The Role of Motorised Two-Wheelers in Sustainable Transport in Asia and the Future of Electric Two-Wheelers

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Motorised Two-Wheelers in the work of GIZ

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GIZ

ASEAN-German Technical Cooperation Project
“Energy Efficiency and Climate Change Mitigation in the Land Transport Sector”
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- TUEWAS connects over 50 projects across 16 Asian countries in the field of transport, environment, energy and water.

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About GIZ
Current Activities in the Transport and Mobility Sector

Two-Wheelers in the work of GIZ

- Implemented by TUEWAS
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Energy efficiency and climate change mitigation in the land transport sector in the ASEAN region

In Short: Transport and Climate Change (TCC)

- **Key activities:** The region has strategies and action plans with which it can enhance energy efficiency in the transport sector and reduce the emission of greenhouse gases (GHG)
- **Overall term:** 2012 – 2015 (phase I); 2016 – 2018 (phase II)
- **Budget:** € 2.5 million for phase I; € 3.5 million for phase II
- **Commissioned by:** German Federal Ministry for Economic Cooperation and Development (BMZ)
- **Partner:** ASEAN secretariat
- **With direct implementation in:** Indonesia, Malaysia, Thailand, the Philippines, Vietnam
Two-wheelers in Asia

• Nowhere else in the world is the concentration of 2/3Ws as high as in South and Southeast Asia
• 2Ws are widespread because they provide:
  – Cheap, reliable, and convenient accessibility
• 2Ws generally take up <40% of the size of a car
  – This allows for a high degree of manoeuvrability, especially in urban congested areas
• They often fill the gaps in urban transport systems
• 2Ws are also used for light commercial/freight transport in several Asian cities
Two-wheelers in ASEAN

Annual Growth of Motorbikes per Capita (2004-2012)

Source: ASEAN Statistics (2014)
Two-wheelers and air pollution

- 85% of global 2Ws have 2-stroke engines (UNEP/KJAER, 2013).
  - With 2-strokes, up to 40% of the fuel and much of the oil escapes unburned (ICCT, 2009).
  - Thus, 2Ws can constitute “the prime source of urban air pollution” (UNEP/KJAER, 2013).

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Unit of measurement</th>
<th>2-stroke engine C2W</th>
<th>4-stroke engine C2W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>[g/km]</td>
<td>27.5</td>
<td>16</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOCs)</td>
<td>[g/km]</td>
<td>14.4</td>
<td>5</td>
</tr>
<tr>
<td>Nitrogen Oxides (Nox)</td>
<td>[g/km]</td>
<td>0.16</td>
<td>0.99</td>
</tr>
<tr>
<td>Sulphur Oxides (SOx)</td>
<td>[g/km]</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Particulate Matter (PM)</td>
<td>[g/km]</td>
<td>0.35</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Source: UNEP Clean Fleet Management Toolkit (2009)
Two-wheelers and CO2 emissions

- **Vietnam**
  - 2W CO2 Emissions: 46%
  - Other vehicles: 54%

- **Indonesia**
  - 2W CO2 Emissions: 16%
  - Other vehicles: 84%

- **Malaysia**
  - 2W CO2 Emissions: 7%
  - Other vehicles: 93%

- **Thailand**
  - 2W CO2 Emissions: 6%
  - Other vehicles: 94%

- **Philippines**
  - 2W CO2 Emissions: 1%
  - Other vehicles: 54%

- Electric 2Ws emit between 1/3 and 4/5 less CO2 per km compared to petrol-powered 2W

Source: GIZ, based on Clean Air Asia data (2012)
TCC’s work on two-wheelers

Activities

Motivation and Approach

• Despite their high mitigation potential, 2Ws receive the least attention by policy makers as a mitigation option (esp. in INDCs)

• TCC promotes an integrated approach:
  – fuel economy standards and technical improvements,
  – policies and regulations,
  – I&M-programmes,
  – supporting the uptake of electric 2Ws through standards, awareness raising, myth-busting, experience-sharing
TCC‘s work on two-wheelers

Activities

• Factsheet on the potential of electric-two wheelers in Thailand
• Supported a NAMA proposal on energy efficient two-wheelers in Malaysia
• Supported standard development for electric two-wheelers in Malaysia
• FE Reports – covering two-wheelers (on-going) in Thailand and Vietnam
• Regional workshops and side-events, e.g. at the BAQ2016
SUTP.
Sustainable Urban Transport Project
Who we are:

The Sustainable Urban Transport Project (SUTP) is hosted by GIZ on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ) and supported by numerous partners.

What we do:

SUTP’s main objective is to assist developing world cities achieve their sustainable transport goals, through the dissemination of information about international experience, policy advice, training and capacity building and targeted work on sustainable transport projects within cities.

Our Target group:

• Policy Makers at Municipal, Regional and Central Governmental Level
• Transport Officials at Municipal, Regional and Government Level
• Transportation and Urban Planning Professionals
• Academia
SUTP Sourcebooks investigate the key areas important for a sustainable transport policy framework in developing cities.

Module 4c “Two- and Three Wheelers”

Currently being updated, expected to be in finalised in December 2017

We have more than 30 Sourcebooks in 13 languages available on www.sutp.org.
New Paradigm: Avoid – Shift - Improve
Holistic approach to transport energy efficiency

AVOID unnecessary trips

SHIFT modes

REDUCE km

IMPROVE vehicles low carbon fuels
Thank you for your attention!

For information/ inquiries, please contact:
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As a federal enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

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