

## 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

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

The proposed JCM project aims to reduce CO<sub>2</sub> 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 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 the result of the proposed JCM project, total 3,857 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 four partner companies:

Partner companies managing transformers:	Number of unit installed
(1) EVN Southern Power Corporation (EVNSPC)	2,507
(2) EVN Hanoi (EVNHN)	186
(3) Khanh Hoa Power Joint Stock Company (KHPC)	416
(4) Dong Nai Power Company (Dong Nai PC)	748
Total	3,857

#### A.3. Location of project, including coordinates

Country	Socialist Republic of Viet Nam
Region/State/Province etc.:	Province/state/province etc. corresponding to the location of headquarters of four partner companies: 1. EVN Southern Power Corporation (EVNSPC) Ho Chi Minh City 2. EVN Hanoi (EVNHN) Hanoi

	3. Khanh Hoa Power Joint Stock Company (KHPC) Khanh Hoa Province 4. Dong Nai Power Company (Dong Nai PC) Dong Nai Province
City/Town/Community etc:	1. EVN Southern Power Corporation (EVNSPC) Ward, District 1, HCMC 2. EVN Hanoi (EVNHN) Hoan Kiem District, Hanoi 3. Khanh Hoa Power Joint Stock Company (KHPC) Nha Trang City 4. Dong Nai Power Company (Dong Nai PC) Bien Hoa City
Latitude, longitude	1. EVN Southern Power Corporation (EVNSPC) 10°46'40.7"N 106°42'15.7"E 2. EVN Hanoi (EVNHN) 21°01'45.7"N 105°51'14.7"E 3. Khanh Hoa Power Joint Stock Company (KHPC) 12°14'59.7"N 109°11'27.3"E 4. Dong Nai Power Company (Dong Nai PC) 10°58'01.9"N 106°51'22.4"E

A list for the location of provincial power companies are provided in Annex.

#### A.4. Name of project participants

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

#### A.5. Duration

Starting date of project operation	01/01/2018
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

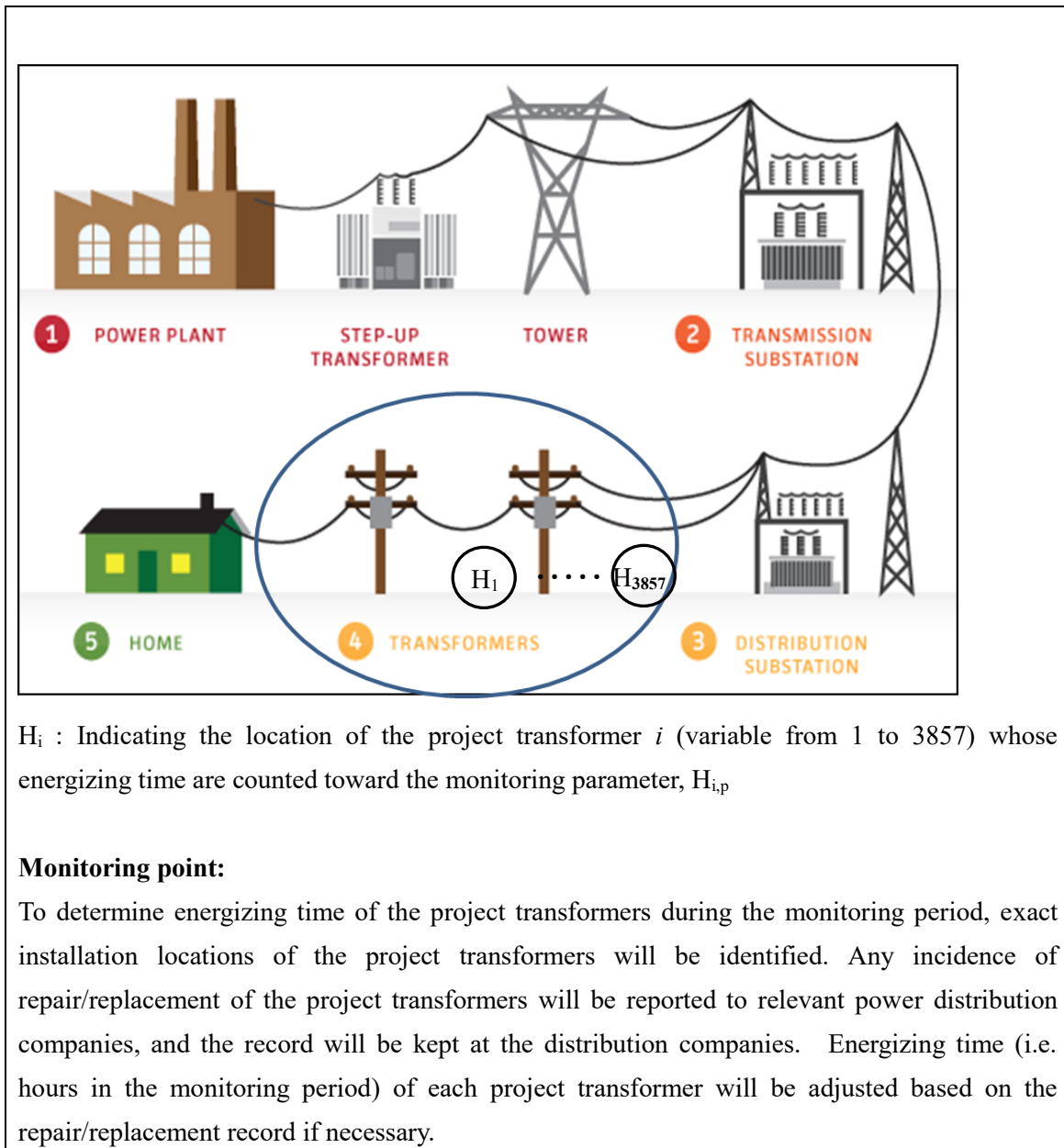
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	Single-phase and/or three-phase oil-immersed transformer with amorphous metal core is installed in the distribution grid.	All transformers installed by the project are either single-phase or three-phase oil-immersed 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 <sub>2</sub>
Project emissions	
Emission sources	GHG type
No-load losses of grid electricity by project transformers	CO <sub>2</sub>

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 <sub>2e</sub> )	Estimated Project Emissions (tCO <sub>2e</sub> )	Estimated Emission Reductions (tCO <sub>2e</sub> )
2018	5,811.6	2,334.4	3,477
2019	5,811.6	2,334.4	3,477
2020	5,811.6	2,334.4	3,477
Total (tCO <sub>2e</sub> )			10,431

#### 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

The direct stakeholders of the proposed JCM project, installation and operation of amorphous transformers at power distribution grid system in northern, central, and southern part of Viet Nam, are the operators and workers of four partner power corporations and the provincial/district power companies subsidiaries of those partner power corporations who will be involved in operation and maintenance of the project transformers. To solicit comments from stakeholders, consultation meetings were planned and identified stakeholders were invited via invitation letter. The meetings were held as follows:

	Date and Time	Venue	Invitees
Day1	31 August, 2018 9:00-11:00	EVNSPC office	EVNSPC, Dong Nai PC, and their subsidiaries power companies in districts where project transformers are installed.
Day2	04 September, 2018 09:00-11:00	KHPC office	KHPC and its subsidiaries power companies in districts where project transformers are installed.
Day3	07 September, 2018 09:00-11:00	EVNHN office	MONRE EVNHN and its subsidiaries power companies in districts where project transformers are installed.

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

## E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
EVNSPC	Is it possible for EVN to trade JCM credits with Japanese companies?	Currently, JCM credits are not internationally tradable. No further action required.
KHPC	How will the JCM credit from the project be allocated among participants?	For the previous JCM project, JCM credits were allocated as follows: Japanese Government: 50% Vietnamese Government: 10% JCM Consortium members: 40% JCM Consortium members will be required to open the account for CO2 credits in order to receive their allocation. No further action required.
EVNHN	If a project transformer is broken after warranty period, is there any grant to purchase a new transformer for the replacement?	After the warranty period, there will be no financial support from the transformer providers. No further action required.

## F. References

n/a

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

## Annex

## • LIST OF PROVINCIAL POWER COMPANIES UNDER EVNSPC

No	Power Company	Address
1.	PC Binh Phuoc	905, Road 14, Tien Thanh Commune, Dong Xoai Town, Binh Phuoc Province
2.	PC Binh Thuan	Ton Duc Thang Avenue, Xuan An Ward, Phan Thiet City, Binh Thuan Province
3.	PC Lam Dong	2, Hung Vuong Street, ward 10, Da Lat City, Lam Dong Province
4.	PC Binh Duong	233, 30 Thang 4 Street, Phu Tho Ward, Thu Dau Mot City, Binh Duong Province
5.	PC Tay Ninh	607, Cach Mang Thang Tam Street, Ward 3, Tay Ninh Town, Tay Ninh Province

6.	PC Long An	168, Tuyen Tranh Street, Ward 4, Tan An City, Long An Province
7.	PC Dong Thap	250 Nguen Hue, Ward 2, Cao Lanh City, Dong Thap Province
8.	PC Tien Giang	07, Hoc Lac Street, Ward 8, My Tho City, Tien Giang Province
9.	PC Ben Tre	450F, Road 60, Huu Dinh Commune, Chau Thanh District, Ben Tre Province
10.	PC Vinh Long	166 Pham Hung, Ward 9, Vinh Long City, Vinh Long Province
11.	PC Can Tho city	06, Nguyen Trai Street, An Hoi Ward, Ninh Kieu District, Can Tho city
12.	PC An Giang	13 Le Van Nhung Street, My Binh Ward, Long Xuyen City, An Giang Province
13.	PC Kien Giang	Lot A10-2, Co Bac Street, Cinh Bao Ward, Tach Gia City, Kien Giang Province
14.	PC Ca Mau	22, Ngo Quyen Street, Ward 2, Ca Mau City, Ca Mau Province
15.	PC Ba Ria Vung Tau	60 Tran Hung Dao Street, Word1, Vung Tau City, Ba Ria-Vung Tau Province
16.	PC Tra Vinh	02, Hung Vuong Street, Ward 4, Tra Vinh City, Tra Vinh Province
17.	PC Soc Trang	113, Le Hong Phong, Ward 3, Soc Trang City, Soc Trang Province
18.	PC Ninh Thuan	16/4 Street, My Hai Ward, Phan Rang-Thap Cham City, Ninh Thuan Province
19.	PC Bac Lieu	07 Tran Huynh Street, Ward 1, Bac Lieu City, Bac Lieu Province
20.	PC Hau Giang	503 Tran Hung Dao Street, Ward 1, Vi Thanh City, Hau Giang Province
21.	PC Dong Nai	01, Nguyen Ai Quoc, Tan Hiep Ward, Bien Hoa City, Dong Nai Province

**• LIST OF PROVINCIAL POWER COMPANIES UNDER EVNHN**

No	Power Company	Address
1.	PC Hoan Kiem	No. 69c, Dinh Tien Hoang Street, Hoan Kiem District, Hanoi
2.	PC Hai Bà Trưng	No. 88, Vo Thi Sau Street, Hai Ba Trưng 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 District, Hanoi
7.	PC Gia Lam	Phu Thuy Hamlet, Phu Thi Commune, Gia Lam District, 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, Ha Noi
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

**• LIST OF PROVINCIAL POWER COMPANIES UNDER KHPC**

No	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 PROVINCIAL POWER COMPANIES UNDER Dong Nai PC**

No	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.

Revision history of PDD		
Version	Date	Contents revised
01.0	08/11/2018	First draft
02.0	08/02/2019	Second edition