

JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Introduction of Amorphous High Efficiency Transformers in Southern and Central Power Grids
Reference number	VN008
Monitoring period	13/05/2017 - 31/12/2017
Date of completion of the monitoring report	27/02/2019
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	15/03/2019

A.2 Conclusion of verification and level of assurance

Overall verification opinion	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
<input checked="" type="checkbox"/> Unqualified opinion	<p>Based on the process and procedure conducted, <i>Deloitte Tohmatsu Sustainability Co., Ltd.</i> (TPE's name) provides reasonable assurance that the emission reductions for <i>Introduction of Amorphous High Efficiency Transformers in Southern and Central Power Grids</i> (project name)</p> <ul style="list-style-type: none"> ✓ 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
<p><i>(If overall verification opinion is negative, please check below and state its reasons.)</i></p> <input type="checkbox"/> Qualified Opinion <input type="checkbox"/> Adverse opinion <input type="checkbox"/> Disclaimer	<p><State the reasons> N/A</p>

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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>

Authorised signatory:	Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>
Last name: Sugiyama	First name: Masahiko
Title: Representative Executive	
Specimen signature:	Date: 15/03/2019
	

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Kunio Tada	DTSUS	Team Leader	<input checked="" type="checkbox"/>	Authorized	<input checked="" type="checkbox"/>
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Yuichi Otani	DTSUS	Team Member	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Chikara Ishigai	DTSUS	Internal Reviewer	<input checked="" type="checkbox"/>	Authorized	<input type="checkbox"/>
Mr. <input type="checkbox"/> Ms. <input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>

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>

Criteria 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 product specification, the brochure of the project transformers by the manufacturer and the transformers list by the project with specification information, and confirmed that all types of transformers by the project were single-phase and/or three-phase oil-immersed transformers with amorphous metal core.

Additionally, the verification team conducted the on-site visits and checked the project transformers by sampling. Every checked transformer was single-phase or three-phase transformers with 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 on-site visit based on 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.

Criteria 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.

According to the brochure from the manufacturer, their products were tested based on the IEC60076 standards, which the verification team confirmed.

TCVN6306-1 is Viet Nam's equivalent to IEC60076 and is basically a translation of IEC60076, which the verification team confirmed. It was also confirmed from interviews with the project participants (the PPs) that, in the event of a time-lag between the update of these standards, IEC60076 would be prior to TCVN6306-1.

The verification team checked the tender specification of the project transformers with the PPs (the four power companies), the product specification of the project transformers with the manufacturer and the acceptance records with the PPs. 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 PPs.

Additionally, the verification team conducted on-site visits and checked the project transformers by sampling. Every checked transformer was actually installed and operating and the information corresponded to the list managed by the PPs.

<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:

- On-site visits were implemented for the areas of EVNSPC and EVNHCMC,
- Sampling is applied according to Paragraph 17 of the 'Joint Crediting Mechanism Guidelines for Validation and Verification' (Version 1.0), and 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 project participant's use of 'Joint Crediting Mechanism Guideline for Developing Project Design Document and Monitoring Report' (Version 2.0), the Project Design Document (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, serial No.) were managed properly by such methods as the use of an electric map system (EVNHCMC) or electricity distribution diagram (EVNSPC), and the project transformers were installed according to the PDD, 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 during interviews 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 the electricity demand change in the installed area and etc. based on interviews with the PPs, on-site visits, and a review of the event list that recorded event information such as replacements, relocations, and etc.

Part of the information in the events list were incomplete (e.g. date of operation stoppage and operation re-start in case of replacements or relocations were blank on the event list).

The verification team raised a CL 1 and requested the PPs to complete the event information.

The verification team received the completed event list and evidence in connection with the events (construction (operation stoppage) and re-start records). It was confirmed that the event information on the list was consistent with the evidence received. The verification team could not check the evidence for some transformers, but it was confirm that the operation time of such transformers during the monitoring period was calculated conservatively (e.g. zero hours in case evidence of both operation stoppage and re-start could not be confirmed, and, in the event the evidence of a re-start could not be confirmed, the transformer was assumed to have stopped operating from the stop date till the end of the monitoring period.), which the verification team concluded was reasonable.

The CL 1 was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that the CL was closed and the project was implemented according to the registered PDD.

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 (H,i,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 non-operation by replacements, relocations and etc., the non-operation 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 of 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 (the 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 operation situation of transformers being installed in an electricity distribution grid.

In the event of replacement and relocations, the non-operation time is raised and deducted from the value of the monitoring parameter (Hi,p).

Non-operation time is calculated by multiplying 24 hours/day by the number of non-operation days (from the date of operation stoppage to the date of operation re-start) during the monitoring period.

The verification team concluded that the calculation of non-operation time was conservative considering that the actual non-operation time within an operation stoppage day and an operation re-start 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, relocations, and etc. The verification team also checked the evidences associated with the events (the construction (operation stoppage) records and operation re-start 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). As for transformers whose evidence could not be confirmed, the operation time was deducted conservatively as reported in the <Findings> of this section.

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 16 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 IEC60076-1 and no changes to the monitoring plan were confirmed.

EFgrid (CO₂ emission factor of the grid): The source of the emission factor issued by Ministry of Natural Resources and Environment (the 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 - 5592 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, relocations, and etc. Also, checked the evidence for these events (the construction (operation stoppage) records and operation re-start records. Lastly, checked whether the non-operation 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 number of days during the monitoring period (13/5/2017-31/12/2017) is 233 days. The verification team found-the number of days during the monitoring period was 232 days in the

initial MRS and the value of the monitoring parameter (Hi,p) was calculated incorrectly. The verification team raised CAR 1 and requested the revision of the number of days. The verification team checked the revised MRS and confirmed that the number of days was revised correctly.

The CAR 1 was closed.

As reported in <Means of verification> of this Section and Section C.2., the verification team found some of the project transformers were replaced and relocated during the monitoring period and the non-operation time was raised in such cases. Although, the value of non-operation time was not deducted from the value of the monitoring parameter (Hi,p) in the initial MRS.

The verification team raised CAR 2 and requested the revision of the value of the monitoring parameter (Hi,p) to deduct the non-operation time.

The verification team checked the revised MRS and confirmed that the value of the monitoring parameter (Hi,p) was revised correctly. As for some transformers whose evidence of events could not be checked, the operation time (the value of Hi,p) was calculated conservatively as reported in Section C.2.

The Car 2 was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that the 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 received written documents with signatures from all of the PPs that declare that the same project was not or would not be registered under any other international climate mitigation mechanisms other than the JCM and that the project did not result in double counting of GHG emission reductions.

The verification team also checked the websites of the Clean Development Mechanism (CDM), Joint Implementation (JI), and Verified Carbon Standard (VCS) and confirmed that the same project was not registered under these mechanisms.

Additionally, the verification team checked the transformers list for similar JCM projects previously registered in Viet Nam (VN004: Introduction of amorphous high efficiency

transformers in power distribution systems in the southern part of Viet Nam). The team checked the serial number of every transformer from the previous project (VN004) and the verified project (VN008). There was no overlap of serial numbers between these projects.

<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 was 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 from the on-site visits, 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 to 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 a first. There was no previous verification.

E. Verified amount of emission reductions achieved

Year	Verified Emissions (tCO ₂ e)	Reference	Verified Project Emissions (tCO ₂ e)	Verified Emission Reductions (tCO ₂ e)
2013				
2014				
2015				
2016				
2017		4223.8	1746.3	2477
2018				
2019				
2020				
Total (tCO ₂ e)				2477

F. List of interviewees and documents received

F.1. List of interviewees

EVN Southern Power Corporation (EVNSPC)
 Nguyen Dac Thang
 Nguyen Huynh An Phu
 Truong Xuan Quy

Binh Duong Power Company (a subsidiary of EVNSPC)
 Nguyen Xuan Hoa

Ho Chi Minh City Power Company (EVNHCMC)
 Nguyen Van Thanh
 Dinh Quoc Cuong
 Nguyen Huu Thanh Thi
 Nguyen Ngoc Thien Kim
 Cao Hoang Trong
 Tran Khai Phong

Sai Gon Power Company (a subsidiary of EVNHCMC)
 Nguyen Duy Phong

Binh Chanh Power Company (a subsidiary of EVNHCMC)

Vo Ho Ngoc

Binh Phu Electricity (a subsidiary of EVNHCMC)

Hoang Minh Tuan

Tan Thuan Corporation (a subsidiary of EVNHCMC)

Nguyen Hoang Phuc

Yuko-Keiso Co., Ltd.

Shiro Tokura

Saori Iwasaki

Vu Huy Hieu

Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.

Chisato Nakade

F.2. List of documents received

- Approved project design document (PDD)
- Validation report
- List of all transformers installed by the project (EVNSPC, EVNCPC, DNPC, EVNHCMC)
- Product specification of the project transformers
- Brochure from the manufacturer for the project transformers
- Tender specification for the project transformers (EVNSPC, EVNCPC, DNPC, EVNHCMC)
- Acceptance (Operation start) records by the PPs (EVNSPC, EVNCPC, DNPC, EVNHCMC)
- Pre-delivery inspection reports of the installed transformers by the manufacturer
- Location map of transformers installed by the proposed project (EVNSPC, EVNCPC, DNPC, EVNHCMC)
- Electricity distribution system diagram by EVNSPC (Only on-site check)
- Detailed transformers location map by EVNHCMC (Only on-site check)
- Event list of the project transformers (EVNSPC, EVNCPC, DNPC, EVNHCMC)
- Evidence of events (relocation, replacement and others: Construction records, Installation Records)
- IEC 60076-1
- National/industrial standard adopted to determine losses of transformers (TCVN6306-1:

2015)

- Source of the emission factor (0.9185 tCO₂/kWh) issued by the MONRE
- Written confirmation by the PPs (four power companies and Yuko-Keiso) that confirm there is no double counting with other projects registered by the JCM and/or other mechanisms.
- List of transformers installed by another JCM project (VN004)

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

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

Team Member

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

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