

# **MRVing transport projects at City Level:**

**lesson learn from IGES MRV Transport project in ASEAN cities**

*The 5<sup>th</sup> high level seminar on Environmentally Sustainable Cities (HLS ESC)*  
*Thematic Session A3: Air Quality and Transport*

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**IGES – IPSS Cities Team**

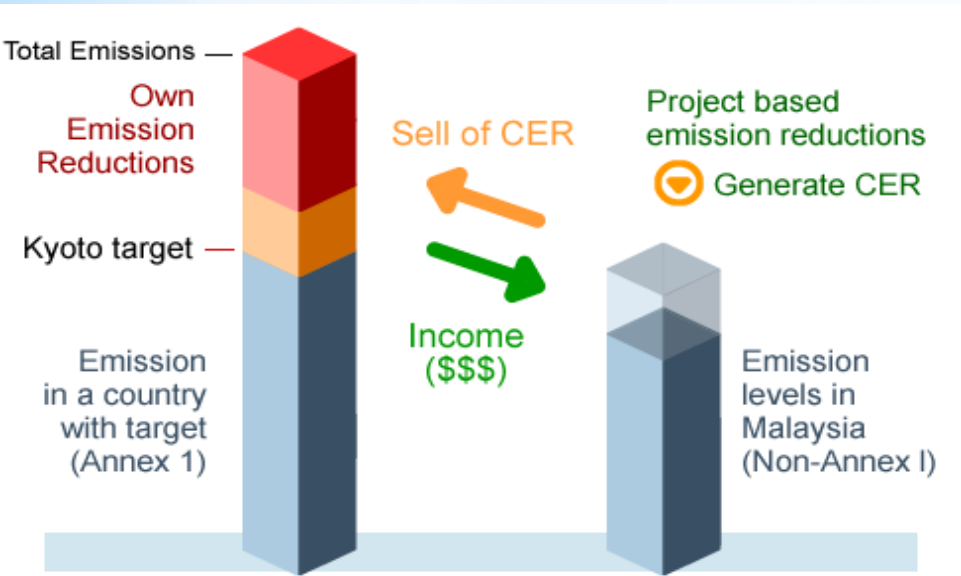
**28 February 2014**

# Outlines

- Transport and Climate Change
- Joint Credit Mechanism
- Case Studies at 5 cities in ASEAN

# Transport and CDM – current status

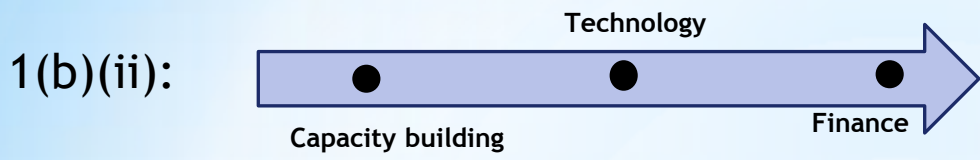
- **Clean Development Mechanism** – one of the ‘flexibility mechanisms’ under the Kyoto Protocol
- stimulates sustainable development and emission reductions in developing countries while giving industrialized countries some flexibility in how they meet their emission reduction limitation targets



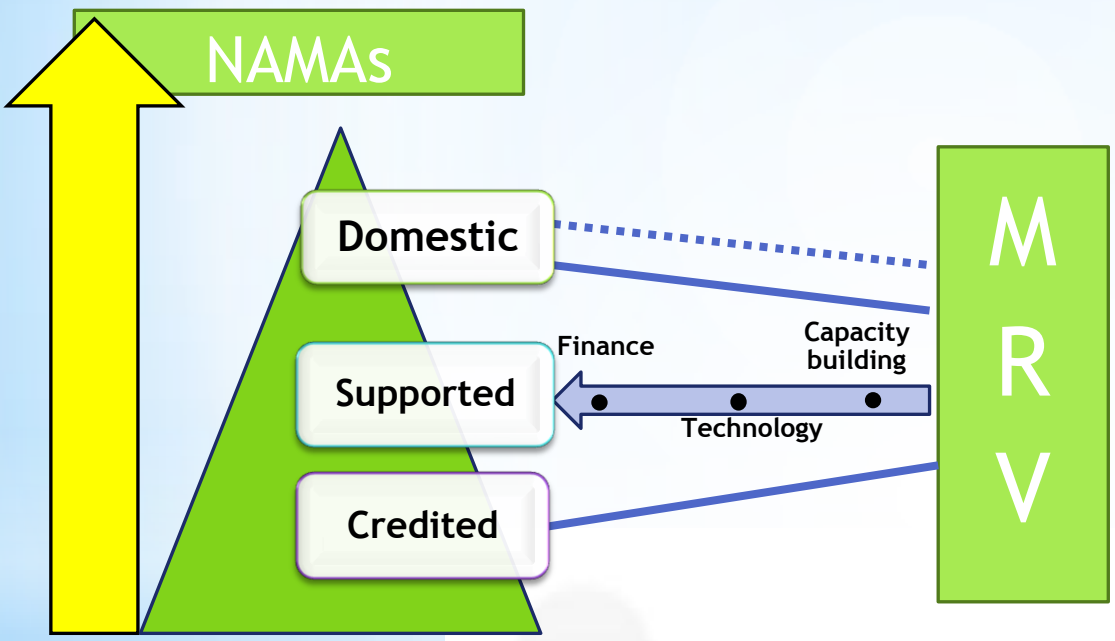
Category	%
1. Energy ind. (ren/non-ren)	74.6
13. Waste handling and disposal	10.9
4. manufacturing ind.	4.2
10. Fugitive emiss(solid/oil/gas)	2.6
15. Agriculture	2.4
5. Chemical Ind.	1.4
3. Energy demand	1.3
8. Mining/mineral prod.	1
14. Afforestation/reforestation	0.6
<b>7. Transport</b>	<b>0.3</b>
11. Fugitive emiss (halon/SF6)	0.3
9. Metal production	0.2
2. Energy distr.	0.1

*only 27 in transport out of 7426 registered CDM projects (as of 31 January 2014) and 67% of projects are in China and India*

# Transport NAMAs – Bali Action Plan (2007) and Copenhagen Accords (2009)



*in a measurable, reportable and verifiable manner*



**MRV is Important !!**

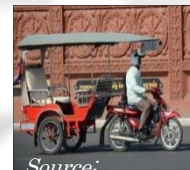
**COP 19 - Warsaw**



# MRV is important to assess **Avoid** - Shift - Improve (A-S-I)



Moto-Tricycle



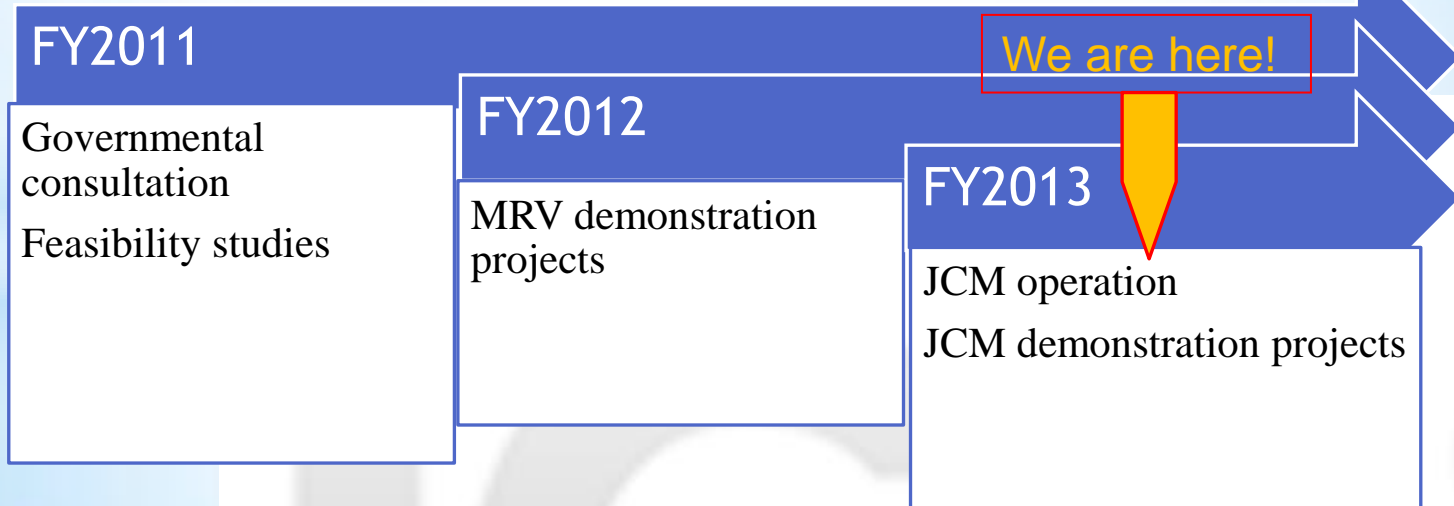
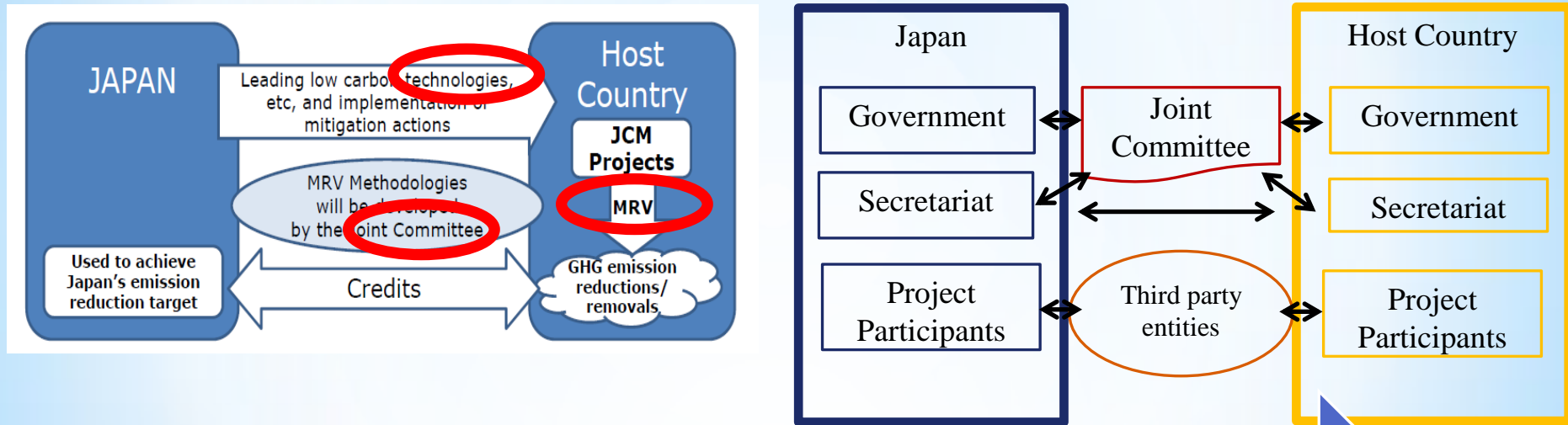
Source:

## ASEAN Context

A diversity of needs and priorities...

A different status and condition ...

Japan propose a **Joint Credit Mechanism (JCM)** as a part of “Framework for various approaches (FVA)” for long-term cooperative action under the UNFCCC (i.e., beyond 2020)



*“The JCM starts its operation as a non-tradable credit mechanism”.*

Source: Adopted from Government of Japan (2014)

# Key features of JCM:

- JCM aims to MRV GHG reduction in a simpler way
- Various approaches... must: meet standards deliver real, permanent, additional and verified mitigation outcomes

## How to simplify transport MRV methodologies? (learn from CDM experiences)

### STEP 1

*use of initial default values*  
*(ex-ante estimation)*

### STEP 2

*With / Without Monitoring (Top-down / Bottom-up)*

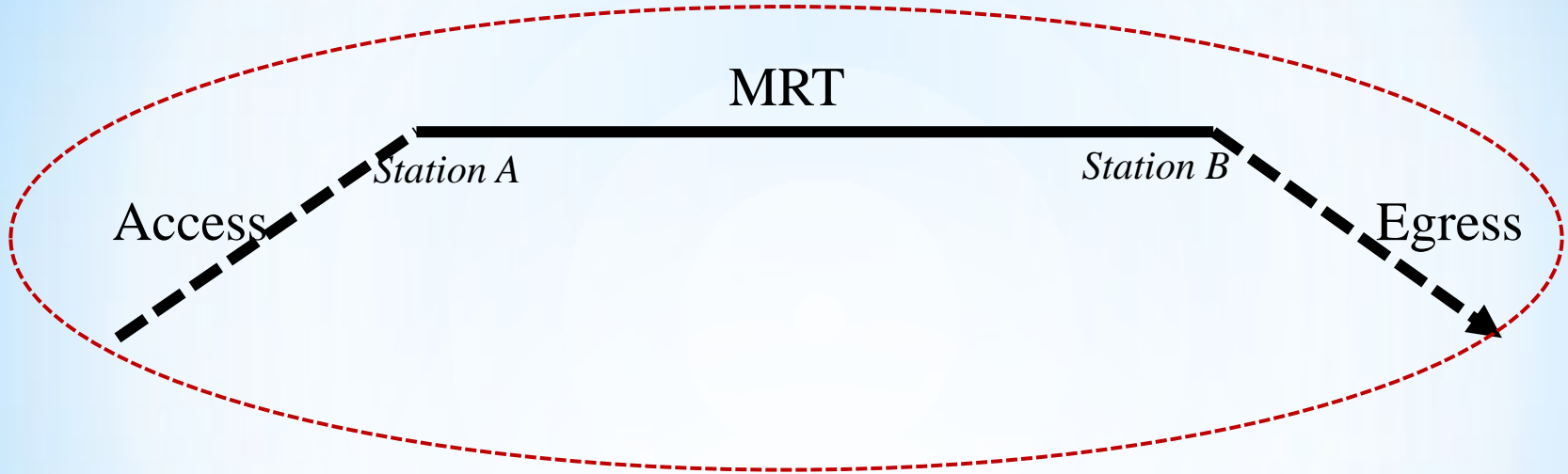
### STEP 3

*adjusted values*  
*(ex-post verification)*

- Use of default values
- Benchmarking
- With/Without monitoring (Top Down/Bottom Up)
- Adjustment of initial values after verification

# An example of different approach of MRV Public Transport System

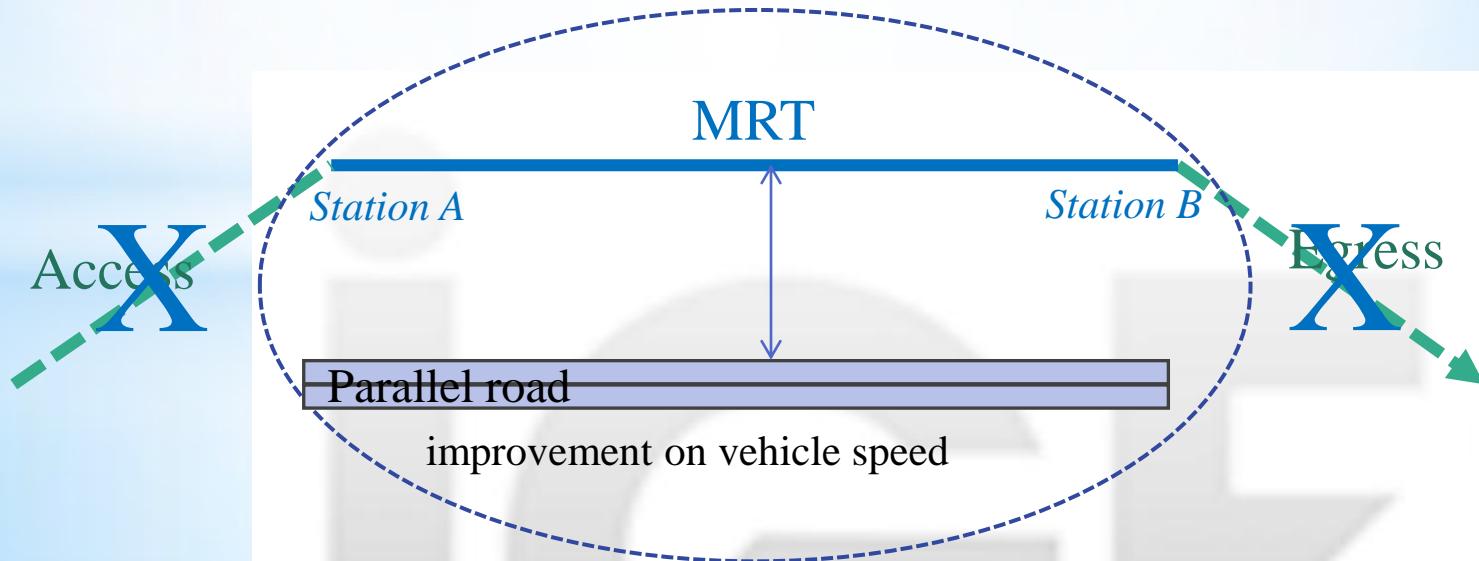
## MRV - CDM



Origin

Destination

## MRV - JCM



Access

Station A

MRT

Station B

Egress

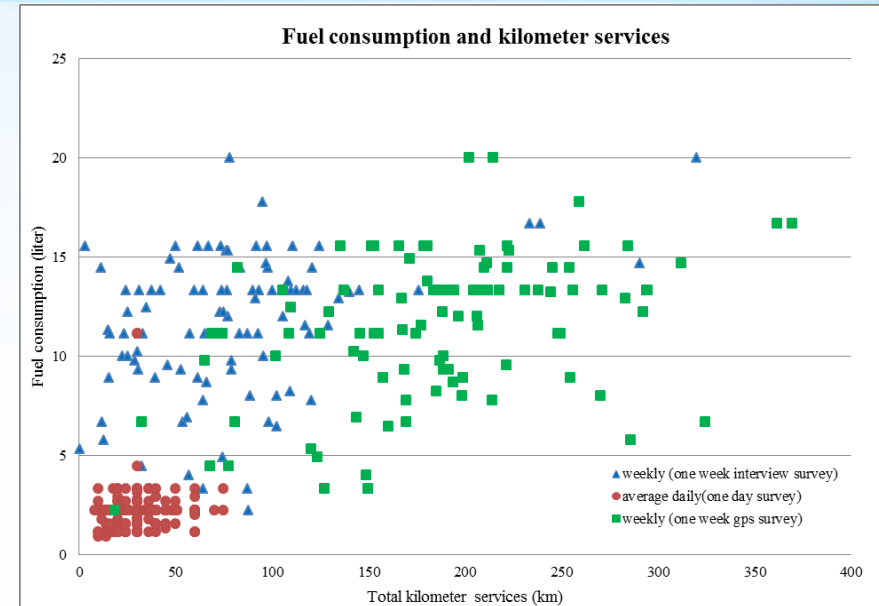
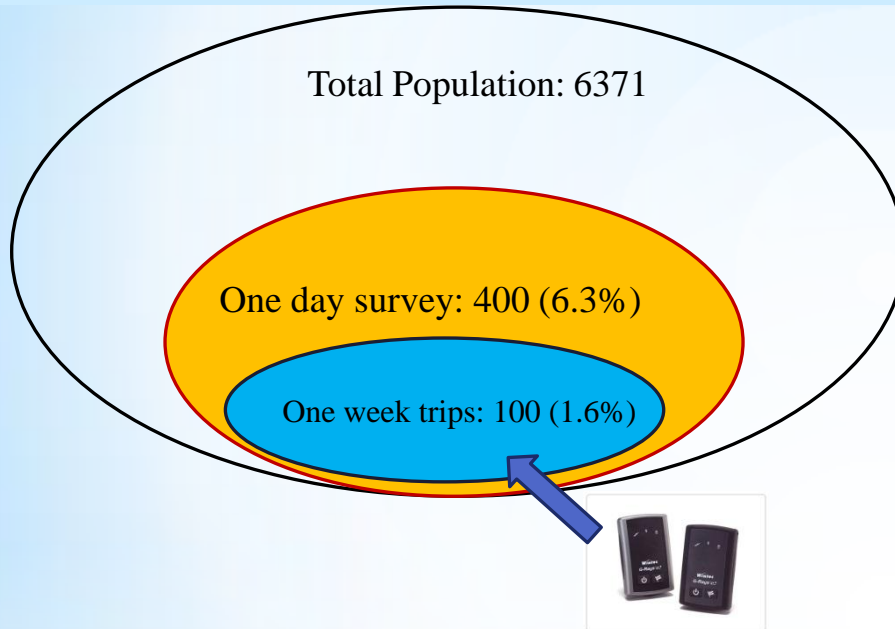
Parallel road

improvement on vehicle speed



# IGES Experiences on MRVing Transport Projects in ASEAN cities under the Joint Credit Mechanism (JCM)

## Case Study-1: Informal Transit System- *a case study of motorcycle taxi in Bandung (2012)*



<i>Baseline Emission (tCO<sub>2</sub>/year)</i>		<b>One Day</b>	<b>One Week</b>	<b>GPS Survey</b>
1	With Monitoring Fuel Consumption	11410.28	11198.98	11198.98
2	Without Monitoring Fuel Consumption	6363.93	4475.35	8974.52
3	Comparison Without/With (%)	55.77%	39.96%	80.14%

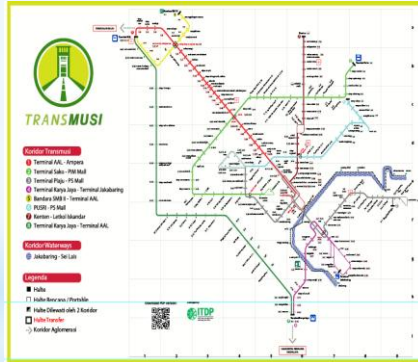
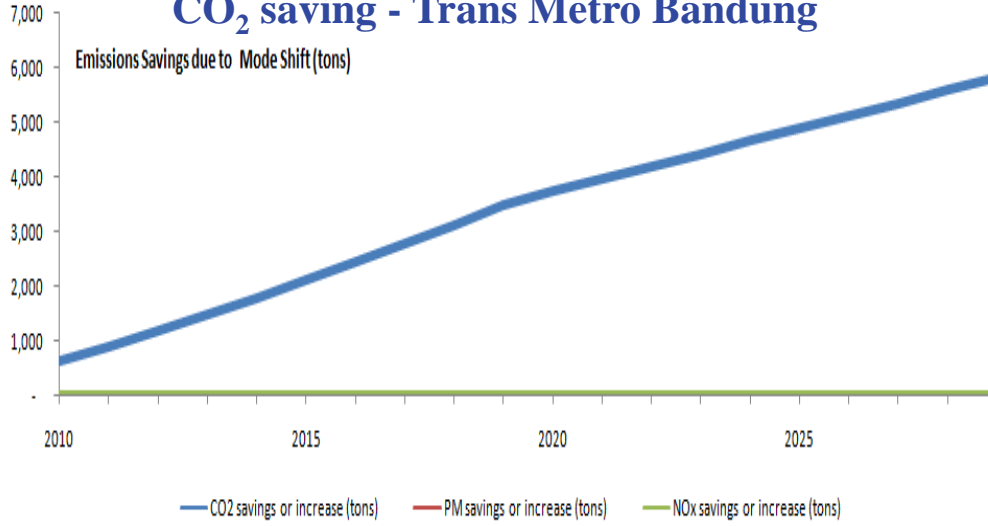
### *Informal Transit system – Data Selection and Reliability*

**(1) Monitoring: Cost-effectiveness – Reliability**

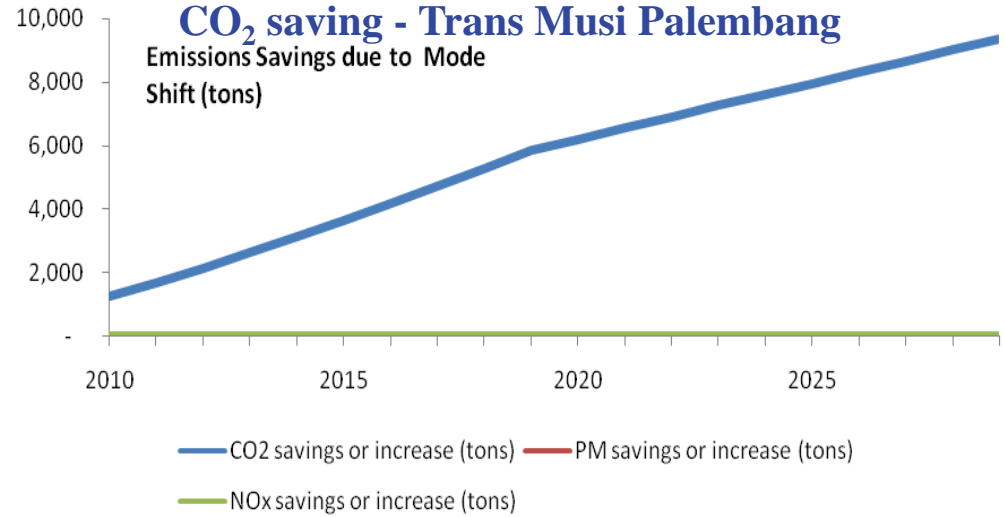
**(2) Trip characteristics (no fixed route and schedule) → Expansion factor & Non-linear relationship**

# Case Study-2: BRT (semi-BRT) System – *case studies in Bandung and Palembang*

## CO<sub>2</sub> saving - Trans Metro Bandung



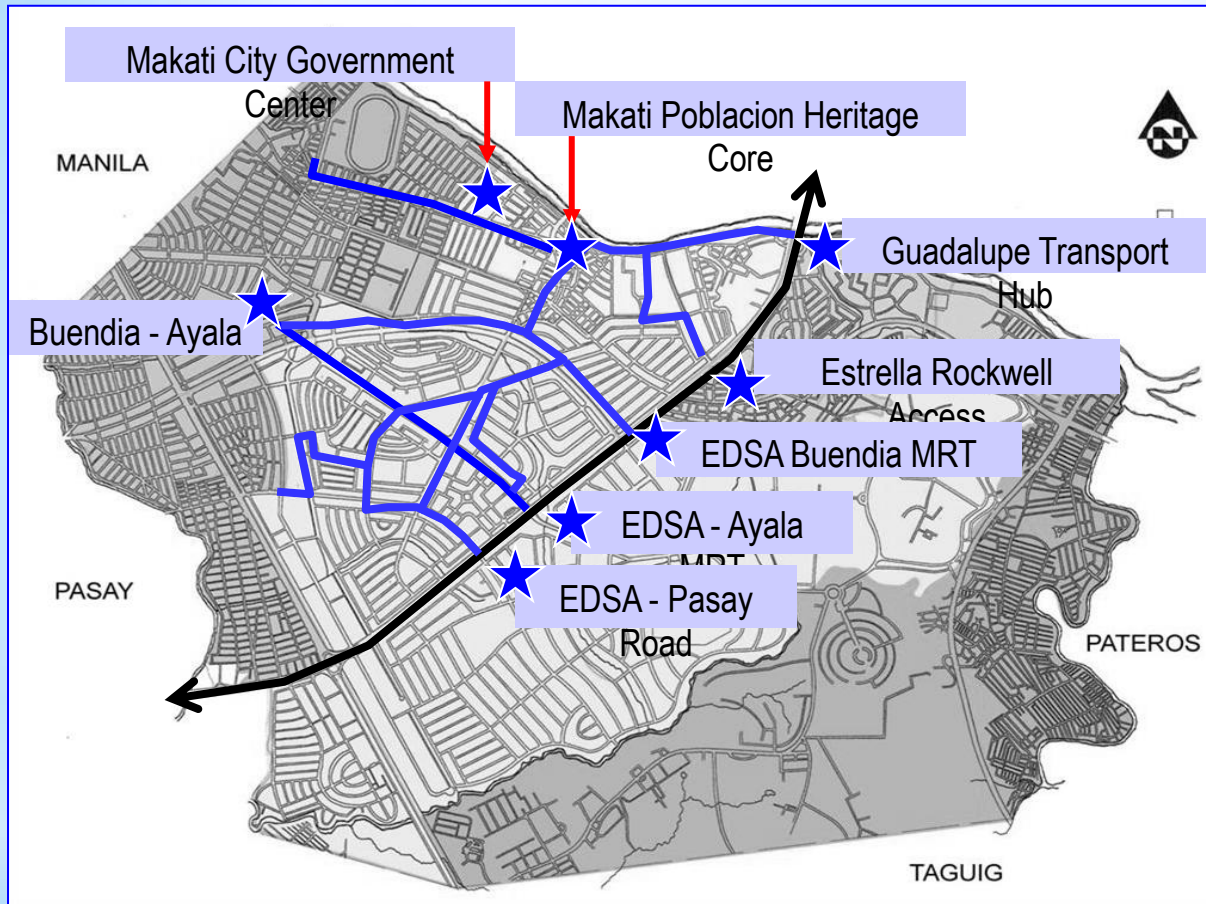
## CO<sub>2</sub> saving - Trans Musi Palembang



**Greater impact on CO<sub>2</sub> saving → wider coverage areas and integrated system**



## Case -4: Non-motorized transport project – *a case study in Makati city*



Proposed Expanded Makati Pedestrian Walkway Network

Makati City Transport Development Strategy (2011 – 2020)

30.4 km. Walkway Network for a healthier, low carbon City

Emissions Savings	CO2
Savings (tons) in 10 years	47,420.26
Average savings (tons/year)	15,806.75

*A great number of CO<sub>2</sub> emission due to non-motorized project in urban areas*

# Key messages

- Climate change – transport project : low performance
- MRV is critical component and bridging the gap between climate and transport sector
- JCM offers more flexible and simpler MRV
- Key findings from the case study:
  - (i) Informal transit system: cost-effectiveness, expansion factor and non-linearity.
  - (ii) Integrated and wider services gives better impacts on GHG reduction.
  - (iii) Public transport gives benefit on the emission reduction, but it is a long-term
  - (iv) Non-motorized transport project may also gives significant GHG emission reduction
  - (v) Rapid transition in ASEAN cities creates several challenges for accurate quantification, including sufficient data, reasonable assumptions etc.
  - (vi) Proper benchmarking and adjustment of initial values after verification are Important
- Governance issues and Capacity Building are important to support MRV transport projects

# Appendix 1:

## E-Learning course on MRV in the Transport Sector

The Institute for Global Environmental Strategies (IGES)

By Integrated Policies for Sustainable Societies (IPSS) - Cities Team

**IGES**  
E • LEARNING

### Measuring, Reporting & Verification (MRV) in the Transport Sector

In November 2013 the Institute for Global Environmental Strategies (IGES) organized a combined capacity building workshop and e-learning seminar entitled Measuring, Reporting and Verification (MRV) in the Transport Sector. The e-learning material aims to enhance capacities of participants to estimate GHG emissions in the transport sector. In particular, the series of short lectures introduces the audience to (1) international climate negotiations and the important role of monitoring, reporting and verifying actions in the field of transport in climate finance mechanisms; (2) the particular challenges to and opportunities for sustainable transport solutions in Asia; (3) methods used to quantify environmental impacts of transport projects and how the Transport Emissions Evaluation Model (TEEMP) tool can support users in developing projects in the transport sector; (4) available carbon offsetting tools and the importance of MRV tools, and the TEEMP tool's functions and application in calculating GHG reduction potentials resulting from Bus Rapid Transport (BRT) projects.

**Introducing the TEEMP Tool**

**Methodologies and Concepts**

**Climate Finance and Transport**

**Climate and Transport: An Introduction**

**Sustainable Low Carbon Transport**

**Basic Information**

**TEEMP Tool Demonstration**

**Results**

**Data Inputs**

**Technical Parameters**

**MRVing Transport NAMAS**

**MRV Methods for Transport Projects**

**TEEMP Tool Primer**

**Transport in Asia**

**E-learning Course Intro**

**Sustainable Low Carbon Transport**

In this introductory section of the e-learning course Eric Zusman, IGES – Integrated Policies for Sustainable Societies area leader, outlines key milestones in climate negotiations and financing, as well as current responses to climate change and environmental degradation. Connecting over-arching trends and developments to low carbon transport, the section concludes with a discussion on measuring, reporting and verifying activities in relation to NAMAS (Nationally Appropriate Mitigation Actions) in the transport sector.

**MRV Methods for Transport Projects**

This e-learning section, presented by IGES policy researcher Sudarmanto Budi Nugroho, is subdivided into two components. The first half covers the topic of offset mechanisms (including Japan's Joint Crediting Mechanism scheme) for financing environmentally sustainable transport (EST) projects. The latter half of the presentation sheds light on the features of robust MRV-frameworks for the transport sector.

**Introducing the TEEMP Tool**

**TEEMP Tool Demonstration**

Launching the third e-learning section Alvin Mejia, program manager at Clean Air Asia (CAA), identifies key challenges cities in Asia face with regard to transport. Following a summary of prevailing concepts and methods underlying low carbon transport planning and assessment, the Transport Emissions Evaluation Model (TEEMP) tool developed by CAA is introduced. A demonstration module outlining the functionalities of the Transport Emissions Evaluation Model (TEEMP) tool for a Bus Rapid Transit (BRT) project concludes the e-learning course. The demonstration provides a step-by-step guide on how to enter basic technical parameters, make further data inputs - such as emission and intensity factors, and analyse results for an existing or planned BRT project.

## Modules:

1. Sustainable Low-carbon transport
2. MRV methods for transport projects
3. Introducing TEEMP tool
4. TEEMP Tool demonstration

[http://www.iges.or.jp/en/integrated-policy/cities/mrv\\_elearning.html](http://www.iges.or.jp/en/integrated-policy/cities/mrv_elearning.html)

Thank you for your attention

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