JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Eco-Driving by Utilizing Digital Tachograph System
Reference number	VN001
Monitoring period	01/07/2016 - 30/09/2017
Date of completion of the monitoring report	07/03/2023
Third-party entity (TPE)	EPIC Sustainability Services Pvt. Ltd.
Project participant contracting the TPE	Nippon Express Holdings, Inc.
Date of completion of this report	16/03/2023

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, *EPIC Sustainability Services Pvt. Ltd.* (TPE's name) provides reasonable assurance that the emission reductions for *Eco-Driving by Utilizing Digital Tachograph System* (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> Not applicable

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of	☒

Item	Verification requirements	No CAR or CL remaining
the eligibility criteria of the applied methodology	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: R.B	First name: Venkataramanaiah	
Title: Director		
Specimen signature: [redacted]	Date: 16/03/2023	

B. Verification team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	A. Prabu Das	Epic Sustainability Services Pvt. Ltd.	Lead auditor/ Team Leader	☒	Qualified	☐
Mr. ☒ Ms. ☐	Bharath S	Epic Sustainability Services Pvt. Ltd.	Auditor/ Team Member	☒	Qualified	☒
Mr. ☐ Ms. ☒	Priyanka M S	Epic Sustainability Services Pvt. Ltd.	Auditor/ Team Member	☒	Qualified	☐
Mr. ☒ Ms. ☐	R Vijaya Raghava	Epic Sustainability Services Pvt. Ltd.	Technical Reviewer/ Internal Reviewer	☒	Qualified	☐

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>

The verification team has determined during the verification process that the actual implementation and operation of the project has been conducted in conformance with the eligibility criteria of the applied methodology. The project applied the approved methodology: JCM_VN_AM001_ver02.0 "Transportation energy efficiency activities by installing digital tachograph systems". The team assessed by means of an on-site visit that the physical features of the project are in place and that the project participants (PPs) have operated the project as per the eligibility criteria of the applied methodology as follows.

Criterion 1: “This methodology applies to freight vehicle fleets to which a digital tachograph system has been installed”.

The freight vehicles under the proposed project are equipped with digital tachograph system. In

Total, 130 digital tachograph systems are implemented under the project. A list of the participating vehicles at the time of validation is provided in Annex II of the PDD (JCM_VN_F_PDD_ver02.0).

It was found from the first verification process and with the previous records that the digital tachograph system were installed to the 130 freight vehicles of Nippon Express Vietnam in Hanoi and Ho Chi Minh. The PP applied for PRC during the first verification for replacing 9 out of 124 vehicles were replaced and 6 new vehicles were added to sum up the total vehicles to 130. The PRC was approved by the verified TPE during the first monitoring period.

The Criterion 1 of the methodology is met.

Criterion 2: “Data of fuel consumption and distance travelled before activation of digital tachograph system is available for each freight vehicle, except for the cases of application of Option (c) to the reference fuel efficiency (ηRE,i) in Section F.2. The data is to be collected for at least 60 days within 4 months of lower monthly mean temperature of the year (November, December, January, and February)”.

The project includes only vehicles in the fleet, with which data for fuel consumption and distance travelled before the activation of the digital tachograph system are available, or which applies Option (c) to the reference fuel efficiency (ηRE,i) in Section F2 of the applied methodology. The data are collected for at least 60 days for each vehicle in the period 01/11/2014 – 28/02/2015.

The reference fuel efficiency was determined at the validation stage based on the available data and no change was made during the monitoring period for 115 freight vehicles included in the originally registered PDD and remained in the first monitoring period. The PPs applied the procedures for determining the reference fuel efficiency based on the revised methodology for the 15 new vehicles added/replaced in the post registration change.

CAR 01 is raised to address the issue of non-calculation of reference emissions for 15 project vehicles as per the methodology.

Criterion 3: “The project includes feedback of a driver’s performance with the graphical representation to the driver regularly, at least once in three months”.

The project includes feedback of the driver's performance with graphical representation at least once a month. By reviewing the graphical feedback provided to the drivers and by on-site visit it is confirmed through the verification processes that the PPs implemented the established procedures for training of drivers including regular graphical representation of feedbacks of driver’s performance using the outputs of the digital tachograph system more frequently than once a month.

CL 01 is raised regarding the criterion 3 of the applied methodology.

The Criterion 3 of the methodology is met.

Criterion 4: “The project does not involve a fuel switch in existing freight vehicles, except for an optional switch to biofuel blends where the blending ratio is not greater than 20% by volume, in which case emission reductions are discounted by the percentage of biofuel in the blend. Justification in the PDD: The project does not involve fuel switch in existing freight vehicles. In case of an optional switch to biodiesel blends where the blending ration is not greater than 20 % by volume, the emission reductions will be discounted accordingly by the percentage of biofuel in the blend”.

The verification team reviewed records of fuel purchased, conducted on site assessment, and interviewed the PPs. The verification team confirmed that the project did not include a fuel switch of the existing freight vehicles and biofuel was not used during the first monitoring period.

The Criterion 4 of the methodology is met.

Criterion 5: “The project participants identify each freight vehicle included in the project, and ensure that the type of service of the freight vehicle is the same before and during the project (e.g. refrigeration vehicle remains as a refrigeration vehicle, etc.)”.

All 130 participating freight vehicles (Middle and Large Truck of 6W and 10W and Tractor Head of 6W and 10W) are identified by their plate numbers. The type of service of the vehicles is specified and is not expected to change after the project implementation. In case the type of services changes after the project implementation for any vehicles, that vehicle will be excluded from the project.

During the on-site visit it was found that the number plates of three units of 5.0 T trucks were changed and the details are as follows,

Old Number	New Number	Stop time	Date of resuming of the operation
52LD-2159	50LD-08256	28/10/2016	18/11/2016
51LD-5432	50LD-08198	28/10/2016	19/11/2016
52LD-2257	50LD-08271	28/10/2016	19/11/2016

CAR 02 is raised to address this issue and the documental evidence for change in the number plates was requested.

Criterion 6: “A plan to present new reference data for freight vehicles of new routes in case route changes have occurred due to construction of new expressways or to modal shift after the introduction of the project is prepared”.

The verification team reviewed the project documentation, supporting evidence from the designated routes specified by the freight owner, conducted on site assessment, and interviewed the PP. Through the processes of verification, the team confirmed that there are no changes in the routes specified by reasons such as construction of new expressways or modal

shift after validation and registration of the project. The plan to present new reference data for freight vehicles of new routes was not required to be applied during the monitoring period.
The Criterion 6 of the methodology is met.

<**Findings**>

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

CAR 01- During the on-site visit it was found that the reference emissions were not calculated for the vehicles from number 116 to 130 (As per the serial number provided in the monitoring sheet) as per the monitoring plan. PP to explain how the ER calculations is as per JCM requirement since it is not calculated as per the registered monitoring plan.

CAR 02 - During the on-site visit it was found that the number plate (Which is used as the identity for the project vehicles) of three vehicles were changed to a new number. PP to clarify on the reason for changing the number plate and to provide the evidence for the change in number plate of those vehicles.

CL 01 - Criterion 3 of the applied methodology VN_AM001_ver02.0 quotes that “the project includes feedback of a driver’s performance with the graphical representation to the driver regularly, at least once in three months”. However, during the site visit it was found that the last graphical feedback data is up to September 2017 (which was the output from Tachograph system).

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The PP has revised the MR by removing the project vehicles numbered from 116 to 130 and it is verified by the verification team and the CAR 01 is closed.

The tachograph data was not submitted by the PP from October 2017 and the justification is provided for the same. Hence, the monitoring period is restricted by the PP from 01/07/2016 - 31/12/2020 to 01/07/2016 - 30/09/2017 and is accepted by the verification team.

Through the review of submitted documents, on-site visit and interaction with the site personnel, the verification team confirms that, the project activity was implemented and operated as per the revised and accepted PDD, ver02.0 and that the monitoring plan is followed as per the accepted monitoring plan ver02.0_rev3 for the period up to September 2017. The verification team accepts the PPs request to limit the monitoring period up to September 2017 for the current assessment.

The PP submitted the evidence for change in number plates of three project vehicles with the justification and it is reviewed and accepted by the Verification team and CAR 02 is closed.

The verification team confirmed that the project has been implemented in conformity with the eligibility criteria of the applied methodology.

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

<Means of verification>

The purpose of the Project is to improve transportation fuel efficiency in diesel-fired freight vehicles of Nippon Express (Viet Nam) Co., Ltd., using a digital tachograph system, while providing the same level of freight transportation services. The digital tachograph system is a complex system consisting of a hardware and software components, as well as a tailor-made driver training system. The hardware component consists of an onboard terminal with a feedback indicator, installed in each vehicle, as well as a server that will collect and process all the information received via wireless signal from each vehicle. Sound indicators will warn the drivers in instances of inefficient driving. All the information is collected and processed using specialized software. The system enables the recording and analysis of driving patterns for use in personalized education in efficient driving principles. Each driver will receive individual feedback and evaluation of their skills from their supervisors. Additionally, regular group trainings will be provided in Hanoi and Ho Chi Minh. In this way safer and more efficient driving patterns are expected to be introduced, leading to less fossil fuel consumption and ultimately less GHG emissions.

The project has two main operational bases in Hanoi and Ho Chi Minh City. Information of project locations is provided for Nippon Express (Vietnam) Co., Ltd.'s Quang Minh Warehouse for Hanoi operations and Song Than Logistics Centre for Ho Chi Minh City operations. The project is implemented by Nippon Express (Vietnam) Co., Ltd. from the Socialist Republic of Viet Nam and Nippon Express Co., Ltd. from Japan.

The Verification team conducted the on-site visit to both Hanoi and Ho Chi Minh offices and verified the sample vehicles in operation.

The verification team determined through the verification process that the implementation and operation of the project has been in accordance with the description contained in the registered PDD. The Monitoring Report (MR) follows the Monitoring Plan (MP) of the registered PDD with the post registration change being proposed that have been established based on the approved methodology.

<Findings>

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

No findings are raised in this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the project was implemented and operated in accordance with the registered PDD with the post registration change approved by the Joint Committee.

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

<Means of verification>

The parameter PDi,p (Project distance travelled by freight vehicle “i” during the period “p”) applies the monitoring Option C and the monitoring of the parameter uses GPS tracking system which is part of the digital tachograph system as a measuring equipment. The digital tachograph system has a level of precision equivalent to the "Black Box" devices approved by the Vietnamese Government (Ministry of Energy) and is subject to regular maintenance and operational control as per the manufacturer's requirements. Any irregular values will be double-checked against the GPS data from the "Black Box" devices.

During the on-site visit and the interviews with the PP, it was found that the Tachograph system were having some technical issues the data were double-checked with the standard Blackbox devices.

<Findings>

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

No findings are raised in this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team has confirmed that the measuring equipment applied for the parameter PDi,p was subject to QA/QC procedures in accordance with the requirements of the MP.

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

<Means of verification>

The MR is developed using the MRS (Monitoring Report Sheet) applied to the registered JCM project that is confirmed fulfilment of the requirements of the MRS of the applied methodology. The data set is available for the monitoring period (01/07/2016 to 30/09/2017). The information provided in the MR has been cross-checked with other sources such as plant logbooks, inventories, purchase records of fuels etc. The calculations of reference emissions and project emissions, as appropriate, have been carried out in accordance with the formulae and methods described in the MP and the applied methodology. However, for the reference emissions for 15 vehicles which are added after the PRC are not as per the methodology and CAR is raised to address the issue. The assumptions used in emission calculations have been justified and is cross checked by using documental evidence. The project accounts for CO2 emissions from consumption of fossil fuel by freight vehicles in accordance with the approved methodology.

The reference emissions are calculated for each freight vehicle by reference fuel efficiency, travel distance during the project period, NCV of the fuel and CO2 emission factor of the fuel. The project emissions are calculated for each freight vehicle by the fuel consumption, NCV of

the fuel and CO2 emission factor of the fuel. The emission reductions are determined as the difference of the reference emissions and the project emissions. The NCV and CO2 emission factor values were chosen from the lower limit values of the default values in 2006 IPCC Guidelines for National Greenhouse Gas Inventory in accordance with the methodology and fixed ex-ante at the validation.

The ex-ante parameters are NCV of the fuel used by freight vehicle, CO2 emission factor of the fuel used by the freight vehicle, Fuel consumption by freight vehicle measured during the period before the activation of digital tachograph, distance travelled by freight vehicle measured before the activation of digital tachograph system and reference fuel efficiency of the freight vehicle.

The ex-post parameters are project fuel consumption of the freight vehicles and project distance travelled by the freight vehicles during the specific period.

Parameters	Monitored values	Method to check values in the monitoring report with sources
PFCi,p	682.814 kL/p	Assessment was conducted based on review of fuel purchase records, fuelling records and records of cross border operations.
PDi,p	2693311km/p	Assessment was conducted based on review of records of travel distance, data of GPS tracking system, and records of cross border operations.

<Findings>

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

No findings are raised in this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Through the review of submitted documents, on-site visit and interaction with the site personnel, the verification team confirms that, the project activity was implemented and operated as per the revised and accepted PDD, ver02.0 and that the monitoring plan is followed as per the accepted monitoring plan ver02.0_rev3 for the period up to September 2017. the verification team accepts the PPs request to limit the monitoring period up to September 2017 for the current assessment.

The verification team confirmed that appropriate methods and formulae for calculating reference emissions and project emissions have been followed. All the assumptions, emissions factors and default values that were applied in calculations have been justified by the PP.

C.5. Assessment of avoidance of double registration

<Means of verification>

The verification team assessed the written confirmation from the PPs that the project is not registered under the other international climate mitigation mechanisms. The team checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard (VCS), Global Carbon council (GCC) and Gold Standard (GS) and found no identical project as the proposed JCM project in terms of the name of entities, applied technology, scale and the location.

<Findings>

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

No findings are raised in this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team confirmed that the projects not registered under other international climate mitigation programs other than JCM.

C.6. Post registration changes

<Means of verification>

The verification team assessed the registered PDD JCM_VN_F_PDD_ver02.0, Verification report from the first monitoring period dated 28/08/2017 and interview with the PP to confirm that there are no post registration changes in the current monitoring period (01/07/2016 to 30/09/2017).

<Findings>

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

No findings are raised in this section.

<Conclusion based on reporting requirements>

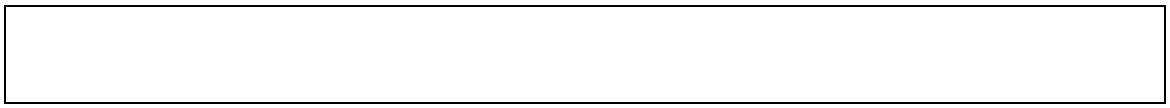
Please state conclusion based on reporting requirements.

The verification through the verification processes determined that there was no post registration change from the registered PDD or approved methodology for the current monitoring period.

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

No issues including FAR from the validation and previous verification are remained. As this is the second verification, no issues from the previous verification are also remained.



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	1983.6	1723.9	198
2017	2309.5	1977.9	230
2018			
2019			
2020			
Total (tCO_2e)			428

F. List of interviewees and documents received

F.1. List of interviewees

1) Shintaro Higashi, Senior Manager, NTT Data Institute of Management consulting, Inc.
2) Nguyen Van Chinh, General Manager, Nippon Express (Viet Nam) Co., Ltd.
3) Nguuyen Tran Duc, Deputy Manager, Nippon Express (Viet Nam) Co., Ltd.
4) Do Thi Minh, Supervisor, Nippon Express (Viet Nam) Co., Ltd.
5) Le Hoang Hung, Deputy Head of Transportation, Nippon Express (Viet Nam) Co., Ltd.
6) Nguyen Minh Duc, Manager, Nippon Express (Viet Nam) Co., Ltd.
7) Fumiki Tsunoda, Assistant Manager, Nippon Express (Viet Nam) Co., Ltd.
8) Le Thanh Hai, Deputy Head of Transport Department, Nippon Express (Viet Nam) Co., Ltd.

F.2. List of documents received

- Agreement between Nippon Express (Viet Nam) Co., Ltd and Nippon Express Co., Ltd
- Requirement confirmation of fleet management system for Vietnam Nippon express.
- Technical specifications of tachograph system
- Document for completion of installation of Tachograph system dated 23/06/2015
- Financial support from Ministry of Environment, Japan
- JCM Project monitoring manual v1.1 dated 11/10/2016
- safety and Eco-driving check sheet
- Approval certificate from Vietnam government dated 22/04/2015 and 28/02/2017

- Declaration from the PP regarding the avoidance of double registration
- fuel receipt samples from the monitoring period
- Notice of changing the number plate of the project vehicles
- Sample graphical feedback of the driver performance report
- training records of the drivers from the monitoring period
- fuel consumption data of the sample vehicles from Hanoi and Ho Chi Minh
- 2016 IPCC Guidelines for National Greenhouse Gas Inventories
- Monitoring report for the year 2016
- Monitoring report for the year 2017
- JCM_VN_AM001_ver02.0
- JCM_VN001_MP_ver02.0
- JCM_VN_PDD_ver02.0
- JCM_VN001_vrf_Rep_20150801_20160630
- JCM_VN_F_vef_Rep_ver02.0
- JCM_VN_GL_PDD_MR_ver02.0
- JCM_VN_GL_PM_ver02.0
- JCM_VN_PCP_ver04.0
- JCM_VN_GL_TPE_ver03.0
- JCM_VN_GL_VV_ver01.0

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.

Mr. A Prabu Das, holds a Master of Technology degree in Energy Conservation and Management and Bachelor of Technology Degree in Petro-chemical Technology. He is a certified Energy Auditor by Bureau of Energy Efficiency, Government of India. He has total 16 years of work experience in Design of biomass Power plants, preparing Techno Economic Feasibility Reports (TEFR), carrying out energy audits, of which last 12 years have been in CDM/GS/VCS consultancy and validation/verification services. He has participated in the validation / verification of various CDM/VCS/GS/GHG and sustainability projects globally. He has undergone extensive training on CDM validation and verification and is a qualified lead auditor for Sectoral Scope 1, 3 and 7 in accordance with procedures of EPIC sustainability services Pvt. Ltd. Further, he has been thoroughly trained in Social Carbon's latest Standard and qualified to perform social carbon validation and verification. He is also an ISO 26000 lead auditor certified by Professional Evaluation and Certification Board (PECB). He is a Certified Sustainability Assurance Professional from Accountability, UK.

Mr.Bharath, holds a B.E in Mechanical Engineering and MBA in Finance and Marketing. He has 5 years of industry experience and is qualified as an auditor for various Non AFOLU project types with respect to various global GHG schemes, standards and protocols. He is based in India.

Ms.Priyanka, holds a B.E in Environmental Engineering. She has around 2 years of industry experience and is qualified as an auditor for various project types with respect to various global GHG schemes, standards and protocols. She is based in India.

Mr. R. Vijayragavan, holds a B. E in Mechanical Engineering, M. Tech in Energy Conservation and Management and MBA in Technology Management. He is certified as Energy Auditor by Bureau of Energy Efficiency (BEE), Government of India. He has 12 years of working experience in energy sector including validation / verification of CDM, VCS and other projects. He has undergone extensive training on CDM validation and verification and has been qualified as Lead Auditor for sector 1, 7 and sector 13. He has also attended quarterly webinar conducted by GSF on 7th August 2014, 23rd July 2015, 27th January 2016, 8th December 2016 and 27th March 2017 for eligibility for fast-track procedure.