Challenges in Today’s Automotive Industry

Today’s automotive industry is changing rapidly. There are a constantly new challenges in an increasingly dynamic environment. How will your organization respond?

- **Global platform proliferation** presents greater volume opportunity, but more models drive complexity
- Accelerated **lifecycle changes and launch activity**
- Increasing **regulatory pressures** on emissions and fuel economy
- Game-changing technologies in **autonomous driving and mobility options**
- OEMs looking to suppliers to drive ongoing **innovation**
- Suppliers face **capacity constraints** in mature markets, but **volume volatility** in emerging regions
Global presence with regional expertise

Through key strategic hubs, LMC Automotive coordinates is analysts and sales staff who operate throughout the world.
Alliances and Partners

Specialist partners across a broad spectrum of automotive disciplines enables us to provide an unrivalled scope and depth of analysis.
A broad portfolio of offerings

Our product portfolio offers comprehensive coverage across the industry and global markets, but with the flexibility to suit your needs.

More than 30 Global and Regional Services

- Production, Sales and Powertrain forecasts for all Passenger Cars, as well as Light and Heavy Commercial Vehicles

Four Global Automotive Conferences

- October – Automotive Industry Conference – Michigan, USA
- October – Asia Pacific Outlook Conference – China, Japan
- November – Global Industry Truck Seminar – London, UK

Nine Global Client Webinars. Free registration - > www.lmc-auto.com
Outline

• Light vehicle production - Current situation
• ASEAN 5 Production outlook
• Key Challenges:
  • ASEAN production
  • Thailand
  • Impact of BREXIT
• Our view on EVs
ASEAN 5 production outlook

Source: LMC Automotive

CAGR = 3.7%
ASEAN Production by country

Vietnam
- 2015: 0.14 mn (+40%)
- 2016: 0.16 mn (+15%)

Thailand
- 2015: 1.89 mn (+1%)
- 2016: 1.95 mn (+3%)

Malaysia
- 2015: 0.61 mn (+4%)
- 2016: 0.53 mn (-5%)

Philippines
- 2015: 0.09 mn (+8%)
- 2016: 0.09 mn (0%)

Indonesia
- 2015: 1.06 mn (-13%)
- 2016: 1.09 mn (+2%)

ASEAN
- 2015: 3.80 mn (-2% YoY)
- 2016: 3.82 mn (+1% YoY)

Remark: Thailand and Indonesia production are around 80% of regional production.
Thai production outlook

- **Inflated demand from 1st car tax rebates**
  - 2014: -22%
  - Lower domestic demand after end of 1st car rebate
  - Flooding in Q4 2011 impacted production

- **2015: +1%**
  - Driven by pull-ahead demand in Q4 2015
  - Pickup and Eco-car exports

- **2016: +3%**
  - Weak domestic sales from price hikes & low rural income
  - Pickup, Eco-car and new model exports

- **2017: +1%**
  - Sales to start recovering from 1st car rebate impact

**Medium- and long-term**
- Production of Eco car Phase 2 must start within 2019
- Buyer from 1st car scheme can re-sale car and repurchase in 2017 – 2018
- General election in 2017 will help lift local demand ??

Source: LMC Automotive
Export offset weak domestic market

- Export is the main growth driver; Pickup, Eco-car and new models
- Weak global economy; China slow down and Middle East in particular
- **Super Cluster policy aims to enhance industry R&D and technologies**

Source: LMC Automotive
Automotive: Top Thailand’s export sector...

2014 Thailand Exports by Sector
USD 227,523 mn
- Other Manufacturing, 34%
- Electronics and Electrical Appliances, 20%
- Metal and Steel, 4%
- Agriculture, 8%
- Food and Beverage, 8%
- Others, 4%

2014 Automotive Sector Exports
USD 31,623 mn
- Vehicle parts & accessories, 41%
- CV, 33%
- PV, 21%
- Motorcycle, 4%
- Other vehicles, 1%

Source: Bank of Thailand
2015 Thailand Exports by Sector

USD 214,375 mn

- Other Manufacturing, 32%
- Metal and Steel, 4%
- Agriculture, 7%
- Food and Beverage, 8%
- Machinery and Equipment, 9%
- Electronics and Electrical Appliances, 21%
- Others, 4%

Source: Bank of Thailand

2015 Automotive Sector Exports

USD 32,423 mn

- Vehicle parts & accessories, 40%
- Other vehicles, 2%
- Motorcycle, 3%
- CV, 25%
- PV, 30%

Automotive, 15%

Source: Bank of Thailand
Pickup weakening, PV gaining

Eco car gaining in 2015, SUV 2016

2014 Automotive Sector Exports
USD 31,623 mn

- Vehicle parts & accessories, 41%
- PV, 21%
- CV, 33%
- Other vehicles, n.i.e., 1%
- Motorcycle, 4%

2015 Automotive Sector Exports
USD 32,423 mn

- Vehicle parts & accessories, 40%
- PV, 30%
- CV, 25%
- Other vehicles, n.i.e., 2%
- Motorcycle, 3%

Source: Bank of Thailand
Indonesia Production outlook

2015: -13%
- Sluggish domestic demand
- Cut fuel subsidy in Q4 2014
- Slow economic growth
- Low commodity prices
- Depreciating currency
- Rise unemployment rate

2016: +2%
- Domestic sales rebounding
- Series of economic stimulus

2017: +7%
- Positive sales outlook
- New Mitsubishi plant start production

Medium- and long- term
- Mitsubishi & Toyota to invest and expand exports
- Largest population in ASEAN (4th in world)
- Economic stimulus will boost investment in medium- and long- term.

Source: LMC Automotive
Indonesia production: Expanding capacity

- Production relies on domestic demand.
- **LCGC models create new demand**
- Reducing taxes for sedans aim to boost demand and production for export (still at proposal stage)
- New Mitsubishi plant will start production in 2017
- Toyota plans new investment; to be online in 2020

Source: LMC Automotive
Malaysia production outlook: Flexible policy

2015: +4%
- Pull-ahead demand in Q1 2015 (pre-GST) and Q4 2015 (prices hike) increase both sales and production
- Q1 2015 +7% YoY
- Q4 2015 +6% YoY

2016: -12%
- Weak sales due to pull ahead demand
- Depreciated currency lead to price hike in Jan
2017: +4%
- Domestic sales expected to rebound ahead of general elections in 2018
- Consumers expected to get used to GST

Medium- and long-term
- Vehicle density in Malaysia highest in ASEAN 5
- Toyota to add 2nd plant in Malaysia
- Customized EEV program and incentives
- One of TPP members with future access to North America at lower cost while Thailand and Indonesia are not TPP members

Source: LMC Automotive
Vietnam production outlook: Tax policy changes

**2015: +40%**
- Strong economic growth & FDI inflow
- Higher light vehicle demand
- The overloaded vehicle policy and booming construction sector lifted CV production by 59% YoY
- PV increased by 34%

**2016: +15% / 2017: -3%**
- Sales expected to increase
- New import tax calculation in Jan 2016 aimed to protect local production increase CBU prices

**Medium- and long- term**
- New special consumption tax recently approved to reduce prices of vehicles with small engines
  - > 1st Phase in Jul 2016
  - > 2nd Phase in Jan 2018
- In 2018, import tariff under AEC to be removed but new import tariff calculation to be in place to protect local production

Source: LMC Automotive
Philippine production outlook: CARS program

2015: +8%
• Booming service sector (labor-intensive industry) and strong remittance inflow drove LV demand.
• Increased sales in 2015 (+19%) were supported by imports
• Toyota and Mitsubishi contributed to c.70% of production

2016: -1%
• Increased imports. Trade agreements with Korea lower prices of imported Hyundai and Kia vehicles

2017: +22%
• Mitsubishi to start production under CARS program

Medium- and long-term
• According to CARS program, Mitsubishi to start production of Mirage and Mirage G4 (Attrage) in 2017 replacing imports from Thailand.
• New generation Toyota Vios to participate in CARS with prices expected to below and production higher
• New (rather radical) President could increase political uncertainties

Source: LMC Automotive
## Key factors: ASEAN production

<table>
<thead>
<tr>
<th>Country</th>
<th>Detail</th>
</tr>
</thead>
</table>
| Thailand  | • Eco-car program phase 2 faces challenges from policy of neighboring countries  
• Government policies aims to increase automotive R&D and technologies e.g. super cluster policy and proving ground project |
| Indonesia | • LCGC program likely to limit to domestic market with limited export  
• Proposal to revise luxury tax for Sedans (30% - 70% vs. 10% for MPV/SUV/Hatchback)  
• Mitsubishi and Toyota to expand plant capacity aimed at boosting export rather than domestic demand |
| Malaysia  | • Government focuses on EV and Hybrid technology.  
• The Energy Efficient Vehicles (EEV) program is flexible and can be customized based on automaker’s proposal. Perodua Axia, Honda Jazz, Mercedes-Benz S400L Hybrid and E300 BlueTec Hybrid get (varying) incentives under this program  
• One of TPP members |
| Vietnam   | • New import calculation effective Jan 2016 have increased CBU prices  
• New special consumption tax will reduce prices of vehicles with small engines making entry models more affordable to first-time buyers |
| Philippines | • Only Toyota Vios, Mitsubishi Mirage and Mirage G4 (Attrage) participate in the Comprehensive Automotive Resurgence Strategy (CARS).  
• Vios is locally-produced model while Mitsubishi models will start production in 2017 instead of being imported from Thailand  
• Production of both OEMs likely to serve domestic demand with limited or no export |
<table>
<thead>
<tr>
<th>Country</th>
<th>Details</th>
</tr>
</thead>
</table>
| Thailand  | - Eco-car program phase 2 faces challenges from policy of neighboring countries  
  - Minimum production volume requirements  
  - Export plans a must for success  
  - Volume target plans in conflict with model lifecycle  
  - Required investment in engine parts                                                                |
| Indonesia | - Tax policy favorable for MPV/SUV/Hatchback (against high tax for Sedan)  
  - LCGC program mainly serves the domestic market with limited export  
  - 80% local content now and 100% in 2019  
  - Gasoline engine ≤ 1200 cc / Diesel engine ≤ 1500 cc  
  - Price less than IDR 100 mn which is low; not many export destinations |
| Malaysia  | - The Energy Efficient Vehicles (EEV) program is flexible and can be customized based on automaker’s proposal  
  - Automaker can negotiate with government  
  - The set of CO2 and Fuel consumption depend on the engine size  
  - High trade barrier of import CBU Hybrid and EVs vehicle  
  - Develop what automaker have |
Thailand: Key challenges

- Maturing domestic market with relatively high vehicle density
- Rising labour costs and lack of skilled labour
- Post-eco car: what’s next?
  - Good in terms of volume but value and technology?
- Auto sector is a key industry for all countries in ASEAN. They are competing rather than cooperating.
- Not a TPP member meaning less access to North America
- Japan: future policy direction focusing on fuel cell as an energy source including for the auto sector. Implication for industry development in Thailand?
<table>
<thead>
<tr>
<th>Advantages</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Geographic advantage</td>
<td>• Competing policy of neighboring countries</td>
</tr>
<tr>
<td>• Strong supplier base</td>
<td>• Demographics: Declining working-age population</td>
</tr>
<tr>
<td>• Long industry experience/expertise</td>
<td>• Critical for sector (and Thailand) to move up value &amp; technology chain</td>
</tr>
<tr>
<td>• Larger production scale (could be</td>
<td>• Indonesia: Large population and low vehicle density</td>
</tr>
<tr>
<td>under threat)</td>
<td>o Emerging destination for new investments</td>
</tr>
<tr>
<td>• Good infrastructure</td>
<td>o Increasing SUV export (following purchasing trend)</td>
</tr>
</tbody>
</table>

Thailand competitiveness vs. other ASEAN

Emerging destination for new investments

Increasing SUV export (following purchasing trend)
Overview

• The United Kingdom’s European Union membership referendum has resulted in a vote to leave the EU, with 52% of the voting for “BREXIT”

• A two-year negotiation period between the UK and the European Council (EC) after the Article 50 is triggered; WTO norms with tariffs applied from two years

• UK possibly facing a recession / Impact on non-UK Europe unclear at this point though impact likely to be much less compared to that on the UK

LV Production

• Impact on vehicle production in the UK could be substantial

• UK exports almost 80% of car production, over half of which go to the EU

• Almost half of all components used in UK-built new cars are imported from the EU

• UK uses EU supply base for capital goods, finished components and skilled labour

LV Sales

• UK imports almost 90% of its new LVs of which 80% are from the EU (excluding UK)

Electric vehicles

Government subsidies are needed to motivate automakers (development) and consumers (purchase)

Japan

<table>
<thead>
<tr>
<th>MAKER</th>
<th>MODEL</th>
<th>Subsidy Yen</th>
<th>Original Price Yen</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honda</td>
<td>Fit EV</td>
<td>850,000</td>
<td>3,809,524</td>
<td>22%</td>
</tr>
<tr>
<td>Nissan</td>
<td>e-NV200</td>
<td>850,000</td>
<td>3,776,000</td>
<td>23%</td>
</tr>
<tr>
<td>Tesla</td>
<td>S model</td>
<td>850,000</td>
<td>8,064,815</td>
<td>11%</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>i-MiEV</td>
<td>710,000</td>
<td>2,628,000</td>
<td>27%</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>Minicab-MiEV</td>
<td>530,000</td>
<td>2,269,000</td>
<td>23%</td>
</tr>
<tr>
<td>BMW</td>
<td>i3</td>
<td>400,000</td>
<td>4,620,370</td>
<td>9%</td>
</tr>
<tr>
<td>Mercedes</td>
<td>Smart for two</td>
<td>350,000</td>
<td>2,824,074</td>
<td>12%</td>
</tr>
<tr>
<td>Nissan</td>
<td>Leaf</td>
<td>270,000</td>
<td>2,466,000</td>
<td>11%</td>
</tr>
<tr>
<td>BMW</td>
<td>i8</td>
<td>850,000</td>
<td>18,203,704</td>
<td>5%</td>
</tr>
<tr>
<td>Mercedes</td>
<td>S550 Plug-in</td>
<td>850,000</td>
<td>15,018,519</td>
<td>6%</td>
</tr>
<tr>
<td>BMW</td>
<td>i3 Plug-in</td>
<td>750,000</td>
<td>5,055,556</td>
<td>15%</td>
</tr>
<tr>
<td>Honda</td>
<td>Accord Plug-in</td>
<td>410,000</td>
<td>4,761,905</td>
<td>9%</td>
</tr>
<tr>
<td>Mitsubishi</td>
<td>Outlander PHEV</td>
<td>290,000</td>
<td>3,399,000</td>
<td>9%</td>
</tr>
<tr>
<td>Toyota</td>
<td>Prius PHV</td>
<td>250,000</td>
<td>2,857,143</td>
<td>9%</td>
</tr>
</tbody>
</table>
China

- Quotas for new car plates in Beijing was reduced to 150k in 2014-2017 from 240k in 2011-2013.
- Quotas for new car plates in Beijing:
  - 2016: 90k for normal cars vs. 60k for EVs.
  - 2015: 120k for normal cars vs. 30k for EVs.
Electric vehicles

• Fuel and energy policy: Bio-Diesel / Gasohol / CNG / EVs
• Waste and Recycle management
• Policy of neighboring country: Malaysia’s EEV

“Previous NAP’s tax breaks for CBU hybrid cars have ended resulting price increases of imported hybrid cars”

“BAIC to begin EV production in Malaysia in September 2016”

“The locally-produce S400L Hybrid and E300 BlueTec Hybrid are exempted from import duty and excise tax as they qualify for the EEV”
Electric vehicles

Lack of suppliers for some crucial parts for EVs such as lithium battery, invertor and convertor.

### EV sales in Thailand and ASEAN

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>HYBRID/EV TYPE</th>
<th>2014</th>
<th>2015</th>
<th>2016F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>FHEV</td>
<td>251</td>
<td>137</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>MHEV</td>
<td>119</td>
<td>136</td>
<td>45</td>
</tr>
<tr>
<td>Indonesia Total</td>
<td></td>
<td>370</td>
<td>273</td>
<td>196</td>
</tr>
<tr>
<td>Malaysia</td>
<td>BEV</td>
<td>0</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>FHEV</td>
<td>3,794</td>
<td>2,294</td>
<td>1,414</td>
</tr>
<tr>
<td></td>
<td>MHEV</td>
<td>5,369</td>
<td>3,385</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>PHEV</td>
<td>0</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Malaysia Total</td>
<td></td>
<td>9,163</td>
<td>5,688</td>
<td>2,968</td>
</tr>
<tr>
<td>Thailand</td>
<td>FHEV</td>
<td>4,756</td>
<td>4,482</td>
<td>4,116</td>
</tr>
<tr>
<td></td>
<td>MHEV</td>
<td>2,036</td>
<td>585</td>
<td>978</td>
</tr>
<tr>
<td></td>
<td>PHEV</td>
<td>0</td>
<td>0</td>
<td>54</td>
</tr>
<tr>
<td>Thailand Total</td>
<td></td>
<td>6,792</td>
<td>5,067</td>
<td>5,148</td>
</tr>
</tbody>
</table>
Thank You