JCM Project Design Document Form

A. Project description

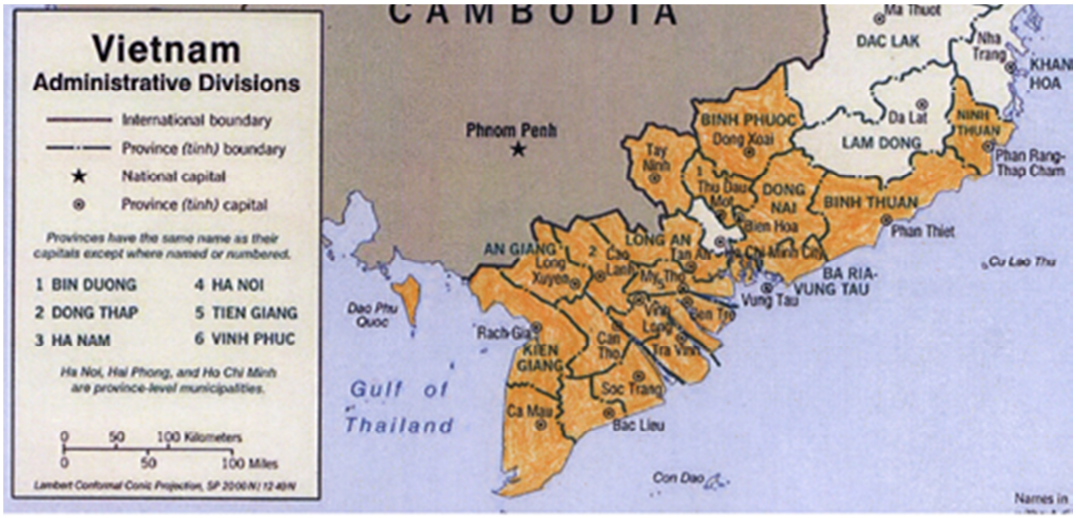
A.1. Title of the JCM project

Introduction of amorphous high efficiency transformers in power distribution systems in the southern part of Viet Nam

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

The proposed JCM project aims to reduce CO2 emissions in Viet Nam by facilitating the utilization of high efficient transformers in power distribution grid. The proposed project involves installation of high efficient amorphous transformers, which will replace some existing and yet-to-be-installed conventional/more energy intensive transformers with silicon steel core.

Amorphous transformers installed by the project are manufactured in Vietnam based on the state of the art technology developed as the result of many years of effort of Hitachi Metals, the industry's leading company in the JCM partner country, Japan. The use of amorphous alloy in the amorphous 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. The proposed JCM project plans to install 1,618 amorphous transformers to the power distribution grid which is maintained and operated by EVN Southern Power Corporation (EVNSPC). The distribution grid covers eighteen provinces and one province-level city located in the southern part of Viet Nam.



(Source of scanned image: University of Texas Libraries)

Figure: 18 provinces and 1 City covered by the proposed project

The emission reductions that would be achieved by the proposed project are estimated to be 610 ton annually.

A.3. Location of project, including coordinates

Country	The Socialist Republic of Viet Nam
Region/State/Province etc.:	① An Giang Province ② Ba Ria-Vung Tau Province ③ Bac Lieu Province ④ Ben Tre Province ⑤ Binh Duong Province ⑥ Binh Phuoc Province ⑦ Binh Thuan Province ⑧ Ca Mau Province ⑨ Can Tho City ⑩ Dong Thap Province ⑪ Hau Giang Province ⑫ Kien Giang Province ⑬ Long An Province ⑭ Ninh Thuan Province ⑮ Soc Trang Province ⑯ Tay Ninh Province ⑰ Tien Giang Province ⑱ Tra Vinh Province ⑲ Vinh Long Province
City/Town/Community etc:	① Xuyen City ② Vung Tau City ③ Bac Lieu City ④ Chau Thanh District ⑤ Thu Dau Mot City ⑥ Dong Xoai Town ⑦ Phan Thiet City ⑧ Ca Mau City ⑨ Ninh Kieu District ⑩ Cao Lanh City ⑪ Vi Thanh City ⑫ Tach Gia City ⑬ Tan An City ⑭ Phan Rang-Thap Cham City ⑮ Soc Trang City

	⑯ Tay Ninh Town ⑰ My Tho City ⑱ Tra Vinh City ⑲ Vinh Long City
Latitude, longitude	① 10°22'56.8"N 105°26'09.5"E ② 10°20'49.7"N 107°04'34.7"E ③ 9°17'45.0"N 105°43'34.9"E ④ 10°16'13.4"N 106°21'29.5"E ⑤ 10°57'58.4"N 106°40'08.3"E ⑥ 11°31'44.0"N 106°52'17.5"E ⑦ 10°56'53.2"N 108°06'37.7"E ⑧ 9°10'46.5"N 105°08'46.3"E ⑨ 10°02'18.9"N 105°47'14.0"E ⑩ 10°27'32.4"N 105°38'26.9"E ⑪ 9°46'25.2"N 105°27'18.6"E ⑫ 10°00'13.8"N 105°04'58.7"E ⑬ 10°32'31.7"N 106°24'42.8"E ⑭ 11°33'50.2"N 109°00'35.5"E ⑮ 9°35'47.0"N 105°58'27.9"E ⑯ 11°18'35.1"N 106°06'21.2"E ⑰ 10°21'24.5"N 106°22'21.0"E ⑱ 9°56'13.7"N 106°20'39.6"E ⑲ 10°15'30.3"N 105°57'10.6"E

A.4. Name of project participants

The Socialist Republic of Viet Nam	EVN Southern Power Corporation (EVNSPC)
Japan	YUKO-KEISO Co., Ltd.

A.5. Duration

Starting date of project operation	01/01/2016
Expected operational lifetime of project	18 years

A.6. Contribution from developed countries

The proposed project receives financial support from the government of Japan. The project has been selected as one of the JCM model projects by the Ministry of the Environment, Japan (MOE). As a result of the financial support provided by MOE program, the initial investment

cost of the proposed project has been partially financed by Japanese government (up to 50% of the initial investment cost). Further, implementation of the proposed project promotes diffusion of low carbon technologies within Viet Nam. Through the MOE program, high efficiency amorphous metal transformers will be installed in place of conventional transformers with silicon steel core.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	JCM-VN-AM005
Version number	Ver.01.0

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

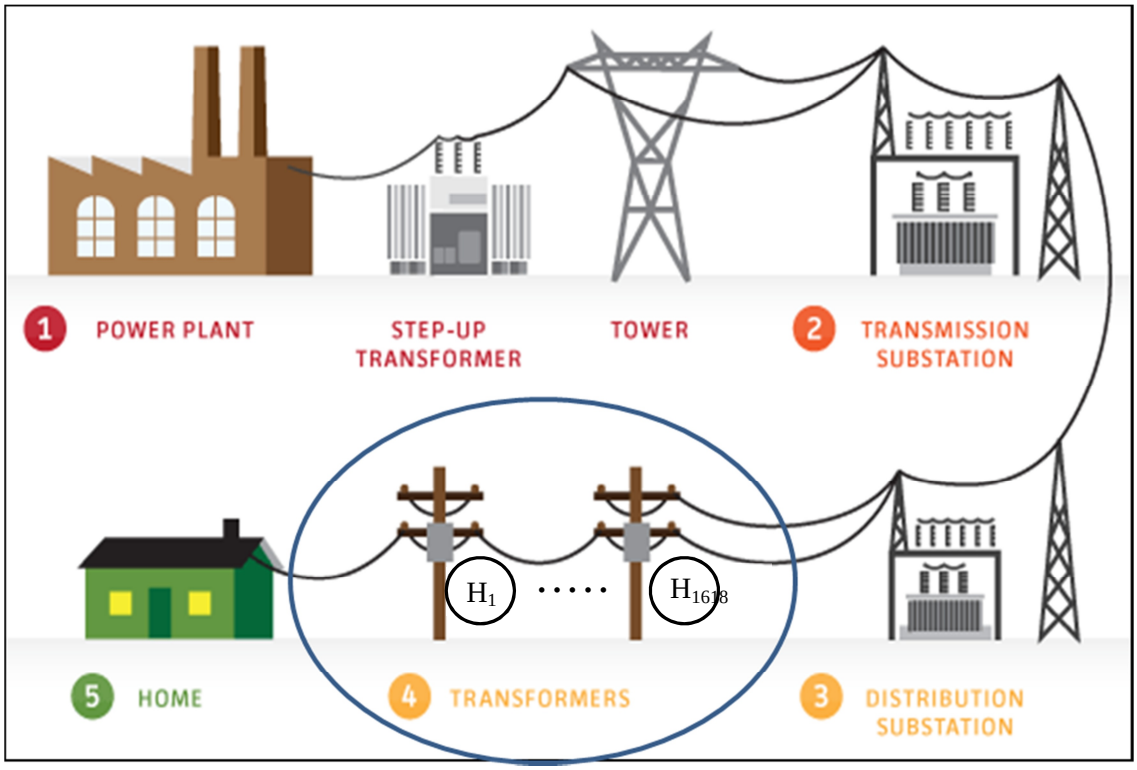
Eligibility criteria	Descriptions specified in the methodology	Project information
Criterion 1	Single-phase and/or three-phase oil-immersed transformer with amorphous metal core is installed in the distribution grid.	Distribution transformers installed by the project are either single-phase or three 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 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. Load losses of the project transformer are determined in line with EVN SPC standard MBA-03_MBA 3P22/0,4kV(Code：EVN SPC-KTSX/QyĐ.114) and MBA-01_MBA 1P12,7/0,23kV(Code: EVN SPC-KTSX/QyĐ.114）

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	CO2
Project emissions	
Emission sources	GHG type
No-load losses of grid electricity by project transformers	CO2

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



H_i : location of the project transformer *i*

Monitoring point:

Exact installation locations of the project amorphous transformers are identified. Any incidence of repair/replacement of the project transformers will be reported to EVN SPC, and the record will be kept at EVN SPC. 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})
2013	-	-	-
2014	-	-	-
2015	-	-	-
2016	1,005	395	610
2017	1,005	395	610
2018	1,005	395	610
2019	1,005	395	610
2020	1,005	395	610
Total (tCO_{2e})	5,025	1,975	3,050

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 project activity, installation of amorphous transformers at power distribution grids in Southern Viet Nam, will be EVNSPC and the power distribution companies under EVN SPC who operate and maintain the power grids.

Comments from local stakeholders have been solicited through a sequence of JCM consortium meetings held routinely among EVNSPC and YUKO-KEISO Co., Ltd., the representative entity of the proposed JCM project. At each consortium meeting, effects and benefits of the JCM project have been discussed. In order to ensure understanding of JCM, at the 5th consortium meeting, a meeting was scheduled and held to solicit comments from EVNSPC representatives as follows:

Date: 16th November 2015
Time: 13：00‐14：00
Venue: Meeting room of the Overseas Environmental Cooperation Center, Japan (OECC)

At the meeting, a presentation summarizing the project's emission reduction effects and the

JCM procedures was explained, and comments were invited through the Q & A session.

In addition, government agencies who are member of JC, such as Ministry of Finance (MOF), Ministry of Industry and Trade (MOIT), and Ministry of Natural Resources and Environment (MONRE), were also identified as local stakeholders of the project activity. The project participants collected comments from officials of MOF, MOIT, and MONRE through a sequence of meetings conducted on 16th and 17th December 2015.

For each local stakeholder's consultation meetings, the project outline and the project's emission reduction effects are explained and comments were invited through the Q & A session. Comments received from the participants of the sequence of meetings have been summarized in the following section E.2. below. The project received no negative comments from the participants of the meetings, and, also, it was confirmed that none of the received comments requires further mitigation action from the project side.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
EVNSPC	Does the JCM registration process affect the actual implementation of the project?	No. The JCM registration process and the project implementation are parallel processes and they do not affect each other. As the JCM accepts retroactive registration, the project can be implemented as scheduled by EVN SPC. Any delay in JCM registration will not lead to reduction of JCM credits.
EVNSPC/ MOF/ MOIT/ MONRE	How the JCM credits are shared among the project participants?	It is our understanding that the sharing of the JCM credits will be discussed and decided among the project participants. As the project receives financial assistance from the Japanese government, the Japanese side seems to expect that the amount of credits corresponding to Japan's contribution will be allocated to the Japanese side. Clarification on these

		issues should be expected in the upcoming decisions of the JC.
MOF official	The government of Viet Nam is now trying to reinforce the Environmental Protection in the country. As such, from the point of the environmental protection, MOF welcomes the type of the project such as the proposed project, which leads to energy efficiency and GHG emission reductions.	Expressing gratitude for the MOF support/ no further action required
MONRE official	The proposed project is listed as one of the priority projects under JC. As EVN SPC being the project participant from Viet Nam side, and because the similar projects can be implemented for the power distribution system within the country, the proposed project has high potential for horizontal development across the country. As such, MONRE fully supports the proposed project as a JCM project, and expects the project to become one of the example JCM project in Viet Nam.	Expressing gratitude for the MONRE support/ no further action required
MOIT official	MOIT is one of the JC member agencies and are fully involved with the approval process of the MRV methodology for the proposed project. Because the government of Viet Nam supports especially energy saving projects, and because the proposed project is an energy efficiency project, in general, MOIT is supportive of the proposed project.	Expressing gratitude for the MOIT support/ no further action required

MOIT official	Approval of the project by the JCM committee has two evaluation points. One is the MRV methodology, and the other is the project participants from Viet Nam. The proposed project overcame both evaluation points. MRV methodology has been approved by the JC, and EVN SPC is participating to the project. As such, MOIT is in the position to support the proposed project.	Expressing gratitude for the MOIT support/ no further action required
MOF official	It was informed that the project is partially supported by Japanese government in terms of financing. About the remaining implementation cost which is not supported by the Japanese government, we would like to know how the project is financed.	EVN SPC is responsible for the remaining implementation cost. No further action required.
MOF official	Is there any maintenance cost for the project?	EVN SPC will conduct regular checking which is done for the regular transformers. No additional maintenance cost due to the JCM project. In case of technical failure, the manufacturer provides 5-year warranty for the amorphous transformers implemented under the project. No further action required.
MOIT official	While the project is under validation stage, not yet registered as a JCM project, yet, the implementation of the project has already begun. MOIT expressed their concerns about the time discrepancy of the project implementation and the JCM registration.	The proposed project has been assessed for its feasibility for JCM project. In this process, the MRV methodology was developed specifically for the proposed project as a JCM project. Considering the pre-registration JCM activity the proposed project, there is no time

		discrepancy between the JCM process and the project implementation. Moreover, the project follows the current JCM procedures regarding the timing of the validation and project implementation. No further action required.

F. References
No references are provided.

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

Annex
N/A

Revision history of PDD		
Version	Date	Contents revised
1.0	19/01/2016	First Edition
2.0	16/03/2016	Second Edition