



Validation report form for renewal of crediting period of voluntary project activities under PoA

VALIDATION REPORT FOR RENEWAL OF CREDITING PERIOD (RCP)

Reference number and title(s) of the specific-case VPA(s)	Ref. no.	Title
	CPA 1	Nepal Biogas Support Program – CPA 1: 20,000 digesters
Number and duration of the next crediting period	2 nd Crediting period: Duration: 31/01/2020 to 30/01/2027	
Version number of the validation report for RCP	1.0Aa	
Completion date of the validation report for RCP	11/11/2019	
Title and GS ref. no. of the PoA into which the specific-case VPA(s) is/are included	Nepal Biogas Support Program – PoA (UNFCCC ref: 9572; GS 3110)	
Version number of the PoA-DD into which the specific-case VPA(s) is/are included	02 of 07/11/2019	
Coordinating/managing entity (CME)	Alternative Energy Promotion Centre (AEPC)	
Host Party(ies)	Nepal	
Estimated annual average emission reductions or net GHG removals in the crediting period (tCO ₂ e) for each specific-case VPA	VPA Ref. no.	Estimated annual average emission reductions or net GHG removals in the crediting period (tCO ₂ e)
	CPA 1	65,103 tCO ₂ e (SDG 13)
Sectoral scope(s) for each specific-case VPA	VPA Ref. no.	Sectoral scope(s)
	CPA 1	01
Selected methodology(ies) for each specific-case VPA	VPA Ref. no.	Selected methodology(ies)
	CPA 1	AMS-I.E, ver. 9 - Switch from Non-Renewable Biomass for Thermal Applications by the User
Name of DOE	RINA Services S.p.A. (RINA)	
Name, position and signature of the approver of the validation report for RCP	Laura Severino (Authorized officer signing for the DOE) Head of Certification Innovation & Sustainability Unit 	

SECTION A. Executive summary

Purpose and general description of the VPA

The component activities involves the implementation of biogas applications at individual households in Nepal. The different sizes of the digesters included in the component activity are 4, 6, 8 and 10 m³. Total number of digesters included in the CPA is 19,999 commissioned between 22/06/2007 to 18/03/2009. The programme uses only one design i.e. GGC 2047 model. Each digester replaces fire-wood which otherwise would have been used for household thermal application (cooking/heating). Thereby, the activities reduces GHG emissions from firing of fire-wood at household level. The programme is managed by Alternate Energy Promotion Centre with the support of Biogas Sector Partnership Nepal (BSP-Nepal), the implementing agency of AEPC.

Location

The programme of activities are implemented in rural households throughout Nepal.

Scope of Validation

The validation scope is to review the updated VPA-DD against GS principles and requirements. The validation of the renewal of crediting period is also to be seen in conjunction with the validation report at the time of requesting the inclusion of the VPA under the registered PoA (RINA – Validation Report No. 2019-IQ-14-MD, version 1.0 of 06/11/2019). Validation of renewal of crediting period is a requirement and it is seen as necessary to provide assurance about:

- (a) the impact of new relevant national and/or sectoral policies and circumstances on the baseline;
- (b) the correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

Validation process

Validation is conducted using RINA procedures in line with the GS requirements and principles and applying standard auditing techniques. The validation assessment involved a document review of relevant documentation, the interview and/or on-site visit and reporting. Validation is not meant to provide any consultancy toward the project participants. However, stated request for clarifications and/or corrective actions may have provided input for improvement of the VPA.

Conclusion

RINA commissioned by Alternative Energy Promotion Centre (AEPC) has performed the validation of the renewal of crediting period of the VPA 'Nepal Biogas Support Program – CPA 1: 20,000 digesters' (GS 3109), with regard to the relevant GS requirements and principles PoA/VPA.

In conclusion, it is RINA's opinion that the VPA 'Nepal Biogas Support Program – CPA 1: 20,000 digesters' as described in the VPA-DD version 02 of 07/11/2019, meets all relevant GS requirements and principles, and correctly applied the baseline and monitoring methodology AMS-I.E, ver. 9 - Switch from Non-Renewable Biomass for Thermal Applications by the User.

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, Validator, Technical Expert (TA 1.1)	IR	IR	Buragohain	Champak	✓	✓	✓	✓

2.	Technical Expert (TA 1.1)	IR	Augustus	Cyril	RINA India	√	X	X	√
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B.2. Technical reviewer and approver of the validation report for renewal

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	Liu	Hui Feng	RINA CHINA
2	Approver	IR	Severino	Laura	RINA HQ

SECTION C. Means of validation

C.1. Desk review

The VPA-DD version 01 of 12/04/2019 and version 02 of 07/11/2019, in particular the applicability of the methodology, the baseline determination, the emission reductions calculation, the sustainability indicators, were assessed as part of the validation. All documents reviewed or referenced during the validation are listed in Appendix 3.

C.2. On-site inspection

Duration of on-site inspection: 30/04/2019 to 02/05/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting	AEPC office, Kathmandu	30/04/2019	Champak Buragohain
2.	On-site inspection/interview with CME/ representative and operation team/ discussion with end users	Rautahat, Mahottari, Chitwan, Chindhuli, Bara, Sarlahi, Makwanpur districts	01/05/2019-02/05/2019	Champak Buragohain
3.	Discussions on findings/closing meeting	Kathmandu	02/05/2019	Champak Buragohain

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Adhikari	Madhusudhan	AEPC (Executive Director)	30/04/2019	project implementation, operation and maintenance, roles and responsibilities etc.	Champak Buragohain
2.	Dhakal	Nawa Raj	AEPC (Director)			
3.	Pokhrel	Prem Kumar	AEPC (Climate and Carbon Financing Expert)	30/04/2019 to 02/05/2019	Emission reduction calculation, GS requirements, monitoring results etc.	Champak Buragohain
4.	Paudel	Nobaraj	Rupli R.E.S. Pvt. Ltd. (Biogas Company)	01/05/2019 to 02/05/2019	Operational status of biogas plants, sustainable development parameters, other benefits, downtime details etc.	Champak Buragohain
5.	Rinal	Subeth	Heteeda Biogas Company Pvt. Ltd.			
6.	Karki	Saroj	Officer AEPC (biogas component)			

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

Area of validation findings	No. of CR	No. of CAR	No. of FAR
Compliance with CPA-DD form			
Compliance with GS VPA Passport form			
Application of baseline and monitoring methodology and standardized baseline			
Validity of original baseline or its update			
Do No Harm assessment			
Impact assessment – Sustainable Development Matrix			
Demonstration of eligibility for the VPA(s)			
Estimated GHG emission reductions or net anthropogenic GHG removals			
Validity of monitoring plan			
Validity of the sustainability monitoring plan			
Crediting period			
CME and project participants			

Others (please specify)			
Total	0	0	0

SECTION D. Validation findings

D.1. Compliance with VPA-DD form

Means of validation	The validation involves cross check between latest version of the VPA-DD form used and the valid VPA-DD form available at the GS website during the time of the VPA validation. The Gold Standard for the Global Goals Key Project Information & VPA Design Document (PDD) FORM version 1 has been used for the VPA-DD /01/ which is the appropriate form and the latest version available at the GS website. All the sections of the form were filled as per the guidelines and gave all the relevant details as evident from the desk review of the VPA DD.
Findings	N/A
Conclusion	The VPA DD /01/ are found to be in compliance with the applicable latest VPA DD form and instructions therein. The VVB hereby confirms that the VPA-DDs Version 02 of 07/11/2019 comply with the latest form.

D.2. Compliance with GS VPA Passport form

Means of validation	Not Applicable
Findings	Not Applicable
Conclusion	Not Applicable

D.3. Application of baseline and monitoring methodology

Means of validation	The updated VPA-DD correctly applied AMS-I.E ‘Switch from Non-Renewable Biomass for Thermal Applications by the User’ version 09 in consistent with the applicable PoA. Applicability of methodology is discussed below:	
	Criteria	Assessment by VVB
	Small-Scale project requirement: For biomass, biofuel and biogas project activities, the maximal limit of 15MW (e) is equivalent to 45 MW thermal output of the equipment or the plant (e.g. boilers). For thermal applications of biomass, biofuels or biogas (e.g. the cookstoves), the limit of 45 MWth is the installed/rated capacity of the thermal application equipment or device/s (e.g. biogas stoves).	There is just one deduction of digester from existing numbers from the already registered VPA. The capacity of one stove is not more than 1.86KWth and for 45MWth capacity the maximum stoves can be 24,000 /03/, /04/. CPA 1 includes 19,999 biogas and hence within the capacity limit.
	This category comprises activities to displace the use of non-renewable biomass by introducing renewable energy technologies. Examples, of these technologies include but are not limited to biogas stoves, solar cookers, passive solar homes, renewable energy-based drinking water treatment technologies (e.g. sand filters followed by solar water disinfection; water boiling using renewable biomass)	The project constitutes the distribution of biogas digesters which will replace the use of firewood with biogas as a fuel. The description of the project was verified with the description given in the registered PoA-DD and CPA DD /01/, /04/. Hence, the condition is met.
	Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	As per latest biogas user survey conducted by CME in 2018 for the program confirms the use of non-renewable biomass since 31 december 1989. The finding that NRB was used is also backed by independent report such as “The Environmental Impact of Poverty:

	Evidence from Firewood Collection in Rural Nepal"/09/.
Findings	N/A
Conclusion	It has been confirmed that the CPA correctly applies the small scale methodology AMS-I.E, version 9.0 and all the applicability criteria were found to be met.

D.4. Validity of original baseline or its update

Means of validation	The validity of original baseline is still valid for the entire PoA as described in the updated PoA-DD /10/ and validation report /04/. Therefore, the baseline is valid and applicable for all VPAs included in the PoA.
Findings	N/A
Conclusion	RINA concludes that the original baseline is valid and assessment is done as per methodological tool 'Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period v3.0.1'.

D.5. Impact assessment - Sustainable Development Matrix

Means of validation	As per GS4GG Safeguarding principles and requirements version 1.1 of March 2018, all projects shall conform to the Gold Standard for the Global Goals Safeguarding Principles & Requirements. The assessment is done as follows: <u>Principle 1- Human Rights:</u> The proposed project activity follows the human rights in accordance with the national legal framework. The project improves the livelihood of rural people and reduces the deforestation due to reduced usage of firewood. The project activity will not be put the human rights at risk. Hence, the project respects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project is not complicit in Human Rights abuses. The project activity involves production of biogas using the biogas digesters and produced biogas will be used in the households primarily for cooking purpose (end use) for the thermal energy needs. Hence, the project does not involve and is not complicit in involuntary resettlement as verified during the site visit. The project activity does not involve alteration damage or removal of any critical cultural heritage as confirmed during the site visit. <u>Principle 2 – Gender Equality and Women’s Rights:</u> Based on the registered GS documentation, including PoA-DD /10/ and transition document /08/, review and assessment of the VPA, it is evident that the activity enables the beneficiaries in using clean fuel (biogas) for cooking. Therefore, the activity helps in reducing the time wasted collecting firewood, along with the physical labour. Based on the gender roles it is mostly Women who shall be benefitted from the programme therefore the safeguarding principle is relevant to the programme in a positive manner. However, the CME chooses not to monitor, hence was found acceptable by the assessment team. <u>Principle 3 – Community Health, Safety and Working Conditions:</u> The project biogas system does not involve any hazardous material during construction and its operation. With the biogas system, users have access to cleaner fuel compared to fire-wood. In addition, fire-wood based cooking system has high indoor air pollution and a risk to fire-hazard. In comparison to that, biogas is clean smokeless fuel, and due to its maintained pressure there is no risk of any fire hazard or accident from the project activity. Hence, the project only leads to safe working conditions and improved in health of end users. Therefore, the emission reduction and improve in health condition has been included appropriately in the monitoring plan. <u>Principle 4 – Cultural Heritage, Indigenous Peoples, Displacement and Resettlement:</u>
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	The project is implemented in existing households where the fire-wood usage is replaced with biogas as fuel. This does not involve any damage to cultural heritage or displacement and resettlement and rights of indigenous people. The project activity takes place in households. Hence, this parameter is safeguarded by the project activity. <u>Principle 5 – Corruption:</u> The project involves installation of household biogas plants in rural households which does not require any specific permit or approval from any authority. The end users as owner of biogas system is taking part in the project activity with agreement to project developer to share benefits from the project to be developed as GS project. Therefore, the project does not have any scope for corruption or corrupt practice. The principle is safeguarded by the project activity. <u>Principle 6 – Economic Impacts:</u> Labour rights & negative economic consequences: The safeguarding principle is not impacted by the CPA because the project does not impact the local economy. The digesters which are installed are small, have little operation cost and the project is public funded, therefore, the CME is not monitoring. Since safeguarding principle is not impacted, the validation team found it acceptable for CME to not monitor this principle. ENVIRONMENTAL & ECOLOGICAL SAFEGUARDING PRINCIPLES: <u>Principle 1 – Climate and Energy:</u> The project being implementation of household biogas system replaces fire-wood which leads to overall emission reductions. The energy supply is not hampered compared to baseline. <u>Principle 2 – Water:</u> The project involves use of household biogas system which does not need waste in huge quantity. There is no need to extract ground water or the project has requirement to affect the pre-existing pattern of watercourses. Water is only needed to mix with cattle dung to make the intake feed as liquid which is very minimal in quantity. Therefore, the project does not have any negative impact on water. <u>Principle 3 – Environment, ecology and land use:</u> The project involves use of household biogas systems which does not involve any landscape modification or leads to vulnerable natural disasters. It also does not involve any manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials. It leads to negligible pollution (air pollution due to firing of firewood) compared to baseline scenario as the project technology replaces firewood consumption compared to baseline scenario. Hence, the principle is safeguarded by the project activity.
Findings	N/A
Conclusion	RINA confirms that conservative approach has been applied by PP to demonstrate sustainable development of the project activity which is in line with GS4GG requirements.

D.6. Demonstration of eligibility for the VPA(s)

Means of validation	Parameters	Required conditions	Assessment
	Geographical Boundary	The biogas digesters in the CPA within the geographical boundary of Nepal.	The biogas digesters in the CPA are within the geographical boundary of Nepal, which has been validated at the time of CDM validation of this project /03/. There is no change in

			digesters (except the total number became 19,999 from 20,000) already registered in the VPA and hence geographical boundary remains same. The revised numbers were verified during last verification of the CPA /05/ and consistent for the next crediting period.
	Double Counting	Double counting is avoided by assuring that no digester is already included to a different CDM project or CPA.	CME and CPA implementer have confirmed in the CDM CPA DDs /01/, /03/, /04/ that the project has not been part of any PA, bundled PA or PoA. The validation team has also checked the unique no. engraved on the pipe of digesters on sample basis and found consistent with the data base. Therefore, it confirms that double counting has been avoided for the CPA.
	Technology/measure	• AEPC has implemented this CPA as part of the BSP. • All digesters listed in the CPA are household biogas digesters with a sludge and gas holding capacity range of 2-10 m3. • Biogas is supplied to a stove with a maximum capacity of 400 l/h leading to a maximum annual gas capacity of not more than 1.86 kWth per stove. • The equipment for each biogas plant installation under CPA is new and not transferred from other project activities	The required conditions were verified to have been fulfilled using CPA DDs /04/, /05/ of CDM PoA project 9572.
	Start Date of CPA	The start date of a CPA is the date of commissioning of the first biogas digester included to that respective CPA; the start date of CPAs are after the last installation of the previous CPA.	Start date of the CPA is 22/06/2007. This is as per validation report of the CPA /03/. The start date of the CPA is after the start date of the PoA /01/.

	Compliance with applied methodology	The activity replaces non-renewable biomass.	The CPA complies with the applied methodology AMS-I.E. version 9.0 /06/. Please refer to section D.3 of this report for the detailed assessment.
	Diversion of official development assistance	The CPA does not result into the diversion of official development assistance.	The VPA is already registered and appropriate declaration provided /03/,/05/.
	Target Group and distribution mechanism	The target groups within the CPA are households.	Since the target groups were surveyed at the time of CPA Validation /03/, the required conditions were met.
	Threshold Check	Number of biogas digester included in each CPA shall not exceed 20,000 units, which assures compliance with the small-scale limit of 45MWth.	The calculations in respective ERs, which have been validated in the CDM validation report of project, have shown that around 24,000 stoves would still have an aggregated capacity below the 45MWth. The digesters being implemented in CPA 1 is 19,999 and therefore, the overall capacity of all digesters combined in the CPA is below 45MWth.
	Other/ Voluntary action	The owners of the digesters listed in the CPA have signed an agreement in which it allows AEPC to market the emission reductions from the installation and operation of the digester.	The CPA is voluntary in nature and not mandated by the Government, which was verified from declaration provided by AEPC /03/. As verified from validation report, owners of digesters have agreed to allow AEPC to market these emission reductions.
Findings	N/A		
Conclusion	Validation team confirms that the CPA meet all the eligibility criteria stipulated in PoA DD.		

D.7. Estimated GHG emission reductions or net anthropogenic GHG removals

Means of validation	The emission reductions for the project activity is estimated as per equation 6 of AMS-I.E version 09 as follows: $ER_y = BE_y - PE_y - LE_y$ Where: ER_y = Emission reductions during year y in t CO₂e BE_y = Baseline Emissions PE_y = Project Emissions LE_y = Leakage Emissions Baseline emissions are estimated as per equation 1 of AMS-I.E version 09 as follows: $BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel}$
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Where:

BE_y = Baseline emissions during the year y in t CO₂e

B_y = Quantity of woody biomass that is substituted or displaced in tonnes

$f_{NRB,y}$ = Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass (fNRB)

$NCV_{biomass}$ = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne)

$EF_{projected_fossil\ fuel}$ = Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 63.7 t CO₂/TJ

By is determined as per equation 2 of AMS-I.E version 09 as follows:

$$B_y = N_{HH} \times (BC_{BL,HH,y} - BC_{PJ,HH,y})$$

Where:

N_{HH} = Number of households in the project activity, number. A cap of 19,999 household is considered in the CPA.

$BC_{BL,HH,y}$ = Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year

$BC_{PJ,HH,y}$ = If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per household in the pre-project devices during the project activity, tonnes/household/year

Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year ($BC_{BL,HH,y}$) is determined as per baseline survey and if pre-project device is continue to be use $BC_{PJ,HH,y}$ shall be monitored and considered accordingly. Number of households in the project activity (N_{HH}) shall be monitored and reported accordingly. $BC_{BL,HH,y}$ is 5.04 ton/HH/year as per survey report /11/. The survey meets the latest version of the 'standard: sampling and survey for CDM project activities and programme of activities' following 'Guidelines for sampling and surveys for CDM project activities and programme of activities' version 04 in determining sample size. Determination of $BC_{BL,HH,y}$ is consistent with the options provided in the applied methodology AMS-I.E version 09.

$f_{NRB,y}$ is calculated as per procedures outlined in tool 'Calculation of the fraction of non-renewable biomass' version 02. The input value and calculation of fNRB has been approved by Ministry of Environment and Forest, Nepal /12/. The value is 86.10%.

Total Baseline emissions from one CPA would be = $19,999 \times 89\% \times 4.5 \times 86.10\% \times 0.0156 \times 63.7$
= 68,529.57 tCO₂e.

Project emissions: As per the applied methodology, the project does not have any project emissions.

Leakage Emissions: The project activities are not meant to use biomass as either fuel or feedstock and therefore, 'tool: project and leakage emission from biomass' is not applicable. In consistent with methodology paragraph 24, leakage emissions (from use/diversion of non-renewable woody biomass saved under the project activity by non-

	project households/users that previously used renewable energy sources) from the project is accounted multiplying By with 0.95 as default. Accordingly, the emission reductions estimated from a single CPA is $= 68,529.57 * 0.95 = 65,103 \text{ tCO}_2/\text{year}$
Findings	N/A
Conclusion	RINA confirms, the VPA-DD correctly lists assumption and data used by the PP for estimating emission reduction including their references and sources. Source of data and assumptions are correctly quoted and interpreted in the VPA-DD. All values used in the VPA-DD are considered reasonable in the context of the proposed CDM PoA. The baseline methodology and corresponding tools have been correctly applied to calculate project, baseline and leakage emissions, and emission reductions. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PoA-DD

D.8. Validity of monitoring plan

Means of validation	The monitoring plan in the VPA-DD is consistent with the latest methodology, AMS-I.E Version 09 and registered PoA-DD. Validation team confirmed from the document review that the list of parameters including the means of monitoring is described in accordance with the applied methodology. Following are the parameters to be monitored: a) The share of digesters implemented that is operational –the parameter shall be monitored CPA wise at least biennially (as part of Biogas User Survey) following sampling approach as per the applied methodology. This parameter shall be used to arrive By value. b) Date of commissioning of project device of type i- Actual date of commissioning of any digester included in a CPA shall be recorded in CPA specific database and shall be verified during verification. Commissioning reports shall be used to cross check the actual date of commissioning. c) Average annual consumption of woody biomass per household in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent ($BC_{PJ,HH,y}$) shall be monitored thorough survey at least once every two years (biennial). The result shall be used to determine 'By' during each verification. The monitoring plan is still same in consistent with the latest methodology and hence valid for the next crediting period. RINA is of the opinion that monitoring plan is feasible within the project design.
Findings	N/A
Conclusion	RINA confirms that the monitoring plan included in the updated VPA-DD is valid as per the applied methodology and conforms the registered PoA-DD.

D.9. Validity of the sustainability monitoring plan

Means of validation	Apart from monitoring relevant parameter under SDG 13 as discussed in section G.5 above, parameters pertaining to SDG 7 and SDG 3 are consistent with registered PoA-DD (GS4GG transition annex) /08/. The monitoring plan of those parameters are discussed below:		
	SDG Indicator	Parameter	Validation
	SDG 3.9.1- Mortality rate attributed to household and ambient air pollution	Users' perception on reduction in indoor air pollution	The improvement in air quality perceived by the beneficiaries will be recorded during the conduction of questionnaire-based surveys (Biogas User Survey) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be

¹ Ex-ante operational status of number of biogas plants are considered to be 89% as per latest survey report.

			randomly selected using the sampling plan. Improvement in air quality can be expected after shifting from conventional fuelwood to biogas, which will release less smoke compared to the baseline fuel. Stating SDG 3.9.1 i.e. 'Mortality rate attributed to household and ambient air pollution' as a relevant SDG indicator is justified because improved air quality within the household will lead to improvement in health of the household members too. Since the applied methodology /06/ demands replacement of firewood with biogas, which has been confirmed in the PoA DD/10/ and CPA DDs of the CDM PoA 9572, reduction in health-related problems should be expected.
		Reduction in health problem	User's perception on reduction in health problems will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.1 i.e. 'Mortality rate attributed to household and ambient air pollution' as a relevant SDG indicator is justified, since the parameter is directly used to measure how much improvement users perceive to have gained in their health from the CPAs, particularly from reduced exposure to smoke from combustion of the conventional fuel. Since the applied methodology /06/ demands replacement of firewood with biogas, which has been confirmed in the PoA DD /10/ and CPA DD of the CDM project 9572, reduction in health-related problems should be expected
		User's perception in Time saving for the cooking (reduce exposure to indoor air pollution)	Users' perception on time saving due to project (comparing to baseline) and use of the saved time will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.1 i.e. 'Mortality rate attributed to household and ambient air pollution' as a relevant SDG indicator is justified, since the saved time can be utilised to create a better lifestyle for the users, thus providing for their well-being.

	7.1.2- Proportion of population with primary reliance on clean fuels and technology	Time saving (Fuel wood collection)	Users' perception on time saving due to project (comparing to baseline) and use of the saved time will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. SDG 7.1.2 (Proportion of population with primary reliance on clean fuels and technology) seem to be the most relevant SDG for this parameter.
		Trainings to Masons	Training of the masons will be monitored using the training report which will be maintained regularly. The parameter will be reported at least biennially. This parameter holds relevance in context of SDG 7.1.2, because training of masons will lead to their capacity building, thus securing their future and ensuring more penetration of biogas technology. According to the CDM PoA DD of the project/10/, the Nepal Biogas Promotion Association (NBPA) will be executing skill enhancement packages for the masons
	3.9.3- Mortality rate attributed to unintentional poisoning	Users perception in reduction of chemical fertilizers	Users' perception on reduction of chemical fertilizers due to project (comparing to baseline) will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.3 i.e. 'Mortality rate attributed to unintentional poisoning' as a relevant SDG indicator is justified, reduction of use of chemical fertilizer leads mortality rate from unintentional poisoning
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)	Improved access to sanitation services	Users' perception on connection of toilet to biogas will be recorded during the conduction of questionnaire based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.2 i.e. 'Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)' as a relevant SDG indicator is justified, since connecting the toilets to biogas

			digester would encourage usage of toilets over open defecation.
	Safeguarding Principle 4.3.8	Impact on Crop Productivity	Users' perception on impact of CPAs on crop productivity will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey conducted by the PP. The monitoring of this parameter will be done at least biennially; the households will be randomly selected using the sampling plan. The safeguarding principle found relevant for this parameter is food. Crop productivity can improve from the usage of composted slurry instead of chemical fertilizers, thus maintaining productivity at a lower cost. Crop productivity can also improve due to time saved by the users which was spent earlier on firewood collection, which can be utilised to focus on the crops
Findings	N/A		
Conclusion	RINA confirms that the sustainable development monitoring plan included in the updated VPA-DD is in consistent with GS principles and requirements and feasible within the project design.		

D.10. Crediting period

Means of validation	The second crediting period for the CPA start from 31/01/2020 to 30/01/2027, immediately after the end of the first crediting period (31/01/2013 to 30/01/2020). The duration of the PoA is 22/06/2007 to 21/06/2035 and hence the second crediting period is within the duration of the PoA. The operational life of each digester is 20 years and first set of digesters within the CPA commissioned on 22/06/2007 which will end its technical life on 21/06/2027. Therefore, technical life of all digesters within the CPA will cover the entire second crediting period.
Findings	N/A
Conclusion	RINA confirms that CME has correctly updated the second crediting period from 31/01/2020 to 30/01/2027 for the VPA (CPA 1).

D.11. CME and project participants

Means of validation	Cross checking the CME and project participants name from the list of project participants and CME of the PoA from the view page at UNFCCC website and latest MoC statement. RINA also reviewed the letter of approval (Ref.838) dated: 31/12/2009 issued from the DNA of Nepal authorizing AEPC as CME and letter of approval from NDA of Germany (dated 16/11/2017) authorizing First Climate Markets AG as project participant and letter of approval dated 09/02/2015 from DNA of Germany authorizing Atmosfair gGmbH as project participant. The latest MoC dated: 17/04/2019 to confirm the name of the project participant. The PoA-DD is updated accordingly.
Findings	N/A
Conclusion	RINA confirms that the CME and project participants of the VPA is listed in the updated VPA-DD and this information is consistent with registered PoA-DD and information available at GS for the PoA.

D.12. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)
Corrections	N
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	N
Changes to the project design of a registered programme of activities	N

Changes to project design of generic component project activities or specific-case component project activities	N
Types of changes specific to afforestation and reforestation project activities	N

SECTION E. Internal quality control

The draft final validation report before being submitted to the client is subjected to an independent technical review to confirm that all validation activities has been completed according to the pertinent RINA's procedures. The technical review is performed by a technical reviewer(s) qualified in accordance with the RINA's qualification procedure.

SECTION F. Validation opinion

RINA has performed the validation of the updated VPA-DD for the VPA 'Nepal Biogas Support Program- CPA 1: 20,000 digesters' in Nepal, GS Registration Reference No. 3109; the validation is performed for the 2nd renewal crediting (from 31/01/2020 to 30/01/2027) and is on the information available to us.

The review of the VPA-DD version 02 and the subsequent follow-up interview have provided RINA with sufficient evidence to determine the validity of the original baseline and the sustainable indicators; the VPA correctly applied the baseline monitoring methodology AMS-I.E, 'Switch from Non-Renewable Biomass for Thermal Applications by the User', version 09.

In conclusion it is RINA's opinion that the VPA meets all the relevant GS requirements for renewal of the 2nd crediting period.

Appendix 1. Abbreviations

Abbreviations	Full texts
AEPC	Alternative Energy Promotion Center
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CME	Coordinating and managing entity
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CPA	Component project activity
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GS4GG	Gold Standard for Global Goals
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
kW	Kilo Watt
LoA	Letter of Approval
MoC	Modalities of Communication
MoV	Means of Verification
MR	Monitoring Report
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PoA	Program of Activities
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation and verification body
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI* QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Cyril Augustus Arokiasamy Amalorpavanathan

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, Local Expert, ITRP

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
3.1	Energy Demand	3
5.1	Chemical Industry	5
13.1	Solid Waste and wastewater	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)
2	09/10/2017	Qualification update as ITRP

Responsabile di schema
Scheme Leader
Laura SEVERINO

*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/ricosciuto da
RINA Services S.p.A. is accredited /recognized by

UNFCCC	quali Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects
VCSA	per condurre la Validazione e la Verifica di Progetti VCS to carry out Validation and Verification of VCS Projects
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS to carry out Validation and Verification of GS Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS to carry out Validation and Verification of SCS Reports
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR to carry out Validation and Verification of ACR projects
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects

GHG_QUAL_CERT_EN_07_16 Voluntary(Certificate)

Page 1 of 1



**CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES***

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Champak Buragohain

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, ITR, Local Expert

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1	Thermal Energy Generation	1
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13
13.2	Manure	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)
2	10/10/2019	Qualification update as TEC in TA 1.1

Responsabile di schema
Scheme Manager
Giovanni D'Angelo

*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard

TBC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/recognizzato da
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GHS_QUAL_CERT_EN_07_16 Voluntary(Certificate)

Page 1 of 1

CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Hui Feng Liu

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, ITRP

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
8.1	Mining and mineral processes	8
9.2	Iron, steel and Ferro alloy production	9
13.1	Solid waste and wastewater	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)

Responsabile di schema
Scheme Leader
Rita Valoroso



*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

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The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	AEPC	Registered CPA- DD 'Nepal Biogas Support Program- CPA 1: 20,000 digesters' and updated CPA-DD	Version 14 of 13/01/2013 Version 02 of 07/11/2019	CME
2	AEPC	Emission reduction worksheet	Version 02 of 07/11/2019	CME
3	TUV Sud	CDM Validation report for the CPA inclusion 'Nepal Biogas Support Program- CPA 1: 20,000 digesters'	Report no. 600500123 dated 31/01/2013	CME
4	RINA	CDM Validation report for the PoA 'Nepal Biogas Support Program-PoA- PoA 9572' in Nepal (Second crediting period)	Version 2.0 Aa of 17/09/2019	VVB
5	UNFCCC	UNFCCC webpage: PoA 9572 : Nepal Biogas Support Program-PoA	https://cdm.unfccc.int/ProgrammeOfActivities/po_a_db/7BSCYZMH2U05T-WXFJKELND18PRQ96O/view	Publicly available
6	UNFCCC	Small-scale methodology 'Switch from non-renewable biomass for thermal applications by the user'	Version 09 of 31/08/2018	Publicly available
7	Gold Standard	Programme of Activity Requirements	Version 1.1 of 01/03/2018	Publicly available
8	Gold Standard	Transition Annex 'Nepal Biogas Support Program-PoA and CPA 1-CPA 5'	Transition review dated 01/08/2018	CME
9	Jean Marie Baland	Jean Marie Baland, "The Environmental Impact of Poverty: Evidence from Firewood Collection in Rural Nepal", Boston University - The Institute for Economic Development Working Papers Series, 30 June 2007	2007	Publicly available
10	AEPC	Updated PoA-DD for the PoA 'Nepal Biogas Support Program-PoA' in Nepal	version 02 of 07/11/2019	CME
11	Prakriti Consult (P) Ltd.	Biogas user survey 2017/18 for Biogas Support Program-Nepal (BSP-Nepal) Activity-1, Activity-2, Activity-3 and Activity-4	May 2018	CME
12	Ministry of Forest and Environment	Confirmation on fNRB value of Nepal	Letter dated 25/11/2018	CME

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

Table 1. CL from this validation

CR ID	xx	Section no.	Date: DD/MM/YYYY
Description of CR			

No CR raised.	
CME response	Date: DD/MM/YYYY
Documentation provided by CME	
DOE assessment	Date: DD/MM/YYYY

Table 2. CAR from this validation

CAR ID	xx	Section no.		Date: DD/MM/YYYY
Description of CAR				
No CAR raised.				
CME response				Date: DD/MM/YYYY
Documentation provided by CME				
DOE assessment				Date: DD/MM/YYYY

Table 3. FAR from this validation

FAR ID	xx	Section no.		Date: DD/MM/YYYY
Description of FAR				
No FAR raised.				
CME response				Date: DD/MM/YYYY
Documentation provided by CME				
DOE assessment				Date: DD/MM/YYYY

