**Validation report form for post-registration changes for CDM project activities**

**(Version 01.0)**

*Complete this form in accordance with the "Attachment: Instructions for filling out the validation report form for post-registration changes for CDM project activities" at the end of this form.*

| VALIDATION REPORT ON POST-REGISTRATION CHANGES (PRCs) | |
|---|---|
| **Title and reference number of the project activity** | Title: Gudauri Small Hydropower Project<br>Reference No. : 9079 |
| **Process track** | ☐ Prior approval<br>☒ Issuance<br>☐ Renewal of crediting period |
| **Version number of the validation report on PRCs** | 01 |
| **Completion date of the validation report on PRCs** | 28-04-2016 |
| **Type(s) of PRCs** | ☐ Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline<br>☐ Corrections<br>☐ Changes to the start date of the crediting period<br>☐ Inclusion of a monitoring plan to a registered project activity<br>☒ Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline<br>☒ Changes to the project design of a registered project activity<br>☐ Types of changes specific to afforestation and reforestation project activities |
| **Version number of PDD to which this report applies** | PDD, Version 14, dated 08-04-2016 |
| **Project participant(s)** | Energo – Aragvi Ltd |
| **Host Party** | Georgia |
| **Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)** | Scope- 1 : Energy industries (renewable - / non-renewable sources)<br>AMS-I.D - 'Grid connected renewable electricity generation' (Version 17) |
| **Name of DOE** | TÜV SÜD South Asia Pvt. Ltd. |

| | |
|---|---|
| **Name, position and signature of the approver of the validation report on PRCs** |  <br>Eswar Murty<br>Certification Body “Environment and Energy” |

## SECTION A. Executive summary

### Objective

TÜV SÜD South Asia Pvt. Ltd. was contracted by the project participant to validate post-registration changes of aforesaid project activity. The validation is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC) viz. VVS 09 section 9 through para 287 to para327 and PS 09 through para 267 to para 297.

### Scope of Verification

The validation scope encompasses an independent and objective review to validate the proposed post-registration changes in the monitoring plan and project description of registered project activity titled 'Gudauri Small Hydropower Project'. The validation is based on the submitted revised PDD, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. The core requirements on changes from the project activity as described in the registered project design document is referred from VVS 09 section 9 through para 287 to para327 and PS V09 through para 267 to para 297.

### Validation Process

The project assessment aims at being a risk based approach and is based on the requirements and guidelines provided in the latest version VVS and PS referred above. The validation 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 design.

Based on the requirements in the VVS, TÜV SÜD has applied a rule-based approach for the validation of the project. TÜV SÜD applied requirements in section 7.3 of VVS V09, mutatis mutandis, specific requirements on PRC, to validate the information provided by the project participant.

The information provided by the project participants is assessed by applying the means of validation specified in the "Clean Development Mechanism Validation and Verification Standard" and where appropriate standard auditing techniques. In the absence of specific means of validation specified in the VVS the standard auditing techniques are applied.

Before the assessment begins a competent team to perform the validation is selected. The team is selected to cover the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the CDM project activity. Once the revised PDD is submitted to TÜV SÜD, members of the team carry out the desk review, follow-up actions, resolution of issues identified, and the preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB "Environment and Energy" before being submitted to the CDM-EB.

In case the validation team identifies issues that require further elaboration, research or expansion in order to determine whether the project activity meets the CDM requirements on PRC, findings are raised as specified in the VVS. To confirm if the revised description accurately reflects the implementation, operation and monitoring of the modified project activity all CARs and CLs must be resolved. All CARs, CLs and FARs are found in Appendix 4 to this validation report including the responses provided by the project participants, the means of validation of the responses and references to any resulting changes in the PDD or supporting annexes.

**Brief summary of the project activity**

This small scale run of river hydro project activity in Gudauri Georgia implemented by Energo – Aragvi Ltd, the Project Participant, involves generation of renewable energy that is supplied to National Grid of Georgia via 110 kV transmission line. The project activity is located upstream the village Kvesheti on the river Tetri Aragvi close to the Gudauri ski resort (northern region of Georgia) at the Dusheti District of Georgia. The powerhouse is geographically located at 42˚26'42"N latitude and 44˚28'52"E longitude.

The project activity was envisaged with two staged implementation; Stage I (also referred as Aragavi I in Monitoring report and revised PDD) was planned with a capacity of 8 MW powered by two Pelton turbines and connected generators, each having an installed capacity of 4 MW; whereas, Stage II (also referred as Aragavi II in Monitoring report and revised PDD) was planned with two years difference from Stage I, with a total capacity of 1.2 MW. It is however important to note here that while Stage I started delivering power, as per plan to the national grid by 03-02-2014, the phase II implementation has been delayed until June-July 2016 due to an unexpected flood that had hit Georgia in July 2015. While the flood forced closure of stage I of project activity for repair and reinforcement work for almost a month, it also compelled PP to alter and redesign phase II to harbor a better design that could withstand such calamities, delaying the implementation of phase II. Thus the verification report presents assessment of generation and resultant emission reductions from stage I alone.

Furthermore, it is imperative to note that the actual installed capacity (name plate/rated capacity) of each of the two generators (under stage I) installed at site is 4260kW (4734kVA x 0.9 (power factor)) against 4000kW stated in the registered PDD, making the total installed capacity of Stage I (Aragavi I) as 8.52 MW against 8 MW mentioned in the registered PDD. Thus with this change the total installed capacity of the project activity (Stage I +Stage II) comes to 9.72 MW as opposed to 9.2 MW in the registered PDD. Secondly the volume of the Buffer basin (Referred as Reservoir/ Balance pond in registered PDD) is 53,463 $m^3$ against 50,000 $m^3$ mentioned in the registered PDD. PP has thus proposed a change in description of project activity to highlight these changes. It was however concluded that the changes proposed to the project design of the registered project activity as described in the revised PDD do not require prior approval and that these changes do not do not impact the scale, additionality, applicability of the applied methodology and compliance with the monitoring plan as per p.06 of Appendix of Project Standard v9.0 (also read section E.4.6).

PP has also proposed permanent changes in the monitoring plan as referred in section D.6 of this report primarily to comply with local and regional regulations. It is however concluded that these change to the registered monitoring plan described in the revised PDD do not reduce the level of accuracy, in any which way, of calculation of emission reductions. Furthermore it was confirmed that these changes do not require prior approval as per p.05 of Appendix I of Project Standard v9.0.

## SECTION B. Validation team, technical reviewer and approver

### B.1. Validation team member

| 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 review | On-site inspection | Interview(s) | Validation findings |
| 1. | Team Leader | IR | Ranjan | Kumud | TUV SUD | ✓ | ✓ | ✓ | ✓ |
| 2. | Verifier | IR | Ranjan | Kumud | TUV SUD | ✓ | ✓ | ✓ | ✓ |
| 3. | Technical Expert | IR | Ranjan | Kumud | TUV SUD | ✓ | ✓ | ✓ | ✓ |

### B.2. Technical reviewer and approver of the validation report on PRCs

| 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 | Supratik | Dutta | TUV SUD |
| 2. | Approver | IR | Murty | Eswar | TUV SUD |

## SECTION C. Means of validation

### C.1. Desk review

The revised PDD provided by the PP and additional background documents related to the impact of the changes on the additionality, the scale of the project activity and/or the applicability/application of baseline methodology aspects were reviewed and assessed as part of this validation process.

All documents reviewed or referenced during the validation is listed in Appendix 3 below.

### C.2. On-site inspection

| **Duration of on-site inspection**: DD/MM/YYYY to DD/MM/YYYY | | | | |
|---|---|---|---|---|
| **No.** | **Activity performed on-site** | **Site location** | **Date** | **Team member** |
| 1. | Plant inspection, location of equipments and Reservoir/ Balance pond; assessing project boundaries | Gudauri, Georgia | 29/01/2016 | Kumud Ranjan |
| 2 | Verified the technical description (including capacity of equipment of generating equipment and capacity of Reservoir/ Balance pond), daily and name plate details of the equipments. | Gudauri, Georgia | 29/01/2016 | Kumud Ranjan |
| 3. | Verified meter details, calibration and accuracy details of the meters, calibration frequency of the meters, new meter technical details. | Gudauri, Georgia | 29/01/2016 | Kumud Ranjan |

### C.3. Interviews

| **No.** | **Interviewee** | | | **Date** | **Subject** | **Team member** |
|---|---|---|---|---|---|---|
| | **Last name** | **First name** | **Affiliation** | | | |
| 1. | Dzneladze | Archil | Energo – Aragvi Ltd | 29/01/2016 and 30/01/2016 | | • Kumud Ranjan (TUV SUD) |
| 2 | Posch | Hannes | Energo – Aragvi Ltd | 29/01/2016 and 30/01/2016 | Management decision, project planning & implementation, Sustainable development | • Kumud Ranjan (TUV SUD) |
| 3. | Beaurain | Francois | CDM Consultant (External) | 29/01/2016 and 30/01/2016 | MR, Project description, ER calculation | • Kumud Ranjan (TUV SUD) |

### C.4. Clarification requests, corrective action requests and forward action requests raised

| **Areas of validation findings** | **No. of CL** | **No. of CAR** | **No. of FAR** |
|---|---|---|---|
| Compliance with PDD form | | 1 | |
| Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline | | | |
| Corrections | | | |
| Changes to the start date of the crediting period | | | |
| Inclusion of a monitoring plan to a registered project activity | | | |
| Permanent changes from registered monitoring plan, | | 1 | |

| | | | |
|---|---|---|---|
| monitoring methodology or standardized baseline | | | |
| Changes to the project design of a registered project activity | | | |
| Types of changes specific to afforestation and reforestation project activities | | | |
| Others (please specify) | | | |
| **Total** | | 2 | |

## SECTION D. Validation findings

### D.1. Compliance with PDD form

| | |
|---|---|
| **Means of validation** | Revised PDD titled 'Gudauri Small Hydropower Project' V14 highlighting changes to project description and monitoring plan, dated 08-04-2016 and CDM-SSC-PDD-FORM, V06 and instructions therein |
| **Findings** | CAR no. 2 was raised requesting PP to submit the revised PDD in the latest PDD template highlighting the change in monitoring plan. |
| **Conclusion** | CAR above was successfully closed. The revised PDD is now in compliance with the valid version of the CDM-SSC-PDD-FORM, version 06 and instructions therein and that the information transferred to the latest version of PDD is materially the same as that in the registered PDD. It is also confirmed that the revised PDD aptly contains a description of the nature and extent of the actual changes to the project design and monitoring plan of the registered project activity. |

### D.2. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

| | |
|---|---|
| **Means of validation** | N/A |
| **Findings** | |
| **Conclusion** | |

### D.3. Corrections

| | |
|---|---|
| **Means of validation** | N/A |
| **Findings** | |
| **Conclusion** | |

### D.4. Changes to the start date of the crediting period

| | |
|---|---|
| **Means of validation** | Email dated 07-01-2016 from UNFCCC secretariat [IRL#27] (CDMRegistration@unfccc.int) confirming change of crediting period to 31-12-2013 – 30-12-2020 from 01-01-2013 – 31-12-2019. This can also be confirmed from project page on UNFCCC website https://cdm.unfccc.int/Projects/DB/SGS-UKL1356112097.03/view . |
| **Findings** | A change to the start date of the crediting period was done as per the guidance #149 of CDM of PCP, version 9 and # 279 CDM PS, version 09. As per the guidance secretariat was notified of the proposed change. |
| **Conclusion** | The change to crediting period was aptly done following the UNFCCC procedures referred above. |

### D.5. Inclusion of a monitoring plan to a registered project activity

| | |
|---|---|
| **Means of validation** | N/A |
| **Findings** | |
| **Conclusion** | |

### D.6. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

| | |
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| **Means of validation** | The verification team has checked the revised monitoring plan referred in E.4.5 above and as proposed in the revised PDD against the monitoring methodology and applicable tools as below<br>▪ AMS I.D. (Version 17.0 EB 61, Annex 17, Valid from 17 June 11 onwards).<br>▪ Tool to calculate the emission factor for an electricity system |

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| | (Version 02.2.1), EB 63, Annex19, valid from 29/09/20117<br><br>Tool to calculate project or leakage $CO_2$ emissions from fossil fuel combustion, EB41, Annex11, version02 |
| **Findings** | There are three prominent changes proposed in the registered monitoring plan primarily to comply with local and regional regulations.<br>• To comply with PPA requirements a bidirectional billing meter (main meter PM4 was installed after the transformer on the 110 kV. This change in the monitoring plan allows taking into account losses in the transformer and provides more conservative measures of the quantity of net electricity provided to the grid.<br>• The registered monitoring plan states that the power meters will have an accuracy level of 0.2S while the meters that have been installed have a 0.5S accuracy level. As per Appendix 1 of the version 9 of the CDM Project Standard, the net quantity of electricity supplied to the grid ($EG_{facility,y}$) will be discounted by a factor of 0.003.<br>• As per the registered monitoring plan the calibration of the energy meters were planned every 3 years, by an authorised laboratory. However, frequency of the calibration is set to 10 years as the lowest value between national regulation (12 years) and manufacturer's recommendations (10 years) |
| **Conclusion** | • An extra meter was installed at 110 kV side (denoted as PM4) of the transformer to comply with the requirements of the PPA. As per the registered PDD energy meter PM5 installed at 10kV was the primary energy meter for measurement of energy generation ($EG_{facility,y}$). However, following the mandatory requirement in the PPA, PM4 was installed at 110kV side of the transformer and was used to measure net energy generation ($EG_{facility,y}$). As this meter accounted for the transformer losses, it added conservativeness to overall net electricity generation and the resulting emission reduction estimation. All other energy meters pertaining to stage I, PM1, PM2, PM3 and PM5 are installed as per the registered monitoring plan. Metering details of Stage II would be available after completion of stage II. Thus in line with p.312, 313, 315 of VVS v9.0 this change to the registered monitoring plan described in the revised PDD [IRL#26] do not reduce the level of accuracy, in any which way, of the calculation of emission reductions.<br>• Registered monitoring plan has considered an accuracy level of 0.2s for its energy meters power meters while the energy meters installed have a 0.5s accuracy level. This was primarily done to comply with national requirements and is in line with the PPA [IRL#18]. Moreover, in line with p 4(a) of Appendix 1 of the v9.0 of the CDM Project Standard, the net quantity of electricity supplied to the grid ($EG_{facility,y}$) was discounted by a factor of 0.003. In line with p.312, 313, 315 of VVS v9.0 this change to the registered monitoring plan described in the revised PDD [IRL#26] do not reduce the level of accuracy, in any which way, of the calculation of emission reductions. Thus acceptable.<br>• This change was made to comply with the Georgian legislation. The Georgian legislation [IRL#20] Law of Georgia, Product Safety and Free Movement Code, Article 80 'Legalised measurement means', specifies 12 year calibration frequency for energy meters where as |

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| | the meter's technical specification (PM1, PM2, PM3 and PM4) specifies a calibration frequency of 10 years [IRL#09,10,11,12]. To be conservative in its approach PP has chosen the later (i.e. 10 years) as a requisite calibration frequency for the meters installed in the project activity. In line with p.312, 313, 315 of VVS v9.0 this change to the registered monitoring plan described in the revised PDD [IRL#26] do not reduce the level of accuracy, in any which way, of the calculation of emission reductions. Thus acceptable.<br>• Furthermore it is confirmed that the changes proposed to the registered monitoring plan described in the revised PDD [IRL#26] do not require prior approval as per p.05 of Appendix I of Project Standard v9.0.<br>None of the changes referred impact the applicability conditions of the applicable methodology or its applicable tools. The change to the registered monitoring plan described in the revised PDD comply with relevant requirements in the Project Standard and the applied methodology and these changes that do not reduce the level of accuracy of the calculation of emission reductions, in any which way. Also these changes are in line with #05 of the Appendix 1 of PS, thus no prior approval by the Board was required.<br>CAR no 1 was raised to correct the description of metering arrangements in Appendix 5 and B.7.3 of revised PDD. CAR was successfully closed. |

### D.7. Changes to the project design of a registered project activity

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|---|---|
| **Means of validation** | The verification team has checked the revised project description as proposed in the revised PDD against the registered PDD and evidences gathered about the capacity of Buffer basin (referred as Reservoir/ Balance pond in the registered PDD) [IRL#21] and nameplate capacity of turbines and generators verified during on site audit ) [IRL#13,14]. |
| **Findings** | There is a change in the installed capacity of the generating unit of stage I. As per the registered PDD the total installed capacity of the stage I of the project activity is 8000kW, achieved from two generating units of 4000 kW each. However, PP has installed two 4260kW generating units cumulating to installed capacity of 8520kW (8.52MW). Installed capacity of stage II however remains the same at 1.2 MW. Thus changing the total installed capacity of the project activity to 9.72 MW from 9.2 MW in the registered PDD.<br>Secondly, the volume of the Buffer basin (referred as Reservoir/ Balance pond in the registered PDD) is 53,463 $m^3$ against 50,000 $m^3$ mentioned in the registered PDD.<br>PP has thus proposed a change in description of project activity to highlight these changes. |
| **Conclusion** | The actual installed capacity (name plate/rated capacity) of each of the two generators under stage I installed at site is 4260kW (4734kVA x 0.9 (power factor)) against 4000kW stated in the registered PDD, thus making the total installed capacity of stage one as 8.52 MW (8520 kW) However installed capacity of stage II remains the same as 1.2 MW. Thus the total installed capacity of the project activity has changed to 9.72 MW from 9.2 MW in the registered PDD. Needless to say the PDD was developed at a very nascent stage and the generation calculation was based on the Detailed Project Report (DPR); that estimated generation capacity of Gudauri Stage I hydro based on the water availability, flow and other relevant parameters as 8000kW (4000kW each from two generating units). However, when two |

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| | units (8520 kW each) are operated simultaneously, double volume water flows in the penstock and due to increased frictional loss and consequent head loss keep the total power output at 4000 kW from each unit. Though, the installed capacity of individual unit increased approx. by 6.5% the net generation capacity of each unit remained at around 4000kW, not impacting the power generation and the resultant emission reductions from the project activity. Same is also evident from the monthly generation report [IRL#22,24] of the project activity. Although the installed capacity has increased from 9.2 MW to 9.72 MW, it remains within the threshold limits of the small scale project activity i.e. 15MW, thus not impacting the applicability of a small scale methodology. Furthermore, as per the explanation above the generation of the project activity remains in line with projections in the registered PDD, thus not impacting the earnings from the project activity and the resulting additionality argument. In addition, change in the installed capacity does not impact the monitoring plan. Thus it is concluded that, the changes do not impact the conclusion of the validation report of the registered PDD in any which way.<br><br>Secondly it was verified during on-site audit that the volume of the Buffer basin/ Reservoir/ Balance pond was 53,463 $m^3$ [IRL#21] against 50,000 $m^3$ mentioned in the registered PDD. The purpose of the Buffer basin/ Reservoir/ Balance pond is to prevent generation loss during minor plant shut down and maintenance. The buffer basin constitutes an 8 hours power reserve (or 4h on maximum power load). The Reservoir volume was planned at 50,000 $m^3$ on paper but in actual the capacity/volume of the reservoir was altered slightly to account for site specific conditions. The change in reservoir volume is minor when compared to the total volume (capacity) and would not impact the generation capacity of the project activity significantly. In addition the power density remains far above the 4W/$m^2$ threshold defined in para 04 of the applied methodology (AMS-I.D version 17) thus not impacting the methodological eligibility criteria. Power density of the project activity when calculated as per para 43 (a) of ACM0002, version 17 is 992.3 W/$m^2$ (surface area of water when reservoir is full is 9795$m^2$). Furthermore, as per para 43 (c) of ACM0002, as the power density of the project activity is greater than 10 W/$m^2$, project emissions from water reservoir is zero. Based on the assessment in line with #320 of VVS V9.0 it is confirmed that these changes do not impact the scale, additionality, applicability of the applied methodology and compliance with the monitoring plan, thus not impacting the conclusion of the validation report of the registered PDD in any which way.<br><br>Furthermore it is confirmed that the changes proposed to the project design of the registered project activity as described in the revised PDD [IRL#26] do not require prior approval in line with #05 of the Appendix 1 of PS as these changes do not do not impact the scale, additionality, applicability of the applied methodology and compliance with the monitoring plan as per p.06 of Appendix of Project Standard V9.0. It is also confirmed that these changes occurred after project registration and would not have been known prior to registration of the registered CDM project activity and that revised description accurately reflects the implementation, operation and monitoring of the modified project activity. |

### D.8. Types of changes specific to afforestation and reforestation project activities

| | |
|---|---|
| **Means of validation** | N/A |
| **Findings** | |
| **Conclusion** | |

## SECTION E. Internal quality control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after final validation report preparation. As a final step of this validation, the validation report has to undergo an internal quality check by the Certification Body i.e. each report has to be approved either by the head of the certification body or his deputy. In case one of these two persons is part of the assessment team, the approval can only be given by the other one. It rests at the decision of TÜV SÜD's Certification Body whether the revised documents will be submitted for approval by the EB or not.

## SECTION F. Validation opinion

The DOE confirms that

- the revised PDD is in compliance with the valid version of the CDM-SSC-PDD-FORM, version 06 and instructions therein and that the information transferred to the latest version of PDD is materially the same as that in the registered PDD and the revised PDD aptly contains description of the nature and extent of the actual changes to the project design and monitoring plan of the registered project activity.
- the change to the registered monitoring plan described in the revised PDD comply with relevant requirements in the Project Standard and the applied methodology and these changes that do not reduce the level of accuracy of the calculation of emission reductions, in any which way;
- the changes to the project design of the registered project activity do not impact the scale, additionality, applicability of the applied methodology and compliance with the monitoring plan and do not impact the conclusion of the validation report of the registered PDD and that these changes occurred after project registration and would not have been known prior to registration of the registered CDM project activity;
- the revised description accurately reflects the implementation, operation and monitoring of the modified project activity.
- the changes proposed to the project design of the registered project activity and permanent changes from the registered monitoring plan as described in the revised PDD do not require prior approval.
- the post-registration changes to the registered PDD will be submitted together with the request for issuance.

# Appendix 1. Abbreviations

| Abbreviations | Full texts |
|---|---|
| **AMS** | Approved Methodology for Small scale project activity |
| **CAR** | Corrective Action Request |
| **CDM** | Clean Development Mechanism |
| **CDM-EB** | CDM Executive Board |
| **CER** | Certified Emission Reduction |
| **CMP** | Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol |
| **$CO_2e$** | Carbon dioxide equivalent |
| **CL** | Clarification Request |
| **DOE** | Designated Operational Entity |
| **EF** | Emission Factor |
| **EIA / EA** | Environmental Impact Assessment / Environmental Assessment |
| **ER** | Emission Reduction |
| **FAR** | Forward Action Request |
| **GHG** | Greenhouse Gas(es) |
| **GWP** | Global Warming Potential |
| **HPP** | Hydro Power Project |
| **IRL** | Information Reference List (Refers to document list in Appendix 3) |
| **KP** | Kyoto Protocol |
| **kV** | Kilo Volt |
| **MP** | Monitoring Plan |
| **MR** | Monitoring Report |
| **PCP** | Project Cycle Procedure |
| **PDD** | Project Design Document |
| **PP** | Project Participant |
| **PS** | Project Standard |
| **TÜV SÜD** | TÜV SÜD South Asia Pvt. Ltd |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **VVS** | Clean Development Mechanism Validation And Verification Standard |

# Appendix 2. Competence of team members and technical reviewers

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

South Asia

# CERTIFICATE OF APPOINTMENT

Mr. Ranjan, Kumud. fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

| Qualification applicable to | | | | | |
|---|---|---|---|---|---|
| **Standard** | CDM | GS | VCS | ISO-14064-1: 2006 | Other |
| | ☒ | ☒ | ☒ | ☐ | ☐ |

| Qualification as | | | | | | |
|---|---|---|---|---|---|---|
| **Status** | Validator | Verifier | ATL | Technical Reviewer | Financial Expert | Technical Expert |
| | ☒ | ☒ | ☒ | ☒ | ☒ | ☒ |
| **TA (s)** | 1.2, 3.1 | | | | | |

| Country Expertise | | | | | | |
|---|---|---|---|---|---|---|
| Region | 1 | 2 | 3 | 4 | 5 | Other |
| | ☒ | ☐ | ☐ | ☐ | ☐ | |
| **Further countries** | | | | | | |

| Technical Area |
|---|
| 1.2_Renewables |
| 3.1_Energy demand |
| |
| |
| |
| |

This appointment is valid until 28.02.2017 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0054/006.

| Date | Signature |
|---|---|
| 01/02/2016 | |

IS-CMS-CB-POG-01/05, version 03

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South Asia

# CERTIFICATE OF APPOINTMENT

Mr. Dutta Supratik. fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

| Qualification applicable to | | | | | |
|---|---|---|---|---|---|
| **Standard** | CDM | GS | VCS | ISO-14064-1: 2006 | Other |
| | ☒ | ☒ | ☒ | ☐ | ☐ |

| Qualification as | | | | | | |
|---|---|---|---|---|---|---|
| **Status** | Validator ☒ | Verifier ☒ | ATL ☒ | Technical Reviewer ☒ | Financial Expert ☒ | Technical Expert ☒ |
| **TA (s)** | 1.2, 3.1 | | | | | |

| Country Expertise | | | | | | |
|---|---|---|---|---|---|---|
| **Region** | 1 | 2 | 3 | 4 | 5 | Other |
| | ☒ | ☐ | ☐ | ☐ | ☐ | |
| **Further countries** | | | | | | |

| Technical Area |
|---|
| 1.2_Renewables |
| 3.1_Energy Demand |
| |
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This appointment is valid until 28.02.2017 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
Your Certificate has the internal reference no. CB-IND-CCP-0054/006.

| Date | Signature |
|---|---|
| 01/02/2016 | |



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TÜV®

# Appendix 3. Documents reviewed or referenced

| No. | Author | Title | References to the document | Provider |
|---|---|---|---|---|
| 1. | UNFCCC | Registered Project Design Document titled 'Gudauri Small Hydropower Project' (Registered Project ID 9079), Version 11 | Dated 03-12-2012 https://cdm.unfccc.int/Projects/DB/SGS-UKL1356112097.03/view | Others |
| 2. | UNFCCC | AMS-I.D – Renewable electricity generation for a grid, version. 17 | https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK | Others |
| 3. | UNFCCC | Published Monitoring report, version 01, titled 'Gudauri Small Hydropower Project', for first monitoring period number 31-12-2013 to 31-10-2015 | https://cdm.unfccc.int/Projects/DB/SGS-UKL1356112097.03/view . Dated 08-01-2016 | Project participant/ Others |
| 4. | Georgian National Agency for Standards and Metrology | Certificate for Recognition of Primary Verification Results of Measurement Means dated 17-12-2013 for Mercury 230/ 0.5S meter of S No. 16827095-13g (PM1). Certificate no. 1767-13 | Dated 17-12-2013 | Project participant |
| 5. | Georgian National Agency for Standards and Metrology | Certificate for Recognition of Primary Verification Results of Measurement Means dated 13-12-2013 for Mercury 230/ 0.5S meter of S No. 16827095-13g (PM2). Certificate no. 1767-13 | Dated 13-12-2013 | Project participant |
| 6. | Georgian National Agency for Standards and Metrology | Certificate for Recognition of Primary Verification Results of Measurement Means dated 28-05-2012 for Mercury 230/ 0.5S meter of S No. 11130132-12g (PM3). Certificate no. 787-12 | Dated 28-05-2012 | Project participant |
| 7. | Georgian National Agency for Standards and Metrology | Certificate for Recognition of Primary Verification Results of Measurement Means dated 27-05-2009 for Alfa A1800 type Electric Energy Meter manufactured by LTD "Elster Metronika" (Russian Federation) meter of S No. 01185826 (PM4-Feb and March 2014). Certificate no. 437-an | Dated 27-05-2009 | Project participant |
| 8. | Georgian National Agency for | Certificate for Recognition of Primary Verification Results of Measurement Means dated 28-03-2014 for Alfa A1800 | Dated 28-03-2014 | Project participant |

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|---|---|---|---|---|
| | Standards and Metrology | type Electric Energy Meter manufactured by LTD "Elster Metronika" (Russian Federation) meter of S No. 01270885 (PM4- April 2014 onwards). Certificate no. 180-14 | | |
| 9. | Georgian Metrology Center Ltd. | Certificate of calibration of energy meter Elster A1500 /0.5S of serial no. 00485666 (PM5). Certificate no. 00998/1-13 | Dated 10-12-2013 | Project participant |
| 10. | INCOTEX | Technical specification Mercury 230/ 0.5S meter of S No. 16827095-13g (PM1) and Mercury 230/ 0.5S meter of S No. 16827095-13g (PM2) | Collected during audit on 29-01-2016 | Project participant |
| 11. | INCOTEX | Technical specification Mercury 230/ 0.5S meter of S No. 11130132-12g (PM3). | Collected during audit on 29-01-2016 | Project participant |
| 12. | Elster | Technical specification Alfa A1800 type Electric Energy Meter manufactured by LTD "Elster Metronika" meter of S No. 01270885 and S No. 01270885 | Collected during audit on 29-01-2016 | Project participant |
| 13. | TUV SUD | Generator (Unit I & 2) name plate pictures | Taken during audit on 29-01-2016 | Others |
| 14. | TUV SUD | Turbine (Unit I & 2) name plate pictures | Taken during audit on 29-01-2016 | Others |
| 15. | TUV SUD | Energy meters pictures | Taken during audit on 29-01-2016 | Others |
| 16. | TUV SUD | SCADA snapshot | Taken during audit on 29-01-2016 | Others |
| 17. | SCHUBERT | SCADA Manual, Revision 01 | 19-02-2014 | Project participant |
| 18. | Energo - Aragvi Ltd and Alpiq TurkeyEnerji | Framework contract for the sale and purchase of electricity | Dated 28-10-2014 | Project participant |
| 19. | Kossler GmbH & Co KG | Provisional Acceptance Certificate (PAC) | Signed on 17-02-2014 | Project participant |
| 20. | Parliament of Georgia | Georgia regulation: "PRODUCT SAFETY AND FREE MOVEMENT CODE-matsne-1659419-11.pdf". Ref. article 80, 2.k for calibration frequency. The document is available online at https://matsne.gov.ge/en/document/view/1659419 | https://matsne.gov.ge/en/document/view/1659419.<br>Date of issuing 08-05-2012 | Project participant |
| 21. | Energo - Aragvi Ltd | Survey Model-basin blue print (Schematic project reservoir) | Collected during audit on 29-01-2016 | Project participant |
| 22. | Energo - Aragvi Ltd<br>Energo Pro<br>Alpiq Turkey Enerji<br>ESCO Georgia | Electricity sale invoices:<br>February 2014- Energo Pro<br>March 2014 to December 2014- ESCO Georgia<br>January 2015 to April 2015- ESCO Georgia | Collected during audit on 29-01-2016 | Project participant |

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|---|---|---|---|---|
| | | May 2015 to July 2015- Alpiq TurkeyEnerji<br>August to October- ESCO Georgia | | |
| 23. | Energo - Aragvi Ltd | Final Monitoring report, version 08, titled 'Gudauri Small Hydropower Project', for first monitoring period number 31-12-2013 to 31-10-2015 | Dated 06-04-2016 | Project participant |
| 24. | Energo - Aragvi Ltd | Emission reduction sheet, Version 01 | Dated 08-01-2016 | Project participant |
| 25. | Energo - Aragvi Ltd | Plant shut down details | Submitted on 10-03-2016 | Project participant |
| 26. | Energo - Aragvi Ltd | Revised PDD titled 'Gudauri Small Hydropower Project' version 14 highlighting changes to project description and monitoring plan | Dated 08-04-2016 | Project participant |
| 27. | UNFCCC secretariat | Email dated 07-01-2016 from UNFCCC secretariat (CDMRegistration@unfccc.int) regarding change in start date of the crediting period. | Dated 07-01-2016 | Others |
| 28. | Ministry of Environment Protection and Natural Resources of Georgia Clean Development Mechanism Designated National Authority | Baseline Emission Factor for the Electricity System of Georgia, Version 01 | http://moe.gov.ge/files/Klimatis%20Cvlileba/Sufta%20Ganvitarebis%20Mekanizmi/SMG%20Erovnuli%20Uflebamosili%20Organo/Baseline_EF_2004-2006.pdf, Published April 2008 | Project participant |
| 29. | ESCO | Gross generation report available on esco.ge website | http://www.esco.ge/index.php?article_id=1&clang=1 | Project participant |
| 30. | Energo - Aragvi Ltd | Emission reduction sheet, Version 02 | Dated 06-04-2016 | Project participant |

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

**Table 1. CL from this validation**

No CLs were raised

| **CL ID** | N/A | **Section no.** | | **Date:** DD/MM/YYYY |
|---|---|---|---|---|
| **Description of CL** | | | | |
| | | | | |
| **Project participant response** | | | | **Date:** DD/MM/YYYY |
| | | | | |
| **Documentation provided by project participant** | | | | |
| | | | | |
| **DOE assessment** | | | | **Date:** DD/MM/YYYY |
| | | | | |

**Table 2. CAR from this validation**

| **CAR ID** | 01 | **Section no.** | Appendix 5, B.7.3 | **Date:** 15/02/2016 |
|---|---|---|---|---|
| **Description of CAR** | | | | |
| An extra meter was installed at 110 kV side (denoted as PM4) of the transformer to comply with the requirements of the PPA. As per the registered PDD energy meter PM5 installed at 10kV was the primary energy meter for measurement of energy generation ($EG_{facility,y}$). This change shall reflect in the revised PDD. | | | | |
| **Project participant response** | | | | **Date:** 18/03/2016 |
| The change now reflects in the revised PDD in section Appendix 5, B.7.3 | | | | |
| **Documentation provided by project participant** | | | | |
| IRL#15,26 | | | | |
| **DOE assessment** | | | | **Date:** 18/03/2016 |
| PP has updated the monitoring plan in Appendix 5 and section B.7.3 of the revised PDD and has included the PM4 in the meter schematic. | | | | |

| **CAR ID** | 02 | **Section no.** | - | **Date:** 15/02/2016 |
|---|---|---|---|---|
| **Description of CAR** | | | | |
| In line with §295, § 296 of VVS, to comply with requirements pertaining to permanent changes from registered monitoring plan and project description, PP shall submit a revised PDD in the latest PDD template highlighting the change in monitoring plan in track change and while transferring the information to the later version of PDD keeping the information materially same as that in the registered PDD.<br><br>PP shall submit a revised PDD in the latest PDD template highlighting the change in monitoring plan and project description in track change and while transferring the information to the later version of PDD keeping the information materially same (verbatim) as that in the registered PDD. | | | | |
| **Project participant response** | | | | **Date:** 18/03/2016 |
| Updated PDD in latest PDD version has been submitted | | | | |
| **Documentation provided by project participant** | | | | |
| IRL#26 | | | | |
| **DOE assessment** | | | | **Date:** 18/03/2016 |

| |
|---|
| PP has submitted a revised PDD in the latest PDD template highlighting the changes in monitoring plan and project description in line with In line with §295, § 296 of VVS. The CAR is closed |

**Table 3. FAR from this validation**

No FAR was raised earlier

| | | | | |
|---|---|---|---|---|
| **FAR ID** | N/A | **Section no.** | | **Date:** DD/MM/YYYY |
| **Description of FAR** | | | | |
| | | | | |
| **Project participant response** | | | | **Date:** DD/MM/YYYY |
| | | | | |
| **Documentation provided by project participant** | | | | |
| | | | | |
| **DOE assessment** | | | | **Date:** DD/MM/YYYY |
| | | | | |

# Attachment: Instructions for filling out the validation report form for post-registration changes for CDM project activities

## 1. General instructions

1. When completing the CDM-PRCV-FORM that applies to the validation of post-registration changes (PRCs) of any type of registered CDM project activity except registered carbon dioxide capture and storage (CCS) CDM project activities, in addition to applying the relevant requirements in the valid version of the "CDM validation and verification standard (VVS)", consult the "Rules and Reference" section of the UNFCCC CDM website. This section contains all regulatory documents for the CDM, such as standards (including methodologies, tools and standardized baselines), procedures, guidelines, clarifications, forms and the "Glossary: CDM terms".

2. Include, if necessarily, additional information other than that indicated in this validation report on PRCs, in order to support how the designated operational entity (DOE) has arrived at its opinion. This information may include, but need not be limited to tables, graphs and annexes such as a validation protocol.

3. List all the abbreviations used in this validation report in Appendix 1 below.

4. Complete the CDM-PRCV-FORM and all attached documents in English, or attach a full translation of relevant sections in English.

5. Complete the CDM-PRCV-FORM using the same format without modifying its font, headings or logo, and without any other alteration to the form.

6. Do not modify or delete the tables and their columns in the CDM-PRCV-FORM. Add rows to the tables and appendices as needed.

7. If a section of the CDM-PRCV-FORM is not applicable, explicitly state "N/A" to indicate that the section is left blank intentionally.

8. Use an internationally recognized format for the presentation of values in the CDM-PRCV-FORM, for example use digits grouping in thousands and mark a decimal point with a dot (.), not with a comma (,).

9. Complete the CDM-PRCV-FORM deleting this attachment "Instructions for filling out the validation report form for post-registration changes for CDM project activity".

## 2. Specific instructions

1. Indicate the following information on the cover page:
   - (a) Title and reference number of the project activity (UNFCCC reference number);
   - (b) Process track (check the applicable track);
   - (c) Version number of the validation report on PRCs (version XX.X);
   - (d) Completion date of the validation report on PRCs (DD/MM/YYYY);
   - (e) Type(s) of PRCs (check the applicable type(s) of PRCs);
   - (f) Version number of monitoring report to which this report applies (version XX.X);
   - (g) Project participant(s);
   - (h) Host Party;
   - (i) Sectoral scope(s), selected methodology(ies) and, where applicable, selected standardized baseline(s);
   - (j) Name of DOE;
   - (k) Name, position and signature of an approver of the validation report on PRCs.

## SECTION A. Executive summary

1. Provide a brief summary of the project activity (including the purpose and general description and location), scope of the validation, validation process and conclusion.

## SECTION B. Validation team, technical reviewer and approver

1. Provide details of the validation team, technical reviewer and approver in sections B.1 and B.2. If applicable, also identify any trainees.
2. For "Type of resource" in sections B.1 and B.2, indicate the type of resource of the personnel with the use of one of the following abbreviations referring to the "CDM accreditation standard";
   (a) IR (Internal Resource);
   (b) EI (External Individuals);
   (c) OR (Outsourced Resource).
3. Demonstrate how the team meets the competence required for the validation in Appendix 2 below.

## SECTION C. Means of validation

### C.1. Desk review

1. List all documents reviewed or referenced during the validation in Appendix 3 below.

### C.2. On-site inspection

1. Summarize any on-site inspection performed during the validation in the table.

### C.3. Interviews

1. Summarize all the interviews (i.e. in-person interviews, web/teleconferences, etc.) conducted during the validation in the table.

### C.4. Clarification requests, corrective action requests and forward action requests raised

1. Indicate in the table the number of clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised during the validation of each type of post-registration change in SECTION D below.

## SECTION D. Validation findings

1. In sections D.1–D.8 below, where applicable, complete tables to validate the compliance in accordance with applicable validation requirements in the VVS by describing:
   (a) Means of validation: describe how the compliance was validated;
   (b) Findings: provide a brief description of the findings. Include in Appendix 4 below details of any CLs, CARs and FARs, if raised;
   (c) Conclusion: provide a conclusion on the compliance based on the findings.

### D.1. Compliance with PDD form

1. Confirm the compliance of the revised PDD (both in tracked-change and clean versions) with the valid version of the applicable PDD form and the instructions therein for filling out the PDD form.
2. If the project participants used the later version of the PDD form for the revised PDD than the version of the PDD form of the registered PDD, confirm whether information transferred to the later version of the PDD form is materially the same as that in the registered PDD.

### D.2. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

1. Explain how the temporary deviations from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline were assessed in accordance with applicable validation requirements related to the temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline in the VVS.
2. Provide an assessment on whether the temporary deviations from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline require prior approval by the Board.
3. Indicate the period for which the temporary deviation from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline is applicable.

### D.3. Corrections

1. Explain how the corrections to the registered PDD were assessed in accordance with applicable validation requirements related to the corrections in the VVS.
2. Provide an assessment on whether the corrections require prior approval by the Board.

### D.4. Changes to the start date of the crediting period

1. Explain how the changes to the start date of the crediting period were assessed in accordance with applicable validation requirements related to the changes to the start date of the crediting period in the VVS.
2. Provide an assessment on whether the changes to the start date of the crediting period require prior approval by the Board.

### D.5. Inclusion of a monitoring plan to a registered project activity

1. Explain how the inclusion of a monitoring plan to the registered project activity was assessed in accordance with applicable validation requirements related to the inclusion of a monitoring plan to a registered project activity in the VVS.

### D.6. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

1. Explain how the permanent changes from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline were assessed in accordance with applicable validation requirements related to the permanent changes from the registered monitoring plan, monitoring methodology and/or standardized baseline in the VVS.
2. Provide an assessment on whether the permanent changes from the registered monitoring plan, applied monitoring methodology and/or applied standardized baseline require prior approval by the Board.

### D.7. Changes to the project design of a registered project activity

1. Explain how the changes to the project design of a registered project activity were assessed in accordance with applicable validation requirements related to the changes to the project design of a registered project activity in the VVS.
2. Provide an assessment on whether the changes to the project design of the registered project activity require prior approval by the Board.

### D.8. Types of changes specific to afforestation and reforestation project activities

1. Explain how the changes specific to afforestation and reforestation project activities were assessed in accordance with applicable validation requirements related to the types of changes specific to afforestation and reforestation project activities in the VVS.

## SECTION E. Internal quality control

1. Describe the measures taken to ensure the quality of the validation activities.

## SECTION F. Validation opinion

| |
|---|
| 1. Provide a validation opinion on the post-registration changes. |

## Appendix 1. Abbreviations

1. List all the abbreviations used in this report in the table.

## Appendix 2. Competence of team members and technical reviewers

1. Provide documentation to substantiate the required competence of validation team members and technical reviewer(s).

## Appendix 3. Documents reviewed or referenced

1. List all documents reviewed or referenced during the validation including CDM regulatory documents in the table.
2. For each document indicate the following:
   (a) Title: provide the title of the document. Include the version number, if applicable;
   (b) Author: provide the name(s) of the author(s). Where the author(s) belong(s) to the organization(s) that issue the document, provide only the name(s) of the organization(s);
   (c) References to the document: where applicable, provide the relevant reference to the document such as the dates of completion/publication and URL;
   (d) Provider: choose one of the following options to indicate who provided the document to the DOE for its desk review. Select 'Others' for documents that were provided by those other than the project participants:
      (i) Project participants;
      (ii) Others.

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

1. If needed, copy tables 1, 2 and/or 3 for each CL, CAR, and/or FAR, and copy the following rows until the finding is closed unless a FAR for future validation is issued:
   (a) Project participant response;
   (b) Documentation provided by project participant;
   (c) DOE assessment.
2. In each table, indicate the section number of the validation report on PRCs to which each CL, CAR or FAR corresponds.

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### Document information

| *Version* | *Date* | *Description* |
|---|---|---|
| 01.0 | 23 March 2015 | Initial publication. |

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
Keywords: post-registration change, project activities, validation report