



# VCS VERIFICATION REPORT OF YUNNAN MANGLI HYDROPOWER PROJECT



Document Prepared By CTI Certification Co., Ltd

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### Summary:

CTI Certification Co., Ltd (CTI) has performed the verification of the emission reductions reported for the project activity “Yunnan Mangli Hydropower Project” (VCS Project ID: 928) for the monitoring period 01/08/2021 to 31/05/2023, to review and determine the monitored reductions in GHG emissions that have occurred as a result of the project activity. These emission reductions are claimed as Verified Carbon Units (VCU) under the Verified Carbon Standard (VCS) version 4.4.

The verification was performed on the basis of VCS Program Guide version 4.3 and VCS Standard version 4.4 for the VCS projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. The verification was conducted by means of document review, follow-up interviews and site inspections, and the resolution of outstanding issues. The verification team identified 1 CAR, 0 CL and 0 FAR in this monitoring period.

In CTI’s opinion, the GHG emission reductions reported for the project in the monitoring report (version 1.1 dated 30/06/2023) are fairly stated. The GHG emission reductions of the monitoring period were calculated correctly on the basis of approved methodology ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources” (Version 20.0).

CTI does not assume any responsibility towards the issuance and utilization of the VCUs hereby verified and certified. Request for issuance of VCUs shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to CTI and the engagement conditions detailed in this report. CTI cannot be held liable by any party for decisions made or not made based on this report.

Hence, CTI is able to certify that the emission reductions from the “Yunnan Mangli Hydropower Project” during the period amount to 63,413 tCO<sub>2</sub>e.

# CONTENTS

|                                                                                 |           |
|---------------------------------------------------------------------------------|-----------|
| <b>1 Introduction .....</b>                                                     | <b>5</b>  |
| 1.1 Objective .....                                                             | 5         |
| 1.2 Scope and Criteria .....                                                    | 5         |
| 1.3 Level of Assurance .....                                                    | 6         |
| 1.4 Summary Description of the Project .....                                    | 6         |
| <b>2 Verification Process .....</b>                                             | <b>6</b>  |
| 2.1 Method and Criteria .....                                                   | 6         |
| 2.2 Document Review .....                                                       | 7         |
| 2.3 Interviews .....                                                            | 8         |
| 2.4 Site Visits .....                                                           | 8         |
| 2.5 Resolution of Findings .....                                                | 9         |
| 2.6 Eligibility for Validation Activities .....                                 | 10        |
| <b>3 Validation Findings .....</b>                                              | <b>10</b> |
| 3.1 Participation under Other GHG Programs .....                                | 10        |
| 3.2 Methodology Deviations .....                                                | 11        |
| 3.3 Project Description Deviations .....                                        | 11        |
| 3.4 Grouped Project .....                                                       | 11        |
| <b>4 Verification Findings .....</b>                                            | <b>11</b> |
| 4.1 Project Implementation Status .....                                         | 11        |
| 4.2 Safeguards .....                                                            | 15        |
| 4.3 AFOLU-Specific Safeguards .....                                             | 16        |
| 4.4 Accuracy of GHG Emission Reduction and Removal Calculations .....           | 16        |
| 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals ..... | 20        |
| 4.6 Non-Permanence Risk Analysis .....                                          | 21        |
| <b>5 Verification conclusion .....</b>                                          | <b>21</b> |
| <b>APPENDIX A: Abbreviations .....</b>                                          | <b>24</b> |
| <b>APPENDIX B: References .....</b>                                             | <b>25</b> |
| <b>APPENDIX C: Competence of team members and technical reviewers .....</b>     | <b>27</b> |

|                                                                                                         |           |
|---------------------------------------------------------------------------------------------------------|-----------|
| <b>APPENDIX D: Corrective Action Requests, clarification requests and Forward Action Requests .....</b> | <b>30</b> |
|---------------------------------------------------------------------------------------------------------|-----------|

# 1 INTRODUCTION

Climate Bridge (Shanghai) Ltd. has commissioned CTI Certification Co., Ltd (CTI) to carry out the verification and certification of emission reductions reported for the “Yunnan Mangli Hydropower Project” (the project) for the period 01/08/2021 to 31/05/2023. This report contains the findings from the verification and includes a verification statement for the verified carbon units.

## 1.1 Objective

Verification is the periodic independent review and ex-post determination by an accredited verification body of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined verification period.

A verification statement is the written assurance by a verification body that, during a specific period in time, a project activity achieved the emission reductions as verified.

The objective of this verification was to verify and provide a verification statement of emission reductions reported for the “Yunnan Mangli Hydropower Project” for the period 01/08/2021 to 31/05/2023.

## 1.2 Scope and Criteria

The scope of the verification is:

- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement;
- To verify that reported GHG emissions data is sufficiently supported by evidence.

The criteria of the verification are:

- VCS Program Guide (version 4.3) /32/
- VCS Standard (version 4.4) /31/ and other relevant requirements defined by VERRA;
- The approved methodology ACM0002 (Version 20.0) /34/ applied by the project.

The verification shall ensure that reported emission reductions are complete and accurate in order to be verified.

### 1.3 Level of Assurance

The verification report expresses a conclusion with a reasonable level of assurance about whether the reported GHG emissions reduction data is free from material misstatement. CTI applied a materiality threshold of 5% (for projects with ER  $\leq$  300,000 tCO<sub>2</sub>e per year) with respect to emission or misstatements concerning reported quantities as per para 3.10.1 and 4.1.8 (4) of VCS Standard, v4.4.

### 1.4 Summary Description of the Project

#### Sectoral Scope and Project Type

According to the VCS Program Guide (version 4.3) /31/, the project is applicable under the following activity categories:

- Sectoral Scope: 1. Energy (Renewable/non-renewable).

According to Annex A of the Kyoto Protocol, the project is applicable under the Sectoral Scope 1: Energy Industries (renewable/ non-renewable sources).

#### Project Background

|                               |                                                                                                                                            |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Project title:                | Yunnan Mangli Hydropower Project                                                                                                           |
| Project proponent:            | Datang Mangli Hydropower Development Company Limited (China)                                                                               |
| Project location:             | Mangshi River, Luxi City of Yunnan Province, P.R.China                                                                                     |
| VCS Project ID:               | 928                                                                                                                                        |
| Applied methodology:          | ACM0002 Version 20.0                                                                                                                       |
| VCS project crediting period: | 25/01/2010 to 24/01/2020 (the 1 <sup>st</sup> VCS crediting period)<br>25/01/2020 to 24/01/2030 (the 2 <sup>nd</sup> VCS crediting period) |
| VCU verification period:      | 01/08/2021 to 31/05/2023                                                                                                                   |

## 2 VERIFICATION PROCESS

### 2.1 Method and Criteria

The verification was performed through means of the following three phases in accordance with the requirement of the renewed VCS PD, the applied methodology, and the VCS Standard (version 4.4) and other relevant VCS requirements:

- A desk review of the monitoring report and all support documents;
- Follow-up interviews with project stakeholders and site inspection;

- The resolution of outstanding issues and the issuance of the verification report and statement.

The following sections outline each step in more detail.

The verification of the emission reductions has assessed all factors and issues that constitute the basis for emission reductions from the project. These include:

- The emission reduction calculations and the relevant data records;
- The calibration and maintenance records for the monitoring instruments;
- The management systems to support the project operation and monitoring.

## 2.2 Document Review

Based on the requirements of competency, experience and qualified sectoral scopes, CTI appointed a verification team in accordance with CTI's internal procedures.

| Function           | Name         | Technical competence             | Task Performance*                                                                                                                                |
|--------------------|--------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Team Leader        | Tong Dezheng | 1.2, 8.1, 10.1                   | <input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RP <input type="checkbox"/> TR |
| Technical Reviewer | Lin Shunrong | 1.2, 3.1, 13.1, 13.2, 14.1, 15.1 | <input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RP <input checked="" type="checkbox"/> TR            |
| TR Member          | Feng Tian    | 1.2,8.1, 13.1, 13.2              | <input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RP <input checked="" type="checkbox"/> TR            |

\*DR=Document review; SV=Site visit; RP=Reporting; TR=Technical review

In addition to the monitoring report /1/, emission reduction calculation spreadsheet /2/, the following documents also were assessed as a part of the verification audit:

- Registered CDM PDD (version 02 dated 28/12/2010) /16/;
- Validation Report of registered CDM PDD (version 03 dated 05/10/2011) /17/;
- Revised CDM PDD approved by CDM EB (version 03 dated 06/08/2012) /18/;
- Validation Opinion on revised CDM PDD approved by CDM EB (version 01 dated 10/09/2012) /19/;
- Registered VCS PD (version 02 dated 25/10/2012) /25/;
- Renewed VCS PD (version 1.2 dated 08/03/2022) /26/;
- Validation Report of renewed VCS PD (version 2.0 dated 08/03/2022) /27/;
- Monitoring report of previous monitoring period 01/05/2018 to 31/07/2021 /20/;
- Verification report of previous monitoring period 01/05/2018 to 31/07/2021 /21/;
- Baseline and monitoring methodology ACM0002 applied by the project /34/;
- Relevant decisions, clarifications and guidance from the VERRA /31/-/33/; and
- Other information and references relevant to the project activity.

During the desk review, CTI has applied standard auditing techniques to assess the quality of information provided. The following activities were performed:

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures; and

An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

## 2.3 Interviews

On 28/06/2023, CTI visited Datang Mangli Hydropower Development Company Limited performed on-site assessment. The key personnel of the project were interviewed or assisted the verification team. Main topics of the interview cover implementation of the project construction, applicability of selected methodology, implementation of project monitoring, emission reduction calculation, etc.

The key personnel interviewed are summarized in the table below:

| Interviewed personnel | Role                                               | Organization                                                             | Subject                                                                                                                                             |
|-----------------------|----------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Mr. Luo Liwen         | Director of General Affairs Department             | Datang Mangli Hydropower Development Company Limited (the project owner) | Operation of the project activity; Implementation of the monitor plan of the project activity; Data collection and data achievement;                |
| Mr. Xiao Mengxian     | Director Assistant of Safety Production Department |                                                                          | Calibration of meters and equipment maintenance;                                                                                                    |
| Mr. Wei Jiayuan       | Safety officer of Safety Production Department     |                                                                          | The on-going local stakeholder consultation; Project's sustainable development contributions                                                        |
| Mr. Jin Xiaosan       | Villager                                           | Local resident                                                           | The impact of the project activity; The complaint by local stakeholders; The stakeholder consultation during the operation of the project activity. |
| Mr. Ding Zongkong     | Villager                                           |                                                                          |                                                                                                                                                     |
| Ms. Yue yeXiangtuan   | Villager                                           |                                                                          |                                                                                                                                                     |
| Ms. Xiao Tuan         | Villager                                           |                                                                          |                                                                                                                                                     |
| Mr. Lv Wen            | Director                                           | Local Environment Protection Bureau                                      |                                                                                                                                                     |
| Ms. Gao Jiabin        | Project Manager                                    | Climate Bridge (Shanghai) Ltd.                                           | Data collection and ER calculation.                                                                                                                 |

## 2.4 Site Visits

The verification team performed the on-site verification (Mangshi River, Luxi City of Yunnan Province, P.R.China) on 28/06/2023. The interviewed personnel and objective are listed in above table. During

the on-site assessment, CTI has applied standard auditing techniques to assess the quality of information provided. The following aspects of the project activity have been verified:

- An assessment of the implementation and operation of the registered project activity is as per the renewed VCS PD (version 1.2 dated 08/03/2022);
- A review of information flows for generating, aggregating and reporting the monitoring parameters; and
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the renewed VCS PD (version 1.2 dated 08/03/2022);
- A cross-check between information provided in the monitoring report and data from other sources such as plant logbooks and electricity sale receipts;
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the renewed VCS PD (version 1.2 dated 08/03/2022) and the selected methodology;
- A review of calculations and assumptions made in determining the GHG data and emission reductions; and
- An identification that quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The data presented in the monitoring report were assessed by review of the detailed project documentation and production records, as well as by interviews with personnel from the project developer Datang Mangli Hydropower Development Company Limited and observation of collection of measurements, observation of established monitoring and reporting practices and assessment of the reliability of monitoring equipment. This has enabled the verification team to assess the accuracy and completeness of reported monitoring results, to verify the correct application of the approved monitoring methodology and the determination of the emission reductions.

In addition all parameters required by the monitoring methodology ACM0002 (Version 20.0), and the management system were assessed during the site visit.

## 2.5 Resolution of Findings

A corrective action request (CAR) shall be raised, where:

- i. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- ii. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
- iii. Issues identified in a FAR during validation to be verified during verification have not been resolved by the project proponents.

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

The verification team identified 1 CAR, 0 CL and 0 FAR in this monitoring period.

### 2.5.1 Forward Action Requests

A forward action request (FAR) is issued for actions if the monitoring and reporting require attention and/or adjustment for the next monitoring period.

CTI confirmed that there was no FAR identified in previous verification /21/, and no FAR was raised during this verification.

## 2.6 Eligibility for Validation Activities

The registered CDM PDD of the project activity was validated by DNV Climate Change and Environmental Services on 05/10/2011 /17/. The revised CDM PDD approved by CDM EB was validated by Bureau Veritas Certification Holding SAS on 10/09/2012 /19/. The renewed VCS PD approved by VERRA was validated by LGAI Technological Center, S.A. (Applus+ Certification) on 08/03/2022 /27/. By checking UNFCCC website and VERRA website, it was verified CTI conducted verification of CDM monitoring period from 01/05/2012 to 31/10/2013 and VCS monitoring period from 01/11/2013 to 30/04/2018, in total six consecutive years. By checking VERRA website, it was verified LGAI Technological Center, S.A. (Applus+ Certification) conducted verification of VCS (previous) monitoring period from 01/05/2018 to 31/07/2021. The proposed monitoring period 01/08/2021 to 31/05/2023 is the 4<sup>th</sup> VCS verification, and CTI just undertook verification activities for the project according to the VCS Program Guide.

As per 4.1.23 of VCS Standard version 4.4, a validation/verification body shall not verify more than six consecutive years of a project's GHG emission reductions or removals. The validation/verification body may undertake further verification for the project only when at least three years of the project's GHG emission reductions or removals have been verified by a different validation/verification body. CTI conducted verification in six consecutive years for the monitoring period from 01/05/2012 to 31/10/2013 and from 01/11/2013 to 30/04/2018 and afterwards, a different VVB, i.e. LGAI Technological Center, S.A. (Applus+ Certification), conducted verification of monitoring period from 01/05/2018 to 31/07/2021, which is more than 3 years. Therefore, it was verified 4.1.23 of VCS Standard version 4.4 are satisfied. This section is thus not applicable.

# 3 VALIDATION FINDINGS

## 3.1 Participation under Other GHG Programs

CTI checked public information from the UNFCCC website (<https://cdm.unfccc.int/Projects/DB/DNV-CUK1305694841.24/view>), REC Mechanism database of China, Chinese Emission Trading System,

Gold Standard Registry and interviewed with project owner during site visit, it is confirmed that the project has been registered as CDM project activity on 07/10/2011 with reference No. 4821, except VCS and CDM scheme, the project has not been participated or been rejected under any other GHG programs since validation. The same has been confirmed through interviewing with project owner.

### 3.2 Methodology Deviations

The validation process /17/ has assessed all factors and issues that constitute the basis for emission reductions from the project according to the applicable CDM methodology ACM0002 (Version 20.0) /34/. There was not any methodology deviation applied to this project. Details refer to section 4.1.

### 3.3 Project Description Deviations

By checking Monitoring Report /20/ and Verification Report /21/ of previous monitoring period, it was verified a project deviation about VCS crediting period has been applied by PP and approved by VERRA. The 1<sup>st</sup> VCS crediting period of the project was determined as 25/01/2010 - 24/01/2020 and the 2<sup>nd</sup> VCS crediting period of the project was determined as 25/01/2020 to 24/01/2030. Besides, it was identified the turbine and generator started operation on 13/01/2010 as per the registered VCS PD. However, the start date of 1<sup>st</sup> VCS crediting period is chosen as 25/01/2010, the date when the data have been monitored and collected following the monitoring procedure.

This deviation has no impact on the applicability of the methodology, additionality or the appropriateness of the baseline scenario and meet all appropriate rules and requirements of VCS standard.

No project description deviations were identified for this monitoring period. The same has been confirmed during site visit.

### 3.4 Grouped Project

The project was not a grouped project; hence this clause is not applicable.

## 4 VERIFICATION FINDINGS

This section summarizes the findings from the verification of the emission reductions reported for the “Yunnan Mangli Hydropower Project” for the period 01/08/2021 to 31/05/2023.

### 4.1 Project Implementation Status

#### **Project Implementation in accordance with the registered project design document**

The project is a grid-connected hydro power plant, which is located in Mangshi River, Luxi City of

Yunnan Province, P.R.China. The installed capacity of the project activity is 36MW, consisting of 2 sets of hydro turbines with unit capacity of 18MW. The average annual power delivered to the grid by the project is expected to be 143,652 MWh. The actual implementation of the project during this verification period was verified in terms of name plate capacities of hydro turbines and monitoring equipment. The details of hydro turbines with respect to installation and capacity have been verified to be consistent with description indicated in the VCS PD. The project activity was put into operation on 13/01/2010, which has been verified by site visit interview, checking VCS Verification Report of previous monitoring period /21/. The electricity generated by the project activity was supplied to China Southern Power Grid (CSPG), which can be confirmed by the Power Purchase Agreement (PPA) signed between the project owner and Yunnan Power Grid Co., Ltd. Dehong Power Supply Bureau /3/. The proposed monitoring period (01/08/2021 to 31/05/2023) is within 2<sup>nd</sup> VCS crediting period from 25/01/2020 to 24/01/2030.

The technical parameters have been verified with the nameplates /10/ as below:

| Generator     |                | Turbine          |                         |
|---------------|----------------|------------------|-------------------------|
| Model         | SF-J18-30/5050 | Model            | HLA551c-LJ-262          |
| Quantity      | 2              | Quantity         | 2                       |
| Rated Power   | 18 MW          | Rated Power      | 18.66 MW                |
| Rated Voltage | 10.5 kV        | Rated Water Head | 37m                     |
| Rated Current | 1100 A         | Rated Flux       | 55.42 m <sup>3</sup> /s |
| Rated Speed   | 200 r/min      | Rated Speed      | 200 r/min               |

Via onsite investigation and checking daily operation and maintenance records /6/, the verification team confirmed that:

- there is no proposed or actual change to the renewed VCS PD during this monitoring period;
- all required equipments and procedures are available and implemented in an appropriate manner;
- the project is completely operational and all necessary monitoring instruments are installed;
- all required instruments including standby and operating procedures for the same have been implemented in an appropriate manner;
- neither mistakes nor malfunction on main meters have been observed during this monitoring period.
- the control system at the power plant is automated and assures continuous operation, including monitoring on malfunction of equipment;
- no serious malfunction happened and the plant was under a normal operation as expected in this monitoring period.

Furthermore, on-site training for the related procedures including monitoring, recording and reporting was verified to be in place /5/ and their implementation was confirmed by interview with the key operators and observing the operation. The monitoring structure and responsibility of personnel, as well as internal auditing process have been verified during site visit and confirmed to be in compliance with the the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022).

In conclusion, as part of the site visit, CTI confirms that:

- the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022) is in accordance with the approved methodology applied by the project activity, i.e. ACM0002 (Version 20.0);
- the project implementation is in accordance with the renewed VCS PD (version 1.2 dated 08/03/2022);
- all the monitoring system in operation period is in accordance with the renewed VCS PD (version 1.2 dated 08/03/2022);
- all physical features of the proposed project activity including data collection systems and storage systems have been implemented in accordance with the renewed VCS PD (version 1.2 dated 08/03/2022) through visual inspection and document review.

#### Participation or any rejection under any other GHG programs

CTI checked public information from the UNFCCC website (<https://cdm.unfccc.int/Projects/DB/DNV-CUK1305694841.24/view>), REC Mechanism database of China, Chinese Emission Trading System, Gold Standard Registry and interviewed with project owner during site visit, it is confirmed that the project has been registered as CDM project activity on 07/10/2011 with reference No. 4821, except VCS and CDM scheme, the project has not been participated or been rejected under any other GHG programs since validation. The same has been confirmed through interviewing with project owner.

#### Other Forms of Credit and Supply Chain (Scope 3) Emissions

- ✓ **Emission Trading Programs and Other Binding Limits:** The verification team checked the REC Mechanism database of China, Chinese Emission Trading System (Chinese ETS) and Chinese Certified Emission Reduction Mechanism, and found that the project activity is not accredited / registered under REC mechanism, Chinese ETS, or CCER mechanism. Also, CCER mechanism is currently suspended by Chinese government, the project activity will not and is not allowed to registered under CCER mechanism. Thus, the assessment team concluded that the project activity not involved on other emissions trading programs and other binding limits.

Furthermore, as per “Notice on Strengthening Enterprise Greenhouse Gas Emission Report Management” /9/ issued by National Development and Reform Committee of P.R.China, China has a national emissions trading scheme only cover the high-emission industries, including thermal power generation, petrochemical, chemical, building materials, iron and steel, non-ferrous, paper, aviation and other key emission industries that emitted at least 26,000 tons of CO<sub>2</sub>e/year. By checking “List of key emissions in the national carbon emissions transaction quota management in 2019-2020” /22/ issued by Ministry of Ecology and Environment of P.R.China, the project owner is not included in the mandatory emission control scheme and thus no emission cap was enforced for the project activity.

- ✓ **Other Forms of Environmental Credit:** The verification team checked the REC Mechanism database of China, I-REC database and confirmed that there are no other forms of environmental credits applied or issued for the project activity. The emission reduction resulted from the project during this monitoring period would only apply for VCUs.

- ✓ **Supply Chain (Scope 3) Emissions:** The Project generated electricity by utilization of renewable hydro sources, replacing the electricity generated by fossil fuel fired power plants of the power grid. For hydro power projects, the GHG emission reductions come from avoiding CO<sub>2</sub> emissions from those fossil fuel-based power plants connected to the grid, which does not happen in a supply chain. Therefore, it is confirmed that the Supply Chain (Scope 3) Emissions are not applicable for the project activity.

Therefore, the verification team confirmed that the project only applies CERs and VCUs under CDM and VCS standard, and no rejection from CDM or VCS standard occurs, there are no other forms of environmental credits applied or issued for the project activity.

The emission reduction resulted from the project during this monitoring period would apply for VCUs.

The forms of credits applied or issued for the project activity is as follows:

| Start Date | End Date   | GHG Emission Reduction (tCO <sub>2</sub> e) | Credit                 | Program |
|------------|------------|---------------------------------------------|------------------------|---------|
| 25/01/2010 | 06/10/2011 | 172,001                                     | VCU                    | VCS     |
| 07/10/2011 | 30/04/2012 | 30,655                                      | CER                    | CDM     |
| 01/05/2012 | 31/10/2013 | 151,177                                     | CER                    | CDM     |
| 01/11/2013 | 30/04/2018 | 342,023                                     | VCU                    | VCS     |
| 01/05/2018 | 31/07/2021 | 201,928                                     | VCU                    | VCS     |
| 01/08/2021 | 31/05/2023 | 63,413                                      | In requesting for VCUs | VCS     |

#### SD contributions resulted by implementation of the project activity

By checking China's National Plan on Implementation of the 2030 Agenda for Sustainable Development and 17 SDGs defined by UNDP, and interviewing with stakeholders during site visit, CTI confirmed that the project would contribute to sustainable development in as below:

- **SDG 13:** Reducing greenhouse gas emissions compared to a business-as-usual scenario. During this monitoring period, the emission reductions achieved were 63,413 tCO<sub>2</sub>e. By checking UNFCCC website (<https://cdm.unfccc.int/Projects/DB/DNV-CUK1305694841.24/view>) and VERRA website (<https://registry.terra.org/app/projectDetail/VCS/928>), it is confirmed that the cumulative Contributions Over Project Lifetime were 961,197 tCO<sub>2</sub>e achieved emission reductions.

- **SDG 7:** Providing clean and renewable energy source and displacing the power generation of fossil fuel power plants, reducing pollution emissions caused by coal burning significantly, thus mitigating the air pollution and its adverse impacts on human health, promoting sustainable economic development in local area. During this monitoring period, the renewable energy supplied to CSPG was 175,567.920 MWh. By checking UNFCCC website (<https://cdm.unfccc.int/Projects/DB/DNV-CUK1305694841.24/view>) and VERRA website (<https://registry.terra.org/app/projectDetail/VCS/928>), it is confirmed that the cumulative Contributions Over Project Lifetime since project start date were 1,391,456.320 MWh renewable energy supplied to CSPG.

- **SDG 8:** Providing direct and indirect employment opportunities during construction and operation period, which promotes sustained, inclusive and sustainable economic growth, full and productive employment and decent work for local residents. By checking Staff Roster /11/, it is confirmed that since operation of the project activity, 26 long term working opportunities are provided.

## 4.2 Safeguards

### 4.2.1 No Net Harm

By checking the EIA summary and conclusion provided in the renewed VCS PD (version 1.2 dated 08/03/2022), it is confirmed that hydro power is green power and the impact caused by hydro power on the surrounding ecosystem and residents, wastewater, solid waste and atmosphere etc. is very little, there would be no net harm caused due to the project activity. Also, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during the site visit. The project is renewable energy project and thus no net harm observed in air or water quality on-site.

### 4.2.2 Local Stakeholder Consultation

As per the registered VCS PD (version 02 dated 25/10/2012), the local stakeholder's consultation was conducted in June 2009 through distributing a questionnaire which was designed to be easily filled in. 100 copies of questionnaire were distributed. The participants filled in the questionnaires included local residents, builders and members of the local authorities. The opinions expressed by the stakeholders were recorded and are available on request.

The survey showed that the project receives strong support from the local community. They all believe the project will provide job opportunities and promote local economic development and agree with the project development and construction.

By checking Verification Report of previous monitoring period /21/, the filled questionnaires from local stakeholders, it is confirmed by the verification team that communications with local stakeholders was being carried out by the project owner in April 2014, August 2016, March 2018, May 2019, August 2020 and April 2021 for previous monitoring periods, and in August 2021, June 2022 and April 2023 for this monitoring period. There are no negative comments received for the project.

Via checking questionnaires from local stakeholders and interviewing with staff from local environmental protection bureau and local residents during the site visit, it is confirmed by the verification team that during the implementation stage of this monitoring period, local authority has conducted spot checks on the implementation of the project periodically as per the request from the local governments' regulations. It is confirmed by the verification team that there were no negative comments and issues from the local stakeholders during this monitoring period and the project passed all the periodic spot checks by local government.

All such conclusion has been verified through site visit and check revised CDM PDD approved by CDM EB.

### 4.3 AFOLU-Specific Safeguards

For non-AFOLU projects, this section is not required.

### 4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The monitoring has been carried out in accordance with the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022). CTI confirms that all parameters stated in the monitoring plan are monitored and reported appropriately. All parameters required to be monitored by the monitoring plan as per the monitoring methodology ACM0002 (Version 20.0) and the management system were assessed during the site visit. The monitoring report lists each parameter required by the monitoring plan and the information flow (i.e. from data generation, aggregation, recording, calculation and reporting) for these parameters is provided. The information flow for the each parameter is further verified in the following sections.

#### Parameters monitored

According to the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022), there are 5 monitoring parameters of the project:

- **Electricity supplied by the project activity to the grid in year y ( $EG_{\text{export},y}$ )**

$EG_{\text{export},y}$  is continuously monitored by 2 bidirectional electricity meters (meter M1 and meter M2). M1 was installed at the substation of Grid Company while meter M2 was installed at the project site. The meter readings were recorded monthly. When M1 is not working, the readings from M2 will be used for reference. By checking the operation log /6/ and interview with project owner during site visit, it is confirmed that during this monitoring period, M1 is working well and has no malfunction.

The cut-off time was at 24:00 of last day of each month. At the cut-off time, the staff from project developer and the grid company read the electricity meters together. The staff from project owner read the meter readings and record the same in Meter Reading Records (MRRs) /7/. The staff from power grid company record electricity meter's readings and then transcribes the data into Electricity Transaction Notes (ETNs) /8/. Value of  $EG_{\text{export},y}$  were sourced from Meter Reading Records (MRRs) /7/ covering monitoring period. Data in the MRRs /7/ were used to the report, through a cross check with ETNs /8/. The conservative values were applied to calculate emission reductions.

- **Electricity imported by the project activity from the grid in year y ( $EG_{\text{import},y}$ )**

$EG_{\text{import},y}$  is continuously monitored by 2 bidirectional electricity meters (meter M1 and meter M2). M1 was installed at the substation of Grid Company while meter M2 was installed at the project site. The meter readings were recorded monthly. When M1 is not working, the readings from M2 will be used for reference. By checking the operation log /6/ and interview with project owner during site visit, it is confirmed that during this monitoring period, M1 is working well and has no malfunction.

The cut-off time was at 24:00 of last day of each month. At the cut-off time, the staff from project developer and the grid company read the electricity meters together. The staff from project owner read

the meter readings and record the same in Meter Reading Records (MRRs) /7/. The staff from power grid company record electricity meter's readings and then transcribes the data into Electricity Purchase Receipts /29/. Value of  $EG_{import,y}$  were sourced from Meter Reading Records (MRRs) /7/ covering monitoring period. Data in the MRRs /7/ were used to the report, through a cross check with Electricity Purchase Receipts /29/. The conservative values were applied to calculate emission reductions.

- **Electricity imported through backup line from the grid in year y ( $EG_{backup,y}$ )**

The parameter was measured continuously by meter  $M_{backup}$  with accuracy of 1.0, which was installed on the back-up line. The same has been verified during site visit. Through interviewing with project owner during site visit and checking operation log /6/, it is confirmed that no electricity imported through backup line from the grid during this monitoring period.

- **Installed capacity of the hydro power plant after the implementation of the project activity ( $Cap_{PJ}$ )**

By checking renewed VCS PD (version 1.2 dated 08/03/2022), it was verified this parameter was determined once at the beginning of each crediting period. By checking nameplate of hydropower turbine and generator /10/ and the Purchase contract of the water-turbine generators equipments signed on 18/08/2008 /28/, it is confirmed by the verification team the installed capacity of project activity is 36MW (36,000,000 W), which is consistent with that in the renewed VCS PD (version 1.2 dated 08/03/2022).

- **Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full ( $A_{PJ}$ )**

By checking renewed VCS PD (version 1.2 dated 08/03/2022), it was verified this parameter was determined once at the beginning of each crediting period. By checking Survey Report of year 2021 /14/, issued by Road Bridge Jiada Surveying Center in Dehong, Yunnan Province on 30/04/2021, it was verified the value of  $A_{PJ}$  was measured and determined to be 2,732,305 m<sup>2</sup>.

✓ **Monitoring equipment and calibration**

The meters have been calibrated periodically as per the relevant industrial standard by the qualified third party to ensure the monitoring equipments' accuracy and in good conditions. The relevant information of meters' calibration is listed as below.

| Electricity Meter     | Meter M1                               | Meter M2                               |
|-----------------------|----------------------------------------|----------------------------------------|
| Mode                  | DTSD718                                | DTSD5                                  |
| Accuracy class        | 0.5S                                   | 0.2S                                   |
| Serial Number         | 05131SG0000020015AD701411              | 02299816                               |
| Calibration frequency | Annually                               | Annually                               |
| Calibration date      | 23/11/2020<br>20/10/2021<br>15/10/2022 | 23/11/2020<br>20/10/2021<br>15/10/2022 |
| Calibration validity  | 22/11/2021                             | 22/11/2021                             |

|  |            |            |
|--|------------|------------|
|  | 19/10/2022 | 19/10/2022 |
|  | 14/10/2023 | 14/10/2023 |

The meters were calibrated by Yunnan Power Grid Co., Ltd. Dehong Metrology Center. Calibration records and accreditation certificates /12//13/ have been verified by the verification team. The accuracy of meters is comply with that in the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022). By checking the applicable industrial metering configuration standard “Technical Administrative Code of Electric Energy Metering” /15/, CTI can confirm that the accuracy level of all meters meets the requirement stipulated in this standard. CTI can thus confirm that the accuracy of the meters is in line with the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022) and relevant industry standard.

In the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022), it stated that the meters will be calibrated and checked annually for accuracy. By checking the calibration reports, CTI found the calibration frequency of these meters is annual, which is in line with the applicable calibrating standard “Technical Administrative Code of Electric Energy Metering” /15/. Hence, CTI can confirm that the meters’ calibration frequency is in line with the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022) and relevant industry standard, and the calibrations of meters are verified to be valid for the whole reporting period.

#### ✓ **Data management and control**

Datang Mangli Hydropower Development Company Limited is responsible for operation and routine maintenance of power plant under the project activity. The quality assurance and quality control procedures have been addressed in the VER project management and monitoring manual /4/, including the organization structure with the responsibilities, personnel competencies, monitoring procedures and monitoring management. By interview with the staff and check records /4/-/6/ during on-site visit, it can be confirmed that the monitoring management system is implemented following the project management and monitoring manual.

All monitoring devices have been calibrated and maintained periodically to ensure the accuracy of measurement. Calibration records of instruments used in measurements were made available during the verification visit and found to be valid for the entire period of the verification. Competence and training records of in-plant personnel engaged in measurement of plant parameters were presented during verification and found to be in order.

#### **Emission reduction calculation**

CTI confirms that appropriate methods and formulae for calculating baseline emissions, project emissions and leakage have been followed, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

According to the applied methodology, the emission reductions are determined as the difference between the baseline emissions, project emissions and leakage:

$$ER_y = BE_y - PE_y - LE_y$$

### ✓ Baseline emissions

As per renewed VCS PD (version 1.2 dated 08/03/2022), Baseline emissions were calculated as follows:

$$BE_y = EG_{\text{facility},y} * EF_{\text{grid},\text{CM},y} = (EG_{\text{export},y} - EG_{\text{import},y} - EG_{\text{backup},y}) * EF_{\text{grid},\text{CM},y}$$

Where:

$BE_y$  = Baseline emissions in year  $y$  ( $\text{tCO}_2\text{e}/y$ );

$EG_{\text{facility},y}$  = Quantity of net electricity generation supplied by the project plant/unit to the grid (MWh);

$EG_{\text{export},y}$  = Electricity supplied by the project activity to the grid in year  $y$  (MWh);

$EG_{\text{import},y}$  = Electricity imported by the project activity from the grid in year  $y$  (MWh);

$EG_{\text{backup},y}$  = Electricity imported through backup line from the grid in year  $y$  (MWh);

$EF_{\text{grid},\text{CM},y}$  = The baseline grid emission factor ( $\text{tCO}_2\text{e}/\text{MWh}$ ).

$EF_{\text{grid},\text{CM},y}$  is the grid emission factor of the which has been verified ex-ante in the validation of renewal of crediting period in the renewed VCS PD (version 1.2 dated 08/03/2022) /20/ as 0.3612  $\text{tCO}_2\text{e}/\text{MWh}$ .

| Period                | EG <sub>export,y</sub> (MWh) |             |                    | EG <sub>import,y</sub> (MWh) |                               |                    | EG <sub>backup,y</sub> (MWh) | EG <sub>facility,y</sub> (MWh) |
|-----------------------|------------------------------|-------------|--------------------|------------------------------|-------------------------------|--------------------|------------------------------|--------------------------------|
|                       | MRRs                         | ETNs        | Conservative value | MRRs                         | Electricity Purchase Receipts | Conservative value | value                        |                                |
| 01/08/2021~31/08/2021 | 51,157.040                   | 51,157.040  | 51,157.040         | 50.160                       | 50.160                        | 50.160             | 0                            | 51,106.880                     |
| 01/01/2022~31/12/2022 | 110,554.400                  | 110,554.400 | 110,554.400        | 153.120                      | 153.120                       | 153.120            | 0                            | 110,401.280                    |
| 01/01/2023~31/05/2023 | 14,176.800                   | 14,176.800  | 14,176.800         | 117.040                      | 117.040                       | 117.040            | 0                            | 14,059.760                     |
| Total                 | 175,888.240                  | 175,888.240 | 175,888.240        | 320.320                      | 320.320                       | 320.320            | 0                            | 175,567.920                    |

During this monitoring period,  $BE_y$  is calculated as:

| Year                  | EG <sub>facility,y</sub> (MWh) | EF <sub>grid,CM,y</sub> ( $\text{tCO}_2\text{e}/\text{MWh}$ ) | BE <sub>y</sub> ( $\text{tCO}_2\text{e}$ )<br>BE <sub>y</sub> = EG <sub>facility,y</sub> * EF <sub>grid,CM,y</sub> |
|-----------------------|--------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                       | G                              | H                                                             | I=Rounddown(G*H)                                                                                                   |
| 01/08/2021~31/08/2021 | 51,106.880                     | 0.3612                                                        | 18,459                                                                                                             |
| 01/01/2022~31/12/2022 | 110,401.280                    | 0.3612                                                        | 39,876                                                                                                             |
| 01/01/2023~31/05/2023 | 14,059.760                     | 0.3612                                                        | 5,078                                                                                                              |
| In total              | 175,567.920                    | /                                                             | 63,413                                                                                                             |

### ✓ Project emissions

According to renewed VCS PD (version 1.2 dated 08/03/2022) and by checking Nameplate of hydropower turbine and generator during site visit, it is confirmed that the installed capacity of the

project ( $Cap_{PJ}$ ) is 36,000,000W. By checking 2021 Survey Report issued by Road Bridge Jiada Surveying Center in Dehong, Yunnan Province /14/, it is confirmed the area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full is measured a third party on 30/04/2021 (at the beginning of the 2<sup>nd</sup> crediting period). As per renewed VCS PD (version 1.2 dated 08/03/2022), the power density of the project activity is calculated as: power density =  $(Cap_{PJ} - Cap_{BL}) / (A_{PJ} - A_{BL})$ , and parameter  $Cap_{BL}$  and  $A_{BL}$  are determined ex-ante as 0. Therefore, the power density of the project activity was:

| Year | $Cap_{PJ}$ (W) | $A_{PJ}$ (m <sup>2</sup> ) | Power Density ( W/ m <sup>2</sup> ) |
|------|----------------|----------------------------|-------------------------------------|
| 2018 | 36,000,000     | 2,732,305                  | 13.176                              |

From the above table, it is concluded that the power density of the project activity is greater than 10W/m<sup>2</sup>. Based on ACM0002 (Version 20.0), the power density is greater than 10 W/m<sup>2</sup>, the project emission due to installation of reservoir is 0 tCO<sub>2</sub>e. Therefore,  $PE_y = 0$ .

#### ✓ Leakages

Leakage does not need to be counted this project as per the renewed VCS PD (version 1.2 dated 08/03/2022) and ACM0002 Version 20.0.

#### ✓ Emission reductions

The emission reductions for this monitoring period was calculated as:

| Monitoring period                      | GHG emission reductions or removals (tCO <sub>2</sub> e) |
|----------------------------------------|----------------------------------------------------------|
| 01/08/2021~31/08/2021                  | 18,459                                                   |
| 01/01/2022~31/12/2022                  | 39,876                                                   |
| 01/01/2023~31/05/2023                  | 5,078                                                    |
| <b>Total ERs claimed (in 669 days)</b> | <b>63,413</b>                                            |

In conclusion, CTI is able to confirm that the actual power supply and also emission reductions reported in this monitoring period are reasonable and appropriate. CTI verified the input data for calculating emission reductions and the calculating process, and confirmed the result were complete and transparent.

## 4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All necessary documentations are collected, referenced and aggregated, which is easily accessible in hard-copy or electronic format. Measurements are performed by calibrated equipment, and the key

data can also be cross-checked via other sources, such as records, receipts and inventory data. No assumptions are used that have any material influence on reported emission reductions.

CTI concludes that during this monitoring period, the evidences for determination of emission reductions are sufficient and reasonable, and the calculation of emission reductions is reliable.

## 4.6 Non-Permanence Risk Analysis

The project is not AFOLU project, and thus non-permanence risk analysis is not applicable for the project.

# 5 VERIFICATION CONCLUSION

CTI Certification Co., Ltd (CTI) has performed the verification of the emission reductions that have been reported for the project activity “Yunnan Mangli Hydropower Project” in China (VCS Project ID: 928) for the period 01/08/2021 to 31/05/2023.

The verification is based on the baseline and monitoring methodology ACM0002 (Version 20.0), renewed VCS PD (version 1.2 dated 08/03/2022) and the monitoring report (version 1.1 dated 30/06/2023). The verification consisted of the following three phases:

- i) desk review of the project design and the baseline and monitoring plan;
- ii) follow-up interviews with project stakeholders;
- iii) resolution of outstanding issues and the issuance of the final verification and certification report.

The project proponents are responsible for the collection, calculation and determination of the GHG data in accordance with the monitoring plan and the reporting of GHG emission reductions on the basis set out within the project monitoring report.

Our verification approach was based on the requirements as defined under the applicable VCS version 4.4 and relevant UNFCCC requirements. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is implemented and operated as per renewed VCS PD (version 1.2 dated 08/03/2022);
- the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022) is as per the applied methodology;
- the monitoring complies with the monitoring plan contained in the renewed VCS PD (version 1.2 dated 08/03/2022);

- the monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS version 4.4 and CDM requirements;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

It is CTI's responsibility to provide an independent verification statement on the reported GHG emission reductions for the project. Based on an understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these, CTI planned and performed our work to obtain the information and explanations that we considered necessary to provide reasonable assurance that reported GHG emission reductions are fairly stated.

CTI does not assume any responsibility towards the issuance and utilization of the VCU's hereby verified and certified. Request for issuance of VCU's shall be made by the project proponent to an approved VCS Program Registry based on the requirements set out under the most recent version of the VCS Program Guidelines clause on VCS Registration.

The verification of reported emission reductions is based on the information made available to CTI and the engagement conditions detailed in this report. CTI cannot be held liable by any party for decisions made or not made based on this report.

In CTI's opinion the GHG emissions reductions of the "Yunnan Mangli Hydropower Project" for the period 01/08/2021 to 31/05/2023 are fairly stated in the monitoring report (version 1.1 dated 30/06/2023). The GHG emission reductions were calculated correctly on the basis of the approved methodology ACM0002 (Version 20.0), the renewed VCS PD (version 1.2 dated 08/03/2022).

CTI can confirm that the GHG emission reductions are calculated without material misstatements. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, CTI confirms the following statement:

Verification period: From 01/08/2021 to 31/05/2023

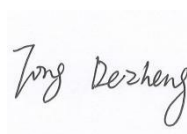
Verified GHG emission reductions and removals in the above verification period:

| Year                  | Baseline emissions or removals (tCO <sub>2</sub> e) | Project emissions or removals (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Net GHG emission reductions or removals (tCO <sub>2</sub> e) |
|-----------------------|-----------------------------------------------------|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| 01/08/2021~31/08/2021 | 18,459                                              | 0                                                  | 0                                      | 18,459                                                       |
| 01/01/2022~31/12/2022 | 39,876                                              | 0                                                  | 0                                      | 39,876                                                       |
| 01/01/2023~31/05/2023 | 5,078                                               | 0                                                  | 0                                      | 5,078                                                        |

|       |        |   |   |        |
|-------|--------|---|---|--------|
| Total | 63,413 | 0 | 0 | 63,413 |
|-------|--------|---|---|--------|

Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered CDM-PDD

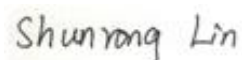
| <u>Ex-ante emissions reductions/removals</u>          | <u>Achieved emissions reductions/removals</u> | <u>Percent difference</u> | <u>Justification for the difference</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------|-----------------------------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01/08/2021<br>31/05/2023:<br>95,102tCO <sub>2</sub> e | - 63,413tCO <sub>2</sub> e                    | -33.32%                   | The emission reductions claimed are 63,413 tCO <sub>2</sub> e in this monitoring period (i.e. 669 days). Compared with the expected emission reductions 95,102 tCO <sub>2</sub> e (calculated as 51,887 tCO <sub>2</sub> e/365d×669d) in the renewed VCS PD (version 1.2 dated 08/03/2022), the reported emission reductions in this monitoring period are 33.32% lower than the expected. By checking 2021 China Flood and Drought Disaster Prevention Communique released by the Ministry of Water Resources /23/ and 2022 National Water Resources Bulletin /24/, as well as interviewing with PP during site visit, it was verified the reasons was due to less electricity generation caused by less low rainfall and drought in the project basin. |



Mr. Tong Dezheng

Team Leader

10/07/2023



Ms. Lin Shunrong

Technical Reviewer

10/07/2023

# APPENDIX A: ABBREVIATIONS

|                   |                                 |
|-------------------|---------------------------------|
| CAR               | Corrective Action Request       |
| CER               | Certified Emission Reduction(s) |
| CL                | Clarification request           |
| CO <sub>2</sub>   | Carbon Dioxide                  |
| CO <sub>2</sub> e | Carbon Dioxide Equivalent       |
| CTI               | CTI Certification Co., Ltd      |
| DOE               | Designated Operational Entity   |
| EF                | Emission Factor                 |
| ER                | Emission Reduction              |
| FAR               | Forward Action Request          |
| GHG               | Greenhouse Gas(es)              |
| MP                | MONITORING REPORT               |
| MR                | Monitoring Report               |
| CSPG              | South China Power Grid          |
| PD                | Project Description             |
| PP                | Project Proponent               |
| VCS               | Verified Carbon Standard        |
| VCU               | Verified Carbon Unit            |

## APPENDIX B: REFERENCES

Documentation used to verify the information provided by the project proponents

- /1/ Climate Bridge (Shanghai) Ltd.: Monitoring Report for Yunnan Mangli Hydropower Project, version 01 dated 01/06/2023, version 1.1 dated 30/06/2023.
- /2/ Climate Bridge (Shanghai) Ltd.: Emission reduction calculation spreadsheet for Yunnan Mangli Hydropower Project, version 01 dated 01/06/2023
- /3/ Datang Mangli Hydropower Development Company Limited and Yunnan Power Grid Co., Ltd. Dehong Power Supply Bureau: Power Purchase Agreement for Yunnan Mangli Hydropower Project.
- /4/ Datang Mangli Hydropower Development Company Limited: VER monitoring manual and management procedure.
- /5/ Datang Mangli Hydropower Development Company Limited: Records of training for on-site staff.
- /6/ Datang Mangli Hydropower Development Company Limited: Operation log sheets, from 01/08/2021 to 31/05/2023.
- /7/ Datang Mangli Hydropower Development Company Limited: Monthly reading records (MMRs) of Yunnan Mangli Hydropower Project from 01/08/2021 to 31/05/2023.
- /8/ Local Electric Power Company: Monthly Electricity Transaction Notes (ETNs) from 01/08/2021 to 31/05/2023.
- /9/ “Notice on Strengthening Enterprise Greenhouse Gas Emission Report Management” issued by National Development and Reform Committee of P.R.China
- /10/ Datang Mangli Hydropower Development Company Limited: nameplate of the equipment.
- /11/ Staff Roaster
- /12/ China National Accreditation Service for Conformity Assessment: Accreditation certificate of Yunnan Power Grid Co., Ltd. valid from 25/12/2019 to 24/12/2024.
- /13/ Yunnan Power Grid Co., Ltd. Dehong Metrology Center: Calibration certificates for meters covering this monitoring period.
- /14/ 2019 Survey Report about Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full issued by qualified third party - Road Bridge Jiada Surveying Center in Dehong, Yunnan Province on 29/04/2019
- /15/ State Economic and Trade Commission: Technical administrative code of electric energy metering.
- /16/ UNFCCC Website: the registered CDM PDD, version 02 dated 28/12/2010.

- /17/ DET NORSKE VERITAS: the Validation Report of registered CDM PDD version 03 dated 05/10/2011
- /18/ UNFCCC website: revised CDM PDD approved by CDM EB, version 03 dated 06/08/2012.
- /19/ Bureau Veritas Certification Holding SAS: the Validation Opinion on revised CDM PDD approved by CDM EB, version 01 dated 10/09/2012.
- /20/ VERRA Website: Monitoring Report for Yunnan Mangli Hydropower Project of monitoring period 01/05/2018 to 31/07/2021.
- /21/ VERRA Website: Final Verification Report of Monitoring Report for Yunnan Mangli Hydropower Project of monitoring period 01/05/2018 to 31/07/2021.
- /22/ “List of key emissions in the national carbon emissions transaction quota management in 2019-2020” issued by Ministry of Ecology and Environment of P.R.China
- /23/ 2021 China Flood and Drought Disaster Prevention Communique released by the Ministry of Water Resources  
[http://www.mwr.gov.cn/sj/tjgb/zgshzhgb/202302/t20230222\\_1646546.html](http://www.mwr.gov.cn/sj/tjgb/zgshzhgb/202302/t20230222_1646546.html)
- /24/ 2022 National Water Resources Bulletin  
[http://www.mwr.gov.cn/sj/tjgb/szygb/202306/t20230630\\_1672556.html](http://www.mwr.gov.cn/sj/tjgb/szygb/202306/t20230630_1672556.html)
- /25/ Registered VCS PD, version 02 dated 25/10/2012
- /26/ Renewed VCS PD (version 1.2 dated 08/03/2022)
- /27/ LGAI Technological Center, S.A. (Applus+ Certification): Validation Report of renewed VCS PD (version 2.0 dated 08/03/2022)
- /28/ Datang Mangli Hydropower Development Company Limited and Hangzhou Resource Power Equipment Co., Ltd.: The purchase contract of the water-turbine generators equipments, signed on 18/08/2008
- /29/ Datang Mangli Hydropower Development Company Limited: Electricity Purchase Receipts covering the monitoring period
- /30/ Attendance list of on site verification

#### Methodologies, tools and other guidance

- /31/ Verified Carbon Standard: VCS Standard, version 4.4.
- /32/ Verified Carbon Standard: VCS Program Guide, version 4.3.
- /33/ Verified Carbon Standard: Registration and Issuance Process, version 4.3.
- /34/ UNFCCC EB: Approved methodology, ACM0002, Version 20.0

# APPENDIX C: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS



## CERTIFICATE OF APPOINTMENT

Mr. Dezheng TONG

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

| Qualification |             |           |          |             |                    |                  |
|---------------|-------------|-----------|----------|-------------|--------------------|------------------|
| Status        | GHG Auditor | Validator | Verifier | Team Leader | Technical Reviewer | Technical Expert |
| Date          | ✓           | ✓         | ✓        | ✓           | -                  | ✓                |

| Scope                                                     | Technical Area                                          |
|-----------------------------------------------------------|---------------------------------------------------------|
| SS 1: Energy industries (renewable/non-renewable sources) | TA 1.2: Energy generation from renewable energy sources |
| SS 8: Mining/mineral production                           | TA 8.1: Mining/mineral production                       |
| SS 10: Fugitive emissions from fuels (solid, oil and gas) | TA 10.1: Fugitive emissions from oil and gas            |

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu LIN

*Wu Lin*

Technical Competent Manager

Shenzhen, 01/07/2022



## CERTIFICATE OF APPOINTMENT

Ms. Shunrong LIN

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

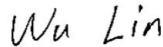
| Qualification |             |           |          |             |                    |                  |
|---------------|-------------|-----------|----------|-------------|--------------------|------------------|
| Status        | GHG Auditor | Validator | Verifier | Team Leader | Technical Reviewer | Technical Expert |
| Date          | ✓           | ✓         | ✓        | ✓           | ✓                  | ✓                |

| Scope                                                     | Technical Area                                          |
|-----------------------------------------------------------|---------------------------------------------------------|
| SS 1: Energy industries (renewable/non-renewable sources) | TA 1.2: Energy generation from renewable energy sources |
| SS 3: Energy demand                                       | TA 3.1: Energy demand                                   |
| SS 13: Waste handling and disposal                        | TA 13.1: Solid waste and wastewater                     |
|                                                           | TA 13.2: Manure                                         |
| SS 14: Afforestation and reforestation                    | TA 14.1: Afforestation and reforestation                |
| SS 15: Agriculture                                        | TA 15.1: Agriculture                                    |

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by:

Wu LIN



Technical Competent Manager

Shenzhen, 25/10/2022



## CERTIFICATE OF APPOINTMENT

Mr. Tian FENG

Satisfies the requirements of competence management system of CTI Certification, and is hereby appointed as:

| Qualification |             |           |          |             |                    |                  |
|---------------|-------------|-----------|----------|-------------|--------------------|------------------|
| Status        | GHG Auditor | Validator | Verifier | Team Leader | Technical Reviewer | Technical Expert |
| Date          | ✓           | ✓         | ✓        | ✓           | -                  | -                |

| Scope                                                     | Technical Area                                          |
|-----------------------------------------------------------|---------------------------------------------------------|
| SS 1: Energy industries (renewable/non-renewable sources) | TA 1.2: Energy generation from renewable energy sources |
| SS 8: Mining/mineral production                           | TA 8.1: Mining/mineral production                       |
| SS 13: Waste handling and disposal                        | TA 13.1: Solid waste and wastewater                     |
|                                                           | TA 13.2: Manure                                         |

This appointment is valid for 3 years from its date of approval below and is bound by internal requirements of management system of the Certification Body of CTI.

Approved by: *Wu Lin*

Wu LIN

Technical Competent Manager

Shenzhen, 25/10/2022

## APPENDIX D: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS

Table 1: Clarification Requests

| CL ID | Clarification Request | Response by Project Proponent | Verification Team Assessment |
|-------|-----------------------|-------------------------------|------------------------------|
| NA    | NA                    | NA                            | NA                           |

Table 2: Corrective Action Requests

| CAR ID | Corrective Action Request                                                                                             | Response by Project Proponent             | Verification Team Assessment                                                                                                                                                              |
|--------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01     | Please supplement the crosschecking process of value of $EG_{export,y}$ and $EG_{import,y}$ in the Monitoring Report. | This part is supplemented in Section 5.1. | The crosschecking process of value of $EG_{export,y}$ and $EG_{import,y}$ has been supplemented in the MR and verified by the assessment team to be correct. Therefore, CAR01 was closed. |

Table 3: Forward Action Requests

| FAR ID | Forward Action Request | Response by Project Proponent | Verification Team Assessment |
|--------|------------------------|-------------------------------|------------------------------|
| NA     | NA                     | NA                            | NA                           |