

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM
(CDM-SSC-CPA-DD) - Version 01**



CDM – Executive Board

NAME /TITLE OF THE PoA: Nittsu Fuel Efficiency Improvement Programme
with Digital Tachograph Systems on Road Freight Transportation in Malaysia



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CLEAN DEVELOPMENT MECHANISM SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD) Version 01
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NOTE:

- (i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.
- (ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)^{1,2} that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

¹ The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

² At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

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SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

1st Nittsu Fuel Efficiency Improvement Programme Activity with Digital Tachograph Systems on Road Freight Transportation in Malaysia

Version 01.3

Date of completion 06/01/2012

A.3. Entity/individual responsible for the small-scale CPA:

Nittsu Transport Service (M) Sdn. Bhd. (“NTS”)

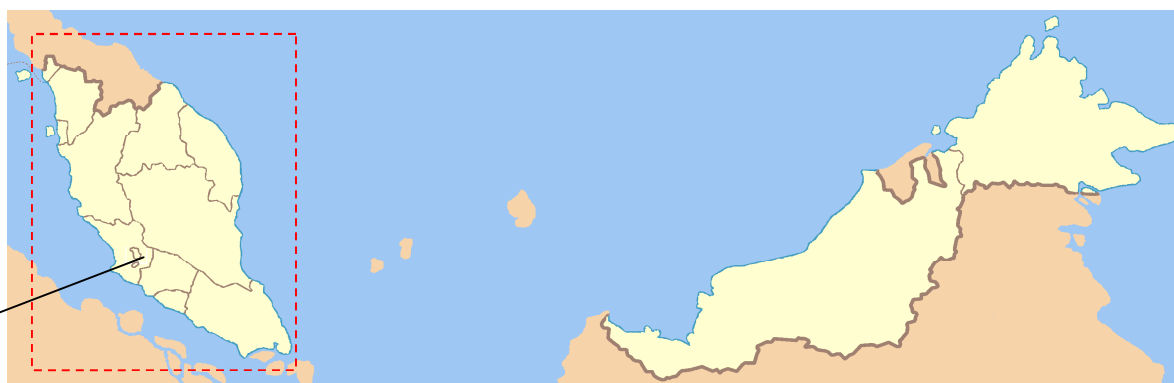
A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

A.4.1.1. Host Party:

Malaysia

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):



Nittsu Transport Service (M) Sdn,Bhd.
Head Office and Truck Terminal
Lot 4286, Batu 12, Jalan Balakong, 43300 Sri Kembangan, Selangor Darul Ehsan

3° 2' 0" North, 101° 43' 0" East

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A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

DD/MM/YYYY, the date on which the CDM PoA-DD is first published for global stakeholder consultation

A.4.2.2. Expected operational lifetime of the small-scale CPA:

10 years 0 months

A.4.3. Choice of the crediting period and related information:

Fixed crediting period

A.4.3.1. Starting date of the crediting period:

DD/MM/YYYY, the date on which the CDM PoA-DD is first published for global stakeholder consultation

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

10 years 0 months

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

Year	Annual estimation of emission reductions in tonnes of CO₂e
<i>1</i>	179
<i>2</i>	204
<i>3</i>	230
<i>4</i>	255
<i>5</i>	255
<i>6</i>	255
<i>7</i>	255
<i>8</i>	255
<i>9</i>	255
<i>10</i>	255
Total estimated reductions (tonnes of CO₂e)	2,398
Total number of crediting years	10
Annual average over the crediting period of estimated reductions	239

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A.4.5. Public funding of the CPA:

No public funding from Annex 1 Parties is involved.

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

Each of the independent measures included in this SSC-CPA is no larger than 600 t CO₂ equivalent (1% of the small-scale threshold defined by the methodology), therefore this SSC-CPA is exempted from performing the debundling check.

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

This small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA.

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

Nittsu Fuel Efficiency Improvement Programme with Digital Tachograph Systems on Road Freight Transportation in Malaysia

B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :

<i>PoA eligibility criteria</i>	<i>Proposed SSC-CPA</i>
The geographical boundary of the SSC-CPA including any time-induced boundary consistent with the geographical boundary set in the PoA, that is Peninsular Malaysia	The geographical boundary of the SSC-CPA, Peninsular Malaysia, is consistent with the geographical boundary set in the PoA, and is mentioned in detail in SSC-CPA-DD Section B.4.
Unique identifications of digital tachographs and freight trucks avoid double counting of emission reductions	Data recorded is unique for each vehicle in the fleet and prevents double counting of emission reductions.
The specifications of technology/measure employed by a SSC-CPA comply with requirements of AMS-III.AT (Version 01)	The digital tachograph system to be installed has functions as listed in the applicability condition of AMS-III.AT (Version 01). These functions are explained in detail in SSC-PoA-DD Section A.4.2.1.
The start date of the SSC-CPA, which is the date the feedback mechanisms of the digital tachograph systems are implemented, is recorded in the	The start date of this SSC-CPA is on the date the PoA starts, and can be checked from the monitoring system.

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monitoring system and determined to be on or after the PoA start date	
An SSC-CPA complies with applicability and other requirements of AMS-III.AT (Version 01) applied by the SSC-CPA	This SSC-CPA complies with applicability and other requirements of AMS-III.AT (Version 01) as detailed in SSC-PoA-DD Section E.2.
The SSC-CPA meets the requirements pertaining to the demonstration of additionality from all the relevant requirements of the Attachment A to Appendix B of the “Simplified modalities and procedures for small-scale CDM project activities”	This SSC-CPA meets requirements of pertaining to the demonstration of additionality as detailed in SSC-PoA-DD E.5.1.
Conditions related local stakeholder consultations and environmental impact analysis are consistent with the PoA	Stakeholder consultations and EIA are conducted at the PoA level, as detailed in SSC-PoA-DD Section C and D.
The SSC-CPA involves direct installation of digital tachograph systems to commercial freight transport vehicles	This SSC-CPA involves direct installation of digital tachograph systems as detailed in SSC-PoA-DD Section A.4.2.1.
The SSC-CPA in aggregate meets the small-scale threshold criteria that the emission reductions every year will not go beyond the limit of 60 ktCO ₂ e/y and remain within this threshold throughout the crediting period of the SSC-CPA	This SSC-CPA in aggregate meets the small-scale threshold criteria as detailed in SSC-CPA-DD Section B.5.3.
Each of the independent subsystems/measures (i.e., digital tachograph system) included in the SSC-CPA of a PoA is no larger than 1% of the small-scale threshold defined by the methodology applied, therefore the SSC-CPA is exempted from performing de-bundling check	Each of the independent measures included in this SSC-CPA is no larger than 600 t CO ₂ equivalent, therefore this SSC-CPA is exempted from performing the debundling check, ad detailed in SSC-CPA-DD Section A.4.6.
Funding from Annex I parties, if any, does not result in a diversion of official development assistance	No public funding from Annex 1 Parties is involved.

B.3. Assessment and demonstration of additionality of the small-scale CPA , as per eligibility criteria listed in the Registered PoA:

As per additionality criteria listed in the PoA-DD:

<i>Additionality criteria</i>	<i>Proposed SSC-CPA</i>
There is no regulatory or policy requirement for the implementation of the Programme technology;	There is no regulatory or policy requirement as of this SSC-CPA’s writing for the installation of digital tachograph systems.
The use of digital tachograph systems for transport efficiency is not the prevailing practice for road freight transport.	This SSC-CPA will be the first instance digital tachography systems will be used to improve driving efficiency.

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The programme is First-of-its-kind in Malaysia. Although the technology applied in the project is not country specific, there are no other countries in the region where the technology have already been implemented.

The programme is the first of its kind to improve fuel efficiency through the use of digital tachograph system. The freight trucks are able to provide the same level of output service while consuming less fossil fuel.

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

Sources and gases included in the project boundary

	Source	Gas	Inclusion	Justification/Explanation
Baseline	Fossil fuel consumption for road transport of freight in the business as usual (BAU) scenario	CO ₂	Yes	Main source of emissions.
		CH ₄	No	Negligible. This is conservative.
		N ₂ O	No	Negligible. This is conservative.
Project activity	Fossil fuel consumption for the transport of freight in trucks installed with digital tachograph systems	CO ₂	Yes	Main source of emissions.
		CH ₄	No	Negligible. This is conservative.
		N ₂ O	No	Negligible. This is conservative.

Proof that the SSC-CPA is located within the geographical boundary of the registered PoA

As per AMS-III.AT (Version 01), the geographical area covering the traceable physical routes along which the vehicles of the SSC-CPA operate and the auxiliary facilities visited by the vehicles is the geographical boundary set in Section A.4.1.2 of the SSC-PoA-DD, that is Peninsular Malaysia.

Shown in the following figure are the routes' main classifications:

1. Thai Border
2. Northern Kedah
3. Penang and Southern Kedah
4. Ipoh
5. Kuantan/Pahang
6. Kelang Valley
7. Senawang and Seremban
8. Melaka and Muar
9. Johor
10. Singapore
11. Thailand

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Routes classified under “Singapore” are those passing the Malaysia-Singapore border. Singapore is outside the geographical boundary of the PoA, so emission reductions will only be claimed for the section of trip that occurs in Malaysia. Meanwhile, routes classified under “Thailand” are for freight headed for Thailand. The trucks however, do not cross into Thailand; the trucks unload the freight at the Malaysia-Thailand border and return, thus the travel for these trucks still occur wholly within Malaysia.



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Time-induced boundary

The freight trucks comprising the CPA are limited to those listed in that CPA. Emission reductions for a single truck will cease to be claimed at the end of operational lifetime of that truck, and any replacement for that retired truck must be listed in its own CPA.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

Fixed parametric values

Data / Parameter:	$\eta_{BLV,i}$
Data unit:	(l/km)
Description:	Efficiency of vehicle <i>i</i> under baseline conditions
Source of data used:	Fuel depot data and truck distance data
Value applied:	Refer to Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	Procedures are described in SSC-PoA-DD Section E.6.1. Fuel consumed and distances travelled while trucks are in Singapore are discounted.
Any comment:	Left blank on purpose

Data / Parameter:	P_i
Data unit:	(t)
Description:	Total annual goods transported by each vehicle under baseline conditions
Source of data used:	Delivery data
Value applied:	Refer to Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	Goods transported while the trucks are in Singapore are discounted.
Any comment:	Left blank on purpose

Data / Parameter:	D_i
Data unit:	(km)
Description:	Total distance travelled by each vehicle under baseline conditions
Source of data used:	GPS route tracing data
Value applied:	Refer to Annex 3
Justification of the	Distances travelled while trucks are in Singapore are discounted.

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choice of data or description of measurement methods and procedures actually applied :	
Any comment:	Left blank on purpose

Data / Parameter:	dp_i
Data unit:	(km)
Description:	Average distance of transportation per tonne of freight by each vehicle i under baseline conditions
Source of data used:	Calculated through company records
Value applied:	Refer to Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	The annual average distance of transportation per tonne of freight is calculated using the formula: $dp_i = \frac{D_i^2}{\sum_{m=1}^{\infty} d_i \times p_i}$ Distances travelled and goods transported while trucks are in Singapore are discounted.
Any comment:	Left blank on purpose

Data / Parameter:	SL_{BL}
Data unit:	(t-km)
Description:	Service level in terms of volume of goods times the average distance of transportation per tonne of freight before the beginning of the project
Source of data used:	Determined from company/operators records, e.g. driver logs and route maps, plus delivery receipts
Value applied:	Refer to Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	Goods transported while the trucks are in Singapore are discounted.
Any comment:	Service level determined by weight of goods times the average distance of transportation tonne of freight (SL_y) shall be capped at baseline level ($SL_{BL,k}$). Emission reductions beyond this level will not be counted.

Data and parameters that are reported in CDM-SSC-CPA-DD form

Data / Parameter:	NCV_i
Data unit:	(TJ/l)

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Description:	Net calorific value of fuel
Source of data to be used:	IPCC default value
Value of data applied for the purpose of calculating expected emission reductions in section B.5	0.0000387
Description of measurement methods and procedures to be applied:	Left blank on purpose
QA/QC procedures to be applied:	Left blank on purpose
Any comment:	0.000045 TJ/kg * 0.86 kg/l

Data / Parameter:	$EF_{CO_2,j}$
Data unit:	(tCO ₂ /TJ)
Description:	CO ₂ emission factor of fuel used by vehicle
Source of data to be used:	IPCC default value
Value of data applied for the purpose of calculating expected emission reductions in section B.5	74.1
Description of measurement methods and procedures to be applied:	Fuel <i>j</i> is diesel oil. IPCC default value is checked annually.
QA/QC procedures to be applied:	Left blank on purpose
Any comment:	Left blank on purpose

Data / Parameter:	SL_y
Data unit:	(t-km)
Description:	Service level in terms of volume of goods times the average distance of transportation per tonne of freight in year <i>y</i>
Source of data to be used:	Monitored for each truck class, from company/operators records, e.g. driver logs and route maps, plus delivery receipts
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Refer to Annex 3
Description of	Goods transported while the trucks are in Singapore are discounted.

This template shall not be altered. It shall be completed without modifying/adding headings or logo, format or font.

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measurement methods and procedures to be applied:	
QA/QC procedures to be applied:	
Any comment:	Assumed ex ante equal to SL_{BL}

Data / Parameter:	-
Data unit:	-
Description:	Annual monitoring to check if tachograph systems have become a mandatory practice, or that highly-enforced anti-idling policies or legislation have been put into place
Source of data to be used:	
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Tachograph systems are not mandatory practice
Description of measurement methods and procedures to be applied:	-
QA/QC procedures to be applied:	-
Any comment:	Left blank on purpose

Data / Parameter:	-
Data unit:	-
Description:	Monitoring to ensure that all tachograph and feedback systems are operating correctly and have not been disabled
Source of data to be used:	
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Tachograph and feedback systems are operating correctly and have not been disabled
Description of measurement methods and procedures to be applied:	-
QA/QC procedures to be applied:	
Any comment:	If any tachograph system installed in a project vehicle is not operating correctly,

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	no emissions reductions can be attributed to that vehicle for the period that the system has not been operating correctly
--	---

B.5.2. Ex-ante calculation of emission reductions:

$$BEF_i = \frac{\sum_j D_i * \eta_{BLVi} * NCV_j * EF_{CO2,j}}{P_i * dp_i} \quad (1)$$

Where:

- BEF_i Baseline emission factor per tonne of goods per kilometre for vehicle i under baseline conditions (tCO₂/t-km)
- P_i Total annual weight of goods transported by each vehicle i under baseline conditions (t)
- dp_i The annual average distance of transportation per tonne of freight by each vehicle i under baseline conditions (km)
- D_i Total annual distance travelled by each vehicle i under baseline conditions (km)
- η_{BLVi} Fuel efficiency of vehicle i under baseline conditions (l/km)
- NCV_j Net calorific value of fuel j (0.000037 TJ/l)
- $EF_{CO2,j}$ CO₂ emission factor of fuel j used by vehicle (74.1 tCO₂/TJ)

P_i , dp_i , D_i , and η_{BLVi} for each vehicle were determined using operational data for a period of 15 months. BEF_i for each vehicle is listed in Annex 3.

The total baseline emissions are calculated on an annual basis using the monitored data as described below.

$$BE_y = \sum P_{i,y} \times BEF_i \times dp_{i,y} \quad (2)$$

Where:

- BE_y Total baseline emissions in year y (tCO₂/yr)
- $P_{i,y}$ Total annual weight of goods transported by each project vehicle i in year y on each traceable route (t)
- BEF_i Baseline emission factor per tonne of goods per kilometre for vehicle i (tCO₂/t-km) under baseline conditions
- $dp_{i,y}$ Annual average distance of transportation per tonne of goods by project vehicle i in year y (km)

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Ex ante, $P_{i,y}$ was estimated based on P_i , while $dp_{i,y}$ was assumed to be equal to dp_i . BE_y for each vehicle is listed in Annex 4. The total baseline emissions in year y are:

$$BE_y = 3,636 \text{ tCO}_2$$

Leakage

No leakage calculation is required, even when applying to a CPA under a programme of activities.

Project activity emissions

Project emissions are determined by monitoring the consumption of fuel or energy consumed by the vehicles introduced, according to the following formula:

$$PE_y = \sum_j \sum_i FC_{i,j,y} * NCV_j * EF_{CO_2,j} \tag{3}$$

Where:

- PE_y Total project emissions in year y (tCO₂/yr)
- $FC_{i,j,y}$ Consumption of fuel j by vehicle i in year y (l)
- NCV_j Net calorific value of fuel j (0.000037 TJ/liter)
- $EF_{CO_2,j}$ CO₂ emission factor of fuel j used by vehicle i under baseline conditions (74.1 tCO₂/TJ, IPCC default value)

Ex ante, $FC_{i,j,y}$ was estimated based on D_i and η_{BLVi} , multiplied by an expected reduction in fuel consumption. Although the methodology allows for up to 10% reduction fuel consumption on account of the digital tachograph system, a reduction of 7% was taken for conservativeness. PE_y for each vehicle is listed in Annex 4. The total project emissions in year y are:

$$PE_y = 3,381 \text{ tCO}_2$$

B.5.3. Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tonnes of CO ₂ e)	Estimation of baseline emissions (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of overall emission reductions (tonnes of CO ₂ e)
1	2,367	2,546	0	179
2	2,705	2,909	0	204
3	3,043	3,273	0	230
4	3,381	3,636	0	255
5	3,381	3,636	0	255

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6	3,381	3,636	0	255
7	3,381	3,636	0	255
8	3,381	3,636	0	255
9	3,381	3,636	0	255
10	3,381	3,636	0	255
Total (tonnes of CO ₂ e)	31,782	34,180	0	2,398

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:

Data and parameters monitored by each SSC-CPA

Data / Parameter:	$DT_{i,y}$
Data unit:	(km)
Description:	Total distance travelled by each vehicle i in year y
Source of data to be used:	Driver logs and route maps, recorded by GPS tracking system
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Refer to Annex 4
Description of measurement methods and procedures to be applied:	Goods transported while the trucks are in Singapore are discounted.
QA/QC procedures to be applied:	
Any comment:	Calculated ex ante based on D_i

Data / Parameter:	i
Data unit:	-
Description:	The trucks identified based on the age, characteristics and load capacity and availability of historical data
Source of data to be used:	Company records
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods	The data are periodically checked on annual basis and recorded electronically

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and procedures to be applied:	
QA/QC procedures to be applied:	
Any comment:	Left blank on purpose

Data / Parameter:	$dp_{i,y}$
Data unit:	(km)
Description:	Annual average distance of transportation per tonne of freight by each project vehicle i
Source of data to be used:	Company records
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Refer to Annex 3
Description of measurement methods and procedures to be applied:	Distances travelled and goods transported while the trucks are in Singapore will be discounted.
QA/QC procedures to be applied:	
Any comment:	Assumed ex ante to be equal to dp_i

Data / Parameter:	$FC_{i,i,y}$
Data unit:	(l)
Description:	Consumption of fuel j by vehicle i in year y
Source of data to be used:	Fuel depot records
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Refer to Annex 4
Description of measurement methods and procedures to be applied:	Fuel consumed while the trucks are in Singapore will be discounted.
QA/QC procedures to be applied:	
Any comment:	Calculated ex ante based on D_i and η_{BLV}

Data / Parameter:	$P_{i,y}$
Data unit:	(t)
Description:	Total annual goods transported by each project vehicle in year y

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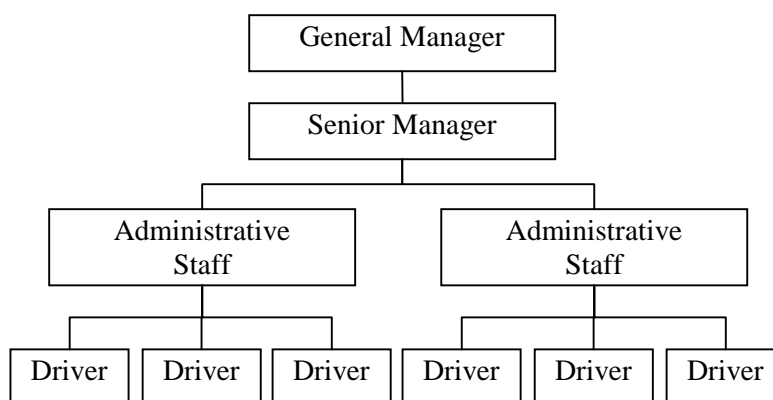
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Source of data to be used:	Monitored data during the project e.g. driver logs, plus delivery receipts
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Refer to Annex 4
Description of measurement methods and procedures to be applied:	Goods transported while the trucks are in Singapore will be discounted.
QA/QC procedures to be applied:	Left blank on purpose
Any comment:	Calculated ex ante based on P_i

Operational and management plan

The monitoring scheme will be implemented following the structure:

NITTSU TRANSPORT SERVICE



The General Manager will be the authority that is responsible for the management and operation of the project activity which includes the monitoring of the parameters, as listed in section B.6.1, required for the emission reduction calculation.

The Senior Manager will be responsible for the management of the team of Administrative Staff. The Senior Manager’s responsibilities include:

- To review and approve the monthly monitoring report
- To review and approve the regular training plan
- To ensure the corrective actions for erroneous measurements and uncertainty

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The Administrative Staff will be responsible for the supervision of the Drivers and the review of the monitored parameters. Administrative Staff's responsibilities include:

- To review the daily recorded parameters and report aggregated data to the Senior Manager on a monthly basis
- To prepare/conduct the personalised training plans for the drivers
- To initiate the corrective actions for any erroneous measurement and uncertainty found
- To compile and archive data for at least two years

All data are transmitted by the digital tachographs to the operations center.

Monitored parameters and experiment results will be recorded using software as per instructed by the provider of the digital tachograph systems. To ensure the proper operation and maintenance of the project activity, training to the Administrative Staff and Drivers will be provided to the supervisors by the technology providers.

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

- Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

n/a

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

n/a

SECTION D. Stakeholders' comments

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

- Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

n/a

D.3. Summary of the comments received:

n/a

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D.4. Report on how due account was taken of any comments received:

n/a

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Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

Organization:	Nittsu Transport Service (M) Sdn.Bhd.
Street/P.O.Box:	Lot 4286, Batu 12, Jalan Balakong
Building:	
City:	Seri Kembangan
State/Region:	Salangor Darul Ehsan
Postfix/ZIP:	43300
Country:	Malaysia
Telephone:	603 8943 3388
FAX:	603 8943 3500
E-Mail:	a-mimori@nittsu.com.my
URL:	
Represented by:	Atsuko Mimori
Title:	
Salutation:	Ms.
Last Name:	Mimori
Middle Name:	
First Name:	Atsuko
Department:	Customer Service & Sales Department
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding from Annex 1 Parties is involved.

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Annex 3

BASELINE INFORMATION

<i>i</i>	η_{BLVi}	D_i	$dp_i / dp_{i,y}$	SL_{BL} / SL	P_i	BEF_i
(unit)	(l/km)	(km)	(km)	(t-km)	(t)	(tCO ₂ /t-km)
BHA 3030	0.34	137,530	459	808,937	1,764	0.000158
BJV 8820	0.34	150,167	532	823,608	1,549	0.000171
BJV 8830	0.32	118,779	389	641,679	1,648	0.000164
BJV 8850	0.29	169,305	537	906,867	1,689	0.000149
BJV 8860	0.35	108,103	552	624,814	1,132	0.000165
BJV 8890	0.34	133,240	517	803,243	1,553	0.000155
BKG 9688	0.35	148,506	527	850,788	1,615	0.000168
BHW 8870	0.41	105,817	445	477,446	1,074	0.000248
BGQ 8830	0.40	90,460	507	527,374	1,040	0.000186
BGS 6011	0.46	73,224	545	433,586	796	0.000214
BGS 6012	0.44	68,685	523	505,461	966	0.000165
BGS 6015	0.47	73,413	485	501,558	1,034	0.000187
BGS 6020	0.40	116,072	576	663,925	1,152	0.000192
BGS 6023	0.43	97,606	502	632,049	1,260	0.000181
BGT 3080	0.41	116,497	477	714,046	1,497	0.000185
BGT 3280	0.43	80,301	532	582,385	1,095	0.000163
BGT 3380	0.41	105,427	490	648,828	1,325	0.000184
BGT 3800	0.41	80,583	525	517,374	985	0.000175
BGW 8802	0.44	73,391	494	491,155	994	0.000181
BGW 8803	0.42	87,624	537	455,628	849	0.000219
BJE 8030	0.35	114,894	321	587,609	1,830	0.000185
BJE 8320	0.34	108,889	500	651,296	1,303	0.000158
BJE 8330	0.41	83,783	471	591,790	1,257	0.000161
BJE 8810	0.36	59,023	501	254,183	508	0.000229
BJE 8980	0.34	92,099	471	549,648	1,167	0.000157
BKA 8810	0.32	114,517	508	760,447	1,498	0.000131
BKA 8860	0.35	104,207	478	651,597	1,362	0.000154
BKA 8870	0.38	101,698	491	729,615	1,487	0.000145
BKW 2210	0.34	102,539	475	581,378	1,224	0.000167
BKW 2212	0.36	115,886	539	732,603	1,360	0.000157
BKW 2213	0.34	109,821	499	678,396	1,360	0.000150
BKW 2216	0.35	116,205	506	714,205	1,412	0.000158
BKW 2217	0.35	114,580	498	714,125	1,434	0.000155
BKW 2218	0.35	109,700	495	677,081	1,369	0.000155
BKW 2219	0.33	105,710	146	164,437	1,127	0.000589
BKW 2220	0.34	114,743	536	670,116	1,250	0.000160
BKW 8028	0.34	102,920	493	665,833	1,349	0.000144
BKW 8870	0.35	99,299	530	522,113	985	0.000182
BKW 9022	0.35	83,112	416	474,699	1,140	0.000170
BLC 8803	0.34	63,654	480	353,734	736	0.000167
BLC 8807	0.34	56,259	501	348,115	695	0.000151
BLC 8809	0.34	48,645	445	257,772	579	0.000178

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BLC 8810	0.35	63,325	451	311,747	691	0.000192
BLC 8870	0.32	53,863	471	283,072	602	0.000165
BLC 8890	0.34	58,076	560	257,515	460	0.000209
XOIC 980	0.39	111,599	498	614,927	1,234	0.000194

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Annex 4

MONITORING INFORMATION

<i>i</i> (unit)	<i>DT_{i,y}</i> (km)	<i>P_{i,y}</i> (t)	<i>FC_{i,j,y}</i> (l)	<i>BE_y</i> (tCO ₂)	<i>PE_y</i> (tCO ₂)	<i>ER_y</i> (tCO ₂)
BHA 3030	110,024	1,411	34,704	102	95	7
BJV 8820	120,134	1,239	38,204	113	105	8
BJV 8830	95,023	1,319	28,504	84	78	6
BJV 8850	135,444	1,351	36,640	108	100	8
BJV 8860	86,482	905	27,960	82	77	6
BJV 8890	106,592	1,242	33,850	100	93	7
BKG 9688	118,805	1,292	38,715	114	106	8
BHW 8870	84,654	859	32,181	95	88	7
BGQ 8830	72,368	832	26,684	79	73	6
BGS 6011	58,579	637	25,193	74	69	5
BGS 6012	54,948	773	22,638	67	62	5
BGS 6015	58,730	827	25,427	75	70	5
BGS 6020	92,858	921	34,632	102	95	7
BGS 6023	78,085	1,008	31,069	92	85	6
BGT 3080	93,198	1,198	35,894	106	98	7
BGT 3280	64,241	876	25,704	76	70	5
BGT 3380	84,342	1,060	32,405	95	89	7
BGT 3800	64,466	788	24,553	72	67	5
BGW 8802	58,713	796	24,137	71	66	5
BGW 8803	70,099	679	27,108	80	74	6
BJE 8030	91,915	1,464	29,505	87	81	6
BJE 8320	87,111	1,042	27,857	82	76	6
BJE 8330	67,026	1,005	25,796	76	71	5
BJE 8810	47,218	406	15,801	47	43	3
BJE 8980	73,679	934	23,441	69	64	5
BKA 8810	91,614	1,198	27,112	80	74	6
BKA 8860	83,366	1,090	27,237	80	75	6
BKA 8870	81,358	1,189	28,780	85	79	6
BKW 2210	82,031	979	26,285	77	72	5
BKW 2212	92,709	1,088	31,244	92	86	6
BKW 2213	87,857	1,088	27,636	81	76	6
BKW 2216	92,964	1,130	30,620	90	84	6
BKW 2217	91,664	1,148	30,089	89	82	6
BKW 2218	87,760	1,095	28,454	84	78	6
BKW 2219	84,568	902	26,306	78	72	5
BKW 2220	91,794	1,000	29,032	86	80	6
BKW 8028	82,336	1,079	25,983	77	71	5
BKW 8870	79,439	788	25,850	76	71	5
BKW 9022	66,490	912	21,933	65	60	5
BLC 8803	50,923	589	16,005	47	44	3
BLC 8807	45,007	556	14,293	42	39	3
BLC 8809	38,916	463	12,460	37	34	3

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BLC 8810	50,660	553	16,287	48	45	3
BLC 8870	43,090	481	12,717	37	35	3
BLC 8890	46,461	368	14,641	43	40	3
XOIC 980	89,279	987	32,370	95	89	7
TOTAL				3,636	3,381	255
