JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia

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

The proposed JCM project aims to save energy by introducing a high efficiency refrigerator to a frozen food processing plant in Indonesia. The project is expected to reduce 25 tCO_{2e} of greenhouse gas (GHG) emissions annually through the installation of a refrigerator for individual quick freezer at an existing frozen fish processing plant of PT Adib Global Food Supplies in West Java Province, Indonesia..

In line with the JCM approved methodology ID_AM003, reference emissions are calculated by multiplying electricity consumption of the project refrigerator (MWh), ratio of COPs (Coefficient Of Performance) for reference/project refrigerators and CO_2 emission factor for electricity consumed (tCO_{2e}/MWh), while project emissions are calculated by multiplying electricity consumption of the project refrigerator (MWh) and CO_2 emission factor for electricity consumed (tCO_{2e}/MWh).

COP of the project refrigerator (COP_{PJ}) is 1.63 which is calculated by dividing cooling capacity (70 kW*) of the refrigerator by its electricity consumption (43kW*) based on the manufacturer's catalogue. COP of reference refrigerator (COP_{RE}) is set as 1.32 which is the maximum value among the collected data for commercially available refrigerators in Indonesia to ensure a net emission reduction. Electricity consumption of the project refrigerator will be obtained by monitoring.

The estimated amount of annual electricity consumption by the project refrigerator is 135 MWh, while that of the reference refrigerator is 167 MWh resulting in 19% energy saving. The reference emissions are 136 tCO_{2e} and the project emissions are 110 tCO_{2e} resulting in an estimated annual GHG emission reduction of 25 tCO_{2e}

*: Temperature condition: - 35 deg. C, Cooling water fed to condenser: inlet 32 deg. C

A.3. Location of project, including coordinates

Country	Republic of Indonesia
Region/State/Province etc.:	West Java Province
City/Town/Community etc:	Kecamatan Cilebar, Kabupaten Karawang
Latitude, longitude	6°05'19.2"S, 107°25'42.3"E

A.4. Name of project participants

The Republic of Indonesia	PT. Adib Global Food Supplies, PT. Mayekawa Indonesia
Japan	MAYEKAWA MFG. CO., LTD.

A.5. Duration

Starting date of project operation	18/12/2014
Expected operational lifetime of project	12years

A.6. Contribution from developed countries

The proposed project was partially supported by the Ministry of the Environment, Japan through the financing programme for JCM model projects which provided financial supports up to 50% of initial investment for the projects in order to acquire JCM credits.
As for technology transfer, MAYEKAWA MFG. CO., LTD has conducted OJT training and provided a manual on operation, maintenance and safety measures of the facilities introduced to the project of PT. Adib Global Food Supplies. Maintenance services after project implementation will be provided by PT Mayekawa, which will also contribute to technical transfer through maintenance experiences of the staff of PT. Adib Global Food Supplies.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	ID_AM003
Version number	1.0
Selected approved methodology No.	N/A
Version number	N/A
Selected approved methodology No.	N/A
Version number	N/A

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	The project installs cooling system at food industry cold storage and frozen food processing plants for the purpose of chilling the food products to below -20 deg. C.	The project installs cooling system at a frozen food processing plant for the purpose of chilling the food products to below -35 deg. C.
Criterion 2	The project system is a secondary loop cooling system using natural refrigerant. CO2 is used as the secondary refrigerant in the system.	The project system is a secondary loop cooling system using natural refrigerant (NH3 and CO2). CO2 is used as the secondary refrigerant in the system.
Criterion 3	The refrigerator applied in the project cooling system is a two stage compressor refrigerator with a cooling capacity as shown below: For cold storage: less than 340kW For individual quick freezer: less than 260kW	The refrigerator applied in the project cooling system is a two stage compressor refrigerator for individual quick freezer with 70kW cooling capacity
Criterion 4	The compressor of the project refrigerator is controlled by inverter.	The refrigerator installed under the project is NewTon F-300 (HFS-45L-PR4I-01), and its compressor is controlled by an inverter.
Criterion 5	COP of the project refrigerator i ($COP_{PJ,i}$) is shown below: For cold storage: more than 2.0 For individual quick freezer: more than 1.5	The COP of the NewTon F-300 (HFS-45L-PR4I-01) installed under the project is 1.63.
Criterion 6	Periodical check at least once a year is planned.	Periodical check is planned once a year.
Criterion 7	Plan for not releasing the primary refrigerant used for project refrigerator is prepared. In the case of replacing the existing refrigerator with the project refrigerator, refrigerant used for the existing refrigerator is not released	The plan for not releasing the primary refrigerant used in the project refrigerator has been prepared. The project refrigerator has been newly installed at the project site in addition to the existing refrigerator. The refrigerant used in the existing refrigerator is not released to the

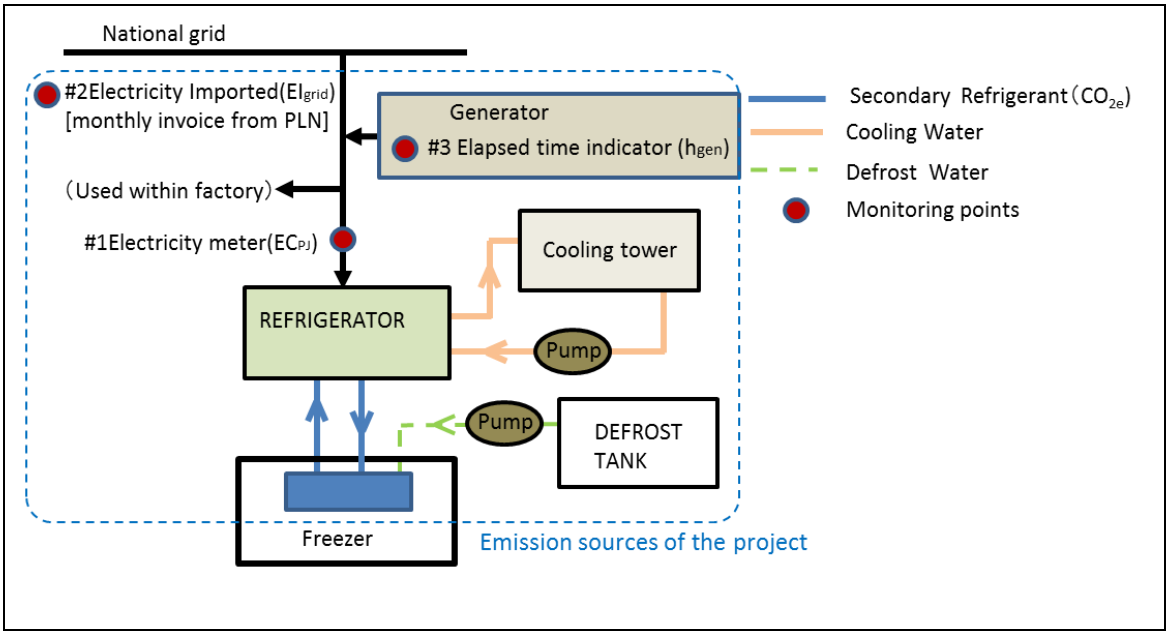
	to the air.	air through proper management of the refrigerant including proper destruction.

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
Electricity consumption by the reference refrigerator	CO2
Project emissions	
Emission sources	GHG type
Electricity consumption by the project refrigerator	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_{2e})	Estimated Project Emissions (tCO_{2e})	Estimated Emission Reductions (tCO_{2e})
2013	0	0	0
2014	5	4	1
2015	136	110	25
2016	136	110	25

2017	136	110	25
2018	136	110	25
2019	136	110	25
2020	136	110	25
Total (tCO_{2e})	821	664	151

D. Environmental impact assessment	
Legal requirement of environmental impact assessment for the proposed project	No

E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

The project activity is limited to installation of a new high efficient refrigerator in an existing food processing plant with a limited level of potential social and environmental impact. The PP identified local stakeholders as the local governments: Karawang Regency Government and West Java Provincial Government as there is no residence within the area where any environmental impact may be caused by the proposed project.

The PP conducted a local stakeholder consultation meeting (face to face meeting) described as below:

[Date] 9:30 – 11:30 8th December 2014

[Venue] Conference room of the West Java Provincial Government

[Agencies participated in the consultation]

No	Organization
1	International Cooperation Division, Regional Autonomy and Cooperation Bureau, Government of West Java Province
2	Department of Communications and Information, Government of West Java Province
3	Social Service Bureau, Government of West Java Province
4	Regional Environmental Management Board of West Java Province (BPLHD Jawa Barat)
5	Economic Bureau, Government of West Java Province
6	Fishery and Marine Department, Government of West Java Province
7	Agriculture and Food Crops Department, Government of West Java Province
8	Industry and Trade Department, Government of West Java Province
9	Department of Fisheries and Marine, Karawang Regency Government (Pemerintah Kabupaten Karawang - Dinas Perikanan dan Kelautan)

For the following agencies which were unable to attend the local stakeholder consultation meeting mentioned above, PP provided the distributed documents in the meeting to these agencies and requested them to provide their comments by email.

1) Regional Development Planning Board of West Java Province (BAPPEDA Jawa Barat)
2) Center for Aquaculture Production Business Services in Karawang (BLUPPB Karawang)

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
International Cooperation Division, Regional Autonomy and Cooperation Bureau, Government of West Java Province	We welcome the implementation of proposed projects under the JCM between Indonesia and Japan.	No action is needed.
	We support the promotion of the low carbon technologies. We hope there would be another chance for us to seek for other projects.	No action is needed.
Economic Bureau, Government of West Java Province	We are ready to support JCM project.	No action is needed.
Social Service Bureau, Government of West Java Province	This technology can contribute to Indonesia by its high efficiency. However, the price seems to be too high for the fishery communities and SMEs to consider using it. Financial support scheme for the communities or SMEs by Indonesian side needs to be considered.	No action is needed.

Department of Fisheries and Marine, Karawang	There are other potential sites in the regency. If the financial support from Japan is open for the next projects, we expect other site owners to apply for the scheme.	No action is needed.
	The two points shown below should be monitored by both Japan and Indonesia: 1) At F/S stage: Attention to AMDAL (environmental regulations) is important. 2) Implementation & MRV stage: Capacity building of Indonesian human resources that involved in all JCM projects would be needed.	Before starting the implementation of this project, MAYEKAWA MFG. CO., LTD has considered relevant laws and regulations including AMDAL. For the capacity building of Indonesian human resources, MAYEKAWA MFG. CO., LTD has conducted OJT training and provided a manual on operation, maintenance and safety measures of the facilities introduced to the project of PT. Adib Global Food Supplies.
Center for Aquaculture Production Business Services in Karawang (BLUPPB Karawang)	1. Low energy consumption and fast freezing are the two main advantages of the IQF which is introduced by the proposed project. Low energy consumption can suppress production cost, and quick freezing enhances the quality of fish products. 2. The use of natural refrigerant is a very good step in protecting the environment (Less GHG emissions and free ozone depleting substances).	No action is needed.

F. References

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

Annex

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Revision history of PDD		
Version	Date	Contents revised
01.0	25/12/2014	First Edition
02.0	13/02/2015	Second Edition