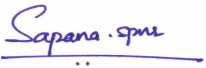




**Verification and certification report form for
CDM programme of activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

| | | |
|--|---|---|
| Title and UNFCCC reference number of the programme of activities (PoA) | Tanzania Renewable Energy Programme Ref. no. 9904 | |
| Version number(s) of the PoA-DD(s) to which this report applies | Version 08 dated 23/04/2014 | |
| Version number of the verification and certification report | 01.1 | |
| Completion date of the verification and certification report | 21/05/2020 | |
| Monitoring period number and duration of this monitoring period | Third Monitoring period From 01/01/2018 to 31/12/2018 (first and last days included) | |
| Number and version number of the monitoring report to which this report applies | Monitoring Report number 02, version 03 | |
| Coordinating/managing entity (CME) | Rural Energy Agency (REA) | |
| Host Parties | Host Parties of the PoA | Is this a host Party to a CPA covered in this report? (yes/no) |
| | United Republic of Tanzania | Yes |
| Applied methodologies and standardized baselines | AMS I.D. Grid connected renewable electricity generation, Version 17 AMS I.F. Renewable electricity generation for captive use and mini-grid, Version 02 | |
| Mandatory sectoral scopes | 01 - Energy Industries (renewable / non-renewable sources) | |
| Conditional sectoral scopes, if applicable | Not Applicable | |
| Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report | 2,707 tCO ₂ e | |
| Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report | 1,922 tCO ₂ e | |
| Name and UNFCCC reference number of the DOE | Bureau Veritas India Pvt Ltd (BVI) Ref. no. E-0009 | |
| Name, position and signature of the approver of the verification and certification report |  Sapana Pednekar – CDM Quality Manager | |

SECTION A. Executive summary

Bureau Veritas India Pvt Ltd (hereafter referred to as BVI) has conducted the third periodic verification of the PoA “Tanzania Renewable Energy Programme”; UNFCCC reference number 9904. The PoA is coordinated and managed by the Rural Energy Agency (REA) and it is located in the United Republic of Tanzania. The PoA’s goal is to increase access to modern energy services in Tanzania by promoting both the off-grid (isolated mini-grid) and national grid connected renewable energy projects, within the country. The technologies promoted by the PoA include: photovoltaic, wind, hydro and biomass technologies, for electricity generation. The PoA applies the following two methodologies: AMS.I-D “Grid connected renewable electricity generation”, Version 17 and AMS.I-F “Renewable electricity generation for captive use and mini-grid”, Version 02. CPAs can be included into the PoA in any one of the following three categories of generic CPAs, by fulfilling the requirements therein:

- a) CPA Category 1: comprises installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity to the main national grid. The CPAs are required to comply with the requirements of methodology AMS-I.D version 17.
- b) CPA Category 2: comprises installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity to an existing mini-grids being operated by either the national utility (TANESCO), or to a new isolated mini-grids or both, to serve new areas. The CPAs are required to comply with the requirements of methodology AMS-I.F version 02.
- c) CPA Category 3: comprises installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity both to the main national grid and existing mini-grids being operated by the national utility (TANESCO), and/or to new isolated mini-grids to serve new areas. The CPAs are required to comply with the requirements of both methodology AMS-I.D version 17 and AMS-I.F version 02.

Monitoring activities for the PoA in this third period are reported in multiple monitoring reports. This verification and certification report covers activities as reported in the second monitoring report, monitoring report number 02, version 03. The monitoring report covers only one CPA: Mbinga Hydroelectric Project UNFCCC reference number 9904-P1-0003-CP1 (hereafter referred to as the CPA). The CPA had undergone post registration change (refer to <https://cdm.unfccc.int/CPAPostRegChanges/DB/prcp512979669/view>) and is now a category 3 CPA.

The verification scope is defined as a periodic independent review and ex post determination (by the Designated Operational Entity) of the monitored reductions in GHG emissions during the defined verification period. BVI’s verification consists of the following three phases:

- i) Desk review of the PoA and CPA design documents, the baseline, monitoring plan, reported parameters and ER calculations;
- ii) Onsite observations, crosschecks with plant logs and follow-up interviews with PoA stakeholders;
- iii) Resolution of outstanding issues and the issuance of the final verification report and opinion.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

CDM-PoA-VCR-FORM

The overall verification, from contract review to verification report and Opinion, was conducted using BVI's internal procedures. This verification did not result in any Clarification Request (CL), Corrective Actions Requests (CAR), or Forward Actions Requests (FAR).

In summary, BVI confirms that the CPA has been implemented in accordance with the latest version of the CPA design document. Installed equipment, for the CPA, being essential for generating emission reduction run reliably. The monitoring system is in place and the CPA is generating GHG emission reductions. The CPA implementation is in accordance with the PoA as described in the validated and registered PoA design document.

Bureau Veritas India Pvt Ltd has determined that the GHG emission reductions, for the CPA, are calculated without material misstatements, applying a conservative approach. The emission reductions verified totalize **1,922 tCO₂e**.

Bureau Veritas India Pvt Ltd.'s opinion relates to the PoA's resulting GHG emission reductions for the monitoring report number 02, version 03; comprising the CPA as mentioned above; and related to the valid and registered baseline, approved monitoring plan and the associated documents for the CPA. The following is a summary:

Monitoring report number: 02
CPA no. : 9904-P1-0003 CP1
Reporting period: 01/01/2018 – 31/12/2018 (first and last days included)
Baseline emissions: 1,922 tCO₂e
Project emissions: 0 tCO₂e
Leakage emissions: 0 tCO₂e
Emission Reductions: 1,922 tCO₂e

SECTION B. Verification team, technical reviewer and approver

B.1. Verification team members

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) | Involvement in | | | |
|-----|-------------|------------------|-----------|------------|---|----------------------|--------------------|--------------|-----------------------|
| | | | | | | Desk/document review | On-site inspection | Interview(s) | Verification findings |
| 1. | Team Leader | IR | Onsongo | Samuel | Bureau Veritas India Pvt Ltd | x | x | x | x |

B.2. Technical reviewer and approver of the verification and certification report

| No. | Role | Type of resource | Last name | First name | Affiliation (e.g. name of central or other office of DOE or outsourced entity) |
|-----|----------------------------|------------------|-----------|------------|---|
| 1. | Technical reviewer | IR | Chirchir | James | Bureau Veritas India Pvt Ltd |
| 2. | Support Technical Reviewer | IR | Patankar | Sanjay | Bureau Veritas India Pvt Ltd |
| 3. | Approver | IR | Pednekar | Sapana | Bureau Veritas India Pvt Ltd |

SECTION C. Application of materiality in conducting the verification

C.1. Consideration of materiality in planning the verification

| No. | Risk that could lead to | Assessment of the risk | Response to the risk in the |
|-----|-------------------------|------------------------|-----------------------------|
|-----|-------------------------|------------------------|-----------------------------|

| | material errors, omissions or misstatements | Risk level | Justification | verification plan and/or sampling plan |
|----|---|---------------|---|--|
| 1. | <i>Human error in the quantification of emissions</i> | <i>Medium</i> | <p><i>Likelihood – may occur if personnel are not trained on monitoring requirements.</i></p> <p><i>Impact – Unreliable data, hence ERs claimed may not be verifiable</i></p> | <i>Through an onsite assessment BVI will check information flow, retracing the reported information to source. BVI will also evaluate the CME's proposed QA/QC procedures.</i> |
| 2. | <i>Reliance on a poorly designed information system</i> | <i>Medium</i> | <p><i>Likelihood – may occur due to the use of excel spreadsheet without adequate controls</i></p> <p><i>Impact – over estimation of ERs claimed.</i></p> | <i>BVI will carry out an independent calculation using the verified data and following the formulae indicated in the included in the respective CPA-DDs and monitoring methodologies</i> |

C.2. Consideration of materiality in conducting the verification

In line with the CDM PoA-VVS version 02.0, BVI has verified the PoA, applying the concept of materiality. Consideration of materiality began by determining the materiality threshold to be applied. BVI used a threshold of 10% as provided for, in paragraph 308 (e) of the standard.

BVI assessed the risks indicated in section C.1 above, and applied the materiality threshold of 10% for the CPA as follows:

Risk no 1: BVI carried out a risk based audit during the onsite assessment conducted on 13/09/2019. The site visit had been planned and conducted together with the first batch of the monitoring report (Monitoring report number 01) and post registration change of the CPA. During the onsite audit, BVI was able to retrace the reported values to plant logs. All sets of data were traceable to the plant logs and no error was noted.

Risk 2: BVI has carried out an independent calculation of the ER claimed by the CPA and confirms that the calculations has been done without material miss statement or omissions.

SECTION D. Means of verification

D.1. Desk/document review

The assessment of the PoA documentation provided by the CME was based upon both quantitative and qualitative information on emission reductions. Quantitative information comprised the reported numbers in the monitoring report submitted to BVI. Qualitative information comprises information on internal management controls, calculation procedures, and procedures for transfer of data, frequency of emissions reports, review and internal audit of calculations.

The monitoring report (MR) version 02 dated 08/08/2019 (refer to doc 1 in Appendix 3), submitted by the project participant, was web hosted on the UNFCCC-CDM web site on 13/08/2019 and thus, was available in the public domain. The report consisted of one CPA; *Mbinga Hydroelectric Project UNFCCC reference number 9904-P1-0003-CP1*.

In addition to the monitoring documentation provided by the project participants, BVI reviewed:

- Previous set of verification and certification reports (refer to 3, 4 and 5 in Appendix 3)
- Previous set of Monitoring reports (refer to 6, 7 and 8 in Appendix 3)
- The registered PoA-DD (refer to 9 Appendix 3)
- the applied methodologies (refer to docs 10 and 11 in Appendix 3)
- Revised approved CPA-DD and corresponding validation report (refer 12,13 and 14 in Appendix 3)
- Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board; (PRC-9904-004)

- (g) Emission reduction calculation spreadsheet version 01 and final version 03 dated 06/05/2020 (refer to docs 2 and 15 respectively in Appendix 3).
- (h) Any other information and references relevant to the project activity's resulting emission reductions (e.g. IPCC reports, data on electricity generation and calibration).
- (i) Other documents were reviewed onsite (including invoices, bill, plant logs, etc.).

A full list of documents and records reviewed is provided in Appendix 3

D.2. On-site inspection

| Duration of on-site inspection: 13/09/2019 to 13/09/2019 | | | | |
|--|--|---------------|------------|----------------|
| No. | Activity performed on-site | Site location | Date | Team member |
| 1. | a) Interview with the Andoya Hydroelectric Power Company Ltd (AHEPO Ltd) management staff b) Tour of the AHEPO plant c) Interview with the World Bank Group Consultant | AHEPO, Mbinga | 13/09/2019 | Samuel Onsongo |

D.3. Interviews

| No. | Interviewee | | | Date | Subject | Team member |
|-----|-------------|---------------|----------------------|---------------|--|----------------|
| | Last name | First name | Affiliation | | | |
| 1. | Bubelwa | Jasper | AHEPO Ltd | 13/09/2019 | - CPA implementation - Operation of the power plant - Technology employed | Samuel Onsongo |
| 2. | John | Hauil | AHEPO Ltd | 13/09/2019 | CPA implementation | Samuel Onsongo |
| 3. | Mbwilo | Sayuni | REA | Various Dates | -Documentation and communication | Samuel Onsongo |
| 4. | Varadharaj | Baraneedharan | The World Bank Group | Various dates | - Types of changes - Impact of changes on a) additionality of CPA b) Scale of CPA c) Applicability of methodology d) Eligibility criteria e) monitoring f) reasons for the changes - Revision of CPA related documents | Samuel Onsongo |

D.4. Sampling approach

No sampling was applied.

D.5. Clarification requests, corrective action requests and forward action requests raised

| Areas of verification findings | No. of CL | No. of CAR | No. of FAR |
|---|-----------|------------|------------|
| General | | | |
| Compliance of the monitoring report with the monitoring report form | | | |
| Remaining forward action requests from validation and/or previous verifications | | | |
| CPAs considered for verification and covered in this report | | | |
| Programme of activities | | | |
| Compliance of the programme implementation with the registered PoA-DD | | | |
| Implementation and operation of the management system | | | |
| Post-registration changes | | | |
| • Corrections | | | |

| Areas of verification findings | No. of CL | No. of CAR | No. of FAR |
|--|-----------|------------|------------|
| <ul style="list-style-type: none"> Inclusion of a monitoring plan | | | |
| <ul style="list-style-type: none"> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents¹ | | | |
| <ul style="list-style-type: none"> Changes to the programme design | | | |
| <ul style="list-style-type: none"> Addition of CPA inclusion template | | | |
| <ul style="list-style-type: none"> Change of coordinating/managing entity | | | |
| <ul style="list-style-type: none"> Changes specific to afforestation and reforestation activities | | | |
| Component project activities | | | |
| Compliance of the CPA implementation with the included CPA design document | | | |
| Post-registration changes | | | |
| <ul style="list-style-type: none"> Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents | | | |
| <ul style="list-style-type: none"> Corrections | | | |
| <ul style="list-style-type: none"> Changes to the start date-of the crediting period | | | |
| <ul style="list-style-type: none"> Inclusion of a monitoring plan | | | |
| <ul style="list-style-type: none"> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents | | | |
| <ul style="list-style-type: none"> Changes to the project design | | | |
| <ul style="list-style-type: none"> Changes specific to afforestation and reforestation activities | | | |
| Compliance of the registered monitoring plan with applied methodologies and standardized baselines | | | |
| Compliance of monitoring activities with the registered monitoring plan | | | |
| <ul style="list-style-type: none"> Data and parameters fixed ex ante or at renewal of crediting period | | | |
| <ul style="list-style-type: none"> Data and parameters monitored | | | |
| <ul style="list-style-type: none"> Implementation of sampling plan | | | |
| Compliance with the calibration frequency requirements for measuring instruments | | | |
| Assessment of data and calculation of emission reductions or net removals | | | |
| <ul style="list-style-type: none"> Calculation of baseline GHG emissions or baseline net GHG removals by sinks | | | |
| <ul style="list-style-type: none"> Calculation of project GHG emissions or actual net GHG removals by sinks | | | |
| <ul style="list-style-type: none"> Calculation of leakage GHG emissions | | | |
| <ul style="list-style-type: none"> Summary of calculation of GHG emission reductions or net GHG removals by sinks | | | |
| <ul style="list-style-type: none"> Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA | | | |
| <ul style="list-style-type: none"> Remarks on difference from estimated value in included CPA | | | |
| Assessment of reported sustainable development co- | | | |

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

| Areas of verification findings | No. of CL | No. of CAR | No. of FAR |
|---------------------------------|-----------|------------|------------|
| benefits | | | |
| Global stakeholder consultation | | | |
| Others (please specify) | | | |
| Total | 0 | 0 | 0 |

SECTION E. Verification findings

E.1. General

E.1.1. Compliance of the monitoring report with the monitoring report form

| | |
|------------------------------|--|
| Means of verification | Document reviewed: The monitoring report version 02 dated 08/08/2019 and subsequent revisions of the report were reviewed against the current valid forms in the UNFCCC CDM website for compliance with instructions for filling in monitoring report forms contained in the forms. |
| Findings | Compliant |
| Conclusion | BVI hereby confirms that the final Monitoring report version 03, dated 06/05/2020 provided by the CME, complies with the latest form and the guidelines therein. (PoA VVS version 02 paragraph 339) |

E.1.2. Remaining forward action requests from validation and/or previous verifications

No FARs were raised at validation or during previous verification.

E.1.3. CPAs considered for verification and covered in this report

| Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period | Is the CPA considered for this verification? (yes/no) | The date when the CPA was included | Version of the PoA-DD | Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N) |
|--|---|------------------------------------|-----------------------|--|
| Mapembasi Hydro Power Project, Njombe District 9904-P1-0001-CP1 | No | 08 May 14 | Version 08 | N |
| NextGen Solar Project, Kigoma Region 9904-P1-0002-CP1 | No | 05 Aug 14 | Version 08 | N |
| Mbinga Hydroelectric Project 9904-P1-0003-CP1 | Yes | 06 Nov 15 | Version 08 | Y |
| Yovi Small Hydro Power Project 9904-P1-0004-CP1 | No | 06 Nov 15 | Version 08 | Y |
| Tulila Hydro-electric Plant 9904-P1-0005-CP1 | No | 06 Nov 15 | Version 08 | Y |

| | | | | |
|---|----|-----------|------------|-----|
| Maguta Small Hydro Power Project 9904-P1-0006-CP1 | No | 07 Jul 16 | Version 08 | N |
| Ngombeni Biomass Power Plant Project 9904-P1-0007-CP1 | No | 11 Aug 16 | Version 08 | Y |
| Ikondo Micro Hydro Power Plant 9904-P1-0008-CP1 | No | 14 Oct 16 | Version 08 | Y |
| Darakuta Mini Hydro Project 9904-P1-0009-CP1 | No | 12 Dec 17 | Version 08 | Y |
| Mpanda Solar Photovoltaic Power Plant 9904-P1-0010-CP1 | No | 14 May 19 | Version 08 | N/A |

E.2. Programme of activities

E.2.1. Compliance of the programme implementation with the registered programme design document

| | | |
|-----------------------|--|--|
| Means of verification | Document review, BVI reviewed the registered PoA-DD version 08, the Monitoring Report. | |
| | Interview with stakeholders: On various dates, between 07/09/2019 to 13/09/2019, BVI held interviews with the CME's and PP's representatives; and on 13/09/2019 interviewed the CPA implementer to confirm the implementation structure, the management and operation plan; and reporting structure of the PoA. | |
| | Onsite inspection BVI further conducted an onsite assessment from 13/09/2019 , to ascertain that all physical features (i.e. technology, project equipment, and monitoring and measuring equipment) for the CPA were in place and that the CPA had been operated as per the revised CPA-DD. | |
| Findings | Compliant | |
| Conclusion | BVI hereby confirms that the program has been implemented in accordance with the registered PoA-DD. The implementation status of the PoA is that: it was registered on 08/05/2014 and since registration up until the end of the monitoring period 31/12/2018, nine (9) CPAs had been included into the PoA in accordance with the established PoA management structure. CPAs have been included as follows: | |
| | Description of CPA Category | Implementation status |
| | CPA Category 1: This comprises CPAs that install one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity to the main national grid. The CPAs are required to comply with the requirements of methodology AMS-I.D version 17. The following CPAs have been included in this category: | Up to the end of the monitoring period only one category 1 CPA had been included i.e. Darakuta Mini Hydro Project, 9904-P1-0009-CP1. |
| | CPA Category 2: | Up to the end of the monitoring |

| | | |
|--|--|---|
| | <p>This comprises CPAs that install one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity to an existing mini-grids being operated by the national utility (TANESCO), or to new isolated mini-grids to serve new areas. The CPAs are required to comply with the requirements of methodology AMS-I.F version 02.</p> <p>The following CPAs have been included in this category:</p> | <p>period the following two CPAs have been included under category 2:</p> <ul style="list-style-type: none"> - NextGen Solar Project, Kigoma Region, 9904-P1-0002-CP1 - Ngombeni Biomass Power Plant Project, 9904-P1-0007-CP1 |
| | <p>CPA Category 3:</p> <p>This comprises CPAs that install one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity the main national grid and an existing mini-grids being operated by the national utility (TANESCO), and/or to new isolated mini-grids to serve new areas. The CPAs are required to comply with the requirements of both methodology AMS-I.D version 17 and AMS-I.F version 02.</p> <p>The following CPAs have been included in this category:</p> | <p>Up to the end of the monitoring period the following 6 CPAs have been included under category 3:</p> <ul style="list-style-type: none"> - Mapembasi Hydro Power Project, 9904-P1-0001-CP1 - Mbinga Hydroelectric Project, 9904-P1-0003-CP1 (<i>Initially included as category 2, is now a category 3 CPA after PRC</i>) - Yovi Small Hydro Power Project, CPA 9904-0004 (<i>Initially included as category 2, is now a category 3 CPA after PRC</i>) - Tulila Hydro-electric Plant, 9904-P1-0005-CP1 - Maguta Small Hydro Power Project, 9904-P1-0006-CP1 - Ikondo Micro Hydro Power Plant, 9904-P1-0008-CP1 |
| | <p>BVI hereby confirms that the CME has implemented the PoA as described in the registered PoA-DD.</p> <p>(PoA VVS version 02 paragraph 342)</p> | |

E.2.2. Implementation and operation of the management system

| | |
|------------------------------|---|
| Means of verification | <p>Document review:</p> <p>BVI reviewed documents including the registered PoA-DD version 08, validation reports for the PoA and the revised CPA-DD for the CPA; together with the validation report, PRC report and previous verification reports.</p> <p>Onsite inspection and interview with stakeholders:</p> <p>From 07/09/2019 to 13/09/2019, BVI held interviews with the CME representative and CPA implementer; to confirm the implementation structure, the management and operation plan; and reporting structure of the PoA.</p> |
| Findings | Compliant |
| Conclusion | <p>The management system in the registered PoA-DD has been implemented as follows:</p> <p>a) Since the registration of the PoA on 08/05/2014, until 31/12/2018 (the end of this monitoring period), nine (9) CPAs have been included into the PoA in accordance with the established Operational and management plan. During onsite assessment, it was confirmed that the operation structure is implemented; where REA is the CME and the implemented CPA, had a manager with responsibilities as described in the registered PoA-DD. Records are kept as proposed in the PoA-DD</p> <p>b) REA (the CME) has carried out training and kept relevant records which were made available onsite including: CDM operators manual and PowerPoint slides used for training, of CPA level CDM Operations.</p> |

| | |
|--|--|
| | <p>c) It was also confirmed through interviews with the CME, PP representatives and the CPA implementer, that the meetings for the purpose of improving the management system had been conducted for the CPA.</p> <p>BVI hereby confirms that the CME has implemented and operated the management system described in the registered PoA-DD.</p> <p>(PoA VVS version 02 paragraph 342)</p> |
|--|--|

E.2.3. Post-registration changes

E.2.3.1. Corrections

There were no post registration changes for the PoA

E.2.3.2. Inclusion of a monitoring plan

There were no post registration changes for the PoA

E.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

There were no post registration changes for the PoA

E.2.3.4. Changes to the programme design

There were no post registration changes for the PoA

E.2.3.5. Addition of CPA inclusion template

There were no addition of CPA inclusion template

E.2.3.6. Change of coordination/managing entity

There was no change to the CME.

E.2.3.7. Changes specific to afforestation and reforestation activities

Not applicable.

E.3. Component project activities

E.3.1. Compliance of the CPA implementation with the included CPA design document

| | |
|------------------------------|--|
| Means of verification | <p>Review of documents BVI reviewed the monitoring report and the revised CPA DD</p> <p>Onsite inspection On 13/09/2019 BVI carried out onsite inspection and interviews with CME representative and the CPA Implementer to ascertain that all physical features (technology, project equipment, and monitoring and measuring equipment) of the CPA were in place.</p> |
| Findings | Compliant |
| Conclusion | <p>BVI hereby confirms that the CPA has been implemented in accordance with the revised CPA DD as follows:</p> <p>a) The CPA was a phased development of a 1.12 MW small hydropower project. Phase 1 was implemented and assessed in previous verifications. During this monitoring period Phase 2 was implemented and commissioned in November 2018. The capacity was lowered to 500 kW in place of the planned 560 kW during the implementation. The CPA was initially designed and included as category 2, during this monitoring period the CPA design changed and is now a category 3 CPA after approval of the post registration change.</p> <p>b) The operation of the CPA is in accordance with the revised CPA.</p> |

| | |
|--|---|
| | <p>During the monitoring period 01/01/2018 - 31/12/2018 the CPA has supplied power directly to villages through an isolated mini-grid and to the TANESCO mini-grid up, until 17/09/2018. From 18/09/2018 the TANESCO mini-grid was connected to the national grid and since then, the CPA has supplied electricity to the national grid and the isolated mini-grid connecting the villages.</p> <p>c) Information (data and variables) reported are lower than projected in the revised CPA-DD. Appropriate emission factors (0.479 tCO₂e/MWh for electricity supplied to the grid and 0.8 tCO₂e/MWh for electricity supplied to mini-grid) have been used in accordance with the revised CPA DD.</p> <p>d) There is no increase in the actual GHG emission reductions achieved by the CPA in the current monitoring period as compared to the ex-ante estimates.</p> <p>(PoA VVS version 02 paragraph 342)</p> |
|--|---|

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

There were no related post registration changes in this monitoring period 01/01/2018 - 31/12/2018.

E.3.2.2. Corrections

There were no related post registration changes in this monitoring period 01/01/2018 - 31/12/2018.

E.3.2.3. Changes to the start-date of the crediting period

There were no related post registration changes in this monitoring period 01/01/2018 - 31/12/2018.

E.3.2.4. Inclusion of a monitoring plan

Not applicable

E.3.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

BVI confirms that permanent changes from the registered monitoring plan, during this monitoring period, have been notified to the secretariat.

Refer to approved PRC-9904-004 dated 27/04/2020

<https://cdm.unfccc.int/CPAPostRegChanges/DB/prcp512979669/view>

E.3.2.6. Changes to the project design

BVI confirms that changes to the project design of a registered component project activity, during this monitoring period, have been notified to the secretariat.

Refer to approved PRC-9904-004 dated 27/04/2020

<https://cdm.unfccc.int/CPAPostRegChanges/DB/prcp512979669/view>

E.3.2.7. Changes specific to afforestation and reforestation activities

Not applicable

E.3.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

| | |
|------------------------------|--|
| Means of verification | <p>Document review</p> <p>BVI reviewed the revised CPA DD and the applied methodologies; to establish whether the monitoring plan, as reported in the monitoring report is in line with the monitoring methodologies.</p> |
| Findings | Compliant |

| | |
|-------------------|--|
| Conclusion | <p>BVI has verified the monitoring plan, including: the data and parameters required to be monitored, measurement procedures, monitoring frequency and QA/QC procedures as described in the latest versions of the CPA DD. BVI confirms that the monitoring plan in the revised CPA-DD is in accordance with the approved methodologies AMS-I.D version 17 and AMS-I.F version 02.</p> <p>(PoA VVS version 02 paragraph 345)</p> |
|-------------------|--|

E.3.4. Compliance of monitoring activities with the registered monitoring plan

E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

| Means of verification | <p>Document review:</p> <p>For the parameters determined and fixed ex ante, BVI crosschecked the values as reported in the monitoring report version 03 with values provided in the revised CPA DD. BVI also assessed the application of the values in calculation of emission reductions.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|--|--------|---|------|------|------------------------|------|------------------------|------|---------------|------|-------------------|------|------|------|---------|------|---------|------|---------|------|-------|------|------------|------|---------------|------|-----------|------|-----------|------|-------------|------|--------------|------|
| Findings | Compliant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conclusion | <p>In the monitoring period 01/01/2018 - 31/12/2018, the CPA operated as a category 2 CPA until 17/09/2018. From 18/09/2018 the CPA was operated as a category 3 CPA. For Category 3, all fixed parameters relevant for category 1 and category 2 CPAs are applicable. Therefore the fixed parameters for the CPA are as follows:</p> <ul style="list-style-type: none"> - EF_{CO2,grid,y} (CO₂ emission factor of the grid in year y). The value reported in the monitoring report and applied in ER calculations was crosschecked with the value in the revised CPA-DD and found to be correct. The value 0.479 tCO₂e/MWh is reported correctly. - EF_{CO2,m,i,y} (CO₂ emissions factor of fossil fuel type i used in power unit m in year y). The values reported in the monitoring report have been crosschecked with the values in the revised CPA-DD and found to be correct. The parameter is not used for direct ER calculation but rather for the determination of the grid emission factor (EF_{CO2,grid,y}), is determined and fixed ex-ante for the first crediting period. The following values are reported correctly: Gas Oil/Diesel Oil 0.0726 tCO₂/GJ and Natural Gas 0.0543 tCO₂/GJ - EF_{EL,m,y} (CO₂ emissions factor of power unit m considered in grid emission factor calculation in year). The values reported in the monitoring report have been crosschecked with the values in the revised CPA-DD and found to be correct. The parameter is not used for direct ER calculation but rather for the determination of the grid emission factor (EF_{CO2,grid,y}). The following values are reported: <table border="1"> <thead> <tr> <th>Plants</th><th>Emission Factor EF_(EL,m,y) (tCO₂/MWh)</th></tr> </thead> <tbody> <tr><td>Zuzu</td><td>1.14</td></tr> <tr><td>Tegeta Gas Plant (TGP)</td><td>0.49</td></tr> <tr><td>Ubungo Gas Plant (UGP)</td><td>0.49</td></tr> <tr><td>SONGAS UGT1&2</td><td>0.49</td></tr> <tr><td>SONGAS UGT3,4,5&6</td><td>0.49</td></tr> <tr><td>IPTL</td><td>0.69</td></tr> <tr><td>NYAKATO</td><td>0.66</td></tr> <tr><td>AGR(TG)</td><td>0.66</td></tr> <tr><td>AGR(UB)</td><td>0.66</td></tr> <tr><td>UGP 2</td><td>0.59</td></tr> <tr><td>SYMB UB GP</td><td>0.49</td></tr> <tr><td>SYMB UB JET A</td><td>0.66</td></tr> <tr><td>SYMB (AR)</td><td>0.66</td></tr> <tr><td>SYMB (DD)</td><td>0.66</td></tr> <tr><td>Kinyerezi I</td><td>0.32</td></tr> <tr><td>Kinyerezi II</td><td>0.32</td></tr> </tbody> </table> | Plants | Emission Factor EF _(EL,m,y) (tCO ₂ /MWh) | Zuzu | 1.14 | Tegeta Gas Plant (TGP) | 0.49 | Ubungo Gas Plant (UGP) | 0.49 | SONGAS UGT1&2 | 0.49 | SONGAS UGT3,4,5&6 | 0.49 | IPTL | 0.69 | NYAKATO | 0.66 | AGR(TG) | 0.66 | AGR(UB) | 0.66 | UGP 2 | 0.59 | SYMB UB GP | 0.49 | SYMB UB JET A | 0.66 | SYMB (AR) | 0.66 | SYMB (DD) | 0.66 | Kinyerezi I | 0.32 | Kinyerezi II | 0.32 |
| Plants | Emission Factor EF _(EL,m,y) (tCO ₂ /MWh) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Zuzu | 1.14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tegeta Gas Plant (TGP) | 0.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ubungo Gas Plant (UGP) | 0.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SONGAS UGT1&2 | 0.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SONGAS UGT3,4,5&6 | 0.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IPTL | 0.69 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NYAKATO | 0.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AGR(TG) | 0.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AGR(UB) | 0.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UGP 2 | 0.59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYMB UB GP | 0.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYMB UB JET A | 0.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYMB (AR) | 0.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYMB (DD) | 0.66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kinyerezi I | 0.32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kinyerezi II | 0.32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

- $\eta_{m,y}$ (Average net energy conversion efficiency of power unit m in year y). The values reported in the monitoring report have been crosschecked with the values in the revised CPA-DD and found to be correct. The parameter is not used for direct ER calculation but rather for the determination of the grid emission factor ($EF_{CO_2,grid,y}$). The following values have been reported correctly:

| Plants | Type of fuels | Technology Used | Efficiency (%) |
|------------------------|-------------------------|-----------------|----------------|
| Zuzu | Diesel & Industrial Oil | Open Cycle | 22.85% |
| Tegeta Gas Plant (TGP) | Natural Gas | Open Cycle | 39.50% |
| Ubungu Gas Plant (UGP) | Natural Gas | Open Cycle | 39.50% |
| SONGAS UGT1&2 | Natural Gas | Open Cycle | 39.50% |
| SONGAS UGT3,4,5&6 | Natural Gas | Open Cycle | 39.50% |
| IPTL | HFO | Open Cycle | 39.50% |
| NYAKATO | Diesel & Industrial Oil | Open Cycle | 39.50% |
| AGR(TG) | Diesel & Industrial Oil | Open Cycle | 39.50% |
| AGR(UB) | Diesel & Industrial Oil | Open Cycle | 39.50% |
| UGP 2 | Natural Gas | Open Cycle | 33.00% |
| SYMB UB GP | Natural Gas | Open Cycle | 39.50% |
| SYMB UB JET A | Diesel & Industrial Oil | Open Cycle | 39.50% |
| SYMB (AR) | Diesel & Industrial Oil | Open Cycle | 39.50% |
| SYMB (DD) | Diesel & Industrial Oil | Open Cycle | 39.50% |
| Kinyerezi I | Natural Gas | Combined cycle | 62.00% |
| Kinyerezi II | Natural Gas | Combined cycle | 62.00% |

- $EG_{m,y}$ (Net quantity of electricity generated and delivered to the grid by power unit m in year y). The parameter has been reported in the monitoring report in accordance with CPA-DD and found to be correct. Values are in the Excel spreadsheet and have been reviewed and found to be correct. Refer to the excel sheet "Grid emission factor".

- $EG_{k,y}$ (Net quantity of electricity generated and delivered to the grid by power unit k in year y (by low-cost/must-run power plants). The parameter has been reported in the monitoring report in accordance with the revised CPA-DD and found to be correct. Values are in the Excel spreadsheet and have been reviewed and found to be correct. Refer to the excel sheet "Grid emission factor".

- $EF_{CO_2,y}$ (CO_2 emission factor for displacement of electricity in the mini-grid and/or the captive power plant). The value reported in the monitoring report is 0.8 tCO₂e/MWh and is in accordance with the revised CPA-DD.

BVI confirms that the parameters fixed ex ante have been correctly reported and applied in emission reductions calculation

(PoA VVS version 02 paragraph 349 & 350)

E.3.4.2. Data and parameters monitored

| | |
|------------------------------|--|
| Means of verification | <p>The monitored parameters have been verified as follows:</p> <p>Parameter 1: $EG_{actual,y}/EG_{BL,y}$ (Quantity of net electricity supplied to the national grid in year y)</p> <p>MoV: From 18/09/2018 until the end of the monitoring period 31/12/2018 the CPA implementer has monitored and reported the quantity of net electricity supplied to the national grid in accordance with the design change.</p> |
|------------------------------|--|

| | <p>Verification of the parameter involved review of monthly energy reports for the period 18/12/2018 to 31/12/2018 and crosschecked the data against invoices to TANESCO for electricity supplied covering the period. No discrepancy in data was observed. The verified amount of electricity supplied to the national grid by the CPA, for the monitoring period, is: 387.172 MWh</p> <p>Parameter 2: $EG_{BL,y}$ (Quantity of net electricity supplied to the mini-grid in year y)</p> <p>MoV: Verification of the parameter involved review of monthly energy reports for the entire monitoring period 01/01/2018 to 31/12/2018 and crosschecked the data with the plant logs and electricity supply logs. No discrepancy was observed in the data information reviewed. The following table shows the verified amount of electricity supplied to the mini-grids by the CPA, for the monitoring period, is:</p> <table><tr><th>Mini-grid</th><th>Period</th><th>Quantity of electricity supplied</th><th>Imported electricity</th><th>Net Electricity supplied to the mini-grids</th></tr><tr><td>TANESCO mini-grid</td><td>01/01/2018 to 17/09/2018*</td><td>2,080.799 MWh</td><td rowspan="2">3.104 MWh</td><td rowspan="2">2,172 MWh</td></tr><tr><td>Other isolated mini-grid</td><td>01/01/2018 to 31/12/2018</td><td>94.666 MWh</td></tr></table> <p>*From 18/09/2018 to 31/12/2018 the project started to supply to the national grid after connection.</p> | Mini-grid | Period | Quantity of electricity supplied | Imported electricity | Net Electricity supplied to the mini-grids | TANESCO mini-grid | 01/01/2018 to 17/09/2018* | 2,080.799 MWh | 3.104 MWh | 2,172 MWh | Other isolated mini-grid | 01/01/2018 to 31/12/2018 | 94.666 MWh |
|--------------------------|--|----------------------------------|----------------------|--|----------------------|--|-------------------|---------------------------|---------------|-----------|-----------|--------------------------|--------------------------|------------|
| Mini-grid | Period | Quantity of electricity supplied | Imported electricity | Net Electricity supplied to the mini-grids | | | | | | | | | | |
| TANESCO mini-grid | 01/01/2018 to 17/09/2018* | 2,080.799 MWh | 3.104 MWh | 2,172 MWh | | | | | | | | | | |
| Other isolated mini-grid | 01/01/2018 to 31/12/2018 | 94.666 MWh | | | | | | | | | | | | |
| Findings | Compliant | | | | | | | | | | | | | |
| Conclusion | <p>Corresponding to the paragraph 349 of PoA VVS version 02.0, BVI confirms that:</p> <ul style="list-style-type: none">- Monitoring has been carried out in accordance with the monitoring plan contained in the revised CPA DD.- Parameters required by the monitoring plan have been sufficiently monitored and correctly listed as indicated above. The monitored data for required parameters have been verified by checking the whole information flow as indicated above. <p>In line with paragraph 350 of PoA VVS version 02.0, the parameters are listed and the means of verification indicated in this table in the first row above.</p> <p>(PoA VVS version 02 paragraph 349 & 350)</p> | | | | | | | | | | | | | |

E.3.4.3. Implementation of sampling plan

| | |
|------------------------------|-----|
| Means of verification | N/A |
| Findings | N/A |
| Conclusion | N/A |

E.3.5. Compliance with the calibration frequency requirements for measuring instruments

| | | | | |
|-----------------------|---|-----------|------------------|-------------------------------------|
| Means of verification | Verification was done through review of documents the revised CPA DD, and onsite review of calibration records (refer to Appendix 3, 17), to determine whether the CME had ensured that calibration of the monitoring equipment was done at the required frequency of once per year. | | | |
| Findings | Compliant | | | |
| Conclusion | BVI confirms that calibration has been conducted. Calibration of measuring equipment for the CPA, was done by the Authorized entity (TANESCO). This was further confirmed through interviews with the CPA implementer during onsite assessment. The calibration for the monitoring equipment for the CPA is as follows: | | | |
| | Meter | SN | Calibration date | Calibration results |
| | Main meter | 211108423 | 28/02/2018 | Within acceptable limit of \pm 2% |
| | Check meter | 211108415 | 28/02/2018 | Within acceptable limit of \pm 2% |
| | (PoA VVS version 02 paragraph 357) | | | |

E.3.6. Assessment of data and calculation of emission reductions or net removals

E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

| | | | | | | | | | | | | | | | | | |
|-----------------------|--|----------------------------|------------------------------|-----------------|--------------------|----------------|---------|----------------------------|------------------------|---------------------|-----------|---------------------------|--------------------------|--------------|--|--|------------------------------|
| Means of verification | Document review: Verification was done by crosschecking information in the revised CPA-DD, with the values reported in the monitoring report as indicated in section E.3.4 above; and following up the CME's calculations in the ER calculation spread sheets. | | | | | | | | | | | | | | | | |
| Findings | Compliant | | | | | | | | | | | | | | | | |
| Conclusion | <p>The CPA applied the calculation approach for category 3 CPAs, where baseline emission is calculated as the sum of baseline emission for the component of electricity displaced from the national grid and the baseline emission for the component of electricity displaced from the mini-grid. Baseline emission for the two components is determined as follows:</p> <p>Grid component Baseline Emissions = Net electricity supplied to the grid x grid emission factor</p> <p>Mini-grid component Baseline emissions = Net electricity supplied to the mini-grid x a default emission factor for a mini-grid</p> <p>The table below shows the values determined using the above formulae</p> <table><tr><td></td><td>Net electricity supplied</td><td>emission factor</td><td>Baseline emissions</td></tr><tr><td>Grid component</td><td>387 MWh</td><td>0.479tCO₂/MWh</td><td>185 tCO₂e</td></tr><tr><td>Mini-grid component</td><td>2,172 MWh</td><td>0.8 tCO₂/MWh</td><td>1,737 tCO₂e</td></tr><tr><td>Total</td><td></td><td></td><td>1922 tCO₂e</td></tr></table> <p>BVI hereby confirms that a complete set of verifiable data was available and the CME has applied the appropriate methods and formulae for calculating baseline GHG emissions. The CME has applied a conservative approach by rounding down the calculated values.</p> <p><i>(PoA VVS version 02 paragraph 360)</i></p> | | Net electricity supplied | emission factor | Baseline emissions | Grid component | 387 MWh | 0.479tCO ₂ /MWh | 185 tCO ₂ e | Mini-grid component | 2,172 MWh | 0.8 tCO ₂ /MWh | 1,737 tCO ₂ e | Total | | | 1922 tCO₂e |
| | Net electricity supplied | emission factor | Baseline emissions | | | | | | | | | | | | | | |
| Grid component | 387 MWh | 0.479tCO ₂ /MWh | 185 tCO ₂ e | | | | | | | | | | | | | | |
| Mini-grid component | 2,172 MWh | 0.8 tCO ₂ /MWh | 1,737 tCO ₂ e | | | | | | | | | | | | | | |
| Total | | | 1922 tCO₂e | | | | | | | | | | | | | | |

E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

| | |
|------------------------------|--|
| Means of verification | <p>Document review: Verification was done by crosschecking information in the revised CPA-DD; with the values reported in the monitoring report as indicated in section E.3.4 above and following up the CME's calculations in the ER calculation spread sheets.</p> <p>Also, during site visit, assessment had been done to determine whether or not, there were any possible sources of project emissions</p> |
| Findings | Compliant |
| Conclusion | <p>The CPA, as designed and operated does not have any project emissions. Project emissions in the revised CPA-DD are reported as zero (0). During onsite assessment, BVI did not come across any indications that deviates from the conclusions in the validation report for the CPA, that is, no project emissions were identified.</p> <p>BVI hereby confirms that the conclusion on project GHG emissions has been applied correctly.</p> <p><i>(PoA VVS version 02 paragraph 360)</i></p> |

E.3.6.3. Calculation of leakage GHG emissions

| | |
|------------------------------|---|
| Means of verification | <p>Document review: Verification was done by crosschecking information in the revised CPA-DD, with the values reported in the monitoring report as indicated in section E.3.4 above and following up the CME's calculations in the ER calculation spread sheets.</p> <p>An onsite assessment had been done, to determine whether or not, there are any possible sources of leakage emissions</p> |
| Findings | Compliant |

| | |
|-------------------|--|
| Conclusion | <p>The CPA, as designed and operated does not have any leakage emissions. Leakage emissions in the revised CPA-DD are reported as zero (0). During onsite assessment, BVI did not come across any indication that deviates from the conclusions in the validation report for the CPA, that is, no leakage emissions were identified.</p> <p>BVI hereby confirms that the conclusion on leakage GHG emissions has been applied correctly.</p> <p>(PoA VVS version 02 paragraph 360)</p> |
|-------------------|--|

E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

| | |
|------------------------------|---|
| Means of verification | Verification was done by crosschecking information in the revised CPA-DDs, with the values reported in the monitoring report as indicated in section E.3.4 above and following up the CME's application of the values in the formulae for calculating emission reductions. |
| Findings | Compliant |
| Conclusion | <p>The emission reductions have been calculated as follows for each of CPAs as</p> <p>Emission reduction = baseline emissions – project emissions – leakage</p> <p>A summary of the calculations is provided in the succeeding table below.</p> <p>Bureau Veritas India Pvt Ltd hereby confirms that :</p> <p>(a) All data for the CPA was available for this monitoring period</p> <p>(b) Crosschecks have been done on the values used in ER calculation with the respective sources of the data (refer to section E.3.4 above).</p> <p>(c) Appropriate methods and formulae for calculating GHG emission reductions have been followed;</p> <p>(d) Assumptions, emission factors and default values that have been applied in the calculations have been justified;</p> <p>(e) No pro-rata approach was necessary in calculations of GHG emission reductions;</p> <p>(f) The first day and last day, for the CPAs, in which CERs are being claimed has been correctly specified</p> <p>(PoA VVS version 02 paragraph 360)</p> |

| Title and UNFCCC reference number of the CPA | Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e) | Project emissions or actual net GHG removals by sinks (tCO ₂ e) | Leakage (tCO ₂ e) | GHG emission reductions or net GHG removals by sinks (tCO ₂ e) | | |
|--|---|--|------------------------------|---|-------------------------------------|---|
| | | | | Amount achieved before 1 January 2013 | Amount achieved from 1 January 2013 | Amount achieved in the entire monitoring period |
| Mbinga Hydroelectric Project 9904-P1-0003-CP1 | 1,922 | 0 | 0 | N/A | 1,922 | 1,922 |
| Total | 1,922 | 0 | 0 | N/A | 1,922 | 1,922 |

E.3.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

| | |
|------------------------------|--|
| Means of verification | <p>Document review</p> <p>Comparison of emission reductions in the revised CPA-DD, for the monitoring period, against the actual emission reductions realised and reported in the</p> |
|------------------------------|--|

| | |
|-------------------|---|
| | monitoring period. |
| Findings | Compliant |
| Conclusion | According to the revised CPA DD, the estimated ex ante emission reductions for this monitoring period, for the CPA is 2,707 tCO₂e . The corresponding actual emission reduction in the monitoring period as reported in the monitoring report and verified by BVI is 1,922 tCO₂e . This is represent 29% less emission reductions than projected in the revised CPA-DD. |

| Title and UNFCCC reference number of the CPA | Actual values achieved by the CPAs during this monitoring period | Value estimated in ex ante calculation in the included CPA-DD(s) |
|--|--|--|
| Mbinga Hydroelectric Project 9904-P1-0003-CP1 | 1,922 tCO ₂ e | 2,707 tCO ₂ e |
| Total | 1,922 tCO₂e | 2,707 tCO₂e |

E.3.6.6. Remarks on difference from estimated value in included CPA

| | |
|------------------------------|---|
| Means of verification | Document review Review of the monitoring report and interview with the CME representative and CPA Implementer. |
| Findings | Compliant |
| Conclusion | BVI considers that lower emissions reductions realised by the CPA is as a result of lower electricity generated compared to the projected amount of 4010 MWh. |

E.3.7. Assessment of reported sustainable development co-benefits

| | |
|------------------------------|-----|
| Means of verification | N/A |
| Findings | N/A |
| Conclusion | N/A |

E.3.8. Global stakeholder consultation

| | |
|------------------------------|--|
| Means of verification | No comments were submitted to BVI for review |
| Findings | N/A |
| Conclusion | N/A |

SECTION F. Internal quality control

The verification report underwent an Internal Technical Review (ITR) before requesting issuance of CERs for the CPA.

The ITR is an independent process performed to examine thoroughly that the process of verification has been carried out in conformance with the requirements of the verification scheme as well as internal Bureau Veritas India Pvt Ltd procedures.

The Lead Verifier provides a copy of the verification report to the reviewer, including any necessary verification documentation. The reviewer reviews the submitted documentation for conformance with the verification scheme. This will be a comprehensive review of all documentation generated during the verification process.

When performing an Internal Technical Review, the reviewer ensures that: The verification activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the program which includes program design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the CME as well as the component project activities, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the verification exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier; and Verification Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the CME/PP(s) the finalized verification report is accepted for further processing such as uploading on the UNFCCC webpage.

SECTION G. Verification opinion

Bureau Veritas India Pvt Ltd has conducted the third periodic verification of the PoA "Tanzania Renewable Energy Programme"; UNFCCC reference number 9904. The PoA is coordinated and managed by the Rural Energy Agency (REA) and is located in the United Republic of Tanzania. The PoA applies the following two methodologies: AMS.I-D "Grid connected renewable electricity generation", Version 17 and AMS.I-F "Renewable electricity generation for captive use and mini-grid", Version 02.

Monitoring activities for the PoA in this third period have been reported in batches-. This verification and certification report covers activities in monitoring report number 02, version 03 dated 06/05/2020. The report comprises only one CPA, Mbinga Hydroelectric Project UNFCCC reference number 9904-P1-0003-CP1 and covers the period 01/01/2018 to 31/12/2018. The CPA is a CPA category 3 after undergoing a design change in September 2018.

CPA category 3 involve installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity both to the main national grid and existing mini-grids; either being operated by the national utility (TANESCO), and/or to new isolated mini-grids to serve new areas. The CPAs are required to comply with the requirements of both methodology AMS-I.D version 17 and AMS-I.F version 02.

The verification consists 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 any outstanding issues and the issuance of the final verification report and opinion.

Bureau Veritas India Pvt Ltd confirms that the programme is implemented as described in validated and registered PoA design document and revised CPA-DD. Installed equipment being essential for generating emission reduction run reliably. The monitoring system is in place and the CPA is generating GHG emission reductions.

Bureau Veritas India Pvt Ltd confirms that, in this verification, there was a post registration change to the CPA. The post registration change has been notified to the secretariat in line with CDM project standard for programmes of activities version 02. (Refer to approved PRC-9904-004).

It is Bureau Veritas India Pvt Ltd opinion that the GHG emission reductions are calculated without material misstatements, applying most conservative approach. The emission reductions verified totalize **1,922 tCO₂e**. Our opinion here relates to the PoA's resulting GHG emission reductions for the single CPA, Mbinga Hydroelectric Project UNFCCC reference number 9904-P1-0003-CP1, as reported in monitoring report number 02, version 03 dated 06/05/2020; and related to the valid and registered baseline, registered monitoring plan and associated documents for the CPA.

SECTION H. Certification statement

Bureau Veritas India Pvt Ltd has conducted the third periodic verification of the PoA “Tanzania Renewable Energy Programme”; UNFCCC reference number 9904. The PoA is coordinated and managed by the Rural Energy Agency (REA) and is located in United Republic of Tanzania. The PoA aims to increase access to modern energy services in Tanzania by promoting both the off-grid (isolated mini-grid) and national grid renewable energy projects within the country using photovoltaic, wind, hydro and biomass technologies for electricity generation. The PoA applies the following two methodologies: AMS.I-D “Grid connected renewable electricity generation”, Version 17 and AMS.I-F “Renewable electricity generation for captive use and mini-grid”, Version 02. CPAs can be included into the PoA in any one of the following three categories of generic CPAs, by fulfilling the requirements therein:

a) CPA Category 1: comprises installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity to the main national grid. The CPAs are required to comply with the requirements of methodology AMS-I.D version 17.

b) CPA Category 2: comprises installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity to an existing mini-grids being operated by either the national utility (TANESCO), or to a new isolated mini-grids or both, to serve new areas. The CPAs are required to comply with the requirements of methodology AMS-I.F version 02.

c) CPA Category 3: comprises installation of one or more renewable energy technologies (hydro, wind, biomass or PV) not exceeding 15 MW, and supply the generated electricity both to the main national grid and existing mini-grids being operated by the national utility (TANESCO), and/or to new isolated mini-grids to serve new areas. The CPAs are required to comply with the requirements of both methodology AMS-I.D version 17 and AMS-I.F version 02.

The verification scope is defined as a periodic independent review and ex post determination (by the Designated Operational Entity) of the monitored reductions in GHG emissions during the defined verification period. BVI’s verification consisted of the following three phases:

- i) Desk review of the PoA and CPA design documents, the baseline, monitoring plan, reported parameters and ER calculations;
- ii) Onsite observations, crosschecks with plant logs and follow-up interviews with PoA stakeholders;
- iii) Resolution of any outstanding issues and the issuance of the final verification report and opinion.

The verification is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

The overall verification, from contract review to verification report and Opinion, was conducted using BVI’s internal procedures. This verification did not result to any Clarification Request (CL), Corrective Actions Requests (CAR) or Forward Actions Requests (FAR).

In summary, BVI confirms that the CPA has been implemented in accordance with the latest approved version of the CPA design document. Installed equipment, for the CPA, being essential for generating emission reductions run reliably. The monitoring system is in place and the CPA is generating GHG emission reductions. The CPA implementation is in accordance with the PoA as described in the validated and registered PoA design document.


Bureau Veritas India Pvt Ltd has determined that the GHG emission reductions, for the CPA, are calculated without material misstatements, applying a conservative approach. The emission reductions verified totalize **1,922 tCO₂e**.

Bureau Veritas India Pvt Ltd.'s opinion relates to the PoA's resulting GHG emission reductions for the monitoring report number 02, version 03 dated 06/05/2020 comprising the CPA as mentioned above; and related to the valid and registered baseline, approved monitoring plan and the associated documents for the CPA. The following is a summary:

| | |
|----------------------------------|---|
| Monitoring report number: | 02 |
| CPA no. : | 9904-P1-0003 CP1 |
| Reporting period: | 01/01/2018 – 31/12/2018 (first and last days included) |
| Baseline emissions: | 1,922 tCO₂e |
| Project emissions: | 0 tCO₂e |
| Leakage emissions: | 0 tCO₂e |
| Emission Reductions: | 1,922 tCO₂e |



Mr. Samuel Onsongo
Team Leader
21/05/2020



Mr. James Chirchir
Internal Technical Reviewer
21/05/2020

Appendix 1. Abbreviations

| Abbreviations | Full texts |
|-------------------|---|
| BVI | Bureau Veritas India Pvt Ltd |
| CAR | Corrective Action Request |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reductions |
| CL | Clarification Request |
| CME | Coordinating / Managing Entity |
| CO ₂ | Carbon Dioxide |
| CO ₂ e | Carbon Dioxide Equivalent |
| DOC/doc | Document |
| DOE | Designated Operational Entity |
| ERs | Emission Reductions |
| FAR | Forward Action Request |
| GHG | Green House Gas(es) |
| MoV | Means of Verification |
| MR | Monitoring report |
| PCP | CDM project cycle procedure for programmes of activities |
| PDD | Project design document |
| PP | Project Participant |
| PRC | Post-Registration Change |
| PS | CDM project standard for programmes of activities |
| REA | Rural Energy Agency |
| SSC | Small Scale |
| TANESCO | Tanzania Electric Supply Company Limited |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VVS | CDM validation and verification standard for programmes of activities |

Appendix 2. Competence of team members and technical reviewers

| | | |
|-----------------------|---|--|
| Mr. Samuel Onsongo | Bureau Veritas Certification, Kenya | Team Leader He has a degree in Physics with over 10 years' experience in renewable energy and climate change out of which 7 years have been in CDM. He has been trained on CDM verification, QMS (ISO 9001) and EMS (ISO 14001), as Lead auditor. He has been involved in validation and verification of CDM and Gold Standard projects covering sectoral scope 1 and 3. |
|-----------------------|---|--|

| | | |
|-----------------------|----------------------------------|---|
| Mr. James Chirchir | Bureau Veritas Certification, | Technical Reviewer James Chirchir – holds a Bachelor's degree in Chemical |
|-----------------------|----------------------------------|---|

| | | |
|--|-------|--|
| | Kenya | and Process Engineering and had 4 years' experience in manufacturing before joining Bureau Veritas. He is an ISO 9001 and ISO 14001 Lead Auditor and a trained CDM Verifier. He has been involved in validation and verification of over 5 projects. |
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|---------------------|-------------------------------------|---|
| Mr. Sanjay Patankar | Bureau Veritas Certification, India | <p>Technical Specialist supporting Technical Reviewer</p> <p>Educational qualifications: B.E. (Mech.) M.E. (Mech.) He has over 20 years of experience in engineering manufacturing industry covering various functions like enterprise management, product design, engineering, tool & die design, improvements in the production shop, quality assurance & control and systems planning and implementation, including ISO 9001 based quality management systems.</p> <p>Working for the last 10 years in Bureau Veritas Certification (India) Pvt. Ltd. As Lead Auditor for ISO 9001, 14001 and OHSAS 18001 standards/specifications. Has undergone training related to Clean Development Mechanism and is currently involved in validation and verification of CDM project activities.</p> |
|---------------------|-------------------------------------|---|

Appendix 3. Documents reviewed or referenced

| No. | Author | Title | References to the document | Provider |
|-----|---------|---|----------------------------|----------|
| 1 | REA | Monitoring report version 02 | 08/08/2019 | CME |
| 2 | REA | Emission reduction calculation spreadsheet version 01 | 24/07/2019 | CME |
| 3 | BVI | Verification certification report-v2 | 07/06/2019 | UNFCCC |
| 4 | BVI | Verification certification report-v2.2 | 22/11/2018 | UNFCCC |
| 5 | BVI | Verification certification report-1.3 | 08/02/2019 | UNFCCC |
| 6 | REA | Tanzania PoA - MR - 2nd VER | 07/06/2019 | UNFCCC |
| 7 | REA | Tanzania PoA MR - I 01Nov2018 | 01/11/2018 | UNFCCC |
| 8 | REA | 2_Monitoring report version 02 | 07/02/2019 | UNFCCC |
| 9 | REA | Tanzania Renewable Energy Programme Version 08 | 23/04/2014 | UNFCCC |
| 10 | EB 61 | AMS I.D. Grid connected renewable electricity generation, Version 17 | 03/06/2011 | UNFCCC |
| 11 | EB 61 | AMS I.F. Renewable electricity generation for captive use and mini-grid, Version 02 | 03/06/2011 | UNFCCC |
| 12 | REA | Mbinga Hydroelectric Project version 04 | 23/12/2019 | UNFCCC |
| 13 | BVI | PRC_Mbinga Hydroelectric Project validation report | 17/03/2020 | UNFCCC |
| 14 | AENOR | Validation report MBINGA version 02 | 26/10/2015 | UNFCCC |
| 15 | REA | Emission reduction calculation spreadsheet version 03 | 06/05/2020 | CME |
| 16 | REA | Monitoring report version 03 | 06/05/2020 | CME |
| 17 | TANESCO | Calibration certificate | 28/02/2018 | CME |

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. Remaining FARs from validation and/or previous verification

| | | | | |
|--|----|--------------------|--|-------------------------|
| FAR ID | xx | Section no. | | Date: DD/MM/YYYY |
| Description of FAR | | | | |
| N/A | | | | |
| CME response | | | | Date: DD/MM/YYYY |
| Documentation provided by the CME | | | | |
| | | | | |
| DOE assessment | | | | Date: DD/MM/YYYY |
| | | | | |

Table 2. CLs from this verification

| | | | | |
|--|----|--------------------|--|-------------------------|
| CL ID | xx | Section no. | | Date: DD/MM/YYYY |
| Description of CL | | | | |
| N/A | | | | |
| CME response | | | | Date: DD/MM/YYYY |
| Documentation provided by the CME | | | | |
| | | | | |
| DOE assessment | | | | Date: DD/MM/YYYY |
| | | | | |

Table 3. CARs from this verification

| | | | | |
|--|----|--------------------|--|-------------------------|
| CAR ID | xx | Section no. | | Date: DD/MM/YYYY |
| Description of CAR | | | | |
| N/A | | | | |
| CME response | | | | Date: DD/MM/YYYY |
| Documentation provided by the CME | | | | |
| | | | | |
| DOE assessment | | | | Date: DD/MM/YYYY |
| | | | | |

Table 4. FARs from this verification

| | | | | |
|--|----|--------------------|--|-------------------------|
| FAR ID | xx | Section No. | | Date: DD/MM/YYYY |
| Description of FAR | | | | |
| N/A | | | | |
| CME response | | | | Date: DD/MM/YYYY |
| Documentation provided by the CME | | | | |
| | | | | |
| DOE assessment | | | | Date: DD/MM/YYYY |
| | | | | |

Document information

| | | |
|----------------|-------------|--------------------|
| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|----------------|-------------|--------------------|

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|---|------------------|---|
| 03.0 | 31 May 2019 | Revision to: <ul style="list-style-type: none">• Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN);• Make structural and editorial improvements. |
| 02.0 | 29 December 2017 | Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0). |
| 01.0 | 5 June 2015 | Initial publication. |
| Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying | | |