JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Introduction of Amorphous High Efficiency Transformers in Power Grid

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

The proposed JCM project aims to reduce CO2 emissions by utilization of energy efficient transformers in the power distribution grid in Lao PDR. The project replaces conventional/more energy-intensive silicon steel core transformers with high efficient amorphous transformers. The use of amorphous alloy in the transformer's iron core leads to improvement of electrical characteristics and significantly reduces non-load losses (standby electricity) caused regardless of whether a load is present. As a result of the proposed JCM project, a total of 1,307 units of amorphous transformers are installed on the power distribution grid in Lao PDR, which is managed by EDL (Electricite Du Laos).

A.3. Location of project, including coordinates

Country	Lao People's Democratic Republic
Region/State/Province etc.:	Region/State/Province etc. corresponds to the location of the headquarters of EDL. Vientiane Capital
City/Town/Community etc:	Lao-Thai Friendship Road, P.O.Box 309, Thong Kang Village. Sisattanak District.
Latitude, longitude	N17.941153, E102.627438

A.4. Name of project participants

The Lao People's Democratic Republic	EDL (Electricite Du Laos)
Japan	Yuko-Keiso Co., Ltd.

A.5. Duration

Starting date of project operation	01/01/2022
Expected operational lifetime of project	18 years

A.6. Contribution from Japan

The proposed project was partially supported by the Ministry of the Environment, Japan (MOEJ) through the financing program 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. Further, the implementation of the proposed project promotes the diffusion of low carbon technology within Lao PDR.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	LA_AM003
Version number	Ver.01.0

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

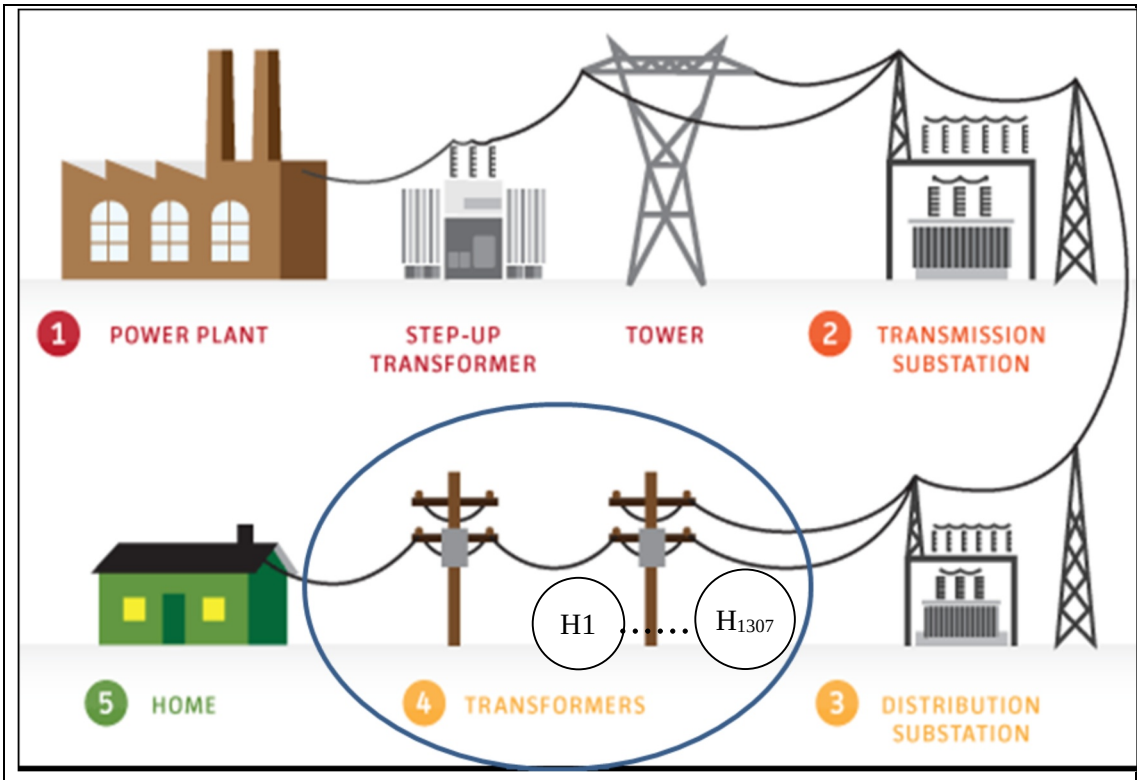
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	Single-phase and/or three-phase oil-immersed transformer with amorphous metal core is installed in the distribution grid	All transformers installed by the project are either single-phase or three-phase oil-immersed transformer with amorphous metal core.
Criterion 2	Load losses of the project transformer determined in line with IEC 60076-1 or national/industrial standards complying with IEC 60076-1 is equal or smaller than the standard values or specification values of load loss, required by the power company of the grid where the project transformer is installed, corresponding to its capacity and number of phases.	It has been confirmed that the load loss of the project transformers is equal or smaller than the standard/specification values of load loss, required by the power company of the grid where the project transformer is installed, corresponding to its capacity and number of phases.

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
No-load losses of grid electricity by reference transformers	CO_2
Project emissions	
Emission sources	GHG type
No-load losses of grid electricity by project transformers	CO_2

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



Hi : Indicating the location of the project transformer i (variable from 1 to 1307) whose energizing time is counted toward the monitoring parameter, Hi,p

Monitoring point:

To determine energizing time of the project transformers during the monitoring period, the exact installation locations of the project transformers will be identified. Any incident of repair/replacement of the project transformers will be reported to EDL, and the record will be kept at EDL. Energizing time (i.e. hours in the monitoring period) of each project transformer will be adjusted based on the repair/replacement record if necessary.

C.3. Estimated emissions reductions in each year

Year	Estimated Reference emissions (tCO_2e)	Estimated Project Emissions (tCO_2e)	Estimated Emission Reductions (tCO_2e)
2022	2,770.6	661.1	2,109
2023	2,770.6	661.1	2,109
2024	2,770.6	661.1	2,109

2025	2,770.6	661.1	2,109
2026	2,770.6	661.1	2,109
2027	2,770.6	661.1	2,109
2028	2,770.6	661.1	2,109
2029	2,770.6	661.1	2,109
2030	2,770.6	661.1	2,109
Total (tCO_2e)			18,981

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

To solicit comments from local stakeholders, a consultation meeting was planned by the project participants, and the project participants invited various stakeholders. Due to the travel restriction caused by COVID-19, the local stakeholder consultation was conducted by teleconference. Details of the local stakeholder consultation meeting is summarized as follows:

Date and Time: 26th October 2022, Laos：Laos10:30-12:00, Japan:12:30-14:00
Venue: Teleconference by ZOOM

Following organizations were invited to the consultation meeting:
- Ministry of Natural Resources and Environment Department of Climate Change (MONRE)
- Ministry of Energy and Mines Department of energy efficiency and promotion
- Electricité Du Laos (EDL)
-Yuko-Keiso Co., Ltd.

At the meeting, the details of the proposed JCM project and the technology to be introduced were explained by the representative of Yuko-Keiso Co., Ltd. There were no negative comments toward the proposed project expressed during the stakeholders meeting by the attendees. The comments received during the local stakeholders meeting are summarized in the following section.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
EDL	What will be the cost share if equipment fails during the project period?	Basically, in the event of equipment failure, EDL will be responsible for repairs as part of normal operations. Yuko-Keiso and EDL have concluded MOAs, and in the event of fails, the equipment has to be repaired and put back into operation. In addition, EDL will be required to report the time of failure and the time of restart. If the equipment cannot be repaired and is to be disposed of, a permit from the Ministry of Environment Japan (MOEJ) will be required. Yuko-Keiso will report to the MOEJ before discarding the equipment. We would like ELD to note that disposal without a permit will result in the return of the subsidy. (No further action is needed)
MONRE	EDL conducted various studies on the introduction of the project, including costs, and decided to implement the project based on the management decision. EDL has a CO2 reduction target, and this JCM project is intended to contribute to achieving it.	EDL conducted various studies on the introduction of the project, including costs, and decided to implement the project based on the management decision. EDL has a CO2 reduction target, and this JCM project is intended to contribute to achieving it. (No further action is needed)

F. References
N/A

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

Annex
N/A

Revision history of PDD		
Version	Date	Contents revised
01.0	17/11/2022	First draft
02.0	21/02/2023 24/05/2023	Second draft Initial registration by the Joint Committee through electronic decision