

JCM Project Design Document Form

A. Project description

A.1. Title of the JCM project

Eco-Driving by Utilizing Digital Tachograph System

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

The purpose of the Project is to improve transportation fuel efficiency in diesel-fired freight vehicles of Nippon Express (Viet Nam) Co., Ltd., through the use of 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.

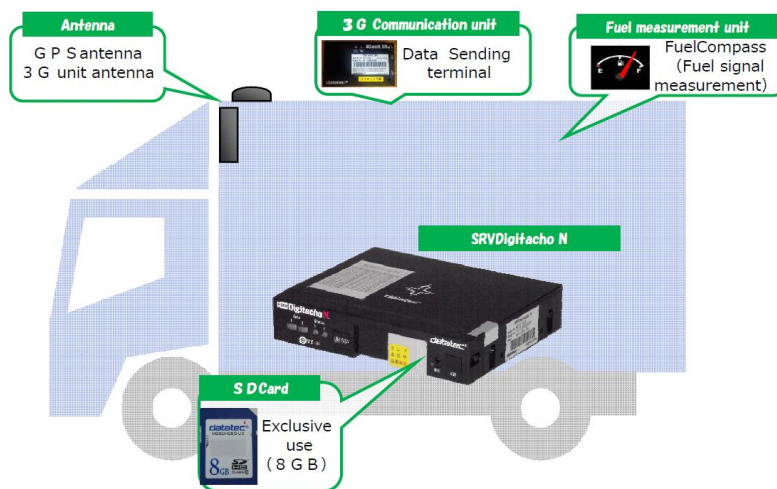


Figure 1: On-Board Terminal (an Example)

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.

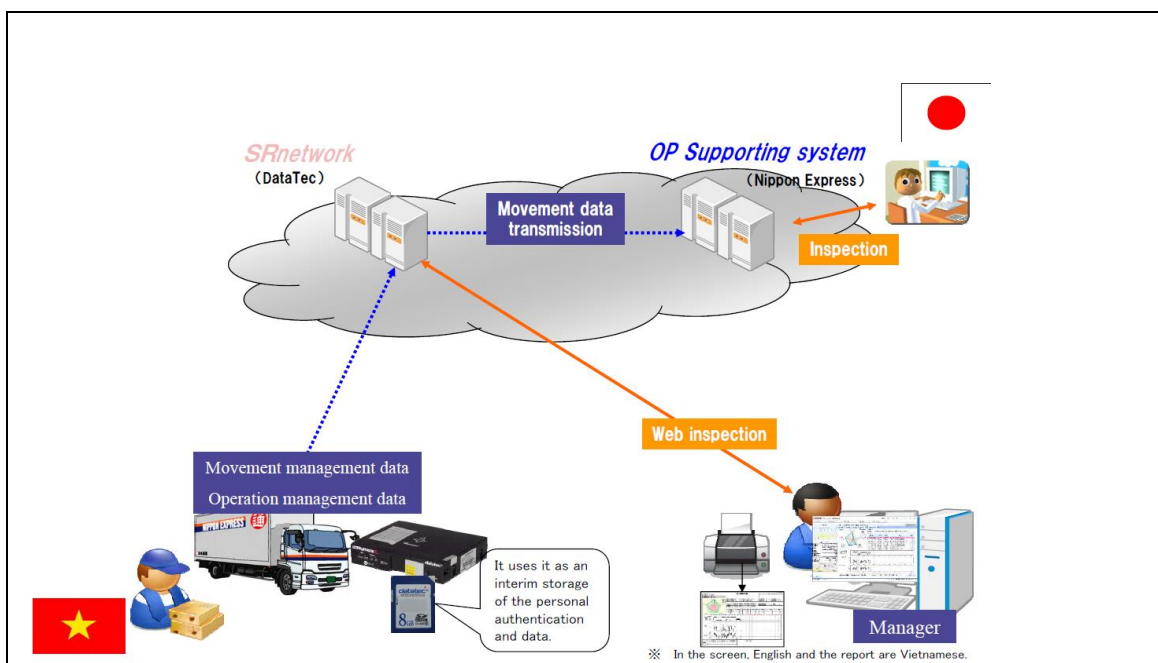


Figure 2: Overall System Operation

The project implementation will lead to environmentally sound and friendly technology and knowhow transfer from Japan and is an example of the application of the Nippon Express Group corporate philosophy to be a driving force of social development. The digital tachograph system has already been introduced throughout the Nippon Express operation in Japan and Malaysia, and its introduction in Viet Nam is expected to become a pioneering example for other freight transport companies in the county.

Through the Project, a total of 130 digital tachograph systems are installed to the selected 130 freight vehicles of Nippon Express (Viet Nam) Co., Ltd. Hanoi and Ho Chi Minh City Operations. In the case of project vehicles replacement, the digital tachograph systems will be removed from the outgoing vehicles and mounted to the vehicles replacing the project vehicles. The list of participating vehicles will be updated to reflect the replacement, and then the update and the type of service of the added freight vehicles will be validated by the TPE. As the result of drivers' performance improvement for the 130 freight vehicles with digital tachograph system, the Project expects to generate 324 tCO₂ of emission reduction annually.

A.3. Location of project, including coordinates

Country	The Socialist Republic of Viet Nam
Region/State/Province etc.:	Hanoi Operations

	Hanoi Ho Chi Minh City Operations Binh Duong Province
City/Town/Community etc:	Hanoi Operations Quang Minh IP, Me Linh Ho Chi Minh City Operations Song Than II Industrial Zone, Di An District
Latitude, longitude	Hanoi Operations 21°11' 47"N 105°45'58"E (Quang Minh Warehouse) Ho Chi Minh City Operations 10°53' 51"N 106°45' 04"E (Song Than Logistics Center)

A.4. Name of project participants

The Socialist Republic of Viet Nam	Nippon Express (Viet Nam) Co., Ltd.
Japan	Nippon Express Co., Ltd.

A.5. Duration

Starting date of project operation	01/08/2015
Expected operational lifetime of project	10 years

A.6. Contribution from Japan

The proposed project was partially supported by the Ministry of the Environment, Japan through the Financing Programme for JCM model projects, which provided financial support of up to 50 % of the initial investment for the projects in order to acquire JCM credits.

The Project is a pioneering example in the area of transport and assists the transfer of environmentally sound and state-of-the-art technology and know-how from Japan and is an example of the application of the Nippon Express Group corporate philosophy to be a driving force of social development.

The introduction of the digital tachograph system allows through a simple intervention - installation of on-board terminals in freight vehicles, data analysis and feedback, as well as regular trainings, to change drivers' behavior and promote more efficient fuel use for freight

transportation and thus reduce CO₂ and other emissions associated with fuel combustion. Furthermore, the system has significant social effects, as eco-driving also leads to safer driving and less traffic accidents.

The digital tachograph system has already been introduced throughout the Nippon Express operation in Japan and is commonplace in the USA and many countries in Europe. The technology is not well-known in Southeast Asian countries, except for a Nippon Express CDM project in Malaysia. Therefore, its introduction in Viet Nam is expected to become a pioneering example for other freight transport companies in the county.

B. Application of an approved methodology(ies)

B.1. Selection of methodology(ies)

Selected approved methodology No.	VN_AM001
Version number	02.0

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	This methodology applies to freight vehicle fleets to which a digital tachograph system has been installed.	Each freight vehicles under the proposed project are equipped with digital tachograph system. Total 130 digital tachograph systems will be implemented under the project. A list of the participating vehicles at the time of validation is provided in Annex II of the PDD.
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 ($\eta_{RE,i}$) 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 traveled before the activation of the digital tachograph system are available, or which applies Option (c) to the reference fuel efficiency ($\eta_{RE,i}$) 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.
Criterion 3	The project includes feedback of a driver's performance with the graphical representation to the	The project includes feedback of the driver's performance with graphical representation at least once a month.

	driver regularly, at least once in three months.	
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.	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.
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 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 particular vehicles, that vehicle will be excluded from the project.
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.	A declaration confirming that 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 provided in Annex I to the PDD. A summary of the plan is prepared and presented to the TPE.

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
Consumption of fossil fuel by freight vehicles	CO ₂
Project emissions	
Emission sources	GHG type
Consumption of fossil fuel by freight vehicles	CO ₂

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

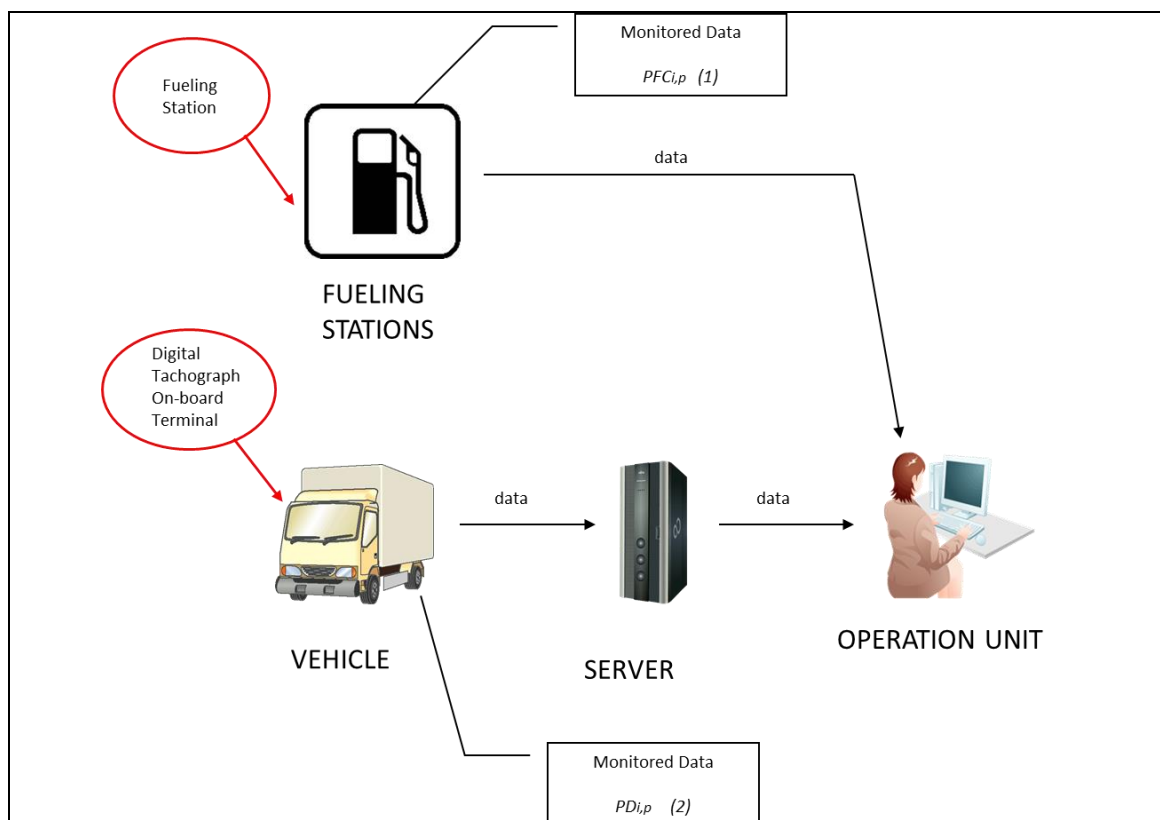


Figure 3: Relevant Monitoring Points

Note: Due to the lack of sufficient data, comparison with the efficiency of the vehicles using ton-km data is not conducted.

C.3. Estimated emissions reductions in each year

Year	Estimated emissions (tCO _{2e})	Reference	Estimated Emissions (tCO _{2e})	Project	Estimated Emission Reductions (tCO _{2e})
2013		N/A		N/A	N/A
2014		N/A		N/A	N/A
2015		1,942		1,808	134
2016		4,662		4,338	324
2017		4,662		4,338	324
2018		4,662		4,338	324
2019		4,662		4,338	324
2020		4,662		4,338	324
Total (tCO _{2e})		25,252		23,498	1,754

D. Environmental impact assessment

Legal requirement of environmental impact assessment for the proposed project	NO.
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E. Local stakeholder consultation**E.1. Solicitation of comments from local stakeholders**

In order to cover a diverse group of stakeholders, in the period from 25 January - 5 June 2015, a series of meetings were conducted with relevant stakeholders, including the Nippon Express Viet Nam's freight transport vehicle drivers who would be directly affected by the implementation of the Project, professional associations which represent the interests of freight transport operators, as well as clients of Nippon Express and Vietnamese government entities. The schedule of the meetings is provided in the table below.

Date	Time	Stakeholder's Name
25/01/2015	10:00 - 15:00	Nippon Express Drivers in Ho Chi Minh City
31/01/2015	10:00 - 15:00	Nippon Express Drivers in Hanoi and Hai Phong
01/06/2015	10:30 - 11:30	Canon Vietnam Co., Ltd.
01/06/2015	13:30 - 14:30	Panasonic Vietnam Co., Ltd.
02/06/2015	14:00 - 15:30	Ministry of Transport of Viet Nam and Department for Roads of Viet Nam
04/06/2015	10:00 - 11:00	Vietnam Nisshin Seifun Co., Ltd.
04/06/2015	14:00 - 15:00	Shiseido Vietnam Inc.
05/06/2015	14:30 - 15:30	Ho Chi Minh City Truck Association, Department of Transport of Ho Chi Minh City

At each meeting, a brief introduction of the project was made and opinions of the stakeholders were solicited. Minutes of all stakeholders' meetings were prepared after the stakeholders' consultations were completed. A summary of the comments received is provided in Section E.2. below.

E.2. Summary of comments received and their consideration

Stakeholders	Comments received	Consideration of comments received
Drivers in Ho Chi Minh City	Can the device warn about any technical issues?	This is not part of the device functions.
	Should eco-driving be prioritized if a customer requires speedy delivery?	It should be discussed with managers on a case-by-case basis.
	Traffic jams, road signs and road conditions can cause deviation from eco-driving principles. How should that be addressed?	Obedying the law is top priority. However, striving to follow eco-driving principles can bring sufficiently good outcomes.
	How is the ranking of drivers done?	All the collected data will be analyzed according to five criteria. Based on this analysis , the system will score the drivers and the manager in charge will work with drivers to find out the causes and solutions for better driving.
	Does the device alert drivers when they become drowsy and are about to fall asleep?	This is not part of the device functions, however using a special device to alert drivers may be considered in the future.
	We are very happy to participate in this project.	(no action is needed)
Drivers in Hanoi and Hi Phong	This is a very good initiative to benefit the people and the environment.	(no action is needed)
	Driving in industrial areas involves a lot of stopping and steering, which negatively affects the driving performance. Differences also result from the type of car, road conditions and traffic jams. How shall this be addressed?	The comparison of drivers' performance is based on operation under the same conditions. As long as we compare the same road conditions before and after the start of the project, it should not affect the result. The project improvements are a result of better driving skills, not of the improvement of roads or changes in other parameters.

	Is there any reward for good drivers or punishment for bad drivers?	Currently, none is considered. In the case of Malaysia, an incentive system is introduced. Something similar can be introduced in Viet Nam, taking into consideration the local conditions.
Canon Vietnam Co., Ltd.	Canon wants to see this example spreading to other industries in Viet Nam. What should be done for this to materialize?	The project is the first step and an example for introduction of green transport in the country. Wider dissemination of this technology is only possible through the cooperation between the private sector and the government. Nippon Express has the knowhow, but governmental support and policy incentives are needed in Viet Nam for spreading the technology on a wider basis.
	The feedback to drivers is very important. It might be beneficial to add to the trainings components where the mistakes of other drivers are introduced to all trainees, thus stimulating a more active learning process.	The feedback to drivers is crucial to the success of the project. The data from all drivers are collected by the project management unit and introduction of drivers' mistakes as part of the learning process is part of the training programme.
	Nippon Express should consider other projects, such as efficiency improvement in logistics.	This is part of the plans of Nippon Express. The company considers this project as a first step that will allow gaining sufficient data on drivers behavior before the introduction of logistics improvement.
	The project entails significant investments. Will that drive shipping costs up?	The project involves significant upfront costs, but these will not lead to an increase of the overall transportation fees that Nippon Express charges, as the company aims to provide better services to its

		clients.
Panasonic Vietnam Co., Ltd.	How can the project be implemented on a wider basis in Viet Nam?	The project is the first step and an example for introduction of green transport in the country. Wider dissemination of this technology is only possible through the cooperation between the private sector and the government. Nippon Express has the knowhow, but governmental support and policy incentives are needed in Viet Nam for spreading the technology on a wider basis.
	Do you expect increase in the transportation fees related to the introduction of the project?	The project involves significant upfront costs, but these will not lead to an increase of the overall transportation fees that Nippon Express charges, as the company aims to provide better services to its clients.
	How can SMEs participate in the project?	The project consists of two main components, technology and training/education. Although SMEs can purchase the digital tachograph terminal, they need education, which they probably cannot conduct in-house. Governmental support and policy incentives are needed in Viet Nam for spreading the technology among SMEs. One way to overcome this issue is through the establishment an eco-driving training center in Viet Nam.
MoT, DRVN	Do you plan to expand the project beyond the Nippon Express group?	The project is the first step and an example for introduction of green transport in the country. Wider dissemination of this technology is

		only possible through the cooperation between the private sector and the government. Governmental support and policy incentives are needed in Viet Nam for spreading the technology on a wider basis. Furthermore, education is important for the project, therefore, an eco-driving training center is needed in Viet Nam.
	It is important to further involve SMEs, so the MoT also believes that establishing a training center for eco-driving can be an important step.	(no action is needed)
	Is the proposed digital tachograph system compatible with the “Black Box” required by the Vietnamese government?	As of now, the digital tachograph system does not meet the “Black Box” requirements, therefore, at this stage digital tachograph no-board terminals will be installed together with the “Black Box”. However, upgrade of the current digital tachograph on-board terminal model and its registration as a “Black Box” device is considered as a possible future option.
	DRVN appreciates that the project leads to reduction of traffic accidents. This is extremely important for Viet Nam.	(no action is needed)
Vietnam Nisshin Seifun Co., Ltd.	Is the project going to lead to reduction of transportation costs?	The main purpose of the project is reduction of CO ₂ emissions and mitigation of the environmental impact of freight transport. Although the project leads to fuel savings, its implementation is associated with significant upfront costs related to the

		purchase of hardware, development of a data management system and execution of drivers' trainings. However, this will not lead to any increase in transportation fees.
	Is this the first such project in Viet Nam?	Yes, this is the first project in the country. Digital tachograph technology was already introduced in Japan 20 years ago, and a similar CDM project was implemented by Nippon Express in Malaysia under the CDM in 2012. The project in Malaysia showed extremely good results, as CO ₂ emissions in the first year were reduced by 6 %, and accidents were drastically reduced to less than 10 % of the original levels.
	Decrease in accidents is a remarkable achievement. Was it difficult to educate drivers and make them aware of the benefits of eco-driving?	It was not easy. In Malaysia, for example, an incentive system was introduced for the best performing drivers. A similar system is also considered in Viet Nam.
	When drivers are subject to constant monitoring of their performance and are forced to follow all eco-driving rules, there is the possibility that the speed of freight delivery is lowered, and, in some cases, freight may not be delivered in time.	Similar concerns were raised in Malaysia at the onset of the project, but we aim to explain to all of our clients about our policy related to eco-driving and receive the clients' full understanding. Furthermore, the reduction of accidents and improvement of driving skills will result in improved overall service to clients and minimize damages to the cargo.
	Are you considering expansion of this approach beyond the Nippon Express Group?	The project is the first step and an example for introduction of green transport in the country. Wider

		dissemination of this technology is only possible through the cooperation between the private sector and the government. Nippon Express has the knowhow, but governmental support and policy incentives are needed in Viet Nam for spreading the technology on a wider basis.
Shiseido Vietnam Inc.	Is the project going to lead to increase of freight transportation fees?	The project involves significant upfront costs, but these will not lead to an increase of the overall transportation fees that Nippon Express charges, as the company aims to provide better services to its clients.
	What kind of support is provided by the Japanese government?	The project received a maximum of 50 % equipment purchase subsidy from the Ministry of the Environment, Japan. However, the subsidy does not cover the development of the data processing and management system.
	Are you considering spreading the project to other companies in Vietnam?	The project is the first step and an example for introduction of green transport in the country. Wider dissemination of this technology is only possible through the cooperation between the private sector and the government. Nippon Express has the knowhow, but governmental support and policy incentives are needed in Viet Nam for spreading the technology on a wider basis.
	There are good drivers and bad drivers. What is the recipe for the success of the project?	In addition to bringing experienced trainers from Japan, in the case of Malaysia, we also introduced an

		incentive system. Every country has its own peculiarities and we are currently designing a similar system that fully reflects the local conditions in Viet Nam. Furthermore, it is crucial that there is face-to-face communication between drivers and managers, in order to implement efficient and continuous learning.
	Road conditions in Viet Nam are not very good. Is this not going to affect the results of your project?	The comparison of drivers' performance is based on operation under the same conditions. As long as we are comparing the same road conditions before and after the start of the project, it should not affect the result. The project improvements are a result of better driving skills, not of the improvement of roads or changes in other parameters.
	Is this the first such project in Viet Nam?	The project is the first step and an example for introduction of green transport in the country. Wider dissemination of this technology is only possible through the cooperation between the private sector and the government. Nippon Express has the knowhow, but governmental support and policy incentives are needed in Viet Nam for spreading the technology on a wider basis.
	There is a possibility that deliveries will be delayed due to the more stringent requirements of eco-driving. How do you plan to address that?	Similar concerns were raised in Malaysia at the onset of the project, but we aim to explain to all our clients about our policy related to eco-driving and receive their full understanding. Also, the reduction of

		accidents and improvement of driving skills will result in improved overall service to clients and minimize damages to the cargo.
Ho Chi Minh City Truck Association, Department of Transport of Ho Chi Minh City	Current regulations require the installation of “Black Box” devices by 2018. Is the digital tachograph system compatible with the “Black Box” or you needed to install both devices on your vehicles?	As of now, Nippon Express plans to install both devices in their vehicles. However, registration of the digital tachograph as a “black box” device is currently considered as an option.
	Is the information collected and processed by the digital tachograph sufficient to analyze drivers' behavior by managers?	All the information that is collected is further processed by a computer and a daily performance report is issued for each driver. The report shows the drivers’ strengths and weaknesses and lists their violations of eco-driving principles. This is already sufficient information for managers to provide feedback. It should be kept in mind, however, that regular trainings by professions trainers are a prerequisite for the success of the project.
	Cities in Viet Nam are congested, so this may affect the results of the project negatively. How do you deal with that?	The comparison of drivers’ performance is based on operation under the same conditions. As long as we are comparing the same road conditions before and after the start of the project, it should not affect the result. The project improvements are a result of better driving skills, not of the improvement of roads or changes in other parameters.
	What kind of support did the project receive from the Japanese government?	The project received a maximum of 50 % equipment purchase subsidy from the Ministry of the

		Environment, Japan. However, the subsidy does not cover the development of the data processing and management system.
	What is the price of the digital tachograph?	The price in general starts from USD 1,000, but depends on the specifications of the tachograph on-board terminal. However, if there is sufficient demand in Viet Nam, Japanese manufacturers, such as DATATECH, can start local manufacturing, which will significantly drive the costs down.
	We are interested in introducing the digital tachograph system on our vehicle fleets as well. However, for most drivers, purchasing both the black box and the digital tachograph will involve significant costs. Therefore, Nippon Express should aim at faster registration of the digital tachograph as a “Black Box” device.	This is part of our plans.

F. References

No references are provided.

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

Annex

Annex I: Declaration in line with Criterion 6 of Joint Crediting Mechanisms Approved Methodology VN_AM001 "Transportation energy efficiency activities by installing digital tachograph systems"

Annex II: List of participating vehicles

Revision history of PDD		
Version	Date	Contents revised
1.0	10/06/2015	First Edition
1.1	19/06/2015	Amended following initial comments from the TPE.
1.2	06/07/2015	Amended as a result of the findings during the site visit by the TPE.
1.3	10/07/2015	Amended following additional comments from the TPE.
2.0	16/12/2016	Second Edition

To Japan Vietnam Joint Committee on the JCM

5 June 2015

Declaration


in line with Criterion 6 of Joint Crediting Mechanism Approved Methodology VN_AM001

"Transportation energy efficiency activities by installing digital tachograph systems"

We, the undersigned representatives of Nippon Express Co., Ltd. and Nippon Express (Viet Nam) Co., Ltd. hereby declare that we will prepare and 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 Eco-Driving by Utilizing Digital Tachograph System JCM project in the Socialist Republic of Viet Nam.


Sincerely yours,

On behalf of Nippon Express Co., Ltd.



Name *Hiroshi Iguchi*
Title *General Manager*
Date *8. June, 2015*

On behalf of Nippon Express (Viet Nam) Co., Ltd.



Name *Atsushi Nagashima*
Title *General Director*
Date *5 June 2015*

ANNEX II
List of Vehicles

No.	Vehicle number	City
1		Ho Chi Minh
2		Ho Chi Minh
3		Ho Chi Minh
4		Ho Chi Minh
5		Ho Chi Minh
6		Ho Chi Minh
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44		Ho Chi Minh
45		Ho Chi Minh
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49		Ho Chi Minh
50		Ho Chi Minh

ANNEX II
List of Vehicles

No.	Vehicle number	City
51		Ho Chi Minh
52		Ho Chi Minh
53		Ho Chi Minh
54		Ho Chi Minh
55		Ho Chi Minh
56		Ho Chi Minh
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58		Ho Chi Minh
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100		Hanoi

ANNEX II
List of Vehicles

No.	Vehicle number	City
101		Hanoi
102		Hanoi
103		Hanoi
104		Hanoi
105		Hanoi
106		Hanoi
107		Hanoi
108		Hanoi
109		Hanoi
110		Hanoi
111		Hanoi
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