VOLUNTARY CARBON STANDARD 2007.1

VERIFICATION REPORT

- 2ND PERIODIC -

WUTUHE ERJI HYDRO POWER PROJECT IN GUIZHOU PROVINCE, CHINA

Monitoring Period: 2008-07-26 to 2010-02-25

(incl. both days)

Report No: 8000384409 - 10/247

Date: 2010-08-05

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Name of Verification company:	Date of the issue:
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Report Title:	**Approved by:**
Wutuhe Erji Hydro Power Project in Guizhou Province, China - verification report 2nd periodic	Mr. Winter, Rainer
Client:	**Project Title:**
Guizhou Zhongshui Hengyuan Project Management and Consulting Co. Ltd.	Wutuhe Erji Hydro Power Project in Guizhou Province, China

Summary:

Guizhou Zhongshui Hengyuan Project Management and Consulting Co. Ltd. has commissioned the TÜV NORD JI / CDM Certification Program to carry out the verification of the Project "Wutuhe Erji Hydro Power Project in Guizhou Province, China", with regard to the requirements of VCS 2007.1 Standard.

The project activity involves hydropower plants generating electricity to displace part of the electricity from coal-fired power plants in China Southern Power Grid, thus achieves GHG emission reduction.

Reporting period:From 26-07-2008 to 25-02-2010

In the course of the verification 1 Corrective Action Requests (CARs), 2 Clarification Requests (CLs) were successfully closed.

The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the validated PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.
As the result of the 2nd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions 34,696 t CO_2 equivalents

Work carried out by:	Number of pages:
LI, Yongjun YU, Miao ZHANG, Na Stöhr, Christina Winter, Rainer	26

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CL	Clarification Request
CSPG	China Southern Power Grid
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GP	Grid Power
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MR	Monitoring Report
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCS - PD	VCS - Project Description
VCU	Voluntary Carbon Unit
VVM	Validation and Verification Manual

Table of Contents *Page*

1 INTRODUCTION

The Guizhou Zhongshui Hengyuan Project Management and Consulting Co. Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the verification of the project:

Wutuhe Erji Hydro Power Project in Guizhou Province, China

with regard to the relevant requirements of the Voluntary Carbon Standard 2007.1 /VCS/. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered VCS project for the monitoring period 2008-07-26 to 2010-02-25.
The applied monitoring methodology is ASM-I.D. (Version 13) “Renewable Energy Projects-Grid connected renewable electricity generation”.

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the project design document;
- to assess the implementation of the monitoring plan (MP) content in the VCS-PD;
- to assess the project’s compliance with other relevant rules, including the host country (India) legislation;
- to confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions (VERs / VCUs) without any double counting; and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this project is based on the validated project design document /VCS-PD/, the monitoring report /MR/, emission reduction calculation spread sheet /XLS/, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

1.3 VCS Project Description

1.3.1 Project Characteristics

Essential data of the project is presented in the following Table 1-1.

Table 1-1: Project Characteristics

Item	Data			
Project title	Wutuhe Erji Hydro Power Project in Guizhou Province, China			
Project owner	Wutuhe Hydro Power Development Co., Ltd.			
Any specific project categories	☐ Mega project (> 10^6 t CO_{2eq} / a) ☐ Micro project (< 5000 t CO_{2eq} / a) ☐ AFOLU project ☐ Grouped project ☒ No specific project category			
VCS PD dated	Draft:	2008-08-20	Final:	2009-11-06
Applied Methodology	ASM-I.D. (Version 13) "Renewable Energy Projects - Grid connected renewable electricity generation"			
Project starting date	2004-11-18			
Crediting period	☒ Renewable Crediting Period (10 y) ☐ Fixed Crediting Period (10 y)			
Start of crediting period	2006-03-28			

1.3.2 Project Location

The details of the project location are given in table 1-2:

Table 1-2: Project Location

No.	Project Location
Host Country	China
Region:	Guizhou Province
Project location address:	Huaga town, Shuicheng County, Liupanshui city, Guizhou Province
Latitude:	26°05'30"N (Power house) 26°05′09″N (Project dam)
Longitude:	104°56′31″E (Power house) 104°55′13″E (Project dam)

1.3.3 Technical Project Description

This Project is a new-built hydropower project. The total installed capacity of the project is 7.5 MW which of three 2.5MW water-turbine generator sets, and the estimated annual net electricity supplied to the grid of 28,060MWh. The main constructions are barrage, power plants, channel and booster station. A water head

of 88.2 m is reached by the barrage of the dam. The generated electricity is delivered to South China Power Grid (SCPG).

The main equipments, e.g. the turbines and generators, are provided by domestic manufactures Fujian Nanping Mechanical & Electric Co., Ltd. which is well-known in the Chinese hydropower equipment production market.

The key parameters of the project are given in table 1-3:

Table 1-3a: Technical data of the project

Parameter	Unit	Value
Turbine		
Model	3	HLJF2504-WJ-69
Manufacturer		Fujian Nanping Mechanical & Electric Co., Ltd
Rated rotate speed	rpm	1,000
Rated water head	m	85
Rated flow rate	m^3/s	3.42
Generator		
Model	3	SFW2500-6/1430
Manufacturer		Fujian Nanping Mechanical & Electric Co., Ltd
Single capacity	MW	2.5
Rated voltag	kV	6.3

Table 1-3b: Parameters confirmed during verification

Parameter	Unit	Value
Turbines		
Type	3	HLJF2504-WJ-69
Capacity	MW	2.5
Rated Rotation Speed	r/min	1000
Rated Water Head	m	85
Rated Flow Rate	m^3/s	3.42
Manufacturer		Fujian Nanping Mechanical & Electric Co., Ltd
Generators		
Type	3	SFW2500-6/1430
Capacity	MW	2.5
Rated voltage	kV	6.3
Manufacturer		Fujian Nanping Mechanical & Electric Co., Ltd

1.3.4 Appointment of team members and technical reviewer

On the basis of a competence analysis and individual availabilities a verification team was appointed. Furthermore also the personnel for the technical review and the final approval was determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 1-4 below.

Table 1-4: Involved Personnel

	Name	Company	Function [1]	Qualification Status [2]	Scheme Competence	Technical Competence [4]	Host Country Competence	Team Leading Competence
☒ Mr. ☐ Ms.	Li, Yong Jun	TÜV NORD China	TL	SA	☒		☒	☒
☐ Mr. ☒ Ms.	Huang, Jessica	TÜV NORD China	TM	E	☒	S	☒	☐
☐ Mr. ☒ Ms.	Zhang, Na	TÜV NORD China	TM	E	☒		☒	☐
☐ Mr. ☒ Ms.	Yu, Miao	TÜV NORD China	-	AT	☐		☒	☐
☐ Mr. ☒ Ms.	Stöhr, Christina	TÜV NORD Cert GmbH	TR[3]	AT	☐		☐	☐
☒ Mr. ☐ Ms.	Winter, Rainer	TÜV NORD Cert GmbH	TR[3]/FA	SA	☒	S	☐	☒

[1] TL : Team Leader; TM : Team Member, TR: Technical review; FA: Final approval;

[2] GHG Auditor Status: A : Assessor; E : Expert; SA: Senior Assessor; T : Trainee; TE Technical Expert
AT: Applicant Trainee

3) No team member

4) As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

1.4 Level of Assurance

The verification has been planned and organized to achieve a

☒ reasonable level of assurance

☐ limited level of assurance.

2 METHODOLOGY

The verification of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- Desk review of the Monitoring Report/MR/ submitted by the client and additional supporting documents.
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

The sequence of the verification is given in the table 2.1 below:

Table 2.1: Verification sequence

Topic	Time
Assignment of verification	2010-05-21
On-site visit	2010-05-25 to 2010-05-27
Draft reporting finalised	2010-06-08
Final reporting finalised	2010-08-03
Technical review on final reporting finalised	2010-08-04
Final corrections	2010-08-05

The main verification steps are described below.

2.1 Review of Project Documentation

The VCS PD /VCS-PD/ and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the verification team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

The references used in the course of this verification are summarized in section 5.

2.2 On-Site Assessment

2.2.1 Review of Performance Records

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

The on-site visit was carried out on from 2010-05-25 to 2010-05-27, 2 members of the verification team attended the site visit.

2.2.2 Follow-up Interviews

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

During verification the verification team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table 2-2.

Table 2-2: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives, Wutuhe Hydro Power Development Co., Ltd./IM01/ Project consultant, Guizhou Zhongshui Hengyuan Project Management and Consulting Co. Ltd. /IM02/	- General aspects of the project - Technical equipment and operation - Changes since validation - Monitoring and measurement equipment - Remaining issues from validation / previous verifications - Calibration procedures - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - GHG calculation - Procedural aspects of the verification - Maintenance - Environmental aspects - Editorial issues of the Monitoring Report - Power grid connection

A comprehensive list of all interviewed persons is part of section 5 Reference Table 5-4.

2.2.3 Collection of Measurements

As per the methodology ASM-I.D. (Version 13) and VCS PD/VCS-PD/, the monitored parameters are electricity supplied to the grid, electricity imported from the grid. The net electricity delivery to grid is calculated as the electricity supplied to the grid deducting the electricity imported from the grid.

2.2.4 Observation of established practices and testing of the accuracy of monitoring equipment

For the metering purpose, one sealed meters i.e. Meter No.1 is installed for measuring the net electricity delivered to the grid in project site. The bidirectional meter with accuracy 0.5 is used as an invoice meter measuring imported and exported power. The meter reading time is fixed at 8:00am on the 25th of each month. The meter reading records are confirmed by the Grid Company and PP together.

If the main meters is malfunction one backup meters is installed in Yezhong substation. The backup meter is also bidirectional and with accuracy of 0.5S.

All two meters mentioned above are calibrated yearly by a qualified third party institute. Neither mistakes nor malfunction have been observed during this monitoring period.

Table 5-1: Key meters information

Item	Serial No.	Type	Accuracy	Calibration covering monitoring period	Calibration valid until	Calibration entity
Meter No.1	200408406 Q0028	DSSD 331	0.5	16/06/2008 16/06/2009	15/06/2010	Guizhou Power Grid Corporation Liupanshui Power Supply Bureau
Meter No.2	090056	DY 3050A	0.5s	13/05/2008 13/05/2009	12/05/2010	

Neither flood nor other emergency happened during the 2nd monitoring period/LOG/.

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data over the whole monitoring period in accordance with the registered VCS PD/VCS-PD/.

During the monitoring period, the project exported 39,824.96 MWh of net electricity. The net electricity supplied was verified by the verification team during the on site visit by checking the Monthly Meter reading records/MMR/ and Daily Meter reading records/DMR/ that were derived from meter reading records. The data was also cross checked with the electricity Balance Advice Note.

2.3 Determination of the reductions in GHG emissions

The approved CDM baseline and monitoring methodology ASM-I.D. (Version 13), and "Tool to calculate the emission factor for an electricity system" (Version 01.1) is applied to the project activity.
GHG emission reduction is calculated as baseline emission minus project emission and leakage emission. Baseline emission is net electricity delivered to the grid multiplied emission factor, in compliance with ASM-I.D. and the tool. In accordance with ASM-I.D. (Version 13), registered PD/VCS-PD/ and validation report/VAL/ project emission is zero and leakage doesn´t have to be considered. Hence, the emission reduction of project activities in year y can be calculated as follows:

$ER_y=BE_y-PE_y-LE_y$

ER_y: the emission reduction in year y associated with the project.
BE_y:the baseline emission in year y.
PE_y: the project emission in year y associated with the project.
LE_y: the leakage in year y associated with the project.

Since the project emission is zero and leakage doesn't have to be considered.

The emission reduction of project activities in year y can be calculated as: $ER_y=BE_y$

Baseline Emissions:

The formula used for the determination of baseline emissions which is consistent with the PD and revised Monitoring Report:

$BEy = EG_y \times EF_{grid,CM,y} = 39{,}824.96$ MWh x 0.8712 tCO_{2e}/MWh = 34,696 tCO_{2e}

BE_y: the baseline emission in year y (tCO_2/year).
EG_y: the net electricity exported (MWh).
$EF_{grid,CM,y}$: Combined margin CO_2 emission factor for grid connected power generation in year y.

For the calculation of baseline emissions the ex-ante determined value of baseline parameters, i.e., SCPG emission factor is taken into account which is a validated value and remains fixed throughout the crediting period. The emission factor is calculated as 0.8712 tCO_{2e}/MWh.

2.4 Review of additional data from other sources if appropriate

The verification team has carried out the checking of the raw data and commercial data, calibration records, maintenance records, CDM management system, trainings, QA/QC documentation / evidences of involved Third Parties.

2.5 Review of monitoring results and verification of the correct application of monitoring methodologies

The verification team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for the VCS.

2.6 Resolution of any material discrepancy

Material discrepancies identified in the course of the verification are addressed either as CARs, CLs or FARs.

A **Corrective Action Request (CAR)** is established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for verification of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

A detailed list of the CARs CLs and FAR raised and discussed in the course of this verification is included in the next section 3 of this report.

3 VERIFICATION FINDINGS

In this section the assessments and findings from the desk review of the VCS PD, site visit, interviews and supporting documents as well as the final assessments are summarised. Table 3-1 includes an overview of all raised CARs, CLs and FARs.

Table 3-1: Overview of CARs, CLs and FARs issued

No.	Topic / Chapter	CAR	CL	FAR
3.1	Remaining issues, including any material discrepancy	0	0	0
3.2	Project implementation	0	0	0
3.3	Completeness of monitoring	0	2	0
3.4	Accuracy of emission reduction calculations	1	0	0
3.5	Quality of evidence to determine emission reductions	0	0	0
3.6	Management and operational system	0	0	0
-	**SUM**	**1**	**2**	**0**

3.1 Remaining issues, including any material discrepancy, from previous verification

Description

There is no open issue indicated in previous verification. The last verification report published on VCS website was checked by the verification team.

Related Findings

☒ No CARs, CLs or FARs have been identified in this context

☐ The following finding(s) have been addressed:

Final Assessment

No open issues identified.

3.2 Project implementation

Description

The project was commenced on 28 Nov. 2004. The project uses hydropower for electricity generation. The total installed capacity is 7.5 MW. The main constructions are: barrage, power plants, channel and booster station.

During the monitoring period covering 2008-07-26 to 2010-02-25 the project exported 39,824.96 MWh of net electricity to the grid, which is a part of South China Power Grid. This was verified by the verification team during the on site visit by checking the Daily meter records for Wutuhe Station /DMR/ and Electricity Sales Summary based on balance advice note /BAN/. The meter calibration certificates/CAL/ and plant operation records/O&M/ were also verified by the verification team during the on site visit.

On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered VCS PD/VCS-PD/.

Related Findings

☒ No CARs, CLs or FARs have been identified in this context

☐ The following finding(s) have been addressed:

Final Assessment

The project was implemented as per the applied methodology AMS-I.D. (Version 13) and registered VCS PD/VCS-PD/. No relevant equipment was exchanged or modified within the monitoring period. There have not been significant incidents during the monitoring period happen.

3.3 Completeness of monitoring

Description

The proposed project used CDM approved methodology AMS I.D. (Version 13) “Renewable Energy Projects-Grid connected renewable electricity generation”.

The parameters to monitor are electricity exported to the grid, electricity imported to the grid. The net electricity delivery to the grid is calculated as the electricity supplied to the grid deducting the electricity imported from the grid. Electricity generated by the project is sent to the 35kV Yezhong transformer substation which is connected with China Southern Power Grid. During the monitoring period from 2008-07-26 to

2010-02-25, the meter (M1) at project plant was defined as gate meter and meter (M2) located at Yezhong substation was a back-up meter for meter (M1) which is in line with MP in VCS PD /VCS-PD/. The two meters are both installed for measuring the net electricity delivered to the grid and calibrated yearly by the local grid company. Responsibilities related to monitoring are clearly defined. The data is recorded on a daily basis and archived electronically with paper back-up, and the archived data will be kept during the monitoring period and two years after. The emission reduction is calculated based on the data by M1.

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated monthly data over the whole monitoring period in accordance with the monitoring plan of the VCS PD /VCS-PD/ and the applied methodology.

All necessary monitoring instruments are installed. The measuring devices are well known and state of the art. All required instruments including stand by and operating procedures for the same have been implemented in an appropriate manner. The reporting procedures reflect the requirements of the monitoring plan in VCS PD /VCS-PD/. All data needed are recorded daily and monthly, and stored appropriately during the whole monitoring period and afterwards. However, CL 3.3-1 and CL 3.3-2 were raised and successfully closed out.

Related Findings

☐ No CARs, CLs or FARs have been identified in this context

☒ The following finding(s) have been addressed:

Finding:	**3.3-1**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The meter calibration time and frequency shall be specified in the monitoring report. The power connection diagram indicated the location of the meters shall be added to the monitoring report.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	This section is revised in the Monitoring Report accordingly.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The relevant sections in MR have been checked. It can be confirmed that all information on calibration frequency of monitoring instruments are provided correctly. The calibration frequencies of monitoring instruments are in line with the MP and the national regulations. The calibrations of meters were conducted by a qualified third party. It is confirmed that the calibration is valid during the monitoring period 2008-07-26 to 2010-02-25. The calibration certificates have been checked to be reliable. The power connection diagram indicated the location of the meters is correctly provided by means of interview, on site observation and checking the power purchase agreement. Therefore, CL is closed.		

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding:	**3.3-2**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Information on backup electric meter regarding meter type, accuracy etc. should be clearly described in monitoring report. The evidence documents with regard to calibration have to be provided for verification.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	This section is described in the Monitoring Report accordingly. The related documents provided accordingly.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The relevant sections in MR have been checked. It can be confirmed that all information on calibration frequency of backup electric meter are provided sufficiently and correctly by means of on-site observation and meter verification certificate checking. The calibration report and calibration entity certificate have been checked by verification team. The frequencies of backup electric meter are in line with the MP and the national regulations. The calibration of meter was conducted by qualified third parties. It is confirmed that the calibration is valid during the monitoring period 2008-07-26 to 2010-02-25. Therefore, CL is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

The monitoring process has been conducted as per monitoring plan in VCS PD[/VCS-PD/]. All the relative information and issues been involved in monitoring report. The monitoring report is clear and unequivocal in all respect.

3.4 Accuracy of emission reduction calculations

Description

The approved CDM baseline and monitoring methodology ASM-I.D. “Renewable Energy Projects-Grid connected renewable electricity generation” (Version 13), and

"Tool to calculate the emission factor for an electricity system" (Version 01.1) is applied to the project activity.

GHG emission reduction is calculated as baseline emission minus project emission. Baseline emission is net electricity delivered to the grid multiplied emission factor, in compliance with ASM-I.D. and the tool.

For the calculation of baseline emissions the ex-ante determined value of baseline parameters, i.e., SCPG Emission Factor is taken into account which is a validated value and remains fixed throughout the crediting period. EF is calculated as 0.8712 tCO2e/MWh. (Based on PD)

The formula used for the determination of emission reduction which is consistent with the PD and revised Monitoring Report:

$ER_y = BE_y = EG_y \times EF_{grid,CM,y}$

$= 0.8712\ tCO_{2e}/MWh \times 39{,}824.96\ MWh$

$= 34{,}696\ tCO_{2e}$

The emission reductions (ER_y) during the monitoring period are 34,696 tCO_2.

In accordance with ASM-I.D. (Version 13), registered PD[/VCS-PD/] and validation report[/VAL/] project emission is zero and leakage doesn´t have to be considered.

Following documents and records were verified by the verification team:

- Monthly electricity Balance Advice Note issued by GP from 2008-07-26 to 2010-02-25.

- Daily meter readings from 2008-07-26 to 2010-02-25.

- Monthly meter readings from 2008-07-26 to 2010-02-25.

- Meters calibration records (covered the monitoring period).

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.

The data used for the emission reduction calculation were derived from the monthly electricity meter readings. All the data were issued or confirmed by the Project Owner and GP, and all the data has also been cross-checked by the Balance Advice Note confirmed by the GP.

Comparison of actual ER with estimated ER

Since the emission factor is an ex-ante determined value, the comparison of actual ER with estimated ER equals to the comparison of the actual net supplied power from the project to the grid with the one estimated in PD. During the monitoring period (2008-07-26 to 2010-02-25) the net supplied power from the project to the grid is 39,824.96 MWh (25,152.6 MWh annually), the average daily supplied electricity is 68.66 MWh/day, which is lower than the estimated in registered PD 76.87 MWh/day (28,060 MWh anually). Therefore the actual ER in 2nd monitoring period is deemed to be reasonable.

However, CAR 3.4-1 was raised and successfully closed out.

Related Findings

☐ No CARs, CLs or FARs have been identified in this context

☒ The following finding(s) have been addressed:

Finding:	**3.4-1**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The data for "Net power supplied to the power grid" during 26/07/2008 - 25/02/2010 is inconsistent with the original data. Revision is necessary.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	This section is revised in the Monitoring Report accordingly.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The MR and emission reduction calculation sheet have been revised correspondingly. The revised values indicated in the Excel sheet and MR have been checked and confirmed to be exactly the same as the originally recorded data. The data has been confirmed by the project owner and power grid, and cross-checked with the electricity Balance Advice Note issued by GP. The CAR is closed.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Final Assessment

The emission reduction calculations in the monitoring report and ER spreadsheet have been checked. They are in line with the monitoring plan. In particular, the formulas, connections, conversions and aggregations in ER spreadsheet have been assessed as correct. The manual transposition errors between data sets have been corrected and checked by verfication team. The emission factor is an ex-ante determined value as per the VCS PD and been appropriately used in emission reduction.

3.5 Quality of evidence to determine emission reductions

Description

Several documents were submitted by the project proponent as evidence to determine emission reductions. Refer to Table 5-1. They are checked by the verification team and assessed as reliable.

Related Findings

☒ No CARs, CLs or FARs have been identified in this context

☐ The following finding(s) have been addressed:

Final Assessment

The sufficient evidences have been provided to verification team. The daily and monthly meter reading records were verified by the verification team and cross checked by the monthly power Balance Advice Note issued by GP. The accuracy of meters was verified through viewing of the real meter and cross checked with the meter calibration report. The characters including serial number, type, and accuracy of the meter are consistent with those described in previous verification reports and are in line with validated MP. By means of interview and on-site observation, it can be confirmed the evidences are reliable.

3.6 Management and operational system

Description

The management and operational system of the project is suitable. An operational structure was established with responsibilities identified. Staff training plan was clear; training records were available. The quality management and erroneous procedures were clearly defined.

Related Findings

☒ No CARs, CLs or FARs have been identified in this context

☐ The following finding(s) have been addressed:

Final Assessment

The management system for monitoring and reporting was established suitably. An

organizational structure and operational structure were established with responsibilities identified. Staff training plan w.r.t competencies, non-conformance handling etc were clear; training records are available. The quality management and erroneous procedures were clearly defined. The internal audits and management review were assessed as adequate.

4 VERIFICATION STATEMENT

Guizhou Zhongshui Hengyuan Project Management and Consulting Co. Ltd. has commissioned the TÜV NORD JI / CDM Certification Program to carry out the verification of the Project "Wutuhe Erji Hydro Power Project in Guizhou Province, China", with regard to the requirements of VCS 2007.1 Standard.

The project activity involves hydropower plants generating electricity to displace part of the electricity from coal-fired power plants in China Southern Power Grid, thus achieves GHG emission reduction.

Reporting period:From 2008-07-26 to 2010-02-25

In the course of the verification 1 Corrective Action Requests (CARs), 2 Clarification Requests (CLs) were successfully closed.
The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the validated PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

In detail the conclusions can be summarised as follows:

- all operations of the project are implemented and installed as planned and described in the validated project description.
- the monitoring plan is in accordance with the applied approved methodology ,ie, AMS I.D. (Version 13)
- the installed equipment essential for measuring parameters required for calculating emission reductions is calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 2nd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Project emissions	0	t CO2 equivalents
Baseline emissions	34,696	t CO2 equivalents
Emission reductions	**34,696**	**t CO2 equivalents**

Shanghai, 2010-08-05

TÜV NORD JI/CDM Certification Program

Verification Team Leader

Essen, 2010-08-05

TÜV NORD JI/CDM Certification Program

Final Approval

5 REFERENCES

Table 5-1: Documents provided by the project participant

Reference	Document
/MCR/	1. Meter Calibration Record for meter M1 & M2 ~~*(pending)*~~ 2. Certificate of calibration entity
/BAN/	Balance Advice Note from Jul. 2008 to Feb. 2010 approved by local grid company
/BL/	Business License
/CAL/	1. Calibration Certificate of meter M1 & M2 ~~*(pending)*~~ 2. Certificate of calibration entity
/DMR/	Daily Meter Reading Records for Wutuhe Station from Jul. 2008 to Feb. 2010
/EPC/	Environmental Protection Completeness Check by Shuicheng County Environmental Protection Bureau issued on 30 November 2009
/GCA/	Grid Connection Agreement The confirmation of the invoice meter statement
/IA/	Internal Audit
/LOG/	Sample copy of project operation records.
/MM/	Monitoring Manual
/MRWMR/	Monthly Meter Reading Records for Wutuhe Station from Jul. 2008 to Feb. 2010
/MR/	Monitoring Report for Wutuhe 7.5MW Hydro Power Project 1. Version 1, drafted on 2010-03-15 2. Version 2, drafted on 2010-06-01 3. Version 3, drafted on 2010-08-02
/O&M/	Project Operation and Maintenance Records Sample copy of O&M records
/PCD/	Power Connection Diagram
/PHT/	Photographs of Project Site

Reference	Document
/PPA/	Electricity Sales and Purchasing Contract signed by PP and GP
/QA/	Monitoring manual and QA/QC procedures ~~*(pending)*~~
/RTC/	Project Responsibilities, Training and Competence Records 1. Project Organization Chart and responsibilities 2. Staff Training Records dated 2009-10-16 3. Sample Copy of Operator Certificates
/TEF/	Tool to calculate the emission factor for an electricity system (Ver. 1.1- Ver. 2)
/VCS-PD/	VCS Project Description developed on 19 November 2007 publised on VCS website.
/VEC/	VERs calculation spreadsheet
/VVR/	VCS Validation Report
/VVRXLS/	Emission Calculation Sheets (related to MR).

Table 5-2: Background investigation and assessment documents

Reference	Document
/AMS I.D./	Approved CDM Methodology ASM-I.D. , version 13: “Renewable Energy Projects-Grid connected renewable electricity generation”
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/IPPC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
/ISO 14064/	Greenhouse gases -- Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
/ISO14065/	Greenhouse gases -- Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition

Reference	Document
/VAL/	Validation Report for VCS project "Wutuhe Erji Hydro Power Project in Guizhou Province, China" dated 18 Nov. 2009
/VCS/	Voluntary Carbon Standard 2007.1
/VDS-PD-T/	VCS PD Template
/VVM/	Validation and Verification Manual (Version as per EB 51)

Table 5-3: Websites used

Reference	Link	Organisation
/cd4cdm/	www.cd4cdm.org	UNEP Riso Centre
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/unfccc/	http://cdm.unfccc.int	UNFCCC
/vcs/	www.v-c-s.org	VCSA

Table 5-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	LI Debin	Wutuhe Hydro Power Development Co., Ltd./ Manager assistant
/IM01/	V	☒ Mr. ☐ Ms	ZHOU Xin	Wutuhe Hydro Power Development Co., Ltd./ statistic recorder
/IM02/	V	☒ Mr. ☐ Ms	WANG Jiafeng	Guizhou Zhongshui Hengyuan Project Management and Consulting Co., Ltd. / Depertment Director
/IM02/	V	☐ Mr. ☒ Ms.	DAN Yanyan	Guizhou Zhongshui Hengyuan Project Management and Consulting Co., Ltd. / Project Manager

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)