REDUCING GAS LEAKAGES WITHIN THE JALALABAD GAS DISTRIBUTION NETWORK IN BANGLADESH

Document Prepared by KBS Certification Services Pvt. Ltd

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Report Title	Reducing Gas Leakages within the Jalalabad Gas Distribution Network in Bangladesh
Client	EcoGas Asia Limited
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Summary:

EcoGas Asia Limited has commissioned KBS Certification Services Pvt. Ltd. to do gap validation under VCS for a CDM registered project activity: "Reducing Gas Leakages within the Jalalabad Gas Distribution Network in Bangladesh" having UNFCCC Ref. No. 10561, with regard to the relevant requirements of VCS Standard version 4.2.

The proposed project activity aims to reduce natural gas leakage in the distribution network of JGTDSL through the implementation of advanced leak detection and repairs (LDAR) procedures. The project activities will include inspection and leak measurements, as well as repair works at components in the natural gas above ground distribution system using advanced leak detection and measurement technology including HiFlow Samplers. Leak Measurement Devices and Gasurveyors as well as advanced repair materials.

A risk-based approach has been followed to perform this validation. In the course of the validation 02 Clarification Request (CL) and 02 Corrective Action Request (CAR) were raised and successfully closed. No Forward Action Requests (FAR) were raised during the gap validation process.

The validation is based on the VCS PD, UNFCCC website for the CDM registered project activity https://cdm.unfccc.int/Projects/DB/RINA1583318622.49/view; the subsequent background investigation, follow-up interviews and supporting documents made available to the validation team by project proponent.

As a result of the validation, the validation team confirms that:

- The project fulfils criteria of VCS Standard Version 4.2.
- The project is in line with all relevant VCS requirements.
- The project baseline is sufficiently justified in the PD.

The calculation of the baseline and project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 10,489,441 tCO_2e is most likely to be achieved within the 10 years of fixed crediting period under VCS.

No restrictions or uncertainties were identified related to the validation.

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1 INTRODUCTION

1.1 Objective

EcoGas Asia Limited has commissioned KBS Certification Services Pvt. Ltd. to do VCS gap validation of the CDM registered project activity: "Reducing Gas Leakages within the Jalalabad Gas Distribution Network in Bangladesh" having UNFCCC Ref. No. 10561 and VCS ID 2737, with regard to the relevant VCS requirements of VCS Standard version 4.2; to attain real, measurable, additional and permanent emission reductions.

The purpose of validation is to ensure a thorough, independent assessment of the project description (PD), in particular the project's description eligibility, ownership, crediting period and details regarding its compliance with the law statutes and other regulatory frameworks.

- The requirements of VCS Program Guide Version 4.1 /8/
- The requirements of VCS Standard Version 4.2 /9/
- To assess the project's compliance with other relevant rules, including the project country (Bangladesh) legislation and
- Other relevant rules are validated in order to confirm that the project description as documented is sound and reasonable and meet the stated requirements and identified criteria.

The validation is seen as necessary to provide assurance about the quality of the project and its intended generation of emission reductions over the project's crediting period without any double counting. /5/

1.2 Scope and Criteria

The scope of the gap validation is defined as an independent and objective review of the sections 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17, 1.18 and 3.6 of the VCS Project Description Template, where methodological deviations and the project's compliance in section 1 (i.e., Project Details) is reviewed against the requirements of VCS Standard. KBS has employed a risk-based approach in the validation, focusing on the identification of significant risks for the generation of Emission Reductions.

The items covered in the validation are described below:

- VCS Criteria
- VCS Project Description sections 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17, 1.18 and 3.6
- Background investigation and follow up interviews
- Draft validation reporting with CARs & CLs, if any
- Final validation reporting

The validation scope is to review the above sections of the VCS PD against the VERRA criteria for VCS gap validation. The gap validation is based on the information made available to KBS and on the contract conditions.

The validation is not meant to provide any consulting to the project proponent. However, stated requests for clarifications and corrective actions may provide input for improvement of the project description. The work carried out by KBS is free from any conflict of interest.

1.3 Level of Assurance

☑ Reasonable level of assurance

The gap validation report is based on VCS-PD, supporting documents made available to the validator and information collected through performing interviews. Based on the process and procedures conducted, KBS states whether the information in the above stated specific sections of the PD:

- is materially correct and is a fair representation of the actual project details, and
- is prepared in accordance with VCS requirements and the applied CDM methodology for information pertaining to description, methodological deviations and reporting.

The gap validation work is carried out as per this requirement and the validation opinion is assured provided the credibility of all above. Details are presented in the Validation statement in section 4 below.

1.4 Summary Description of the Project

The proposed project activity aims to reduce potent greenhouse gas leakage from components into the system and then to atmosphere (predominantly methane). Leaks in the distribution system are caused by normal component wear, thermal and vibrational stresses and seasonal expansion/contraction cycling from ambient air temperature changes. Natural gas leaks occur

through various sources including, ball/gate/plug valves, flanges, and connectors. These components have not been routinely checked for leaks under existing safety practices of JGTDSL. The company operators lack the advanced leak detection equipment, advanced repair materials and trained workers to identify chronically leaking components, accurately measure the leak rates and make reliable repairs of the leaks.

The project activity planned to reduce natural gas leakage in the distribution network of JGTDSL. The project implements advanced leak detection and repairs (LDAR) procedures to identify and implement various reduction of methane emissions repair works at components in the natural gas above ground distribution system, using advanced leak detection and measurement technology including HiFlow Samplers. Leak Measurement Devices and Gasurveyors as well as advanced repair materials. In addition, selected staff of JGTDSL will be trained in advanced leak detection, measurement, and repair techniques. The project will lead to the reduction of methane emissions at flanges, valves, insulating joints and other above ground equipment components.

The estimated total amount of emission reductions over the chosen 10-year "fixed crediting period" are 10,489,441 tCO_2e. The estimated amount of emission reductions per annum are 1,048,944 tCO_2e.

In opinion of Validation team it has checked that the project activity "Reducing Gas Leakages within the Jalalabad Gas Distribution Network in Bangladesh' as defined in section 1.1 of VCS PD meets all the relevant requirements for VCS standards and found consistent with the registered CDM-PDD/2.1/ https://cdm.unfccc.int/Projects/DB/RINA1583318622.49/view /2.3.

2 VALIDATION PROCESS

2.1 Method and Criteria

The PA applies approved CDM large-scale methodology AM0023, version. 04.0, categorized under sectoral scope 10 "Fugitive emission from fuel". The validation consisted of the following phases:

- Completeness check and desk review of the Project Description
- Interview with project representatives and issuance of findings.
- Resolution of findings followed by preparation of the final validation report and opinion.

Timeline of Validation:

Work order signed	06-December-2021

Onsite validation/Remote audit	24-May-2022
Draft Reporting	25-May-2022
Final Reporting	16-June-2022
Final report after addressing VCS PRR issues	24-Aug-2022

2.2 Document Review

After the submission of the draft PD and supporting background documents related to the project design and baseline from the client, the completeness of information required for gap validation as per VCS standard version 4.2 /9/ requirements is reviewed. The project has been listed in the VERRA (https://registry.verra.org/app/projectDetail/VCS/2737). A desk review is carried out to assess the following:

- the project details as per VCS PD template in sections 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.12, 1.13, 1.14, 1.15.1, 1.16, 1.17, 1.18 and 3.6 (gap validation)
- any methodological deviations applied
- compliance with relevant law and regulations
- conditions prior to project initiation/ baseline

The list of documents reviewed is included in the section 'References'

2.3 Interviews

Please refer section 2.4, where complete list of interviewed personnel and key points discussed is provided.

2.4 Site Inspections

As a result of the COVID-19 pandemic, taking into account the rules of relevant national and local authorities (local to the VVB offices as well as to locality of the site visits), World Health Organization (WHO) recommendations, policies of the VVB, email clarification for Verra guidance on site visits, notification of Covid-19 Travel Guidance for Projects https://verra.org/covid-19-travel-guidance/ and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return from specific countries), the VVB has skipped the on-site visit. Further Email from VERRA dated 24/03/2020 from "Andrew Beauchamp" has been referred as per which "*The VCS Program does not explicitly mandate site visits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the*

VCS Standard, v4.1). Therefore, where a VVB can achieve a reasonable level of assurance without conducting a site visit, or through a remote site visit, this is in conformance with the VCS rules, and no request for an exemption or pre-approval from Verra is required. However, where a validation/verification has been conducted without a site visit, or through a remote site visit, please ensure that the applicable section of the validation/verification report includes a discussion of how a reasonable level of assurance was achieved without an in-person site visit".

Hence, the VVB has used other standard auditing techniques for validation as referred to in VCS Rules/requirements, VCS Validation and Verification Manual version 3.2/10/,

Validation team has used the following alternative means for its assessment and to justify that they are sufficient for the purpose of gap validation. Along with desk review, audit team has conducted remote audit interview/12/ as follows:

- A complete desk review of the VCS PD, as well as all applicable country legal requirement and supportive evidences have been checked by the validation team.

- Validation team has performed mode of interview with PP in order to check project design, ownership, technology, assess safety compliance arrangements, monitoring etc.

- Cross-check evaluation, for information received from interviews, under the scope of all information and references provided in VCS PD and supporting documents.

KBS has conducted a remote inspection on 24 May 2022 for the gap validation process of Jalalabad Gas Distribution Network in Bangladesh using the virtual platform (WhatsApp Calls) with the management/site-specific personnel. The key highlights of the inspection process are as follows:

i) Introductory call with the management of project entities emphasizing the process of monitoring, project description, data archiving, QA/QC procedures, safety protocols followed, training procedures, etc.

ii) WhatsApp video calls with Jalalabad site personnel which included cross-checking the following;

a) Leakage point tags: Assessment team checked & verified the Tags that are attached to the leakage points; tags contain the leak number code, the initial leak rate (in lpm), the date of repair, etc.

b) Live Geo-coordinates: During the remote audit, the assessment team checked the live geo-coordinates of the Jalalabad site displayed by the site person

c) Demonstration of leakage measurement using Gas surveyors (GS) at the actual leakage points: Assessment team checked the Currents readings measured by GS during the remote audit i.e. 0 lpm.

d) Previous reading observed: Initial readings observed during the repairs were checked during the remote audit.

iii) During remote assessment following locations at Jalalabad were assessed with the codes as: SYL.N.1.RR.733, SYL.N.1.RR.734, SYL.N.1.RR.735, and for evidence site-specific photographs are provided by the PP.

During the remote inspection, interviews were carried out and details of interviewees, topics covered and additional information are presented below:

Date:	24 May 2022 (WhatsApp Video call)		
Key points discussed:	**Name of person, interviewed**	**Designation, Organization**	**Team member**
Project description, Ownership, Project start date, ,sample repair points and their geo coordinates and procedure to avoid double counting	Kevin James	Director, Climate Compass	Team Leader Ms. Anjana Sharma Trainee Validator Ms. Varsha Bohiya Technical Area Expert (TA 10.1 Mr . Manoj K. M. Chaturvedi
	Volodymyr Potapenko	Director, MBS Ltd	
	Mahbub Sarwar	Project Manager, PSL	
	Md. Saifur Rahaman	Project Coordinator, PSL	
	Md. Belayet Hossain	Project Coordinator, PSL	
	Md. Mohi Uddin	Database Manager, PSL	
	Md. Abdul Barek	Database Manager, PSL	
	Md. Tanvir Ahmed	Operating Manager, PSL	
	Md. Atik Shahriar	Operating Manager, PSL	
	Oleksandr Potapenko	Deputy Director, MBS Ltd	

	Akhilesh Joshi	Sr. Manager, CSAT, C-Quest Capital	

2.5 Resolution of Findings

KBS applies the risk-based approach aimed at focusing on high-risk issues to the validation results whilst not omitting any part of the mandatory processes. A few discrepancies were found during the validation and the validation report was submitted to the project proponent, indicated under the titles corrective action requests (CARs) and clarification requests (CLs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

- the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions
- the Voluntary Carbon Standard's requirements have not been met, or
- there is a risk that emission reductions cannot be monitored or calculated.

Clarification request (CL):

- Information is insufficient or not sufficiently clear to determine whether the applicable VCS requirements have been met.

FARs is to be raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs does not relate to VCS requirements for registration. CARs and CLs are to be resolved or closed out if the PP modifies the project description, rectifies the PD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration under VCS registry.

02 CAR and 02 CL were found during validation.

2.5.1 Forward Action Requests

No FARs raised during the validation.

3 VALIDATION FINDINGS

3.1 Project Details

- Project scope, activity, type, technologies and measures implemented, (Section 1.1 of VCS PD)

The proposed project activity aims to reduce potent greenhouse gas leakage from components into the system and then to atmosphere (predominantly methane). Leaks in the distribution system are caused by normal component wear, thermal and vibrational stresses and seasonal expansion/contraction cycling from ambient air temperature changes. Natural gas leaks occur through various sources including, ball/gate/plug valves, flanges, and connectors. These components have not been routinely checked for leaks under existing safety practices of JGTDSL. The company operators lack the advanced leak detection equipment, advanced repair materials and trained workers to identify chronically leaking components, accurately measure the leak rates and make reliable repairs of the leaks.

The project activity planned to reduce natural gas leakage in the distribution network of JGTDSL. The project implements advanced leak detection and repairs (LDAR) procedures to identify and implement various reduction of methane emissions repair works at components in the natural gas above ground distribution system, using advanced leak detection and measurement technology including HiFlow Samplers. Leak Measurement Devices and Gasurveyors as well as advanced repair materials. It is confirmed from training documents that selected staff of JGTDSL will be trained in advanced leak detection, measurement, and repair techniques. The project will lead to the reduction of methane emissions at flanges, valves, insulating joints and other above ground equipment components.

The estimated total amount of emission reductions over the chosen 10-year "fixed crediting period" are 10,489,441 tCO_2e. The estimated amount of emission reductions per annum are 1,048,944 tCO_2e.

During the remote audit inspection, location (as mentioned in section 1.12 of VCS PD) and all the technical aspects of the project activity mentioned in the VCS PD have been verified. The same was also crosschecked during the desk review of supporting documents. The Validation team has checked all the above-mentioned details and confirms that all the information provided is accurate. CAR 02 and CL 01 has been raised and successfully closed (Refer to Appendix 3 for further details).

- Section 1.2 of the VCS PD:

  The project activity falls under Sectoral Scope 10 – Fugitive emissions from fuels. And the project is not a grouped project.

- Section 1.3: Project's eligibility: Based on the following information validated by validation team, project is confirmed to be eligible under VCS program:

  1. The emissions reduction of the project comes from Methane (CH4) emissions as a result of the previously leaking gas that will be eliminated by finding and repairing the leak in the project scenario; Thus, the project is applicable to this scope.

2. Ozone-depleting substances: This project does not involve ODSs.

3. Project activities supported by a methodology approved under the VCS Program through the methodology approval process: This project does not use a methodology approved under the VCS Program through the methodology approval process. The project is based on CDM approved Methodology AM0023, version 4.0.

4. Project activities supported by a methodology approved under a VCS approved GHG program, unless explicitly excluded under the terms of Verra approval: The methodology AM0023, Version 04 the project utilized is a methodology approved under CDM Program, that is a VCS approved GHG program.

5. Jurisdictional REDD+ programs and nested REDD+ projects as set out in the VCS Program Document Jurisdictional and Nested REDD+ (JNR) Requirements: This project does not involve REDD+.

In addition to above, the project is not included in the projects excluded in Table 1 of VCS Standard 4.2.

- **Section 1.5 and 1.6 of VCS PD:** Project proponent

M/s EcoGas Asia Limited is the project proponent of the proposed project. The same has been verified from the CDM registered PDD/2.1/ (https://cdm.unfccc.int/Projects/DB/RINA1583318622.49/view)/2.3/ and the letter of approval (LoA)/3/ issued by the host country DNA to confirm that the managing director/authorized signatory is the same person (Mr. Ken Newcombe), as mentioned in the section 1.5 of the VCS-PD. Hence, the PP has been verified and accepted by validation team.

Item	Data
Project Entities	EcoGas Asia Limited (Project Owner)
	Climate Compass LLC (Project consultant)

Other entities involved in the project activity is Climate Compass LLC. Main responsibilities of this entity is "Project development and implementation".

- **Section 1.8 of the VCS PD:** Project start date

As per the project description (PD), the start date of the project activity is stated as 20 January 2019 which is the date when the first emission reduction occurred when a repair was made preventing methane from leaking into the atmosphere. The validation team has verified the logbook record of repairs done on first day i.e. 20 January 2019 to confirm the date of 1st repair done under this project activity. This is in accordance with section 3.7 of VCS standard, Version 4.2 /9/.

- **Section 1.9 of VCS PD**: Project crediting period:

  10-year fixed crediting period has been selected by PP. Duration of crediting period is 20 January 2019 to 19 January 2029.

- **Section 1.10 of the VCS PD:** Project scale and estimated GHG emission reductions or removals

  The estimated volume of emission reduction from the project activity is greater than 300,000 tons of CO_2e per year. The validation team confirms that the project activity falls under the category 2 'Large scale Projects' as per para 3.9.1 of the VCS standard version 4.2 /9/, as it does have the potential to reduce GHG emission more than 300,000 tCO_2e/year.

  The estimated annual average and the total CO_2e emission reduction by the project activity over the fixed crediting period of 10 years are expected to be 1,048,944 tCO_2e and 10,489,441 tCO_2e respectively.

  Emission reduction estimates have been verified by validation team are found to be in line with the applied methodology. For arriving at emission reduction estimates for VCS crediting period, PP has followed the below approach:

  - BE_{CAP} (11,24,521 T CO_2 e) has been arrived at based on the actual monitored leak rate during the first crediting year (20-Jan-2019 to 20-Jan-2020)
  - Minimum of BEcap (11,24,521 T CO_2 e) and actual ERs of a year have been considered as estimated ERs of a particular year.

	Estimated ER	Adjusted BCAP	Estimated ERs Claimed (Min of estimate ERs and Adjusted B_{CAP})	Notes
Year				
2019 (20 Jan 2019 to 31 Dec 2019)	4,16,043	10,72,296	416043	(Calculation based on monitored results in CER Totals Tab)
2020	10,18,693	11,24,521	10,18,693	(Calculation based on monitored results from 01-January-2020 to 30-July-20 and also includes actual issuance via CDM

				31-July 2020 to 31-December 2020)
2021	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2022	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2023	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2024	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2025	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2026	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2027	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2028	11,24,521	11,24,521	11,24,521	(Estimated based on total leaks found and repaired)
2029 (01 Jan 2029 – 19 Jan 2029)	58,537	58,537	58,537	(Estimated based on total leaks found and repaired)
		Total	**10,489,441**	

Calculations as provided transparently in Emission reduction estimate excel sheet /4.2/ are based on formulae defined in applied methodology AM0023, version 04 /7/

- **Section 1.12 of VCS PD:** Project location

  The project is located and operated by Jalalabad Gas Transmission and Distribution System Limited at Sylhet division consisting of the districts of Sylhet, Moulvibazar, Habigonj and Sunamgonj. With its Headquarters at Bhaban, Mendibag, Sylhet - 3100 Bangladesh. The geographic co-ordinates of project site are provided below:

  Geo coordinates: N 24° 53' 4.2642", E 91° 52' 52.215"

  Further, exact location of the repaired leaks has been verified during remote assessment and by reviewing the recorded data in the monitoring system database and coordinates provided by PP, and a street address when possible or a description of the location. A photographs of the leak repair is also provided for each leak include in the project provided by PP and few samples were verified during the remote audit as well.

- **Section 1.13**: Conditions prior to project initiation

In the absence of the project activity significant percentage of natural gas leaks from components in the system & atmosphere. The project aims to reduce gas leakages from components in the natural gas transmission and distribution system operated by (JGTDSL) in Bangladesh. Currently, JGTDSL does not have a formal operational procedure or specification on what type of maintenance should actually be implemented to ensure the proper functioning of components across the network.

Further, during the remote interviews, it has been confirmed that the JGTDSL team generally relies on odor and soap bubbles to identify leaks which is ineffective as odor does not allow a repair person to identify a leak or its size and this method gives no information on the actual size of the leak which is critical to making cost-effective repairs. Also, there is no limit on how much a component can leak before it is declared unsafe.

During the remote assessment, it is identified that the JGTDSL does not have any advanced leak detection equipment and the company lacks the modern repair materials required to fix all leakages. The validation team has checked this scenario with the registered documents /2/ and found it consistent.

- **Section 1.14. of VCS PD**: Project compliance with applicable laws, statutes and other regulatory frameworks

The assessment team by its document review confirmed /13/that the project activity is in compliance with all the applicable Bangladesh laws. PA comply with the 'Natural Gas Security Law' also known as 'Prakitik Gas Nirapatta Bidhimala, 1991 - Revised in 2003'. Declaration /13/ has been provided by Project Manager to confirm that all repair works are carried out in compliance with "National Gas Security Law" also known as "Prakitik Gas Nirapatta Bidhimala, 1991 – Revised in 2003" and other Bangaladeshi regulatory requirements.

The assessment team has also confirmed that the baseline scenario presented in the VCS PD is also in compliance with the laws and regulations of Bangladesh. The same is elaborated in detail in section 1.14 of VCS PD.

Findings: CL 01 has been raised and successfully closed (Refer to Appendix 3 for further details).

- **Section 1.15.1 of VCS PD:** Projects Registered (or seeking registration) under Other GHG Program(s)

The project is registered under the United Nations Clean Development Mechanism (CDM) Program with the registration number 10561 and all project information can be found at https://cdm.unfccc.int/Projects/DB/RINA1583318622.49/view.

- **Section 1.16 of the VCS PD:** Other Forms of Credit

  - Emissions Trading Programs and Other Binding Limits

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading. Self-declaration has been provided in this regard /5/.

  - Other Forms of Environmental Credit

The project hasn't sought or received another form of environmental credits. Self-declaration has been provided in this regard /5/.

  - **Section 3.6 of the VCS PD: Methodology deviations**

    Based on the review of the VCS PD, validation team is able to confirm that no methodology deviation has been applied.

Ownership and other programs:

Project Ownership

As per the registered CDM-PDD/2.1/ and as per section 1.5 of the VCS-PD, the Project is owned by EcoGas Asia Limited; hence it possesses right of use of VER credits. The Ownership is demonstrated through the following documents provide evidence of project ownership, in accordance with the VCS specifications on project ownership.

1. Evidence of ownership of the proposed project

2. PP has provided "Gas Leak project agreement" dated 28 May 2019 between Jalalabad Gas Distribution Company limited and EcoGas Asia Limited, which clearly indicates the "ownership of gas leakage project" and hence, any generated Emission reductions from the project. /14/Ownership has further been confirmed from the "Letter of Approval"/3/ issued by DNA of Bangladesh for registering the same

project under CDM. The same has been verified from UNFCCC project link (https://cdm.unfccc.int/Projects/DB/RINA1583318622.49/view)/2.3/.

3. Evidence for start date.

   Project start date under VCS is the date when the project starts generating emission reductions. Given this, for this particular project, the project start date is considered to be 20 January 2019 which is the date when the first repair work was carried out, KBS validation team verified the Company official record document - reference – CODE – SYL-W.1.RR.570 (24° 54' 50.9" N 91° 48' 57.9"), SYL-W.1.RR.571 (24° 54' 49.8" N 91° 48' 57.9" E) and SYL-W.1.RR.572 (24° 54' 48.5" N 91° 49' 01.8" E) ,HBG-1.RR.4(24° 23' 08.3" N 91° 24' 20.6" E), HBG-1.RR.5(24° 23' 08.3" N 91° 24' 20.6" E) and HBG-1.RR.6 (24° 23' 09.6" N 91° 24' 20.1" E) clearly having the photograph of riser, tag placed on the riser with date, operator's name. Based on these documents verified, the project start date is confirmed to be 20 January 2019/6/.

Findings: CL 02 has been raised and successfully closed (Refer to Appendix 3 for further details).

Additional Information Relevant to the Project

Leakage Management

It was checked and confirmed during remote audit that there is no expected change of emissions outside the project boundary expected from reducing leakage from gas pipelines, hence not applicable to this project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

Natural gas leaks result in emissions of methane (CH4) into the atmosphere. It is checked by document review and confirmed during remote assessment that due to the implementation of the project activity emissions already reduced by more than 1,434,736 tCO2e (till 31 Dec 2020) and is expected to reduce more than an additional 9,108,315 tCO2e over the ten-year of fixed crediting period. In addition to reducing greenhouse gas emissions, this project will also contribute to the People's Republic of Bangladesh's sustainable development goals by:

- Improving environmental quality and minimizing risks for employees and local communities due to the reduction of harmful pollutants (methane);

- Preserving a finite resource (natural gas). The reduction in gas losses will mean that the same amount of service can be provided to customers but with a lesser amount of gas required. Using a finite resource more efficiently, and thus preventing waste of that resource, is an important example of sustainable development;
- Capacity building of the local staff in advanced LDAR techniques;
- Transferring advanced technology in the form of leak detection kit and repair materials that have heretofore not been utilized in this region of Bangladesh;
- Job creations through the hire of around 30 staff;
- Strengthening human capital in the country through retention and employment of locals to support the project implementation (leak measurement program, repair works, and monitoring).

The validation team concludes that the project description is accurate, complete, and provides an understanding of the nature of the project. The validation team confirms that the developments mentioned in the above paragraph are being taken place through various measures adopted by PP and it was also confirmed by remote audit interviews and the desk review conducted.

3.2 Safeguards

3.2.1 No Net Harm

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.2.2 Local Stakeholder Consultation

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.2.3 Environmental Impact

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.2.4 Public Comments

According to section 3.20.5 of the VCS Standard version 4.2 /9/, PP webhosted the project for global stakeholder consultation process on Verra website (https://registry.verra.org/app/projectDetail/VCS/2737) for period from 20-April-2022 to 20-May-.

3.2.5 AFOLU-Specific Safeguards

The project does not implement AFOLU activity. Thus, this section is not applicable.

Findings: CAR 02 has been raised and successfully closed (Refer to Appendix 3 for further details).

3.3 Application of Methodology

3.3.1 Title and Reference

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.3.2 Applicability

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.3.3 Project Boundary

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.3.4 Baseline Scenario

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.3.5 Additionality

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.3.6 Quantification of GHG Emission Reductions and Removals

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation.

3.3.7 Methodology Deviations

The project activity has used the CDM methodology AM0023, Version 04.0.0 /7/ and the PP has completely followed the methodology for the development of the VCS PD /1/. The validation team has confirmed that the PP had not applied any deviations from the applied methodology

3.3.8 Monitoring Plan

According to section 3.20.5 of the VCS Standard version 4.2 /9/, this section is not required for completion for the gap validation tools.

3.4 Non-Permanence Risk Analysis

Non-permanence risk analysis is not applicable.

Findings: CAR 02 has been raised and successfully closed (Refer to Appendix 3 for further details).

4 VALIDATION CONCLUSION

EcoGas Asia Limited has commissioned KBS Certification Services Pvt. Ltd. to do VCS gap validation of the CDM registered project activity: "Reducing Gas Leakages within the Jalalabad Gas Distribution Network in Bangladesh" having UNFCCC Ref. No. 10561 and VCS ID 2737, with regard to the relevant VCS requirements of VCS Standard version 4.2; to attain real, measurable, additional and permanent emission reductions.

This project involves reduction of gas leakage from components within Jalalabad Gas Distribution Company Limited. In addition to reducing greenhouse gas emissions, this project will also contribute to the People's Republic of Bangladesh's to climate change mitigation in a sustainable manner.

A risk-based approach has been followed to perform this validation. In the course of the validation 04 Corrective Action Request (CAR) and 02 Clarification Request (CL) were raised and successfully closed.

The validation is based on the VCS PD, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validation team by project proponent.

As a result of the gap validation, the validation team confirms that:

- The project fulfils criteria of gap validation as per VCS Standard Version 4.2.
- The project is in line with all relevant VCS requirements.

The estimation of the emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 10,489,441 tCO_2e is most likely to be achieved within the 10 years of fixed crediting period.

No restrictions or uncertainties were identified related to the validation.

Location: Faridabad, Haryana, India

Date:24-08-2022

Kaushal Goyal

Managing Director

KBS Certification Services Pvt. Ltd.

APPENDIX 1: Reference

No.	Document
1.	/1.1/ Initial VCS- PD Version 04, dated 15-April-2022 /1.2/ Final VCS-DD Version 5.2 , dated 14-Aug- 2022
2.	Registered CDM Documents: /2.1/ CDM PDD Version 04 dated 21-July-2020 /2.2/ Validation Report (by RINA Services S.p.A.)- version. 3.0Aa, dated 21- July-2020 /2.3/ UN Webpage Link https://cdm.unfccc.int/Projects/DB/RINA1583318622.49/view
3.	Letter of Approval from host country (Bangladesh) dated 25-Febraury-2020
4.	Spread sheets for Emission Reduction Calculations /4.1/ Initial ER sheet corresponds to VCS PD Version 04, dated 15-April-2022 /4.2/ Final ER sheet corresponds to VCS PD Version 05.2, dated 11-08--2022
5.	Self-declaration for not availing other forms of environmental credit for the same crediting period under consideration (dated 15-May-2022)
6.	Photographs of the riser, tag placed on the riser with date, operator's name for start date of project activity.
7.	Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities" AM0023, Version 04.0.0
8.	VCS Program guide Version 4.1
9.	VCS Standard, Version 4.2
10.	VCS_Validation_Verification_Manual_v3.2
11.	Compliance against applicable safety regulations • Photographs of places where the repair work has been carried out to avoid leakages

12.	Remote audit & Interviews with project personnel on 24-05-2022
13.	Declaration for confirming repair work is in compliance with National Gas Security Law Ref. No. PSL-CC LLC/PM/JG-22/01 Dated : 10-May-2022
14.	Other Documents • Gas Leak Project Agreement between PP & Gas company on 28 May 2019 • Agreement between Prokaushali Sangsad Ltd. and Climate Compass LLC on 15 Nov 2018 • Gas leak project field services agreement (Bangladesh gas utility service agreement) between EcoGas Asia Limited, C-Quest Capital LLC, Brawa IVS, and Climate compass LLC on 17 August 2018 • MBS training & certification course for PSL on 22 May 2022 • Engineering service contract between Climate compass LLC and MBS Ltd on 30 Oct 2018 • Amendment to engineering service contract between Climate compass LLC and MBS Ltd on 1 Dec 2019

APPENDIX 2: Competence of team members and technical reviewers

Personnel Name:		Ms. Anjana Sharma	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☒
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope		**Technical Area**	
SS: 01: Energy industries (renewable/non-renewable sources)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
		TA 1.2: Energy generation from renewable energy sources	
SS 3: Energy demand		TA 3.1. Energy Demand	
SS 5: Chemical industry		TA 5.1 Chemical industry	
SS 12: Solvents use		TA 12.1 Chemical industry	
SS 13: Waste handling and disposal		TA 13.1 Waste Handling and Disposal	
		TA 13.2 Manure	
Approved by		(Manager C & T)	
Approval date:		05/08/2021	

Personnel Name:		Ms. Varsha Bohiya	
Qualified to work as:			
Team Leader	☐	Technical Expert	☐
Validator/Verifier (Trainee)	☒	Financial Expert	☐

Technical Reviewer	☐	Local Expert	☐
Area(s) of Technical Expertise			
Sectoral Scope		**Technical Area**	
-		-	
Approved by (Manager C & T)		Manager –Competence and training	
Approval date:		08/11/2021	

Personnel Name:		**Mr. Manoj K. M. Chaturvedi**	
Qualified to work as:			
Team Leader	☐	Technical Expert	☒
Validator/Verifier	☐	Financial Expert	☐
Technical Reviewer	☐	Local Expert (Qatar)	☒
Area(s) of Technical Expertise			
Sectoral Scope		**Technical Area**	
SS 10: Fugitive emissions from fuels (solid, oil and gas)		TA 10.1. Fugitive emissions from oil and gas	
Approved by		Manager C & T	
Approval date:		05/09/2019	

Personnel Name:		**Mr. S.Ranganathan**	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☒	Local Expert (India)	☒

Area(s) of Technical Expertise	
Sectoral Scope	**Technical Area**
SS 01: Energy industries (renewable/non-renewable sources)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar
	TA 1.2: Energy generation from renewable energy sources
SS 2: Energy distribution	TA 2.1. Energy distribution
SS 3: Energy demand	TA 3.1. Energy Demand
SS 5: Chemical industry	TA 5.1 Chemical industry
SS 12: Solvents use	TA 12.1 Chemical industry
SS 13: Waste handling and disposal	TA 13.1 Waste Handling and Disposal
	TA 13.2 Manure
Approved by (Manager C& T)	Shikha Sharma
Approval date:	05/05/2022

APPENDIX 3: Findings

Table 1.CLs from this validation

CL ID	CL 01.	Section no.	Section 3.1	Date: 10/05/2022
Description of CL				
Under section 1.14 of VCS PD, PP shall clarify the compliance with 'Natural Gas Security Law' with supportive. In addition to this, PP is required to provide the supportive document to demonstrate that all repair work is carried out meeting safety requirements.				
Project participant response		**Date:** 10/05/2022		
All repairs are made by trained staff of PSL which has confirmed it follows all the safety norms included in the Gas Safety and National Gas Act.				
Documentation provided by project participant				
The Gas Safety and National Gas Act have been provided and a letter from the Project Manager who supervises all the repair work which confirms all these regulations have been followed.				
DOE assessment				**Date:** 17/05/2022
PP has submitted the supportive document to demonstrate the repair work is carried under safety norms and comply with 'Natural Gas Security Law', hence acceptable to assessment team. Based on adequate justification and submission of supportive documents. **Thus, CL 01 is closed.**				

CL ID	CL 02.	Section no.	Section 3.1	Date: 10/05/2022
Description of CL				
PP is requested to provide evidence for project ownership.				
Project participant response		**Date:** 05/10/2022		
A contract has been signed between the PP and the Gas Company				
Documentation provided by project participant				
Copy of the contract.				
DOE assessment				**Date:** 17/05/2022
PP has provided the contract signed between PP & the Gas company to conform the project ownership. Based on adequate submission of supportive document CL 02 is closed.				

Table 2.CARs from this validation

CAR ID	CAR 01	**Section no.**	Verification report	**Date:** 09/05/2022
Description of CAR				
As per the VCS template for validation of projects under the VCS, the font size, date format, is inconsistent in throughout the PDD, PP shall check and revise accordingly as per VCS PD Template				
Project participant response		**Date:** 05/10/2022		
The font size and date format have been updated in the VCS PD to conform to the template.				
Documentation provided by project participant				
Revised PD.				
DOE assessment				**Date:** 17/05/2022
The revised VCS PD is checked by assessment team to conform that now updated with VCS template for validation and hence acceptable to the assessment team. Based on adequate responses and revised documents from project participant, CAR 01 is closed.				

CAR ID	CAR 02	**Section no.**	Section 3.2 & section 3.3	**Date:** 09/05/2022
Description of CAR				
1. PP shall consider latest VCS standards and PD filling guidelines under VCS throughout the PD. 2. In VCS PD under Section 2 and 3 para no. of VCS standards to be updated.				
Project participant response		**Date:** 05/10/2022		
Edits in the PD have been made to conform to the latest VCS standard and PD Guideline including the correct reference in section 2 and 3.				
Documentation provided by project participant				
Revised PD				
DOE assessment				**Date:** 17/05/2022
The revised VCS PD is now updated with latest VCS standards and PD filling guidelines and hence acceptable to the assessment team. Based on adequate responses and revised documents from project participant, CAR 02 is closed.				

CAR ID	CAR 03	Section no.	VCS PRR issue	Date: 11/08/2022
Description of CAR				
VCS PRR issue: *The methodology requires that baseline emissions must be capped "to the baseline emission level of the first crediting year" (Step 4, "Calculation of baseline emissions" p. 7). The VVB mentions in the VR p.14 that the baseline cap (BCAP) has been arrived based on "actual monitored leak rate during the first crediting year". However, the ER spreadsheet submitted presents leaks´ repairs that are included in the consolidated value in cell "I10918" (worksheet "Total") and which took place after the end of the first monitoring year (from Jan 2019 to Jan 2020).*				
Project participant response		**Date:** 14/08/2022		
The Excel sheet and VCS-PD have been revised to include only those leaks in the Bcap from the first year of the crediting period. All leaks detected after the 19-January-2020 (after 1 year from project start date), has not been considered for ER estimation.				
Documentation provided by project participant				
Revised PD, Emission reduction excel sheet				
DOE assessment				**Date:** 17/08/2022
In line with the methodology requirements, VCS PD and emission reduction excel sheet has been corrected now. Leaks that occurred and monitored during the 1st crediting year (20 Jan 2019 to 20 Jan 2020) have now been considered to arrive at BEcap. Revised VCS PD and emission reduction excel sheet have been reviewed and found okay. CAR 03 is now closed.				

CAR ID	CAR 04	Section no.	VCS PRR issue	Date: 11/08/2022
Description of CAR				
VCS PRR issue: *Section 2.4 in the PD was left blank as per paragraph 3.20.5 of the VCS Standard. However, public consultation is a requirement for projects undergoing gap validation.*				
Project participant response		**Date:** 14/08/2022		
The section 2.4 of the revised VCS-PD has now been updated with details of public consultation period and any comments received.				
Documentation provided by project participant				
Revised VCS PD				

DOE assessment	**Date:** 17/08/2022
PP webhosted the project for global stakeholder consultation process on Verra website (https://registry.verra.org/app/projectDetail/VCS/2737) for period from 20-April-2022 to 20-May-2022. No comments were received. Section 2.4 of the VCS PD has now been revised to cover information about “Public Comments”. CAR 04 is closed now.	

Table 3.FARs from this validation

No FAR raised from this validation.

~~**FAR ID**~~	~~xx~~	~~**Section No.**~~		~~**Date:** DD/MM/YYYY~~
~~**Description of FAR**~~				
~~**PP response**~~				~~**Date:** DD/MM/YYYY~~
~~**Documentation provided by PP**~~				
~~**VVB assessment**~~				~~**Date:** DD/MM/YYYY~~