THE LOGISTICS AND SUPPLY CHAIN

5 NOVEMBER 2018

BY MR. CHALAT WONGSANGUAN
In 2017, Thailand logistics costs was approx. 2.02 trillion baht, 5.1% growth. %Logistics costs have decreased but still be high.

Thailand % Logistics Costs on GDP

% Logistics Cost to GDP, Y2016

- World (avg.) 10.9%
- Europe 9.5%
- United State 7.5%
- Asia Pacific 12.7%
- Singapore 7.4%
- Malaysia 13.6%
- Thailand 13.9%
- Vietnam 21.0%
- Indonesia 25.2%

Source: Office of the National Economic and Social Development Board (NESDB); Armstrong & Associates; https://www.atkearney.com/transportation-travel/article/2017-state-of-logistics-report-article
81% of domestic cargo freight is road mode which costs relatively high compared to water and rail mode.

<table>
<thead>
<tr>
<th>Thailand’s infrastructure</th>
<th>Cargo Traffic (‘000 tons)</th>
<th>Transport cost, avg.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Road</strong></td>
<td>Domestic</td>
<td>Import/Export</td>
</tr>
<tr>
<td>National Highway</td>
<td>486,743</td>
<td>32,293</td>
</tr>
<tr>
<td>Motorway &amp; Expressway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural &amp; Local road</td>
<td></td>
<td></td>
</tr>
<tr>
<td>99,774 km.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225 km.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>357,223 km.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Deep Sea</td>
<td>101,221</td>
<td></td>
</tr>
<tr>
<td>Ports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Containers</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Waterways</td>
<td>10M TEUs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,999 km.</td>
<td></td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter-city</td>
<td>11,970</td>
<td></td>
</tr>
<tr>
<td>In Bangkok and vicinities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5,652 km.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>123 km.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Air</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airports</td>
<td>122</td>
<td>736</td>
</tr>
<tr>
<td>- Aircrafts (2014)</td>
<td></td>
<td>excl. 3 of postal &amp; courier</td>
</tr>
<tr>
<td>- Scheduled airlines (2014)</td>
<td>624,169</td>
<td></td>
</tr>
<tr>
<td>- Scheduled inter’l routes</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td></td>
<td>266</td>
<td></td>
</tr>
</tbody>
</table>

Remark: Data as of 2016 except data of Aircrafts, Scheduled airlines, and Average Transport Cost

Source: Ministry of Transport; Office of the National Economic and Social Development Board (NESDB)
To lower logistics cost, more of rail and water mode should be utilized

<table>
<thead>
<tr>
<th>% Logistics Cost to GDP</th>
<th>Portion of Inland Freight by Mode, Y2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5% Europe</td>
<td>Road, 76% Water, 6% Rail, 17%</td>
</tr>
<tr>
<td>7.5% United State</td>
<td>Road, 66% Water, 3% Rail, 9%</td>
</tr>
<tr>
<td>13.9% Thailand</td>
<td>Road, 81% Water, 17% Rail, 2%</td>
</tr>
</tbody>
</table>

MORE USE OF RAIL FREIGHT WOULD BE POSSIBLE ACCORDING TO RAILWAY DEVELOPMENT PLAN

Railway track development plan

**Single track**

**Double track**

*Source: Office of Transport and Traffic Policy and Planning*

**Immediate Phase**

<table>
<thead>
<tr>
<th>Route</th>
<th>Completion date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chachoengsao - Kaeng Khoi, Saraburi</td>
<td>Feb 2019</td>
</tr>
<tr>
<td>Jira, Korat - Khon Khan</td>
<td>Feb 2019</td>
</tr>
<tr>
<td>Hua Hin – Prachuap</td>
<td>Jul 2020</td>
</tr>
<tr>
<td>Nakhon Patom - Hua Hin</td>
<td>Jan 2021</td>
</tr>
<tr>
<td>Prachuap - Chumphong</td>
<td>Jan 2021</td>
</tr>
<tr>
<td>Lopburi-Paknampho Nakon Sawan</td>
<td>Apr 2022</td>
</tr>
<tr>
<td>Map Kabao, Saraburi - Jira, Korat</td>
<td>May 2023</td>
</tr>
</tbody>
</table>

*Immediate Phase 7 Sections*

*Double track Phase II*

*New track*
RAIL MODE WOULD BE AN ALTERNATIVE MODE LINKING THAILAND TO CLMV AND CHINA

Planned Completion Year

2018

Mandalay
Yangon
Ruili
Dali
Kunming
Hekou
Hanoi
Danang
Ho Chi Minh City

Missing link

2022

Mandalay
Ruili
Dali
Kunming
Mohan
Luang Phrabang
Vientiane
Phnom Penh
Hanoi
Danang
Nong Khai
Bangkok
Ho Chi Minh City
Yangon

Missing link

Western Route
Eastern Route
Central Route

Kuala Lumpur

SCG LOGISTICS

Missing link
IN VIEW OF LOGISTICS BUSINESS, POSTAL & COURIER SEGMENT HAS GROWN THE MOST. THE GROWTH DRIVER IS E-COMMERCE.

<table>
<thead>
<tr>
<th>Logistics Business</th>
<th>2016 %Growth</th>
<th>2017 %Growth</th>
<th>2018e %Growth</th>
<th>Value (MB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road transport</td>
<td>3.5%</td>
<td>6.2%</td>
<td>5.3% - 7.0%</td>
<td>145,100 – 147,300</td>
</tr>
<tr>
<td>Warehouse</td>
<td>3.7%</td>
<td>6.2%</td>
<td>5.3% - 7.0%</td>
<td>75,500 – 76,700</td>
</tr>
<tr>
<td>Freight forwarder</td>
<td>-3.2%</td>
<td>1.6%</td>
<td>0.5% - 2.1%</td>
<td>58,000 – 59,900</td>
</tr>
<tr>
<td>Postal &amp; Courier</td>
<td>5.2%</td>
<td>8.7%</td>
<td>9.6% - 11.3%</td>
<td>30,800 – 31,300</td>
</tr>
</tbody>
</table>

**VALUE OF THAILAND’S E-COMMERCE**

<table>
<thead>
<tr>
<th>Growth rate</th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit: trillion baht</td>
<td>+10.41%</td>
<td>+14.03%</td>
<td>+9.86%</td>
</tr>
<tr>
<td></td>
<td>2.03</td>
<td>2.25</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>2.81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: K SME Analysis; https://www.bangkokpost.com/tech/local-news/1332643/e-commerce-value-gauged-at-b2-8tn
In 2016, Thailand's B2C market became the largest in ASEAN.

**VALUE OF ASEAN E-COMMERCE IN 2016 (B2C)**

1. **THAILAND**
   - B2C e-commerce: $19.6 billion
   - Population (million): 68.4
2. **MALAYSIA**
   - B2C e-commerce: $17.5 billion
   - Population (million): 30.2
3. **VIETNAM**
   - B2C e-commerce: $5.6 billion
   - Population (million): 90.7
4. **INDONESIA**
   - B2C e-commerce: $5.3 billion
   - Population (million): 255
5. **SINGAPORE**
   - B2C e-commerce: $4.1 billion
   - Population (million): 5.5
6. **PHILIPPINES**
   - B2C e-commerce: $0.5 billion
   - Population (million): 100

Source: Electronic Transactions Development Agency
In B2C e-commerce, high growth in retails, foods, & cosmetics shopping; e-retails still has more room to grow.

<table>
<thead>
<tr>
<th>Year</th>
<th>2557</th>
<th>2558</th>
<th>2559</th>
<th>2560</th>
</tr>
</thead>
<tbody>
<tr>
<td>14,167.53</td>
<td>157,354.38</td>
<td>237,482.88</td>
<td>318,431.76</td>
<td></td>
</tr>
<tr>
<td>43,619.19</td>
<td>54,523.19</td>
<td>72,917.85</td>
<td>80,922.51</td>
<td></td>
</tr>
<tr>
<td>61,632.50</td>
<td>118,921.47</td>
<td>177,690.46</td>
<td>167,476.48</td>
<td></td>
</tr>
</tbody>
</table>

**Sources:**
- ETDA

**Values:**
- Million Baht

**Key Figures:**
- E-Retail is 1% of the total Retail in Thailand.
- E-Retail is 8.1% of the total Retail in the United States.
- E-Retail is 14.9% of the total Retail in China.
E-COMMERCE CHANGES THE WAY WE DO LOGISTICS
TOUGHER JOB TO MEET CONSUMER EXPECTATION, BUT COMPETITION IS MUCH TOUGHER

PARCEL DELIVERY IN Y2017

25.5 BILLION BAHT

482.3 MILLION PARCELS

Source: DHL; ไปรษณีย์ไทย

2559

2563

แบบทั่วไป

มากกว่า 99%

แบบทั่วไป

มากกว่า 99%

Same Day

น้อยกว่า 1%

Same Day

22%

Instant Delivery

on Demand

3%

Marketeer

ที่มา: DHL, 2561

Source: DHL; ไปรษณีย์ไทย
FULFILLMENT EMERGES TO FACILITATE ONLINE SELLERS

1. Your products are purchased or manufactured and shipped to your 3PL warehouse.
2. Your store’s inventory is synced with the inventory at your fulfillment partner.
3. Your customer places and pays for an order.
4. Your fulfillment partner pick, packs, and ships the order to your customer.
E-COMMERCE DRIVES FOOD DELIVERY, ALSO COLD CHAIN LOGISTICS, TO PROSPER

ONLINE FOOD DELIVERY IN Y2017

2.6 BILLION BAHT

65% GROWTH

THE EXPRESS LOGISTICS MARKET IS EXPECTED TO DRIVE THE COLD CHAIN LOGISTICS MARKET OWING TO THE SHIPMENTS CONSISTING OF PERISHABLE ITEMS

Thailand Cold Chain Market Forecast to 2022 - By Type (Cold Storage and Cold Transport), By 3PL, By Temperature Range, By Region, By International and Domestic Cold Transport and By Modes of Transport (Ground, Air and Sea)“
COLD CHAIN LOGISTICS IS NEEDED IN ORDER TO KEEP THE PRODUCTS FRESH AND MAINTAIN THEIR QUALITY

- 30% – 35% of fresh vegetable and fruits waste during transportation
- Temperature controlled logistics costs approximately 3% more than normal one
- Cold chain industry has been driving by export of frozen food and processed meat industry. The growth in pharmaceutical industry would drive the cold chain to grow more.
- Cold chain logistics is estimated to reach 295 billion baht in Y2022, 4% – 6% CAGR growth

Source: คณะกรรมการพัฒนาระบบโลจิสติกส์ ; Japan Institute of Logistics System (JILS) ; Thailand Cold Chain Market Forecast to 2022 - By Type (Cold Storage and Cold Transport), By 3PL, By Temperature Range, By Region, By International and Domestic Cold Transport and By Modes of Transport (Ground, Air and Sea)”, Ken Research
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