JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Introduction of Amorphous High Efficiency Transformers in Northern, Central and Southern Power Grids II

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

The proposed JCM project aims to reduce CO_2 emissions by utilization of energy efficient transformers in power distribution grid in Viet Nam.

The project replaces conventional/more energy intensive silicon steel core transformers by highly 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 the result of the proposed JCM project, total 1,537 units of amorphous transformers are installed to the power distribution grid in northern, central, and southern part of Viet Nam, which are managed by the following three partner companies:

Partner companies managing transformers:	Number of units installed:
(1) Khanh Hoa Power Joint Stock Company (KHPC)	341
(2) Dong Nai Power Company (Dong Nai PC)	1,103
(3) EVN Hanoi Power Corporation (EVN HN)	93
Total	1,537

A.3. Location of project, including coordinates

Country	The Socialist Republic of Viet Nam
Region/State/Province etc.:	Province/City etc. corresponding to the location of headquarters of three partner companies: 1. Khanh Hoa Power Joint Stock Company (KHPC) Khanh Hoa Province 2. Dong Nai Power Company (Dong Nai PC) Dong Nai Province

	3. EVN Hanoi Power Corporation (EVN HN) Hanoi
City/Town/Community etc:	1. Khanh Hoa Power Joint Stock Company (KHPC) Nha Trang City 2. Dong Nai Power Company (Dong Nai PC) Bien Hoa City 3. EVN Hanoi Power Corporation (EVN HN) Hoan Kiem District, Hanoi
Latitude, longitude	1. Khanh Hoa Power Joint Stock Company (KHPC) 12°14'59.7"N 109°11'27.3"E 2. Dong Nai Power Company (Dong Nai PC) 10°58'01.9"N 106°51'22.4"E 3. EVN Hanoi Power Corporation (EVN HN) 21°01'45.7"N 105°51'14.7"E

A.4. Name of project participants

The Socialist Republic of Viet Nam	Khanh Hoa Power Joint Stock Company (KHPC) Dong Nai Power Company (Dong Nai PC) EVN Hanoi Power Corporation (EVN HN)
Japan	Yuko-Keiso Co., Ltd.

A.5. Duration

Starting date of project operation	01/01/2021
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, implementation of the proposed project promotes diffusion of low carbon technology within Viet Nam.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	VN_AM005

Version number	Ver.01.0

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

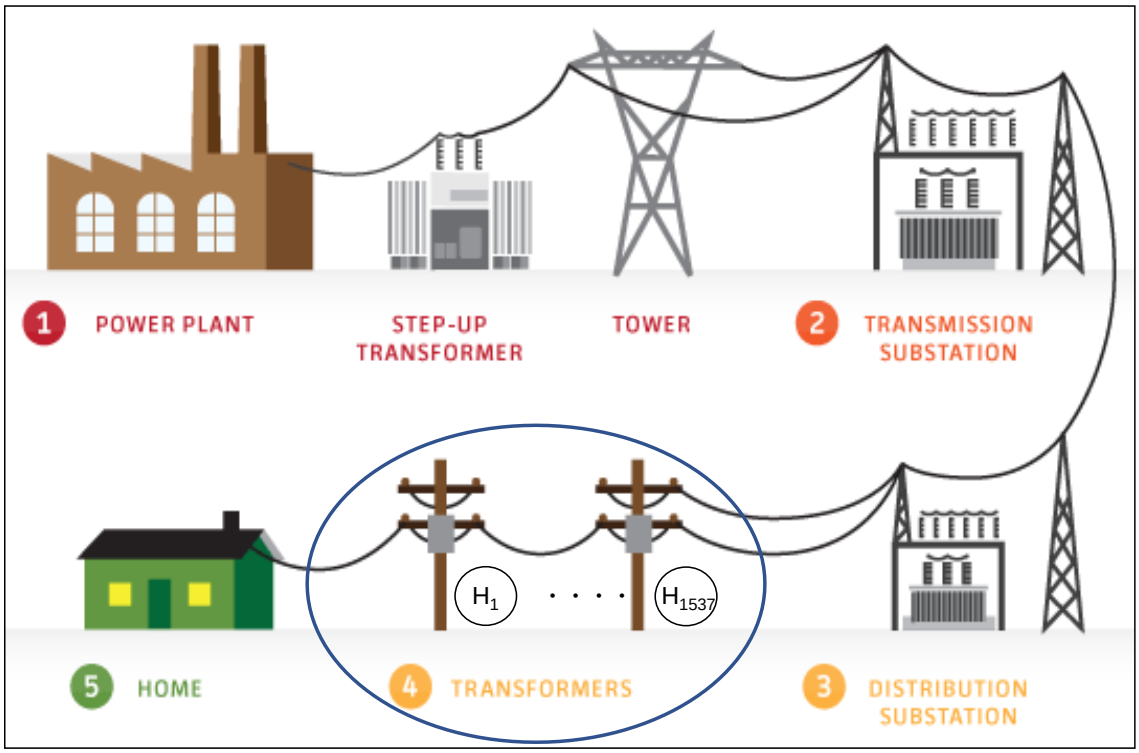
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	Single-phase and/or three-phase oil-immersed transformer with amorphous metal core is installed in the distribution grid.	All transformers installed by the project are either single-phase or three-phase oil-immersed 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 are 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



H_i: Indicating the location of the project transformer *i* (variable from 1 to 1537) whose energizing time are counted toward the monitoring parameter, $H_{i,p}$

Monitoring point:

To determine energizing time of the project transformers during the monitoring period, exact installation locations of the project transformers will be identified. Any incidence of repair/replacement of the project transformers will be reported to relevant power distribution companies, and the record will be kept at the distribution companies. 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})
2018	-	-	-
2019	-	-	-
2020	-	-	-
2021	3,875.0	1,619.2	2,255
2022	3,875.0	1,619.2	2,255
2023	3,875.0	1,619.2	2,255

2024	3,875.0	1,619.2	2,255
2025	3,875.0	1,619.2	2,255
2026	3,875.0	1,619.2	2,255
2027	3,875.0	1,619.2	2,255
2028	3,875.0	1,619.2	2,255
2029	3,875.0	1,619.2	2,255
2030	3,875.0	1,619.2	2,255
2031	3,875.0	1,619.2	2,255
2032	3,875.0	1,619.2	2,255
2033	3,875.0	1,619.2	2,255
2034	3,875.0	1,619.2	2,255
2035	3,875.0	1,619.2	2,255
2036	3,875.0	1,619.2	2,255
2037	3,875.0	1,619.2	2,255
2038	3,875.0	1,619.2	2,255
Total (tCO_{2e})	69,750.0	29,145.6	40,590

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 direct stakeholders of the proposed JCM project, Introduction of Amorphous High Efficiency Transformers in Northern, Central and Southern Power Grids II, are the operators and workers of three partner power corporations including the provincial/district power companies that are subsidiaries of those partner power corporations, who will be involved in operation and maintenance of the project transformers. To solicit comments from stakeholders, consultation meeting was planned and identified stakeholders were invited via invitation letter. The meeting was held as follows:

Date and Time	Venue	Invitees

28 September 2021 9:00-11:00 (Vietnam time)/	Online meeting by Zoom	· KHPC, Dong Nai PC, EVN HN and their subsidiaries power companies in districts where project transformers are installed. · Global Environment Centre Foundation

Satisfactory response to the comment received during the consultation meeting was provided at the time of the meeting. There is no further action required as for the consideration of comment received. Summary of comment received during the consultation meeting and their consideration is summarized in the following section E.2.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
EVN HN	The validation by TPE is scheduled through December 2021, however, we were already inspected in March 2021. What is the difference?	The inspection held in March 2021 was the process of the financing programme for JCM model projects by the Ministry of Environment Japan. On the other hand, the validation is required for the project registration to be submitted to the Joint Committee. No further action required.

F. References

N/A

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

Annex

- List of Regional Power Companies under KHPC

No.	Regional power company	Address
1	PC Power Center Nha Trang	No. 11, Ly Thanh Ton Street, Nha Trang City, Khanh Hoa Province
2	PC Vinh Nguyen	No. 08, Nguyen Tat Thanh Street, Nha Trang City, Khanh Hoa Province

3	PC Vinh Hai	Nguyen Quyen Street, Vinh Hai Ward, Nha Trang City, Khanh Hoa Province
4	PC Ninh Hoa	Population group No. 16, Ninh Hiep Ward, Ninh Hoa Town, Khanh Hoa Province
5	PC Van Ninh	No. 507, Hung Vuong Street, Van Gia Town, Van Ninh District, Khanh Hoa Province
6	PC Cam Ranh – Khanh Son	168, Tuyen Tranh Street, Ward 4, No. 1732, Hung Vuong highway, Cam Phu Ward, Cam Ranh City, Khanh Hoa Province
7	PC Dien Khanh – Khanh Vinh	277, Lac Long Quan Street, Dien Khanh Town, Dien Khanh District, Khanh Hoa Province
8	PC Cam Lam	Cam Thanh Bac Commune, Cam Lam District, Khanh Hoa Province

- List of Regional Power Companies under Dong Nai PC

No.	Regional power company	Address
1	PC Bien Hoa	No. 28, Nguyen Ai Quoc Street, Quarter No. 3, Quang Vinh Ward, Bien Hoa City, Dong Nai Province
2	PC Bien Hoa 2	No. 117, Hanoi Highway Tan Bien Ward, Bien Hoa City, Dong Nai Province
3	PC Nhon Trach	Nguyen Huu Canh Street, Phu Hoi Commune, Nhon Trach District, Dong Nai Province
4	PC Thong Nhat	Administrative Region of Thong Nhat District, Lap Thanh Hamlet, Xuan Thanh Commune, Thong Nhat District, Dong Nai Province
5	PC Long Thanh	No. 45A, 51A Highway, Long Duc Commune, Long Thanh District, Dong Nai Province
6	PC Dinh Quan	No. 113, 20 Highway, Hiep Loi Hamlet, Dinh Quan Town, Dinh Quan District, Dong Nai Province
7	PC Long Khanh	No. 3 Nguyen Cong Tru Street, Long Khanh Town, Dong Nai Province
8	PC Xuan Loc	No.94, Hung Vuong Street, Gia Ray Town, Xuan Loc District, Dong Nai Province
9	PC Tri An	Quarter No. 8, Vinh An Town, Vinh Cuu District, Dong Nai Province
10	PC Cam My	Suoi Ca Hamlet, Long Giao Commune, Cam My District, Dong Nai Province
11	PC Trang Bom	2/9 Street, Quarter No. 4, Trang Bom Town, Trang Bom District, Dong Nai Province

- List of Regional Power Companies under EVN HN

No.	Regional power company	Address
1	PC Hoan Kiem	No. 69c, Dinh Tien Hoang Street, Hoan Kiem District, Hanoi
2	PC Hai Ba Trung	No. 88, Vo Thi Sau Street, Hai Ba Trung District, Hanoi
3	PC Ba Dinh	No. 6 Hang Bun Street, Ba Dinh District, Hanoi
4	PC Dong Da	No. 274 Ton Duc Thang Street, Dong Da District, Hanoi
5	PC Bac Tu Liem	Phu Do Population groups, Phu Do Ward, Nam Tu Liem District, Hanoi
6	PC Thanh Tri	No. 155, Phan Trong Tue Street, Van Dien Town, Thanh Tri Dist, Hanoi
7	PC Gia Lam	Phu Thuy Hamlet, Phu Thi Commune, Gia Lam Dist, Hanoi
8	PC Dong Anh	Group 2, Dong Anh Town, Dong Anh District, Hanoi
9	PC Soc Son	No. 36, Da Phuc Street, Soc Son Town, Hanoi
10	PC Tay Ho	No. 2, Lane 693, Lac Long Quan Street, Phu Thuong Ward, Tay Ho District, Hanoi
11	PC Thanh Xuan	No. 47, Vu Trong Phung Street, Thanh Xuan District, Hanoi
12	PC Cau Giay	No. 169A, Xuan Thuy Street, Cau Giay District, Hanoi
13	PC Hoang Mai	C2 , Bac Linh Dam Collective, Hoang Mai District, Hanoi
14	PC Long Bien	No. 82, Ngo Gia Tu Street, Long Bien District, Hanoi
15	PC Me Linh	Dai Bai Village, Dai Thinh Commune, Me Linh District, Hanoi
16	PC Ha Dong	No. 4, Trung Nhi Street, Ha Dong District, Hanoi
17	PC Son Tay	No.1, Bui Thi Xuan Street, Son Tay District, Hanoi
18	PC Chuong My	No. 38 Yen Son Street, Chuc Son Town, Chuong My district, Hanoi
19	PC Thach That	Lien Quan town, Thach That District, Hanoi
20	PC Thuong Tin	To Hieu Commune, Thuong Tin District, Hanoi
21	PC Ba Vi	Tay Dang Town, Ba Vi District, Hanoi
22	PC Dan Phuong	Cluster 8, Phuc Tho Town, Phuc Tho District, Hanoi
23	PC Hoai Duc	Cluster 6, Tram Troi Town, Hoai Duc District, Hanoi
24	PC My Duc	Thuy Ung Village, Phung Town, Dan Phuong District, Hanoi
25	PC Phu Xuyen	Hamlet 11, Thach That Commune, Quoc Oai District, Hanoi
26	PC Phuc Tho	Phu Xuyen Town, Phu Xuyen District, Hanoi
27	PC Quoc Oai	No.3 Lac Long Quan Street, Kim Bai Town, Thanh Oai District, Hanoi
28	PC Thanh Oai	Phu Luu Te Commune, My Duc District, Hanoi
29	PC Ung Hoa	No.105, Tran Dang Ninh Street, Van Dinh, Ung Hoa District, Hanoi
30	PC Nam Tu Liem	Locality No. 5, Me Tri Ha, Me Tri Ward, Nam Tu Liem District, Hanoi

Revision history of PDD		
Version	Date	Contents revised
01.0	29/09/2021	First edition