:</p> <p>(1) Adverse geological conditions of water diversion tunnel result in the more investment for bracing and protection during the construction of the tunnel;</p> <p>(2) The higher inducing flow the</p>	<p>Yes, the PP provided the information for the projects developed in Puduhe River, the 2 projects were registered in UNFCCC, hence, the Project owner made the decision to search the CDM revenue for the projects. And PP provided evidences to show that the project located on an Earthquake ribbon, and the earth structure is very complicated, and that caused the investment amount per kW is higher than other project. This CL is closed.</p>

				<p>Project result in larger tunnel diameter, in addition, longer tunnel, which result in higher investment;</p> <p>(3) Different completion date of the FSRs result in the adoption of different price index. The cost of construction and installation engineering, cement, steel and labor grew significantly from the second half of 2005 to the second half of 2008, which result in the higher investment of the Project.</p> <p>In addition, according to contract list & statistics table (see response to CL05), the total contract value reaches to 2379.73 million yuan, which justify the investment of the Project.</p> <p>3rd Response from PP:</p> <p>According to the geological investigation report for Jiayan Hydropower Station completed by Kunming Hydropower Investigation, Design & Research Institute, CHECC in October 2008, the diversion water tunnel is located at the earthquake fault zone, and the geological condition is not stable, more supporting measures should be adopted during the construction of the tunnel from the suggestions of</p>	
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					geological investigation report for Jiayan Hydropower Station.	
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Appendix B

Qualification

Huang, Minglong /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level: Lead Auditor
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer: ☐ yes
(Zusätzlicher Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 05 - Chemical industry
CDM 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
CDM 12 - Solvents use

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

12/28/2009

Valid to:
(Gültig bis)

12/26/2015

Remarks:

CDM 01 valid for TA1.2 - Renewable Energies
CDM 5.1 / 11.1 / 12.1 - Chemical process industries

Languages:

Chinese
Chinese simplified
English
Cantonese
French

Experience Exchange

Date

Location

Remarks

Accreditation(s)

2010-12-21 Beijing

United Nations Framework Convention on Climate Change

GC CDM Auditor Experience Exchange, Beijing, 2010-12-21to23

Monitoring

Qualification

Hai, Harold /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:

(AuditorenRegNr)

Appointed:
(Zugelassen)

☒ ja

Qualification Level: Lead Auditor
(Qualifikationsstufe)

External:
(Externer)

☐ ja

Add. reviewer: ☐ yes
(Zusätzlicher Prüfer)

EAC Scopes:
(EAC Branchen)

CDM 13 - Waste handling and disposal
CDM 01 - Energy industries (renewable - / non-renewable sources)
CDM 06 - Construction

Add. qualification:
(zus. Qualifikation)

First Appointment:
(Erstberufung)

12/19/2007

Valid to:
(Gültig bis)

09/24/2015

Remarks:

TA1.2 - Renewable Energies
TA 13.1- Waste handling & disposal
TA 6.1 - Construction

Languages:

Chinese
English
Mandarin
Chinese simplified
Chinese traditional

Experience Exchange

Date

Location

Remarks

Accreditation(s)

2010-12-21 Beijing

United Nations Framework Convention on Climate Change

GC CDM Auditor Experience Exchange, Beijing, 2010-12-21to23

Monitoring

Qualification

Tang, Walter /

Emission Trading

United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)Appointed:
(Zugelassen)☒ jaQualification Level:
(Qualifikationsstufe)

Lead Auditor

External:
(Externer)☐ jaAdd. reviewer:
(Zusätzlicher Prüfer)☐ yesEAC Scopes:
(EAC Branchen)

CDM 01 - Energy industries (renewable - / non-renewable sources)
 CDM 02 - Energy distribution
 CDM 03 - Energy demand
 CDM 13 - Waste handling and disposal
 CDM 04 - Manufacturing industries

Add. qualification:
(zus. Qualifikation)First Appointment:
(Erstberufung)

10/11/2011

Valid to:
(Gültig bis)

09/11/2015

Remarks:

Appointed as Technical Reviewer for TA 1.1, 1.2, 2.1, 2.2, 3.1
 Direct work experience. TA 4.3, 4.5, 13.1 based on Annex D para 9
 of the Accreditation Standard

Languages:

Chinese simplified
 English

Experience Exchange

Date

Location

Remarks

Accreditation(s)

Monitoring

Latest Monitoring:
(letzte Beurteilung)Next Monitoring:
(nächste Beurteilung)

Remarks: