The growth and challenges of the oleochemicals industry in South East Asia (SEA)

By S.C. Cheah
IOI Oleochemical Industries
Presented at the ICIS 6th World Oleochemicals Conference 2007, Sheraton Hotel, Brussels, Belgium. October 24, 2007

PRESENTATION OVERVIEW

1. Development of Oleochemicals Industry
2. Current Oleochemicals producers in SEA
   - Malaysia
   - Indonesia
   - Philippines
   - Thailand
3. Expansion in India & China
4. Challenges' faced by SEA’s Oleochemicals Industry
Development of Oleochemicals Industry

- **18th century:**
  - Initial used for consumer and candle products
- **70s:**
  - 1st petroleum crisis
  - Oleochemicals started to replace petrochemical
- **80s:**
  - Global population expanded
  - 1st company in the world to produce Oleochemicals using PO/PKO- ACIDCHEM INTERNATIONAL, Malaysia.
  - Increasing demand on vegetable based material
  - ‘Green Drive’

Development of Oleochemicals Industry-Cont’

- **90s:**
  - Supply of tallow and coconut oil unable to keep up the increasing demand
Development of Oleochemicals Industry—Cont’

- 90s:
  - supply of tallow and coconut oil unable to keep up the increasing demand
  - Palm oil (PO) & Palm Kernal Oil (PKO) has been identified as a sustainable supply of feedstock to the oleochemicals.

World Production of PKO & CNO (1980-2006)

Reference: Statistics from IOI Corp. (2007)
World Production of PO & Tallow (1980-2006)

MT('000)

Year

PO & PKO annual growth up to 9% annually.

SEA - the largest OC producing region

>80% PO & PKO produced from Malaysia, Indonesia & Philippines
Fatty Acid & Alcohol Producers in SEA

<table>
<thead>
<tr>
<th>Country</th>
<th>Fatty Acid</th>
<th>Fatty Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>800,751 MT</td>
<td>414,249 MT</td>
</tr>
<tr>
<td>Indonesia</td>
<td>70,000 MT</td>
<td>80,000 MT</td>
</tr>
<tr>
<td>Philippines</td>
<td>120,000 MT</td>
<td>115,000 MT</td>
</tr>
<tr>
<td>Thailand</td>
<td>2,160,000 MT</td>
<td>471,000 MT</td>
</tr>
<tr>
<td>Singapore</td>
<td>80,000 MT</td>
<td>80,000 MT</td>
</tr>
<tr>
<td>Indonesia</td>
<td>140,000 MT</td>
<td>140,000 MT</td>
</tr>
<tr>
<td>Philippines</td>
<td>390,000 MT</td>
<td>720,000 MT</td>
</tr>
<tr>
<td>Thailand</td>
<td>390,000 MT</td>
<td>400,000 MT</td>
</tr>
<tr>
<td>Singapore</td>
<td>10,000 MT</td>
<td>110,000 MT</td>
</tr>
<tr>
<td>Indonesia</td>
<td>80,000 MT</td>
<td>92,000 MT</td>
</tr>
<tr>
<td>Philippines</td>
<td>110,000 MT</td>
<td>179,000 MT</td>
</tr>
<tr>
<td>Thailand</td>
<td>50,751 MT</td>
<td>92,000 MT</td>
</tr>
<tr>
<td>Singapore</td>
<td>100,000 MT</td>
<td>110,000 MT</td>
</tr>
<tr>
<td>Indonesia</td>
<td>120,000 MT</td>
<td>100,000 MT</td>
</tr>
<tr>
<td>Philippines</td>
<td>100,000 MT</td>
<td>110,000 MT</td>
</tr>
<tr>
<td>Thailand</td>
<td>100,000 MT</td>
<td>100,000 MT</td>
</tr>
<tr>
<td>Singapore</td>
<td>73,302 MT</td>
<td>36,487 MT</td>
</tr>
</tbody>
</table>


Development of Oleochemicals Industry-Cont’

- **90s:**
  - Supply of tallow and coconut oil unable to keep up the oleochemicals demand.
  - Palm oil (PO) & Palm Kernel Oil (PKO) has been identified as a sustainable supply of feedstock to the oleochemicals.
  - PO & PKO annual growth up to 9% annually.

- **21st Century:**
  - SEA - the largest OC producing region.
  - >80% PO & PKO produced from Malaysia, Indonesia & Philippines.

- **21st Century:**
  - Economic growth in Asia eg. China & India will push for further development of Oleochemicals industry.
Fatty Acid & Alcohol Producers
(China & India)

- **FATTY ACID** = 2,333,520 MT
- **FATTY ALCOHOL** = 777,000 MT

Kerry
150,000 MT/yr

Taiko
157,000 MT/yr

Rugao Shuangma Chem
200,000 MT/yr

Boxing Huarun oleo
50,000 MT/yr

Yihai Sasol Oleochemicals Co. Ltd.
60,000 MT/yr

Shanghai Soap Grp. Rugao
80,000 MT/yr

Kwantas
100,000 MT/yr

China Resource
110,000 MT/yr

Feixiang Chem (Zhangjiagang)
60,000 MT/yr

Boxing Huarun oleo
80,000 MT/yr

Luzhou Natural Gas
15,000 MT/yr

Zhejiang Fenghuang Chemical
20,000 MT/yr

Wuxi Tongtai Chemicals
20,000 MT/yr

Dalian Sifang United Chemicals Co.
20,000 MT/yr

Sangqiu Longning Chemicals
40,000 MT/yr

Dong Ma
75,000 MT/yr

Others
484,520 MT/yr


Outlook on SEA’s Oleochemicals Industry

- **Strong expansion of Palm Oil production**
- **Plantation Companies to Invest Profits in Oleochemicals**
Challenges faced by SEA’s Oleochemical Industry

- Development of biodiesel industry

Biodiesel Producers in SEA

- Global Bio-Diesel
- Biodiesel LD SdnBhd
- Zuriex Corp
- Himuran Sari
- ECO Seabana Co. Ltd
- DSM Biofuels Sdn Bhd
- QL Bioenergy Sdn. Bhd
- Success Nexc
- Carotech
- VPU Palm Int
- Zelmac Resources
- PGE3 Edible Ole
- Golden Hope
- Kulim (M) Bhd
- Mal Bumi Sdn Bhd
- GS Palm Sdn Bhd

Biodiesel Producers (India & China)

- **Bioflux Biofuel**: 300,000 MT/yr
- **Huacheng Biofuel**: 400,000 MT/yr
- **Sunshine Tech Group**: 500,000 MT/yr
- **Zhonghe Energy**: 500,000 MT/yr
- **Qingjiang Bioenergy Tech**: 750,000 MT/yr
- **Gushen Biodiesel**: 100,000 MT/yr
- **Huawu Group**: 100,000 MT/yr
- **CNOOC**: 100,000 MT/yr
- **Guofeng Group, Zhonglian Co.**: 200,000 MT/yr
- **Biolux International (Austria)**: 250,000 MT/yr
- **Zhuoyue New Energy**: 50,000 MT/yr
- **Fujing Oils Group HK Fuel (Asia) Grp**: 100,000 MT/yr
- **Yuanhua Energy Tech**: 30,000 MT/yr
- **Tianguan Group**: 30,000 MT/yr
- **Zhenghe (Hainan) Bioenergy**: 10,000 MT/yr
- **Groundnut Research**: 10,000 MT/yr
- **Jintongfu Biodiesel**: 10,000 MT/yr
- **Zhonghe (Hainan) Bioenergy**: 10,000 MT/yr
- **Southern Online Biotech**: 900,000 MT/yr
- **Bioflux Biofuel**: 300,000 MT/yr
- **Biofake International (Australia)**: 250,000 MT/yr


Challenges faced by SEA’s Oleochemical Industry

- Development of biodiesel industry
- Over expansion resulting in over capacity
Challenges faced by SEA’s Oleochemical Industry

- Development of biodiesel industry
- Over expansion resulting in over capacity
- Oversupplied of glycerine/glycerol in the market

World Supply & Demand of Fatty Acid (2005-2009 est.)

[Bar chart showing supply and demand for fatty acid from 2005 to 2009, with demand and supply values indicated for each year.]
World Supply & Demand of Fatty Alcohol (2005-2009 est.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Supply MT</th>
<th>Demand MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>2007</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>2009</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Oleochemicals Production in SEA

<table>
<thead>
<tr>
<th>SEA</th>
<th>Biodiesel MT</th>
<th>Fatty Acid MT</th>
<th>Glycerine MT</th>
<th>Alcohol MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>4,145,000</td>
<td>2,160,000</td>
<td>264,280</td>
<td>471,000</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1,478,000</td>
<td>800,751</td>
<td>99,140</td>
<td>441,249</td>
</tr>
<tr>
<td>Philippines</td>
<td>279,520</td>
<td>73,302</td>
<td>31,018</td>
<td>166,487</td>
</tr>
<tr>
<td>Thailand</td>
<td>35</td>
<td>104,500</td>
<td>650</td>
<td>100,000</td>
</tr>
<tr>
<td>Singapore</td>
<td>866,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>6,768,555</td>
<td>3,138,553</td>
<td>395,088</td>
<td>1,151,736</td>
</tr>
</tbody>
</table>

Challenges faced by SEA’s Oleochemical Industry-Cont’

- Higher production cost
- Shortage of cargo space
- Increasing freight rate

- Scarce of Land Resource for future plantation development
Challenges faced by SEA’s Oleochemical Industry-Cont’

- Scarce of Land Resource for future plantation development
- REACH Legislation

THANK YOU.