

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

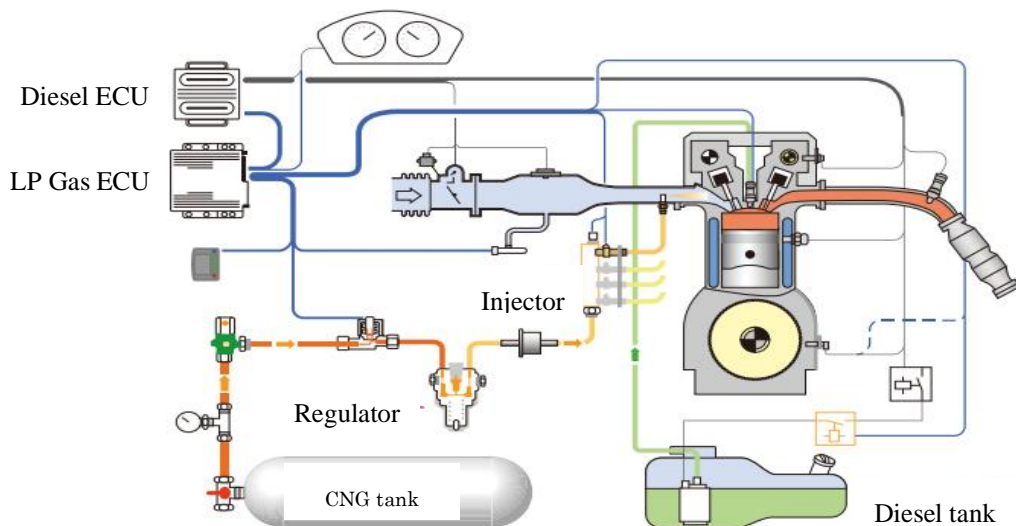
Introduction of CNG-Diesel Hybrid Equipment to Public Bus in Semarang

A.2. General description of project and applied technologies and/or measures

Toyama City has concluded a cooperation agreement between Semarang City to realize low carbon society under inter-city cooperation. Based on the cooperation agreement, this project aims to reduce GHG emissions through fuel switch from diesel to CNG. In the project, 72 diesel buses owned by Trans Semarang, including 25 large-sized buses and 47 mid-sized buses, are retrofitted from diesel engine to hybrid engine with CNG system available.

Bus type	Engine	Body	Year of production	Number
Large	Hino	Laksana	2014	25
Mid 1	Isuzu	Laksana	2016	25
Mid 2	Hino	Laksana	2016	7
Mid 3	Mitsubishi	New Armada	2015	8
Mid 4	Mitsubishi	New Armada	2017	7

Dual fuel track Structural drawing



A.3. Location of project, including coordinates

Country	Republic of Indonesia
Region/State/Province etc.:	Central Java
City/Town/Community etc:	Semarang
Latitude, longitude	6° 59' 23.0" S, 110° 20' 20.4" E

-6.990052858598153, 110.33900926877959

A.4. Name of project participants

The Republic of Indonesia	BLU UPTD Trans Semarang
Japan	Hokusan Co., Ltd.

A.5. Duration

Starting date of project operation	20/08/2019
Expected operational lifetime of project	5 years

A.6. Contribution from Japan

The proposed project was partially supported by the Ministry of the Environment, Japan (MOEJ) through the financing programme for JCM model projects, which provided financial support of less than half of the initial investment for the projects in order to acquire JCM credits. Furthermore, implementation of the proposed project promotes transfer of low carbon technologies in Indonesia. The proposed JCM project also provides local staff with a technical training for maintenance skill.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	ID_AM026
Version number	Ver1.0

B.2. Explanation of how the project meets eligibility criteria of the approved methodology

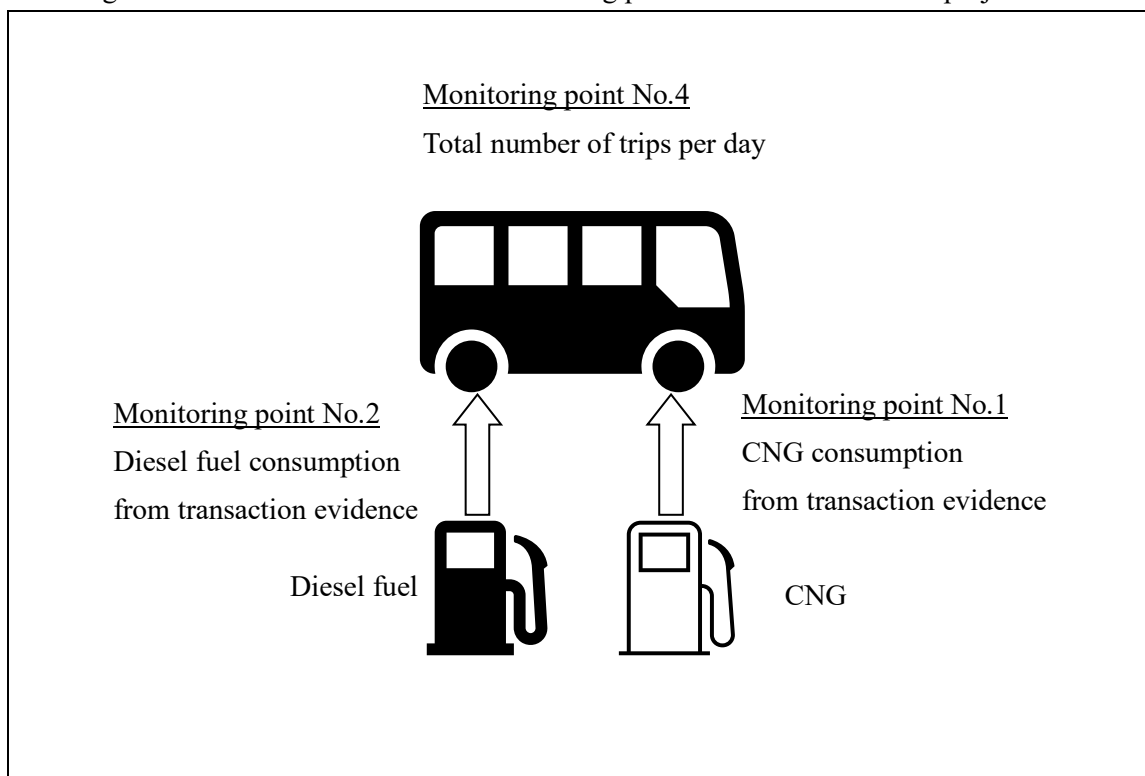
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	CNG-diesel hybrid equipment is newly installed to the public transport buses which have already been in operation or are newly procured.	CNG-diesel hybrid equipment was newly installed to 72 public transport buses owned by Trans Semarang in total which had already been in operation at the time of installation.

C. Calculation of emission reductions

C.1. All emission sources and their associated greenhouse gases relevant to the JCM project

Reference emissions	
Emission sources	GHG type
Diesel fuel consumption by reference buses	CO2
Project emissions	
Emission sources	GHG type
Diesel fuel consumption by project buses	CO2
CNG consumption by project buses	CO2

C.2. Figure of all emission sources and monitoring points relevant to the JCM project



C.3. Estimated emissions reductions in each year

Year	Estimated Reference emissions (tCO ₂ e)	Estimated Project Emissions (tCO ₂ e)	Estimated Emission Reductions (tCO ₂ e)
2013			
2014			
2015			
2016			

2017			
2018			
2019	2,077.6	1,731.0	346
2020	5,030.3	4,402.2	628
2021	5,458.5	4,542.9	915
2022	6,068.2	3,749.9	2,318
2023	6,068.2	3,749.9	2,318
2024	3,840.4	2,373.2	1,467
2025			
2026			
2027			
2028			
2029			
2030			
Total (tCO ₂ e)			7,992

Note:

The estimated emission reductions in each year are rounded down after the decimal point.

D. Environmental impact assessment

Legal requirement of environmental impact assessment for the proposed project	No
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E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

A local stakeholder consultation has been conducted on 12th October with participation of the local stakeholders listed in the table below.

The list of participants has been consulted to the JC secretariat of Indonesia side prior to invitation, and the local stakeholders to be invited have been fixed. The project participants sent invitation letters to those stakeholders except for those who work at the project site to notify of convening local stakeholder consultation meeting.

The schedule and participants of the meetings is provided below.

Date: 12th October 2022

Venue: Hybrid meeting

1. Dinas Perhubungan Kota Semarang Office

2. Online

Time: 9:00-10:10

Agenda

1. Opening remarks
2. Introduction of participants
3. Outline of BLU UPTD Trans Semarang
4. Summary of the project and technology introduced
5. Questions and answers
6. Closing

[Local stakeholders]

No.	Organization	Position
1	Semarang City	Head of Economic Planning Division
2	Semarang City	Head of Section for Insider Route Transport, Semarang City Transportation Service
3	CMEA/Indonesia JCM Secretariat	Head of Indonesia JCM Secretariat
4	CMEA/Indonesia JCM Secretariat	Analyst
5	CMEA/Indonesia JCM Secretariat	Analyst
6	Indonesia JCM Secretariat	Senior Advisor

[Project participants]

Project participants: [Indonesia] BLU UPTD Trans Semarang, [Japan] Hokusan Co., Ltd.

Other participants: Toyama City

At each agenda item, a brief presentation was made by the project participants and manufacturer of the project refrigerator, and opinions of the stakeholders were solicited. A summary of the comments received and consideration of those comments are provided in Section E.2. below.

Meeting materials were e-mailed to those invited but not attended to the local stakeholder consultation to collect any comments on the proposed project after the meeting. The project participants have received no comment from them.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Indonesia JCM Secretariat	From the first implementation up to now, how many equipment that have broken and need to be repaired? And how did you repair it?	We experienced some failure in installed equipment. Repair and maintenance have been done in the garage of each corridor by our maintenance mechanics. No further action is needed.
Semarang City	Semarang City is committed in developing environmentally friendly fuel transport. From 72 bus units, now we have 249 units and also vehicle units for government services. We appreciate this project.	No further action is needed.
Semarang City	We are committed to continuing to use the converter kit in our buses where 249 units have been installed. We are thankful to the Ministry of Energy and Mineral Resources for the support.	No further action is needed.
Indonesia JCM Secretariat	We really appreciate what Trans Semarang and Semarang Government have done, including the fact that they still continue and maintain the JCM projects. It would be the best example for other cities to follow Semarang's step because we know that currently the fuel price is not stable. We think to use gas will be one of the best choices for public transportation. Here we really support Semarang government and congratulations on the good works and successful of this project, on behalf of JCM Secretariat we thank you very much on the collaboration between us.	No further action is needed.

F. References

Reference lists to support descriptions in the PDD, if any.

Annex**Revision history of PDD**

Version	Date	Contents revised
1.0	11/01/2023	First draft