Session on Asia-Pacific: Thailand

Shifting to Efficient and Zero Emissions Vehicles in the Global South

Supported by: European Commission, FIA Foundation, GEF, BMUV-IKI

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Outline

• APEC Project on Policy Dialogue on Fuel Economy Platform
  ✓ Under APEC Policy Partnership on Science, Technology and Innovation [PPSTI]
  ✓ Dec 2017 – Nov 2018 [Co-sponsors: China; Chinese Taipei and Philippines]

• Highlight of UNEP project, “Mainstreaming Electric Mobility 2&3 Wheelers in Thailand”
  ✓ Phase 1 & Phase 2
  ✓ Related activities
    ➢ Phase 2 Partner [Electric Generating Authority of Thailand: EGAT]
    ➢ National Project on “Thailand Battery Swapping Platform [2021-23]”
APEC PPSTI 03 2017A: Policy Dialogue on Fuel Economy Platform

• Proposer: Thailand with co-sponsors China; Chinese Taipei and Philippines
• Duration: Dec 2017 – Nov 2018
• Objectives
  ✓ To ensure **trained participants** will be able to **conduct impact assessment on fuel economy policy** in his/her own economies after the training.
  ✓ To create framework or **platform for fuel economy** among APEC economies in alignment with Global Fuel Economy Initiative (GFEI).
  ✓ To **develop recommendations** for economies with trained participants on how fuel economy initiative can be established.
  ✓ To increase knowledge and **build capacity** in impact assessment of fuel economy as one of the energy efficiency measure in transportation sector.
• Workshops: 1\textsuperscript{st} in Bangkok on 26-27 Apr 2018, 2\textsuperscript{nd} in Malaysia on 13 Nov 2018 [BAQ2018]
• Final report available*

1st APEC workshop on Policy Dialogue on Fuel Economy (FE) Platform

- Held on 26-27 April 2018 in Bangkok [TH]
- Focus on FE update from APEC membered economies with case study on Thailand FE cost-benefit analysis
- Attended by 50 participants from 9 APEC membered economies,
  ✓ 23 female
  ✓ 31 from government sector, 10 from private sector
2nd APEC workshop on Policy Dialogue on Fuel Economy (FE) Platform

• Held on 13 November 2018 in Kuching (MA) during BAQ2018
Mainstreaming Electric Mobility 2&3 Wheelers in Thailand


• Despite delay from Covid-19 pandemic, the following outputs are
  ✓ Advisory group to spearhead the development of policies to support the transition to electric mobility in Thailand focusing on electric 2&3 wheelers ➔ National Technical Committee on Electric Two Wheelers under Thailand Industrial Standard Institute [TISI]
  ✓ Assessment of the national baseline and business-as-usual scenarios to set the stage for uptake of electric 2&3 wheelers and electric mobility at large in Thailand ➔ LEAP model
  ✓ Relevant technical studies to support policy and standards development on electric 2&3 wheelers ➔ National Standard on Battery Swapping for e2w
  ✓ Design and launch of a demonstration pilot for electric 2&3 wheelers in Thailand ➔ Memorandum of Agreement [MOA] Ceremony on 5 May 2022
Mainstreaming Electric Mobility 2&3 Wheelers in Thailand

- **Phase 1**
  - Established baseline data to quantify potential benefit
  - Coordinated with regulator for national battery swapping standard
  - Initiated collaboration with EGAT for electric motorcycle taxi demonstration in Phase 2

![Graphs showing stock numbers and fuel shares](image-url)
Mainstreaming Electric Mobility 2&3 Wheelers in Thailand

- **Phase 1**
  - ✓ Established baseline data to quantify potential benefit
  - ✓ Coordinated with regulator for national battery swapping standard
  - ✓ Initiated collaboration with EGAT for electric motorcycle taxi demonstration in Phase 2

11 EGAT E-bike has been monitored between April – July 2021

**TARGET**

Demonstration on using of

- **51 EGAT E-Bikes**
- **3 Swapping Battery Stations**
- In **19 EGAT areas**

**BENEFITS**

- Improved the E-Bike performance & fuel economy
- Reduce air pollution (CO2, PM2.5)
- Expand the use of electric motorcycle in Thailand

1. Voltage supply from DC-to-DC convertor
2. Voltage, current and GPS sensors installed.
1. Electric Motorcycle Label No.5 program

- Develop criteria and high energy performance standards for electric motorcycles
- EGAT held MOU ceremony for Electric Motorcycle Label No.5 program on 28 August 2019

Currently (March 2021)

- **20 companies** participating in the labeling program
- **23 models / 12,250 cars** of Electric Motorcycle Label no.5

Application
- Application
- Submit testing sample or submit testing report

Testing
- Follow testing standard
- TISI, IEC, ISO etc.
- EGAT inform test report

Labeling
- Label printing
- Client receive label
- Labeling Appliance and sold

Monitoring Verification and Enforcement
- EGAT purchase appliance from market
- Testing
- If fail EGAT revoke labels

Labeling Program Process

Website >> [http://labelno5.egat.co.th](http://labelno5.egat.co.th)
Electric Motorcycle separate categories to 3 type
(Regulation Eu 168 2013)

**L1e-A (Powered cycle)**
- Pedal equipped with auxiliary propulsion
- Speed ≤ 25 km/h
- Electrical motor size ≤ 1 kW

**L1e-B (Two-wheel moped)**
- Speed ≤ 45 km/h
- Electrical motor size ≤ 4 kW

**L3e (Two-wheel motorcycle)**
- Exclude from L1e type
- Electrical motor size 11 kW (L3e-A1)
- Speed > 45 km/h
  (Can be registered with Department of Land Transport)

**Label No.5 Energy Efficiency Criteria**

<table>
<thead>
<tr>
<th>Type</th>
<th>Energy consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1e-A</td>
<td>≤ 20.4 Wh/km</td>
</tr>
<tr>
<td>L1e-B</td>
<td>≤ 26.4 Wh/km</td>
</tr>
<tr>
<td>L3e</td>
<td>≤ 36.8 Wh/km</td>
</tr>
</tbody>
</table>

**Testing Standard**

<table>
<thead>
<tr>
<th>Type</th>
<th>L1e</th>
<th>L3e</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving Cycle</td>
<td>ECE R47</td>
<td>World Harmonized Motorcycle Test Cycle (WMTC), stage 2</td>
</tr>
</tbody>
</table>
3. Expanding the use of EGAT E-Bike inside and outside

**1. Transition** Fuel Motorcycle to E-Bike (EGAT Area)

**TARGET**: E-Bike 100% in 2027

**2. Loan Welfare to buy E-Bike For EGAT Employees**

**3. Selling E-Bike through the cooperative stores of EGAT**

**4. Pilot 51 E-Bike taxis in Bang Kruai District**

**5. Set up Platform to use of E-Bike & Swapping Station with partners.**

**6. Develop knowledge & Service point (Production, assembly, maintenance) with partner in 2021**
National Standard on e2w Battery Swapping [TISI3316-2564]

• Title: Electric Mopeds and Motorcycles - Removable Rechargeable Electrical Energy Storage System
Thailand Battery Swapping Platform* [2021-23]

• PI: Dr. Pimpa Limthongkul, pimpa.lim@entec.or.th

• A collaborative project between research institute, universities, battery pack producer, E-motorcycle producers and charging service providers

• Target to create standardized battery packs which can be used in various motorcycle providers, and charging operators

• Funded by

• Expected outputs
  ✓ Prototype of swappable battery & connector with supporting e2w
  ✓ Prototype of swapping station
  ✓ Pilot testing of battery swapping

* http://www.batteryswapping.in.th
Mainstreaming Electric Mobility 2&3 Wheelers in Thailand

- Cooperation with EGAT-E-Bike project

**Energy Consumption Tracking Kit**

- Voltage supply from DC-to-DC convertor
- Voltage, current and GPS sensors installed

11 EGAT E-bike has been monitored between April – July 2021

- Maximum total energy consumption: 0.55 kWh
- Maximum total mileage traveled along the route: 14 km
MOA Ceremony for 50 e2w demonstration

The National Energy Technology Centre (ENTEC) on Thursday signed a memorandum of understanding with the National Science and Technology Development Agency (NSTDA), the Thailand (EGAT), the Shihlin Co Ltd, and Dongguan Tailing Electric Vehicle Co Ltd to plan the integration of electric motorcycles among bike taxi riders in Thailand.

https://www.nationthailand.com/in-focus/40015266
https://www.egat.co.th/home/20220505-pre01/ | https://tna.mcot.net/business-936525
Thank you