EV Current Status in Thailand

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The data in this presentation is adopted from the policy research project “Assessment of Electric Vehicle Technology Development and Its Implication in Thailand” by Laoonual. Y., et al (2013) funded by EGAT-NSTDA, Thailand
Contents

- Automotive industry in Thailand
- EV situation in Thailand
- Thailand’s national policy related to EV
- Summary
Automotive industry in Thailand

Number of vehicle registration by vehicle type

Motor vehicle 13,664,044 (42%)
Motorcycle 19,147,225 (58%)

Source: Department of Land Transport  (Accumulated Dec 2013)
Automotive industry in Thailand

Number of vehicle registration by fuel type

Source: Department of Land Transport (Accumulated Dec 2013)
Automotive industry in Thailand

Light Duty Vehicle Production and Sales in Thailand

Source: *Automotive Intelligent Unit, Thailand Automotive Institute (TAI)

**Source:** LMC Automotive (2013) ASEAN Automotive Monthly: March 2013
Automotive industry in Thailand

Thailand Sales Forecast by Fuel Technology

Automotive industry in Thailand

Domestic motorcycle statistic

Production, sales and export figures of motorcycles in Thailand between 2006 and 2010

Source: Thailand Automotive Institute (TAI)
Current situation of battery electric vehicles (BEV) in Thailand

Source: Transport Statistics Sub-division, Planning Division, Department of Land Transport (Thailand).
Current situation of hybrid electric vehicles (HEV) in Thailand

Source: Transport Statistics Sub-division, Planning Division, Department of Land Transport (Thailand).
EV situation in Thailand

Local Electric bus’s Company in Thailand

EVT Chalet MTP 14s

- Passenger Capacity: 14
- External Dimensions: 4.95 x 1.49 x 1.95 M.
- Reference Range: 70 km
- Max. Speed: 30 km/h
- Min. Turning Radius: 6 M
- Climbing Capability: 15%
- Motor: 5 kW DC 72 V
- Battery Voltage: 6 V x 12 UNITS

E4E’s electric bus

<table>
<thead>
<tr>
<th>ELECTRIC BUS 8.5 m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension [LxWxH]</td>
</tr>
<tr>
<td>Wheelbase</td>
</tr>
<tr>
<td>Curb weight</td>
</tr>
<tr>
<td>GVW</td>
</tr>
<tr>
<td>Seat</td>
</tr>
<tr>
<td>Top speed</td>
</tr>
<tr>
<td>Range/charge</td>
</tr>
<tr>
<td>Charge time</td>
</tr>
<tr>
<td>Tire</td>
</tr>
<tr>
<td>Air condition</td>
</tr>
</tbody>
</table>
Public EV charging stations in Thailand

PTT Public Company Limited

- DC quick charger, CHAdeMO (220V, 50 kW)
- AC charger (220 V, 22 kW)
- AC charger (220V, 3.3 kW)
- Launched in September 2012

- 6 stations in Bangkok and its vicinity in 2013

Metropolitan Electricity Authority (MEA)

- DC quick charger, CHAdeMO (220 V, 50 kW) launched in August 2012

- 10 stations at MEA offices in 2013
Thailand’s national plans related to EV

National Industrial Development Master Plan
by Ministry of Industry

Automotive sector
1. Thailand will be a quality production base in Asia-Pacific.
2. Focus on 1-tonne pick-up truck, high efficiency light duty vehicle, motorcycles and auto parts.
Thailand’s national plans related to EV

Automotive master plan 2012 – 2016 proposed by TAI

“Thailand is a global green automotive production base with strong domestic supply chains which create high value added for the country”

Strategic Plan (3 COEs + 2 ENVs)

COE-1 Research and Technology Development
- Alternative energy
- Light weight vehicles
- Vehicle Safety
- Advanced Production Technology

COE-2 Human Resources Development
- Integrated AHRD System Development
- Capability Upgrading
- AHRD Alliance

COE-3 Entrepreneur Strength Enhancement
- Productivity Improvement
- Cluster/Supply Chain Network
- Green Manufacturing

ENV-1 Infrastructure
- Testing and, R&D Centers
- Automotive Information Centers
- Automotive Academy

ENV-2 Government Policy
- Policy Integration
- Policy Research Support
- Promote Investment Promotion for Green Products and Suppliers
- Branding for REM

COE: Center of Excellence
ENV: Good Business Environment
## Thailand’s national plans related to EV

### New Excise Tax Scheme based CO₂ emission

<table>
<thead>
<tr>
<th>Type</th>
<th>Engine size (&lt;220HP)</th>
<th>Current scheme</th>
<th>New scheme (To be effective on 1st January 2016)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engine size</td>
<td>Engine size</td>
<td>CO₂</td>
</tr>
<tr>
<td>Passenger car</td>
<td>&lt; 2,000 cc.</td>
<td>&lt; 3,000 cc.</td>
<td>&lt; 100 g/km</td>
</tr>
<tr>
<td></td>
<td>2,001 – 2,500 cc.</td>
<td>101-150 g/km</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>2,501 – 3,000 cc.</td>
<td>151 – 200 g/km</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>&gt; 3,000 cc. or 220 HP</td>
<td>&gt; 200 g/km</td>
<td>40%</td>
</tr>
<tr>
<td>Eco-car</td>
<td>Gasoline &lt; 1,300 cc.</td>
<td>&gt; 3,000 cc.</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Diesel &lt; 1,400 cc.</td>
<td>Gasoline &lt; 1,300 cc.</td>
<td>&lt; 100 g/km</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diesel &lt; 1,400 cc.</td>
<td>101 - 120 g/km</td>
</tr>
</tbody>
</table>

Source: Ministry of Finance
Thailand’s national plans related to EV

Energy Demand in the Past and Future Trends

Thailand’s national plans related to EV

Thailand Energy Conservation Target

20-Year Energy Efficiency Development Plan Updated 2013

EI (2009) = 15.6 ktoe/billion baht
EI (2030) = 11.1

Final Energy Consumption (ktoe)

- 158,525 ktoe
- Reduction of 38,845 ktoe
- Industry 16,257 ktoe (42%)
- Transport 15,323 ktoe (40%)
- Commercial 3,630 ktoe (9%)
- SME & Residential 3,635 ktoe (9%)

Potential evaluation of transportation sector 16,250 ktoe

- Use high energy efficiency vehicles and use vehicles efficiently
  - Use high energy efficiency vehicles => *For new vehicles*
    - Regulation to use automobile efficiency label
    - Enforce minimum efficiency standard
    - Support production and sales of high energy efficiency vehicles
  - Use vehicles efficiently => *For current vehicles*
    - Support eco-driving
    - Idling stop

- Mode shift
  - *Travelling pattern mode shift* from private vehicles to mass transportation system
  - *Logistics mode shift* from road to rail or water way

- Travel demand management
  - Reduce number of journeys
  - Road-pricing or Congestion charging
Thailand’s national plans related to EV

Smart grid in Thailand

Provincial Electricity Authority (PEA) smart grid scheme

Source: Provincial Electricity Authority (PEA, Thailand). “Smart Grid [in Thai]”.
Development of low-carbon society in Thailand

Alternative Energy Development Plan (AEDP : 2012-2021)

Target on using Renewable Energy at 25% of Total Energy Consumption By 2021

New energy resources

- Tidal wave: 2 MW, 3 MW
- Geothermal: 1 MW
- Solar: 3,000 MW, 100 ktoe
- Wind: 1,800 MW

Solar & Wind

- Solar: 4,800 MW, 100 ktoe
- Wind: 3,000 MW

Hydro power

- Mini: 324 MW
- Micro: 324 MW

Bio-energy

- Biomass: 4,800 MW, 8,500 ktoe
- Bio-gas: 600 MW, 1,000 ktoe
- Napier grass: 3,000 MW
- MSW: 400 MW, 200 ktoe

Biofuels for Transport

- Ethanol: 9 ML/day
- Bio-diesel: 7.20 ML/day
- CBG: 1,200 ML/day
- new. Biofuels (BHD): 3 ML/day

Replacing Oil 9,463 ktoe

Source: Department of Alternative Energy Development and Efficiency (DEDE) updated 2013
Thailand’s national plans related to EV

Solar rooftop project by Ministry of Energy

Generate electricity (200 MW)

PLUG IN. CHARGE UP.

“EV” and “Solar rooftop” seems to be a perfect match.

Photo: http://cleantechnica.com/2013/03/23/you-could-win-a-smart-electric-car-rooftop-solar-pv-system/
The domestic production of HEVs commenced in 2009. However, PHEVs and BEVs are not yet widely known and only few demonstration project at related organisation. It is forecasted that HEV and PHEVs will probably be more popular than BEVs.

At present, almost 99% of motorcycles in Thailand are internal combustion engine. The electric bikes and motorcycles currently on sale in Thailand are equipped with lead-acid battery, which is are not widely popular among Thai customers due to lower performance compared to ICE motorcycles.

Currently the Thai government does not have any policy to support nationwide electric motorcycle or vehicle production and sale.
Thank You

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