Reducing Gas Leakages within the Karnaphuli Gas Distribution Network in Bangladesh

Prepared By Kevin James
kjamesqt@gmail.com

Project Title	Reducing Gas Leakages within the Karnaphuli Gas Distribution Network in Bangladesh
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Prepared By	Kevin James
Contact	5004 River Rd. Bethesda, Maryland USA, +1 202 340-1112

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The proposed project was registered as a CDM project on 31-July-2020. The project is reducing gas leakages from components within the Karnaphuli Gas Distribution (KGDCL) network in the People's Republic of Bangladesh, a Least Developed Country.

Construction began on the Bangladesh gas distribution system in the mid- 1960s and over the years the system has not been adequately maintained. As a result, a significant percentage of the natural gas throughput (predominately methane (CH_4)) leaks from components in the system and is released into the atmosphere contributing to global warming. The project is reducing methane, a potent greenhouse gas (GHG).

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 KGDCL. 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 will lead to the reduction of methane emissions at flanges, valves, insulating joints and other above ground equipment components.[1]

Project activity

The project activity will reduce natural gas leakage in the distribution network of KGDCL 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 Gas surveyors as well as advanced repair materials. In addition, selected staff of KGDCL will be trained in advanced leak detection, measurement, and repair techniques.

The average annual GHG emission reduction from the project is expected to be 837,378 tCO_2e. Total GHG emission reduction from the project is expected to be 8,373,776 tCO_2e over the entire crediting period of 10 years.

1.2 Sectoral Scope and Project Type

Sectoral Scope 10 – Fugitive emissions from fuels

[1] The selected methodology AM0023 (Version 04.0.0) defines a component as "above-ground process equipment in natural gas production, processing, transmission, storage, distribution systems", including valves, flanges and other connectors etc.

This project is not a grouped project.

1.3 Project Eligibility

1. The six Kyoto Protocol greenhouse gases: 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: NA This project does not involve ODSs.

3. Project activities supported by a methodology approved under the VCS Program through the methodology approval process: NA This project does not use a methodology approved under the VCS Program through the methodology approval process.

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: NA This project does not involve REDD+.

Additionally, the project is not included in the projects excluded in Table 1 of VCS Standard 4.0. Thus, the project is eligible under the scope of VCS program.

1.4 Project Design

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

Eligibility Criteria

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

1.5 Project Proponent

Organization name	EcoGas Asia Limited
Contact person	Ken Newcombe

Title	Director
Address	Brumby Centre , Lot 42, Jalan Muhibbah, Labuan, 87000 Labuan F.T. , Malaysia
Telephone	+1 202 416-2401
Email	knewcombe@cquestcapital.com

1.6 Other Entities Involved in the Project

Organization name	Climate Compass LLC
Role in the project	Project Development and Implementation
Contact person	Kevin James
Title	Managing Director
Address	5004 River Rd. Bethesda, MD 20816
Telephone	+12023401112
Email	kjamesqt@gmail.com

1.7 Ownership

EcoGas Asia by virtue of an enforceable and irrevocable agreement with Karnaphuli Gas Distribution Company Limited *(*KGDCL*)*, the holder of the statutory rights in the gas distribution system where the methane leaks are found and repaired by the project proponent, vests carbon credits ownership in the project proponent (i.e. EcoGas Asia Limited).

The ownership can be further confirmed from the “Letter of Approval” issued by the host country Designated National Authority (DNA) for CDM in Bangladesh, dated 25-February-2020.

1.8 Project Start Date

The VCS Standard defines the project start date of a non-AFOLU project as the date on which the project began generating GHG emission reductions or removals. The project keeps a detailed database of every leak measurement and repair made with electronic and hard-copy records to document the date. The database documents 06-January-2019 as when the first

activity of measuring and repairing leaks occurred leading to the first methane emission reduction as part of the feasibility study. Therefore, the start date as per the VCS Standard Definition is 06-January-2019- the date the first emission reduction occurred when a repair was made preventing methane from leaking into the atmosphere.

The start date is different than the start date listed for the project under the CDM registration as the CDM definition of Project Start Date is "the date on which the project participants commit to making expenditures for the construction or modification of the main equipment or facility (e.g. a wind turbine), or for the provision or modification of a service (e.g. distribution of energy-efficient light bulbs, change of transport management system), for the CDM project activity or CPA. Where a contract is signed for such expenditures (e.g. for procurement of a wind turbine), it is the date on which the contract is signed." The CDM start date for the project activity is taken as the date on which the EcoGas Asia has made the first financial commitment towards implementing the project activity through a 'Gas Leak Project Service Agreement'. This agreement is the first contract that specifically provides authorization of and payment for project implementation activities and supporting budget directly tied to the implementation of this project. It, for the first time, commits EcoGas Asia to pay for implementation efforts towards this project.

1.9 Project Crediting Period

06-January-2019 to 05-January-2029 (10 year fixed crediting period)

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	
Large project	√

Year	Estimated GHG emission reductions or removals (tCO_2e)
2019 (06-January-2019 to 31-December-2019)	495,527
2020 (01-January-2020 to 31-December-2020)	799,284
2021 (01-January-2021 to 31-December-2021)	883,358
2022 (01-January-2022 to 31-December-2022)	883,358

2023 (01-January-2023 to 31-December-2023)	883,358
2024 (01-January-2024 to 31-December-2024)	883,358
2025 (01-January-2025 to 31-December-2025)	883,358
2026 (01-January-2026 to 31-December-2026)	883,358
2027 (01-January-2027 to 31-December-2027)	883,358
2028 (01-January-2028 to 31-December-2028)	883,358
2029 (01-January-2029 to 05-January-2029)	12,101
Total estimated ERs	8,373,776
Total number of crediting years	10
Average annual ERs	837,378

1.11 Description of the Project Activity

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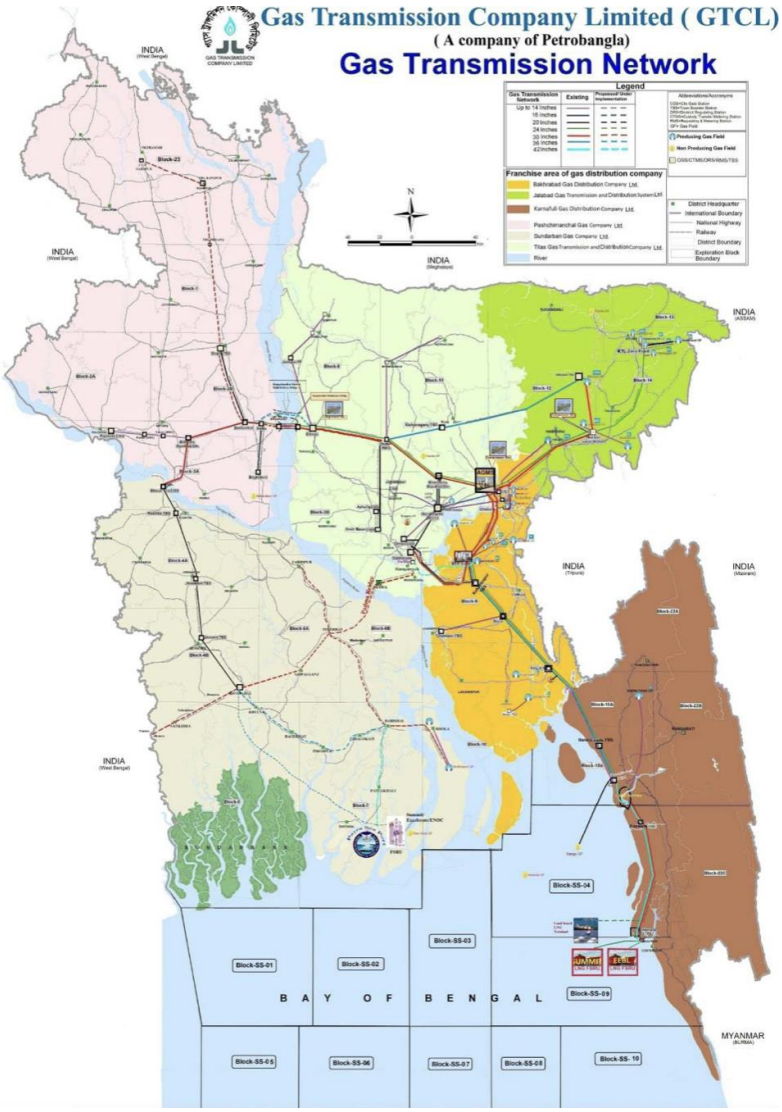
1.12 Project Location

The entire above ground gas transmission and distribution system found in the service and franchise areas operated by: Karnaphuli Gas Distribution Company Limited including with its Headquarters at 137/A, CDA Avenue, Sholashahar, Chittagong Bangladesh (N 22°22'3.1152", E 91°49'35.1978"). The Company carries out transmission and distribution of natural gas within the southeast part of Bangladesh including Chittagong, Rangamati, Khagrachori, Bandorban, and Coxsbazar.

The exact locations of all the identified and repaired leaks are recorded in the monitoring system database using GPS coordinate, and a street address when possible or a description of the location. A photo of the leak repair will also be provided for each leak included in the project. The map below indicates the general area in brown color included in the project.

Map 1



1.13 Conditions Prior to Project Initiation

Situation before the project

The current maintenance schedule does not extend to the identification and repair of chronic leaks that are present in the above ground transmission and distribution network. KGDCL does not have a “planned” maintenance schedule where teams are tasked with checking different components across the network to ensure their proper functioning. There is no formal operational procedure or specification on what type of maintenance should actually be implemented. There is also no limit on how much a component can leak before it is declared un-safe. In practice, repairs are implemented mainly out of safety concerns in locations where gas from leaks can collect and pose a threat of explosion.

Currently, KGDCL does not have any advanced leak detection equipment. Teams generally rely on odor and soap bubbles to identify leaks. This approach is ineffective as odor does not allow a repairman to pinpoint a leak or its size. In fact, in above ground outdoor equipment odor is extremely in effective in isolating leaks. Soap can be used to isolate leaks, but this method gives no information on the actual size of the leak which is critical to making cost effective repairs.

Furthermore, even for those leaks that are identified through bubbles and odor, the company lacks the modern repair materials required to fix all but the simplest leaks that require only tightening of components.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

The project complies with all Bangladesh laws. While the activities included in the project are not required, they conform to the 'Natural Gas Security Law' also known as 'Prakitik Gas Nirapatta Bidhimala, 1991 - Revised in 2003'. Per the 'Natural Gas Security Law'. However, leakage reports prepared and submitted to the Department of Explosives as required under this law (attached to the Department of the Ministry of Energy and Mineral Resources, Government of Bangladesh) are confined to major incidents involving explosions. For these events, a special team not associated with the project is dispatched to make repairs and a report sent instantly. For other less catastrophic incidents, monthly reports are prepared. Any leaks or repairs made as part of this safety effort will be excluded from the project as they are part of the baseline case. A separate team from the project effort is completely responsible for this activity thereby preventing the accidental inclusion of safety related repairs into the project. As another safeguard, the safety team will have no access to the advanced monitoring equipment required to include a repair in the project.

1.15 Participation under Other GHG Programs

1.15.1 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 10560 and all project information can be found at https://cdm.unfccc.int/Projects/DB/RINA1583158638.05/view

1.15.2 Projects Rejected by Other GHG Programs

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

1.16 Other Forms of Credit

1.16.1 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.

1.16.2 Other Forms of Environmental Credit

The project hasn't sought or received another form of environmental credits.

1.17 Sustainable Development Contributions

The project achieves its emission reductions by training and employing local staff to find and repair leaks in the gas system using advanced gas detection technology and repair materials.

Natural gas leaks result in emissions of methane (CH4) into the atmosphere. The implementation of the project has already reduced these emissions by 1,294,811 tCO_2e (till 31-December-2020) and is expected to reduce about an additional 7,078,965 tCO_2e over the ten-year 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 20 local 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).

Gas savings and emission reductions data are shared with the company and national government to track progress in achieving sustainability goals.

1.18 Additional Information Relevant to the Project

Leakage Management

NA- There is no expected change of emissions outside the project boundary expected from reducing leakage from gas pipelines.

Commercially Sensitive Information

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

Further Information

No further information is included.

2 SAFEGUARDS

2.1 No Net Harm

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

2.2 Local Stakeholder Consultation

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

2.3 Environmental Impact

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2.4 Public Comments

Under the global stakeholder consultation, the project was open for public comments between 20-April-2022 to 20-May-2022. No public comment was received during this period.

2.5 AFOLU-Specific Safeguards

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3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

3.2 Applicability of Methodology

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

3.3 Project Boundary

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

3.4 Baseline Scenario

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3.5 Additionality

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3.6 Methodology Deviations

There are no deviations from the applied methodology.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

4.2 Project Emissions

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

4.3 Leakage

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4.4 Net GHG Emission Reductions and Removals

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

5 MONITORING

5.1 Data and Parameters Available at Validation

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

5.2 Data and Parameters Monitored

As per 3.20.5 point 1 on page 47 of the VCS Standard this section is left blank.

5.3 Monitoring Plan

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