CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

CONTENTS

Annexes

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

Emission Reductions through Introduction of Motorcycle Maintenance Techniques in Vietnam
Version 0.1
07/03/2011

A.2. Description of the small-scale project activity:

Description of the activity

Along with Vietnam's rapid economic development, there has been a rapid increase in the number of motorcycles on roads, especially in Hanoi and Ho-Chi-Minh City. It is estimated that Vietnam has over 18 million motorcycles, of which over three million are in Ho-Chi-Minh City. Meanwhile, Vietnam to date has had no regulations relating to motorcycle exhaust and motorcycle maintenance. As a result, many motorcycles have low fuel efficiency and are not being properly maintained. Inefficient combustion results in more emissions of greenhouse gases and air pollutants.

To address this situation, the Vietnamese government has for several years been considering the introduction of regulations to control motorcycle exhaust. The government currently plans to introduce a new motorcycle exhaust gas regulation in July 2011, but the details have not yet been announced. It is uncertain whether the regulation will adequately address current problems, because of the lack of proper maintenance or vehicle investigation techniques. The reasons for the lack of adequate maintenance techniques in the country are that most motorcycle shops lack the needed skills and knowledge about motorcycle maintenance, and have limited resources to acquire them, as most are basically small owner-operated enterprises.

Therefore, the introduction of maintenance technologies, investigation systems, and educational programs to propagate them can serve as an important way to reduce greenhouse gas emissions and air pollutants from motorcycles.

The purpose of the proposed project as a Clean Development Mechanism activity is to introduce motorcycle maintenance technologies and techniques, to promote maintenance and investigation for motorcycles already on the road in the host country, and to educate and raise awareness about the expected motorcycle exhaust regulations, as well as about techniques and related equipment. The project includes the following activities:

1. introducing equipment for motorcycle exhaust investigation,
2. establishing systems for motorcycle testing and maintenance, and
3. educating local mechanics about motorcycle maintenance techniques that can improve fuel efficiency

Under the project activity, a maintenance shop operated by a Vietnam-based Japanese affiliate (operational entity) will first be established. In collaboration with a Vietnamese entity, the affiliate will offer local shops and mechanics training programs about proper maintenance techniques. These local shops will then offer regular motorcycle maintenance activities under the project. The resulting improvements in fuel efficiency of properly-maintained motorcycles will reduce their exhaust emissions, including CO_2, CO and HC.

This project activity will contribute to sustainable development through the three indicators below:

Socio-economic well being

- The project will improve the fuel efficiency of motorcycles in the host country. It will contribute to reductions in the amount of fuel use, and will also help deal with growing electricity needs.
- The project will help to reduce air pollution and improve the air quality in Ho-Chi-Minh City, which can be expected to improve public health.

Environmental benefits

- The project will reduce the amount of air pollutants in motorcycle exhaust, thereby contributing to the improvement of air quality in Ho-Chi-Minh City. It will also reduce emissions of CO_2, a greenhouse gas, thereby mitigating global warming.

Technological benefits

- The project will be the first CDM project in the transportation sector that seeks to improve the fuel efficiency of motorcycles. It could serve as a model for other countries and regions or to improve the efficiency of transport systems.
- The project will transfer advanced technologies and skills by training local people in the host country.

A.3. Project participants:

Name of Party involved(*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants(*)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Vietnam (Host)	Tamsui,Vietnam	Yes
Japan	Under consideration	No

(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

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A.4.1.1. Host Party(ies):

Socialist Republic of Vietnam

A.4.1.2. Region/State/Province etc.:

Dong Nam Bo Province

A.4.1.3. City/Town/Community etc:

Ho-Chi-Minh city

A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :

The project activity takes place in Ho-Chi-Minh city, Dong Nam Bo Province, Viet Nam.
HCMC Reference Coordinates: 10 ° 46 ′ 10.56 ″ N, 106 ° 41 ′ 7.8 ″ E

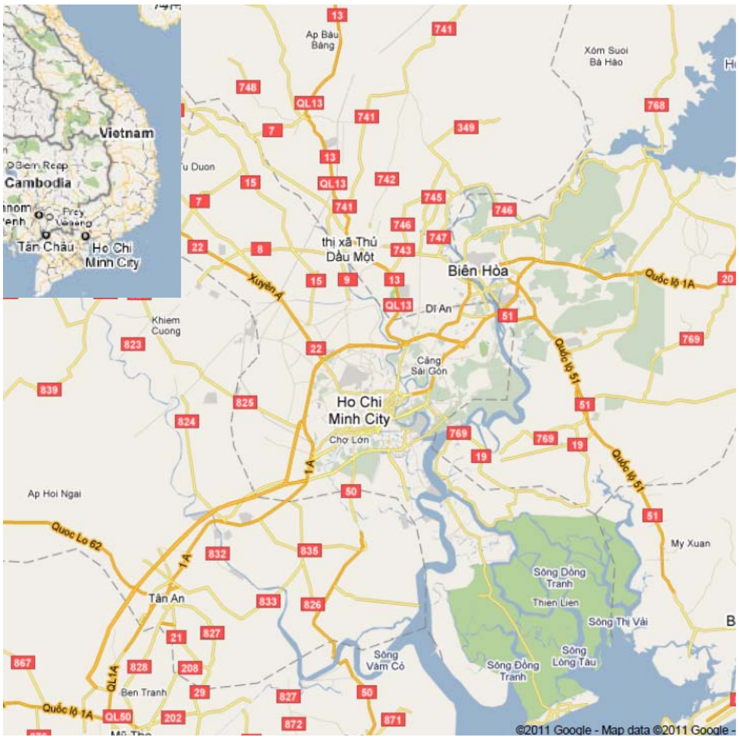

Fig.-A-1. Project location

A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

Type and category of project activity

The project activity will reduce greenhouse gas emission and air pollutants by introducing technologies of exhaust gas investigation and maintenances to existing motorcycles in Ho-Chi-Minh City in order to improve their fuel efficiency. The project activity applies the proposed methodology “Introduction of fuel efficiency improvement technologies for motorcycles”.

The technologies/measures implemented

Three kinds of technologies are employed to the project. The representation of the technologies is given below:

Cleaning air cleaner element;
Cleaning electrode of spark plug;
Engine oil change;

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

Years	Annual estimation of emission reductions in tonnes of CO_2e
2012	13,934
2013	13,934
2014	13,934
2015	13,934
2016	13,934
2017	13,934
2018	13,934
2019	13,934
2020	13,934
2021	13,934
Total estimated reductions (tonnes of CO_2e)	13,9340
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	13,934

A.4.4. Public funding of the small-scale project activity:

The Project will not receive any public funding from Parties included in Annex I of the UNFCCC.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

According to Appendix C to the simplified modalities and procedures for small scale CDM project activities, a small-scale project is considered a debundled component of a large project activity if there is a registered small-scale activity or an application to register another small-scale activity:

1. With the same project participants;
2. In the same project category and technology;
3. Registered within the previous two years; and
4. Whose project boundary is within 1km of the project boundary of the proposed small-scale activity.

The project participants confirm that there is no registered small scale CDM project activity within the previous two years with them whose project boundary is within 1km of the project boundary of the proposed small scale activity or application to register another small scale CDM project activity, either under their name or within the same project category and technology / measure. Hence, the small scale project activity is not a debundled component of a larger project activity.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

The simplified modalities and procedures for small scale CDM project activities allow project participants to submit a new small scale methodology to the CDM Executive Board for consideration and amendment of appendix B. The project activity applies the first version of the proposed type-III methodology "Introduction of fuel efficiency improvement technologies for motorcycles" with this PDD.

B.2 Justification of the choice of the project category:

The project activity conforms to the proposed type III methodology, "Introduction of fuel efficiency improvement technologies for motorcycles", since:

1) The project activity covers motorcycles with engine displacement of less than 150cc for commuting in Ho-Chi-Minh city. To confirm them, the project participant will collect information of the owner and his/her motorcycle to indentify them;
2) The motorcycles are powered by gasoline, and their odometers function properly. In order to confirm them, project participants will check the kind of fuel used and the availability of the odometer before submitting the investigation and the maintenance.
3) The project results in annual emission reductions of approximately 13,934 tons of CO2, which is within the eligibility limit of maximum 60,000 tons of CO2 per annum for type III small scale project activity.

B.3. Description of the project boundary:

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In the proposed methodology, the project boundary is an area of approximately 40km in radius from the project site. It is also the physical, geographical commuting route along which these motorcycles operate.

The project boundary of this project activity includes 300 thousands motorcycles in Ho-Chi-Minh city to which investigation and maintenance will be provided by maintenance shops that introduce investigation equipments and by mechanics who are educated to retain the capacity for investigation and maintenance by the project activity.

Table B-1: Overview on emissions sources included in or excluded from the project boundary

	Source	Gas		Justification/ Explanation
Baseline	Exhaust gas from motorcycle	CO_2	Included	Main emission source
		CH_4	Excluded	Excluded for simplification.
		N_2O	Excluded	Excluded for simplification.
Project Activity	Exhaust gas from motorcycle	CO_2	Included	Main emission source
		CH_4	Excluded	Excluded for simplification.
		N_2O	Excluded	Excluded for simplification.

B.4. Description of baseline and its development:

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The baseline scenario is a situation in which motorcycles continue to be used, but receive no maintenance or less maintenance than indicated above (defined hereinafter as "un-maintained" motorcycles). This scenario results in more fossil fuel consumption than in the case of the project activity.

In order to calculate the baseline emissions project participants first determine the baseline motorcycle fuel economy. We chose Option 1 in the proposed methodology for the determination of baseline fuel economy.

$BE_y = \sum BE_{dc,y}$

Where:
BE_y : Total baseline emissions in year y (tCO2)
$BE_{dc,y}$: Total baseline emissions of motorcycles in engine displacement class *dc* in year *y*

$BE_{dc,y} = SN_{p,dc,y} \times BFE_{dc,y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$

Where:
$SN_{p,dc,y}$: Statistical number of project motorcycles *p* in engine displacement class *dc* in year *y*
$BFE_{dc,y}$: Representative value of baseline fuel economy of motorcycle in each engine displacement class *dc* in year *y* (litre/km)
$AD_{PL,commuting,p,y}$: Average annual commuting distance of project motorcycles *p* in year *y* (km)
$EF_{CO2,j}$: CO2 emission factor of motor gasoline (tCO2/MJ)
NCV_j : Net calorific value of motor gsoline (MJ/t)
D_j : Density of motor gasoline (g/cm3)

The parameter $BFE_{dc,y}$ shall be determined by statistical method based on $BFE_{sample, dc, y}$ obtained from baseline motorcycles in a sample survey and $BFE_{sample, dc, y}$ is calculated according to the following formula:

$BFE_{sample, dc, y} = FC_{BL, sample, dc, y} / TD_{BL, sample, dc, y}$

Where:
$FC_{BL, sample, dc, y}$:
Amount of fuel consumed by a sample un-maintained motorcycle in engine displacement class *d*c during sample survey in year *y*

This value is obtained by measuring the actual fuel consumption of a sample un-maintained motorcycle operating in comparable traffic conditions (i.e., in the same city) during the sample survey. It is measured based on the amount of fuel needed to fill the fuel tank after use of the motorcycle in a defined period, with the tank having been filled at the beginning of the sample survey.

$TD_{BL, sample, dc, y}$:
Travel distance of the sample un-maintained motorcycle with fuel consumption of $FC_{BL, sample, dc, y}$

This value is obtained by measuring the actual travel distances of the sample un-maintained motorcycle with fuel consumption of $FC_{BL, sample, dc, y}$. The travel distance is read from the odometer.

Both parameter values are obtained from a given motorcycle at the same time.

In order to conduct a sample survey to determine $BFE_{dc,y}$ in each engine displacement class *dc*, measurements shall be undertaken on representative sample of motorcycles and any $BFE_{dc,y}$ shall comply with 90% confidence interval and ±10% error margin to determine the sample size. Measurement principles and techniques used for the baseline sample shall be identical to the project sample. The upper 95% confidence interval is taken.

The following parameters are determined *ex ante* and shall not be monitored:

Parameter	Item/Unit	Measurement method/Item
$EF_{CO2,j}$	CO2 emission factor of motor gasoline (tCO2/MJ)	IPCC default value.
NCV_j	Net calorific value of motor gasoline (MJ/t)	IPCC default value
D_j	Density of motor gasoline (g/cm^3)	International value

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

In accordance with paragraph 7 of the simplified modalities and procedures for small scale CDM project activities, a simplified baseline and monitoring methodology listed in Appendix B may be used for a small-scale CDM project activity if project participants are able to demonstrate to a designated operational entity that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in Attachment A to Appendix. B. These barriers are:

- Investment barrier
- Technological barrier
- Barrier due to prevailing practice

The project activity faces the following barriers:

Investment barrier

The project activity requires about US $787,000 for the initial investment though the project activity generates no financial or economic benefits other than CDM related income.

Technological barrier

Adequate training of motorcycle maintenance has not provided to local mechanics and the level of the maintenance techniques for motorcycle has not improved. The two main reasons why most of maintenance mechanics have not trained are: first, they are usually their own small businesses; second, therefore they lack appropriate knowledge about motorcycle maintenance due to the lack of appropriate education. In order to promote the improvement of maintenance techniques of mechanics, some maintenance technologies, techniques and knowledge shall be transferred to them.

Barrier due to prevailing practice

In the current prevailing motorcycle maintenance practices in Vietnam, simple services are provided by individuals in each own business. Therefore, it is not common for them to provide maintenance services in order to respond to a new exhaust emission regulation.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

The procedure for estimating the emissions reductions from this project activity during the crediting period are as per the following steps which corresponds with the proposed methodology "Introduction of fuel efficiency improvement technologies for motorcycles".

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Data / Parameter:	$EF_{CO2,j}$
Data unit:	tCO_2/TJ
Description:	CO2 Emission factor of the gasoline for vehicle
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	Default value : 69.3（tCO2/TJ）
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	NCV_j
Data unit:	TJ/Gg
Description:	Net calorific value of the gasoline for vehicle
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	Default value : 44.3（TJ/Gg）
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	D_j
Data unit:	g/cm^3
Description:	Average of specific gravity value of the gasoline for vehicle
Source of data used:	The Energy Statistics Working Group Meeting report of International Energy Agency
Value applied:	Default value : 0.7449（g/cm^3）
Justification of the choice of data or description of	

measurement methods and procedures actually applied :	
Any comment:	http://www.iea.org/Textbase/work/2004/eswg/22_Oil%20Densities.pdf

B.6.3 Ex-ante calculation of emission reductions:

Baseline emissions

We chose Option 1 in the proposed methodology for the determination of baseline fuel economy.

$BE_y = \sum BE_{dc,y}$

Where:
BE_y : Total baseline emissions in year *y* (tCO2)
$BE_{dc,y}$: Total baseline emissions of motorcycles in engine displacement class *dc* in year *y*

$BE_{dc,y} = SN_{p,dc,y} \times BFE_{dc,y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$

Where:
$SN_{p,dc,y}$: Statistical number of project motorcycles *p* in engine displacement class *dc* in year *y*
$BFE_{dc,y}$: Representative value of baseline fuel economy of motorcycle in each engine displacement class *dc* in year *y* (litre/km)
$AD_{PL,commuting,p,y}$: Average annual commuting distance of project motorcycles *p* in year *y* (km)
$EF_{CO2,j}$: CO2 emission factor of motor gasoline (tCO2/MJ)
NCV_j: Net calorific value of motor gasoline (MJ/t)
D_j : Density of motor gasoline (g/cm3) [1]

The parameter $BFE_{dc,y}$ shall be determined by statistical method based on $BFE_{sample,\ dc,\ y}$ obtained from baseline motorcycles in a sample survey and $BFE_{sample,\ dc,\ y}$ is calculated according to the following formula:

$BFE_{sample,\ dc,\ y} = FC_{BL,\ sample,\ dc,\ y} / TD_{BL,\ sample,\ dc,\ y}$

Where:
$FC_{BL,\ sample,\ dc,\ y}$:
Amount of fuel consumed by a sample un-maintained motorcycle in engine displacement class *d*c during sample survey in year *y*

This value is obtained by measuring the actual fuel consumption of a sample un-maintained motorcycle operating in comparable traffic conditions (i.e., in the same city) during the sample survey. It is measured based on the amount of fuel needed to fill the fuel tank after use of the motorcycle in a defined period, with the tank having been filled at the beginning of the sample survey.

$TD_{BL,\ sample,\ dc,\ y}$:

[1] http://www.iea.org/Textbase/work/2004/eswg/22_Oil%20Densities.pdf

Travel distance of the sample un-maintained motorcycle with fuel consumption of $FC_{BL, sample, dc, y}$

This value is obtained by measuring the actual travel distances of the sample un-maintained motorcycle with fuel consumption of $FC_{BL, sample, dc, y}$. The travel distance is read from the odometer.

Although we conducted a sample survey (N=80) for determination of the baseline fuel economy $BFE_{dc,y}$, almost half of motorcycles (N=44) were not met applicability of the proposed methodology, e.g. non-functioning odometer, and in addition, we excluded motorcycles which show outlier value, i.e., improvement or decline of fuel economy during sample survey more than 150%.

Matrix of the results of the sample survey (N=36, <100cc: N=6, 100-125cc: N=30)

Engine displacement class *dc*	Percentage of motorcycle in the sample survey (%)	Number of statistical project motorcycle $SN_{p,dc,y}$	Baseline fuel economy $BFE_{dc,y}$ (l/km)
<100cc	16.7%	$SN_{p,dc1,y}$ = 0.167 × 300,000=50,000	1/50.32
100cc-125cc	83.3%	$SN_{p,dc2,y}$ = 0.833 × 300,000=250,000	1/42.95
	q1+q2=100%	$SN_{p,dc1,y}$+ $SN_{p,dc2,y}$=Total number of project motorcycles (=300,000)	

According to the questionnaire for motorcycle owners, commuting use is accounted for most of their use. We obtained 10,382 km of annual distance for commuting, $AD_{PL,commuting,p,y}$.

Calculation of baseline emissions

$BE_{<100, y} = SN_{p, <100, y} \times BFE_{<100, y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$

= 50,000 × 1/50.32 (litre/km) × 10,382 (km)× 69.2 (tCO2/MJ) × 44.3 (MJ/t) × 0.7449 × 10^-6 = 23,558 (t-CO2)

$BE_{100\text{-}125, y} = SN_{p, 100\text{-}125, y} \times BFE_{100\text{-}125, y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$

= 250,000 × 1/42.95 (litre/km) × 10,382 (km)× 69.2 (tCO2/MJ) × 44.3 (MJ/t) × 0.7449 × 10^-6 = 137,998 (t-CO2)

$BE_y = \sum BE_{dc,y}$ = 23,558 + 137,998 =161,556 (t-CO2)

Project emissions

We chose Option A in the proposed methodology for the determination of project fuel economy.

$PE_y = \sum PE_{dc,y}$

Where:

PE_y : Total project emissions in year *y* (tCO2)

$PE_{dc,y}$: Total project emissions of motorcycles in engine displacement class *dc* in year *y*.

$PE_{dc,y} = N_{p,dc,y} \times PFE_{dc,y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$

$N_{p,dc,y}$: Number of project motorcycles *p* in engine displacement class *dc* in year *y*
$PFE_{dc,y}$: Representative value of improved fuel economy of project motorcycle *p* in engine displacement class *dc* in year *y* (litre/km)
$AD_{PL,commuting,p,y}$: Average annual commuting distance of project motorcycles *p* in year *y* (km)
$EF_{CO2,j}$: CO2 emission factor of motor gasoline (tCO2/MJ)
NCV_j : Net calorific value of motor gasoline (MJ/t)
D_j : Density of motor gasoline (g/cm3) [2]

The parameter $PFE_{dc,y}$ is determined by statistical method based on $PFE_{p,dc,y}$ obtained from project fuel economy survey and $PFE_{p,dc,y}$ is calculated according to the following formula:

$PFE_{p,dc,y} = FC_{PL,p,dc,y} / TD_{PL,p,dc,y}$

$FC_{PL,p,dc,y}$:
Amount of fuel consumed by a project motorcycle p in engine displacement class *dc* during a project fuel economy survey in year *y*.

This value is obtained by measuring the actual fuel consumption of a project motorcycle during the project fuel economy survey in year *y* and measured based on the amount of fuel needed to fill the fuel tank after use of the motorcycle in a defined period, with the tank having been filled at the beginning of the sample survey.

$TD_{PL,p,dc,y}$:
Travel distances of the project motorcycle *p* in engine displacement class *dc* with fuel consumption of $FC_{PL,p,dc,y}$

This value is obtained by measuring the actual travel distances of the project motorcycle with fuel consumption of $FC_{PL,p,dc,y}$. The travel distance is read from the odometer.

Matrix of the results of the sample survey (N=36, <100cc: N=6, 100-125cc: N=30)

Engine displacement class *dc*	Number of project motorcycle $N_{p,dc,y}$	Project fuel economy $PFE_{dc,y}$ (l/km)
<100cc	50,000	1/52.67
100cc-125cc	250,000	1/47.37
	$N_{p,<100,y} + N_{p,100\text{-}125,y}$=Total number of project motorcycles (300,000)	

<u>Calculation of Project emissions</u>

$PE_{<100,y} = N_{p,dc,y} \times PFE_{dc,y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$
= 50,000 × 1/52.67 (litre/km) × 10,382 (km) × 69.2 (tCO2/MJ) × 44.3 (MJ/t) × 0.7449 × 10^-6 = 22,504 (t-CO2)

$PE_{100\text{-}125,y} = N_{p,dc,y} \times PFE_{dc,y} \times AD_{PL,commuting,p,y} \times EF_{CO2,j} \times NCV_j \times D_j$

[2] http://www.iea.org/Textbase/work/2004/eswg/22_Oil%20Densities.pdf

= 250,000 × 1/47.37 (litre/km) × 10,382 (km) × 69.2 (tCO2/MJ) × 44.3 (MJ/t) × 0.7449 × 10^-6 = 125,117 (t-CO2)

$PE_y = \sum PE_{dc,y}$ = 22,504 + 125,117 = 147,622 (t-CO2)

Leakage

No leakage calculation is required.
Travel distances may increase with better fuel economy, resulting in additional CO2 emissions. The improvement of fuel economy due to the project activity would offset those increases, however, because better fuel economy would decrease the fuel consumption of motorcycles operated for uses other than commuting.

Emission reduction

Emission reductions are calculated as follows:

$$\mathbf{ER_y = BE_y - PE_y}$$

Where:
ER_y : Emission reductions in year *y* (tCO_2)
BE_y : Total baseline emissions in year *y* (tCO_2)
PE_y : Total project emissions in year y (tCO_2)

ER_y = 161,556 (tCO_2/ year) – 147,622 (tCO_2/ year)
= 13,934 (tCO_2 / year)

B.6.4 Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions(tCO_2e)	Estimation of baseline emissions(tCO_2e)	Estimation of leakage emissions(tCO_2e)	Estimation of overall emission reductions(tCO_2e)
2012	147,622	161,556	0	13,934
2013	147,622	161,556	0	13,934
2014	147,622	161,556	0	13,934
2015	147,622	161,556	0	13,934
2016	147,622	161,556	0	13,934
2017	147,622	161,556	0	13,934
2018	147,622	161,556	0	13,934
2019	147,622	161,556	0	13,934
2020	147,622	161,556	0	13,934
2021	147,622	161,556	0	13,934
Total	**1,476,220**	**1,615,560**	0	**13,9340**

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	$BFE_{dc, y}$
Data unit:	Litre/km
Description:	Baseline fuel economy in engine displacement class *dc* in year y
Source of data to be used:	Sampling survey
Value of data	The upper 95% confidence interval is taken.
Description of measurement methods and procedures to be applied:	Sample survey in year *y*. The fuel economy data based on the sample survey shall comply with the 90% confidence interval and 10% margin of error requirement, and the upper value of 95% confidence interval shall be taken in each engine displacement class *dc*.
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$PFE_{dc, y}$
Data unit:	Litre/km
Description:	Project fuel economy in engine displacement class *dc* in year *y*
Source of data to be used:	Sampling survey
Value of data	The lower 95% confidence interval is taken.
Description of measurement methods and procedures to be applied:	Sample survey of project motorcycles in year *y*. The fuel economy data based on the sample survey shall comply with the 90% confidence interval and 10% margin of error requirement, and the lower value of 95% confidence interval shall be taken in each engine displacement class *dc*.
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	$AD_{PL, commuting, p ,y}$
Data unit:	Km
Description:	Average annual commuting distance of project motorcycles in year *y*.
Source of data to be used:	Interview or questionnaire for the project motorcycle owners in year *y*.
Value of data	Average value is taken
Description of measurement methods and procedures to be applied:	Interview or questionnaire for the project motorcycle owners in year *y* when maintenance is provided to project motorcycles.
QA/QC procedures to be applied:	
Any comment:	

B.7.2 Description of the monitoring plan:

The monitoring will be submitted when the investigation for exhaust gas to the motorcycle which are investigated and maintained at the maintenance shop (project site) once a year for $BFE_{dc,y}$ and $AD_{PL, commuting, p ,y}$, and once every three months for $PFE_{dc, y}$. In order to make the motorcycle owners coming to the maintenance shop continuously, the incentives for them to come to the maintenance shop (ex. discount the price of the maintenance) should be provided. It enables us to make the continuous data collection.

All the collected data that have to be collected according with monitoring plan shall be recorded electronically and they will be kept for two years after the final crediting period. At the monitoring, following information that helps to identify the owner and the motorcycle separately should be collected.

- Name of the owner
- Name of the motorcycle maker
- Model of motorcycle and engine displacement
- Registration number
- Purchase date

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

>>
<Date of completion of the baseline and monitoring methodology>
March, 2011

<Name of person(s)/entity(ies)>
Pacific Consultants Co., Ltd.
Mr. Nose Daiki

Global Environment Department
Pacific Consultants Co., Ltd.
1-7-5, Sekido, Tama-shi, Tokyo 206-8550 Japan
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Email: daiki.nose@tk.pacific.co.jp

<Name of person(s)/entity(ies)>
Pacific Consultants Co., Ltd.
Mr. Mizuno Yoshihiro

Global Environment Department
Pacific Consultants Co., Ltd.
1-7-5, Sekido, Tama-shi, Tokyo 206-8550 Japan
Tel: +81-42-372-7130 Fax: +81-42-372-1857
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SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

XX/XX/2011
Equipment relating to the project activity have not ordered yet. It is anticipated that the procurement of the equipment may start tentatively in 2011.

C.1.2. Expected operational lifetime of the project activity:

20 years

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

Not applicable

C.2.1.2. Length of the first crediting period:

Not applicable

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01/01/2012
The expected data of commissioning of the first maintenance activity is given as the starting date of the crediting period. Should the activity be delayed, the stating date of the crediting period will be delayed accordingly.

C.2.2.2. Length:

10 years

SECTION D. Environmental impacts

>>

D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

The project activity is an energy efficiency improvement project. It results in reductions of energy losses thereby contributing towards the betterment of the environment. The project activity has no significant negative impact on the environment.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

No significant impacts are associated with the project activity.

SECTION E. Stakeholders' comments

>>

E.1. Brief description how comments by local stakeholders have been invited and compiled:

>>

E.2. Summary of the comments received:

>>

E.3. Report on how due account was taken of any comments received:

>>

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Tamsui Vietnam Corporation
Street/P.O.Box:	5th Floor
Building:	IDC Building, 163 Hai Ba Trung St.,District 3
City:	Ho-Chi-Minh city
State/Region:	Dong Nam Bo Province
Postfix/ZIP:	
Country:	Socialist Republic of Vietnam
Telephone:	+84-8-38230031
FAX:	+84-8-38229683
E-Mail:	mitsuhiro_nabekura@tamsui.jp
URL:	
Represented by:	
Title:	General Director
Salutation:	Mr.
Last Name:	Nabekura
Middle Name:	
First Name:	Mitsuhiro
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Fuel Economy

	Sample	Ratio	Baseline fuel economy (km/l)		Project fuel economy (km/l)		Improvement range (km/l)	
			95% lower	95% upper	95% lower	95% upper	Minimum	Maximum
< 100cc	6	16.67%	43.93		57.10		13.17	
			37.55	50.32	52.67	60.65	2.36	23.10
100 - 125cc	30	83.33%	39.62		50.84		11.22	
			36.29	42.95	47.37	54.30	4.42	18.01

Average annual commuting distance

Sample	$AD_{PL, commuting, p, y}$ (km)
39	10382

Default value

Item	Value
$EF_{CO2, j}$	69.3 (tCO2/TJ)
NCV_j	44.3 (TJ/Gg)
D_j	0.7449 (g/cm3)

Emission reduction

	Sample	Statistical number of project motorcycle	Baseline emissions (tCO2)	Project emissions (tCO2)	Emission reductions (tCO2)
< 100cc	6	50000	23558	22504	1054
100 - 125cc	30	250000	137998	125117	12880
Total	36	300000	161556	147622	13934

Annex 4

MONITORING INFORMATION

Parameters monitored: All monitored data shall be recorded electronically and be kept for at least two years after the final crediting period.

Parameter	Item	Monitoring method	Frequency
$BFE_{dc,y}$	Baseline fuel economy in engine displacement class *dc* in year *y* (litre/km)	Sample survey in year *y*. The fuel economy data based on the sample survey shall comply with the 90% confidence interval and 10% margin of error requirement, and the upper value of 95% confidence interval shall be taken in each engine displacement class *d*c.	Annually
$PFE_{dc,y}$	Project fuel economy in engine displacement class *dc* in year *y* (litre/km)	Sample survey of project motorcycles in year *y*. The fuel economy data based on the sample survey shall comply with the 90% confidence interval and 10% margin of error requirement, and the lower value of 95% confidence interval shall be taken in each engine displacement class *dc*.	Once every three months
$AD_{PL,commuting,p,y}$	Project average annual commuting distance of project motorcycles in year *y* (km)	Interview or questionnaire for motorcycle owners when maintenance is provided to project motorcycles	Annually

In order to identify the each project motorcycle separately, project participants shall provide following information to identify specific owners and their motorcycles.

Name of the owner	
Motorcycle manufacture	
Model and engine displacement of motorcycle	
Registration number	
Purchase date	

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