JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Introduction of amorphous high efficiency transformers in power distribution systems in the southern part of Viet Nam
Reference number	VN004
Monitoring period	01/04/2016 - 31/12/2020
Date of completion of the monitoring report	12/01/2023
Third-party entity (TPE)	Deloitte Tohmatsu Sustainability Co., Ltd. (DTSUS)
Project participant contracting the TPE	Yuko-Keiso Co., Ltd.
Date of completion of this report	17/03/2023

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, *Deloitte Tohmatsu Sustainability Co., Ltd.* (TPE's name) provides reasonable assurance that the emission reductions for *Introduction of amorphous high efficiency transformers in power distribution systems in the southern part of Viet Nam* (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons> N/A

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipments have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Hase	First name: Tomoharu
Title: Representative Executive	
Specimen signature: [redacted]	Date: 17/03/2023

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Yuichi Otani	DTSUS	Team Leader	☒	Authorized	☐
Mr. ☒ Ms. ☐	Chikara Ishigai	DTSUS	Internal Reviewer	☒	Authorized	☐
Mr. ☐ Ms. ☐				☐		☐
Mr. ☐ Ms. ☐				☐		☐

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

Criterion 1: Single-phase and/or three-phase oil-immersed transformer with amorphous metal core is installed in the distribution grid.

The verification team checked the specification information in the project transformers list with 1) the product specification and 2) the brochure of the project transformers by the manufacturer. The verification team confirmed that all types of transformers by the project were single-phase and/or three-phase oil-immersed transformers with an amorphous metal core.

Additionally, the verification team conducted the review of relevant documentation such as photographs and records for checking the project transformers by sampling. Every checked transformer was a single-phase or three-phase transformer with an amorphous metal core.

The verification team confirmed that some project transformers were replaced or relocated during the monitoring period, as reported in Section C.2.

As for replacements, the newly exchanged transformers also satisfied the criteria of the methodology. The verification team confirmed this during the documentation review and interviews with the project participants (PPs) and a review of the acceptance records of those

transformers.
As for relocations, they are not related to exchanges of transformers and do not affect the applicability of the methodology.

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.
The verification team confirmed that their products were tested based on the IEC 60076-1 standards according to the brochure from the manufacturer.
The verification team checked the tender specification of the project transformers of the PP (the EVN Southern Power Corporation (EVNSPC)), the product specification of the project transformers issued by the manufacturer, and the acceptance records of the PP. In doing so, the verification team also confirmed that the load losses of the project transformers were equal to or smaller than that required by the PP.
Additionally, the verification team conducted the review of documentation, such as photographs and records and checked the project transformers by sampling. Every checked transformer was confirmed for its installation and operation, and the information corresponded to the list managed by the PP.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised on the compliance of the project implementation with the eligibility criteria of the applied methodology.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that project implementation complied with the eligibility criteria of the applied methodology.
The verification team has undertaken a reasonable assurance engagement based on ISO14064-3. The engagement has not been undertaken based on the International Standard on Assurance Engagement (ISAE) 3000 ‘Assurance Engagements Other than Audit or Reviews of Historical Financial Information’ issued by the International Auditing and Assurance Standards Board (IAASB).
The implemented procedures are as shown below:

- In the second verification, the physical features in place of the project and the project

operation by the PPs were checked and confirmed by pictures and evidential documents by sampling method instead of on-site visit since initial confirmation of the physical features and operation were already confirmed during the first verification. The verification team also conducted the meeting with the PPs remotely by the online method in the second verification since the verification team considered the situation of COVID-19 and concluded that it was not appropriate to conduct physical on-site visits in the circumstances of COVID-19.

- Sampling is applied according to Paragraph 17 of the 'Joint Crediting Mechanism Guidelines for Validation and Verification' (Version 1.0), and the sampling size was 61 transformers.
- Evidence obtained included information that cannot be externally obtained.
- Implemented procedures involve assessing the suitability in the circumstances of the PP's use of the 'Joint Crediting Mechanism Guideline for Developing Project Design Document and Monitoring Report' (Version 2.0), the Project Design Document (PDD) (Version 2.0) of the project, and the approved methodology (VN AM005 Version 1.0) as the basis for the preparation of the monitoring report.
- As for the presentation, the PDD of the project complies with the requirement for the 'JCM Guidelines for Developing Project Design Document and Monitoring Report' (Version 2.0).

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

The verification team implemented on-site visits and checked whether the project transformers were installed and operating according to the approved PDD and the monitoring plan by sampling.

The verification team confirmed that information on the physical features of the project transformers (type (phase 1 or 3), capacity (kVA), location, and serial number) was managed properly by such methods as the use of an electricity distribution system diagram (EVNSPC), and the project transformers were installed according to the PDD, the monitoring plan and the transformers list by the PPs.

The verification team checked the monitoring structure in the monitoring plan sheet. All the responsible personnel listed in the structure sheet were identified with the PPs. Through the verification process, it was confirmed that the structure was valid during the monitoring period, and each role was performed properly according to the monitoring plan.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

The verification team confirmed that some of the project transformers have been replaced or relocated during/after the monitoring period because of breakdown by thunderbolt, change of electricity demand in the installed area, etc. based on interviews with the PPs, and a review of the event list that recorded event information, such as replacements, relocations, etc.

The verification team checked evidence of events (construction (operation stoppage) and restart records) and whether information in the event list was consistent with that in evidence and found that information (date of operation stoppage and/or restart, i.e., nonoperation time) of all transformers was consistent.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

As for the changes reported above (replacements and relocations of some project transformers), the verification team concluded that such changes do not affect the applicability of the methodology as reported in Section C.6.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>

The monitoring parameter is 'Energizing time of the project transformer (Hi,p)' of which the monitoring option is ‘Option C.’

The parameter is measured by counting the number of hours of the monitoring period according to the monitoring plan. The number of hours is actually calculated by multiplying 24 hours/day by the number of days during the monitoring period (in case of nonoperation by replacements, relocations, etc., the nonoperation time is deducted), and no measuring equipment is used.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised on compliance with calibration frequency and correction of measured values.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that no measuring equipment is used to monitor the parameter, and therefore, the requirements in this section are not applicable.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

The verification team checked the Monitoring Report Sheet (MRS) form and confirmed that the MRS form used is appropriate and corresponds to the applied methodology that is being used.

Transformers are basically assumed to be in operation continuously, and the monitoring parameter 'Energizing time of the project transformer (Hi,p)' is calculated by multiplying 24 hours/day by the number of days during the monitoring period.
The verification team concluded that the assumption made was reasonable considering the typical operational situation of transformers being installed in an electricity distribution grid.
In the event of replacement and relocations, the nonoperation time is raised and deducted from the value of the monitoring parameter (Hi,p).
Nonoperation time is calculated by multiplying 24 hours/day by the number of nonoperation days (from the date of operation stoppage to the date of operation restart) during the monitoring period.
The verification team concluded that the calculation of nonoperation time was conservative considering that the actual nonoperation time within an operation stoppage day and an operation restart day is less than 24 hours).
The verification team checked the event information of the project transformers during the monitoring period from the event list of transformers that recorded event information such as those related to replacements and relocations. The verification team also checked the evidence associated with the events (the construction (operation stoppage) records and operation restart records) and confirmed that the event information on the list was basically consistent with the recorded evidence (i.e., the set of data for the monitoring period was complete).

The verification team checked the parameters to be fixed ex ante, and confirmed the values of these parameters were not changed from the monitoring plan and corrected as shown below:

NLLRE,i,j,k (No load losses of the reference transformer): The value was checked by the monitoring plan and no changes to the monitoring plan were confirmed.

NLLPJ,i,j,k (No load losses of the project transformer): The value was checked by the

monitoring plan and no changes to the monitoring plan were confirmed. The values of all types of project transformers were also checked by the product specifications.

Brp (Blackout rate): The value was checked by the default value in the applied methodology and no changes to the monitoring plan were confirmed.

UNCi (Maximum allowable uncertainty for the no-load losses): The value (0.15: 15%) was adopted from the tolerance of component losses defined in IEC 60076-1 and no changes to the monitoring plan were confirmed.

EFgrid (CO_2 emission factor of the grid): The source of the emission factor issued by Ministry of Natural Resources and Environment (MONRE) was checked and no changes to the monitoring plan were confirmed.

Parameters	Monitored values	Method to check values in the monitoring report with sources
Hi,p Energizing time of the project transformer i during the period p	0 – 8,784 hours for each transformer	Checked the event information of the project transformers during the monitoring period from the event list for transformers, which records event information such as replacements and relocations. Also, checked the evidence for these events (the construction (operation stoppage) records and operation restart records). The number of days (hours) during monitoring period was confirmed to be correctly calculated as follows in the MRS. The year of 2020 was a leap year and it was reflected correctly in the MRS in 2020. 1/4/2016-31/12/2016: 275 days (6,600 hours) 1/1/2017-31/12/2017: 365 days (8,760 hours) 1/1/2018-31/12/2018: 365 days (8,760 hours) 1/1/2019-31/12/2019: 365 days (8,760 hours) 1/1/2020-31/12/2020: 366 days (8,784 hours) Lastly, checked whether the nonoperation time was reflected (deducted) correctly from the value of Hi,p in the MRS.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

The verification team raised two CLs and four CARs and requested the PPs to revise the values of Hi,p in the MRS to reflect the revision by CLs and CARs in Section C.2. The verification team checked the revised MRS and confirmed that the revision of CLs and CARs were reflected (the nonoperation time was deducted) appropriately. The CLs and CARs was closed.

The CLs and CARs are listed as follows:

[CL1]

The PPs will transfer the data of the counted energizing time calculated based on the information of outage time by relocation and replacement in the Event List into the Monitoring Report each year. However, the outage and energizing time of ID No. 772 in Event List and the Monitoring Report of 2018 were inconsistent. The PPs were requested to clarify the issue.

[Responses by the PPs]

It was the transcription error from the Event List to the Monitoring Report. Therefore, the Monitoring Report 2018 was revised.

[Assessment result by TPE]

Based on the responses from the PPs, the verification team confirmed the reason for the transcription error and assessed the revised Monitoring Report. Thus, the verification team concluded that the PPs responses were properly solved and closed the CL1.

[CL2]

The PPs will transfer the data of the counted energizing time calculated based on the information of outage time by relocation and replacement in the Event List into the Monitoring Report each year. However, the outage and energizing time of ID No. 890 in Event List and the Monitoring Report of 2018 were inconsistent. The PPs were requested to clarify the issue.

[Responses by the PPs]

It was the transcription error from the Event List to the Monitoring Report. Therefore, the Monitoring Report 2018 was revised.

[Assessment result by TPE]

Based on the responses from the PPs, the verification team confirmed the reason of the transcription error and assessed the revised Monitoring Report. Thus, the verification team concluded that the PPs responses were properly solved and closed the CL2.

[CAR1]

The stop date (18/2/2017) and restart date (15/3/2017) of the transformer ID No.126 were indicated in the Event List and the Monitoring Report both in year 2016 and 2017. The PPs are

requested to revise the outage/energizing time of 2016 in both the Event List and the Monitoring Report.
[Responses by the PPs]
It was a mistake to listed up in the Event List of 2016 and the transcription error from the Event List to the Monitoring Report occurred. Therefore, both the Event List and the Monitoring Report of 2016 were revised.
[Assessment result by TPE]
Based on the responses from the PPs, the verification team confirmed the reason for the transcription error and assessed the revised Monitoring Report. Thus, the verification team concluded that the PPs responses were properly solved and closed the CAR1.

[CAR2]
The stop date (18/12/2019) and restart date (6/1/2020) of the transformer ID No.1026 were indicated in the Event List and the Monitoring Report both in years 2019 and 2020. The PPs are requested to revise the outage/energizing time of 2019 and 2020 in both the Event List and the Monitoring Report.
[Responses by the PPs]
It was a mistake to listed up in the Event List of 2019 and 2020 and the transcription error from the Event List to the Monitoring Report occurred. Therefore, both the Event List and the Monitoring Report of 2019 and 2020 were revised.
[Assessment result by TPE]
Based on the responses from the PPs, the verification team confirmed the reason of the transcription error and assessed the revised Monitoring Report. Thus, the verification team concluded that the PPs responses were properly solved and closed the CAR2.

[CAR3]
The stop date (24/7/2020) and restart date (14/1/2021) of the transformer ID No.650 were indicated in the Event List and the Monitoring Report both in years 2020 and 2021. The PPs are requested to revise the outage/energizing time of 2020 and 2021 in both the Event List and the Monitoring Report.
[Responses by the PPs]
It was a mistake to listed up in the Event List of 2020 and 2021 and the transcription error from the Event List to the Monitoring Report occurred. Therefore, both the Event List and the Monitoring Report of 2020 and 2021 were revised.
[Assessment result by TPE]
Based on the responses from the PPs, the verification team confirmed the reason of the transcription error and assessed the revised Monitoring Report. Thus, the verification team

concluded that the PPs responses were properly solved and closed the CAR3.

[CAR4]
The stop date (26/12/2020) and restart date (18/1/2021) of the transformer ID No.935 were indicated in the Event List and the Monitoring Report both in years 2020 and 2021. The PPs are requested to revise the outage/energizing time of 2020 and 2021 in both the Event List and the Monitoring Report.
[Responses by the PPs]
It was a mistake to listed up in the Event List of 2020 and 2021 and the transcription error from the Event List to the Monitoring Report occurred. Therefore, both the Event List and the Monitoring Report of 2020 and 2021 were revised.
[Assessment result by TPE]
Based on the responses from the PPs, the verification team confirmed the reason for the transcription error and assessed the revised Monitoring Report. Thus, the verification team concluded that the PPs responses were properly solved and closed the CAR4.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The verification team concluded that the CLs and CARs were closed, the data was monitored appropriately, and the amount of GHG emission reductions was calculated correctly according to the monitoring plan.

C.5. Assessment of avoidance of double registration

<Means of verification>
The verification team checked the Modalities of Communication (MoC) and confirmed that the PPs declared as a written confirmation that the proposed project has not been registered under other international climate mitigation mechanisms.
As a cross-check, the verification team checked the project lists on the websites of the UNFCCC (CDM/JI) and the Verified Carbon Standard (VCS) and there was no similar project. There have already been registered JCM projects in Viet Nam which are similar to the proposed project (VN004, VN008 and VN013). The verification team received the transformers list of these existing projects and checked the serial numbers of these transformers with the numbers of the proposed project transformers. There was no duplication among the lists.

<Findings>
Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised on avoidance of double registration.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that the projects were not registered under other international climate mitigation programs.

C.6. Post registration changes

<Means of verification>

The verification team confirmed that some project transformers were replaced or relocated during the monitoring period as reported in Section C.2.

As for replacements, the newly exchanged transformers also satisfied the criteria of the methodology. The verification team confirmed this during the interviews with the PPs and a review of the acceptance records of those transformers.

As for relocations, they are not related to exchanges of transformers and do not affect the applicability of the methodology.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised on post registration changes.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that there was no issue raised that prevents the use of the applied methodology and the need for post-registration change approvals during the verification.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

There are no remaining issues including FARs from the validation. This verification is the second. There was one FAR from the previous verification.

The verification team also interviewed and confirmed the PP regarding the FAR1 issued during the first verification.

[FAR1 raised during the first verification]

The PPs were requested to improve the procedures for collecting information of the relocated and replaced transformers to be reflected to the counting of the energizing time including the internal data checks to ensure accuracy and completeness and record keeping for the next monitoring period.

[Responses by the PPs]

The PPs used to use the Excel spreadsheet to collect information regarding the relocation, replacement, and address change of the transformers which were to be reflected to the counting of the energizing time from local power companies. However, the information was not collected in the same level of information since the collecting and reporting information were not in the unified manner.

To solve the situation, the PPs introduced the information collection system by utilizing "Kintone" from Cybozu. The Kintone is a customizable workplace platform to manage data, tasks, and communication in one central place.

[Assessment result by TPE]

The verification team assessed the system from collecting to aggregating information from local power companies demonstrated by the PPs. The verification team confirmed that the information of the relocation, replacement, and address change are implemented properly and timely manner. The verification team concluded that the procedures for collecting information of the relocated and replaced transformers to be reflected to the counting of the energizing time, including the internal data checks are considered appropriately maintained during the monitoring period.

Thus, the verification team concluded the closure of the FAR1 from the first verification.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013			
2014			
2015			
2016	752.8	295.7	457.1
2017	1,004.7	394.6	610.1
2018	1,004.4	394.5	609.9
2019	1,004.0	394.3	609.7
2020	1,003.5	394.1	609.4
Total (tCO_2e)			2,896.2

F. List of interviewees and documents received

F.1. List of interviewees

Yuko-Keiso Co., Ltd.

Saori Iwasaki

Shiro Tokura

Ryosuke Morita

Aya Yamamoto

NTT DATA Institute of Management Consulting, Inc.

Shintaro Higashi

F.2. List of documents received

- Monitoring Report (Calculation Spreadsheet)
- Project design document (PDD)
- Approved methodology 'Installation of energy efficient transformer in a power distribution grid (JCM_VN_AM005) version 1.0)
- Validation report
- List of all of transformers installed by the PJ
- Product specification of every type of transformers installed
- Brochure of the transformer issued by the manufacturer

- Acceptance records by the power companies that checked all transformers installed satisfied the criteria 1 and 2
- Predelivery inspection reports of the installed transformers by the manufacturer (Evidence of maximum allowable uncertainty (UNCi))
- Maps and list of transformers installed by the VN008 PJ, VN013 PJ, VN018 PJ, and other planned PJ
- Maps of transformer installation locations by EVNSPC
- First verification report and any reference documents (to check whether any FAR exists)
- Photo of sampled transformers with serial number
- Event List (Records of replacement, exchange, or location change of the installed transformers during the monitoring period)
- Evidence of events (outage records and operation records); at least for sampled transformers IEC 60076-1
- National/industrial standard adopted to determine load losses of transformers (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))
- Tender specification of transformers or other documents that evidence the standard required by the power company (EVNSPC)
- The source of the emission factor (0.5657 tCO2/kWh) issued by the MONRE
- Written documents by the PPs (EVNSPC and Yuko Keiso) that confirm there is no double counting with other projects registered by the JCM and/or other mechanisms
- List of power companies (subsidiaries of EVNSPC) to identify the parameter 'j' in the calculation

Annex Certificates or curricula vitae of TPE's verification team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Team Leader

Name:	OTANI, Yuichi		
Position:	☒ 1. Lead Auditor ☐ 2. Auditor ☐ 3. Technical Expert		
Fields of Expertise:	Sectoral Scopes (SS)	Technical Areas (TA)	
	SS 1: Energy industries (renewable/non-renewable sources)	☒	TA 1.1: Thermal energy generation
		☒	TA 1.2: Renewables
	SS 2: Energy distribution	☒	TA 2.1: Electricity distribution
	SS 3: Energy demand	☒	TA 3.1: Energy demand
	SS 4: Manufacturing industries	☐	TA 4.1: Cement and lime production
	SS 5: Chemical industry	☐	TA 5.1: Chemical process industries
		☐	TA 5.2: Caprolactam, nitric and adipic acid
	SS 6: Construction	☐	TA 6.1: Construction
	SS 7: Transport	☐	TA 7.1: Transport
	SS 8: Mining/mineral production	☐	TA 8.1: Mining and mineral production
	SS 9: Metal production	☐	TA 9.1: Aluminum and magnesium production
		☐	TA 9.2: Iron steel and ferro-alloy production
	SS 10: Fugitive emissions from fuels (solid, oil and gas)	☐	TA 10.1: Fugitive emissions from oil and gas
	SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	☐	TA 11.1: Emissions of fluorinated gases
		☐	TA 11.2: Refrigerant gas production
	SS 12: Solvents use	☐	TA 12.1: Chemical industries
	SS 13: Waste handling and disposal	☒	TA 13.1: Solid waste and wastewater
		☐	TA 13.2: Manure
	SS 14: Afforestation and reforestation	☐	TA 14.1: Afforestation and reforestation
	SS 15: Agriculture	☒	TA 15.1: Agriculture
	SS 16: Carbon capture and storage of CO2 in geological formations	☐	TA 16.1: Carbon capture and storage
Approved by:	MATSUSHITA, Yoshichika, Chief Executive Officer of DTSUS		

NOTE: In accordance with "Auditor's List with Technical Areas of Sectoral Scopes" by DTSUS.

Internal Reviewer

Name:	ISHIGAI, Chikara		
Position:	☒ 1. Lead Auditor ☐ 2. Auditor ☐ 3. Technical Expert		
Fields of Expertise:	Sectoral Scopes (SS)	Technical Areas (TA)	
	SS 1: Energy industries (renewable/non-renewable sources)	☒	TA 1.1: Thermal energy generation
		☒	TA 1.2: Renewables
	SS 2: Energy distribution	☒	TA 2.1: Electricity distribution
	SS 3: Energy demand	☒	TA 3.1: Energy demand
	SS 4: Manufacturing industries	☐	TA 4.1: Cement and lime production
	SS 5: Chemical industry	☒	TA 5.1: Chemical process industries
		☐	TA 5.2: Caprolactam, nitric and adipic acid
	SS 6: Construction	☐	TA 6.1: Construction
	SS 7: Transport	☐	TA 7.1: Transport
	SS 8: Mining/mineral production	☐	TA 8.1: Mining and mineral production
	SS 9: Metal production	☐	TA 9.1: Aluminum and magnesium production
		☐	TA 9.2: Iron steel and ferro-alloy production
	SS 10: Fugitive emissions from fuels (solid, oil and gas)	☒	TA 10.1: Fugitive emissions from oil and gas
	SS 11: Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	☐	TA 11.1: Emissions of fluorinated gases
		☐	TA 11.2: Refrigerant gas production
	SS 12: Solvents use	☒	TA 12.1: Chemical industries
	SS 13: Waste handling and disposal	☒	TA 13.1: Solid waste and wastewater
		☐	TA 13.2: Manure
	SS 14: Afforestation and reforestation	☐	TA 14.1: Afforestation and reforestation
	SS 15: Agriculture	☐	TA 15.1: Agriculture
	SS 16: Carbon capture and storage of CO2 in geological formations	☐	TA 16.1: Carbon capture and storage
Approved by:	MATSUSHITA, Yoshichika, Chief Executive Officer of DTSUS		

NOTE: In accordance with “Auditor’s List with Technical Areas of Sectoral Scopes” by DTSUS.