PTT Public Company Limited
2018 Business Overview & Update

Corporate Strategy
PTT Public Company Limited

Tuesday 27th March 2018
Content

Thailand Oil & Gas Outlook

PTT Group Business Overview & Update

Collaboration with +3 Countries

Sources: Ministry of Energy (Thailand Energy Outlook 2016)
Oil Balance Thailand: Jan - Dec 2017
Adequate refining capacity maintains the stability of supply

Supply

Import (81%) 973 KBD
Indigenous (19%) 229 KBD

Production

Crude/Condensate 907 KBD
Indigenous (19%) Crude/Condensate 195 KBD
Crude Export 34 KBD

Refined Products 66 KBD

Sales

Domestic 934 KBD (**)
Refined Products 1113 KBD*
Refined Products 204 KBD

Export

238 KBD

Total Refining Capacity in Thailand: 1,232 KBD
PTT’s Associated Refineries: 770 KBD (TOP, PTTGC, IRPC)
Other Refineries: 462 KBD (ESSO, BCP, SPRC)

Source: PTIT

Remark:
(*) Refined product from refineries = 952 KBD, including domestic supply of LPG from GSPs and Petrochemical Plants = 105 KBD
(**) Not included Inventory
KBD = Thousand Barrels per day
Natural Gas Balance: Jan – Dec 2017
Main driver of the Thai economy

Supply
- Gulf of Thailand (69%)
  - PTTEP, 29%
  - Others, 71%
- Onshore (2%)
- Import (29%)
  - Myanmar 62%
  - LNG 38%

Production
- Bypass Gas 575 MMSCFD
- 6 GSPs Total Capacity 2,860 MMSCFD @ Actual Heat
- 98 MMSCFD
- Methane 1,673 MMSCFD

Sales
- Petrochemical Feedstock (14%)
- Industry Household Transportation (7%)
- Power (58%)
- Industry (15%)
- NGV (6%)

Remark: MMSCFD = Million Cubic Feet @ Heating Value 1,000 Btu/ft³
Content

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PTT Group Value Chain

Upward Integration (through subsidiaries)

E & P

PTTEP

Refineries

IRPC

Thaioil

ptt GLOBAL CHEMICAL

Coal

PTT Energy Resources

Natural Gas

~ 4,800MMSCFD

Trading

Trading Vol. ~ 1.1 MBOED

Oil

~ 1,530 Stations (41% mkt Share)

LNG

Petrochemicals

IRPC

Thaioil

ptt GLOBAL CHEMICAL

PTT Own Businesses (operated by PTT)

Natural Gas

~ 4,800MMSCFD

Trading Vol. ~ 1.1 MBOED

Downward Integration (through subsidiaries)

Petrochemicals

IRPC

Thaioil

ptt GLOBAL CHEMICAL

Power

GPSC

Coal

PTT Energy Resources

Natural Gas

~ 4,800MMSCFD

Trading Vol. ~ 1.1 MBOED

Oil

~ 1,530 Stations (41% mkt Share)

LNG

Petrochemicals
PTT Exploration and Production

Worldwide operations: 44 projects in 11 countries

Sources: PTTEP

PTTEP’s core production base
- 75% of total sales volume
- Key producing assets include Bongkot, Arthit, Contract 4 and 5

Australasia
- Oil producing project
  - 15KBD of oil sales from wholly-owned Montara project
  - Sizable undeveloped gas resource in Timor Sea

Southeast Asia
- Second heartland to PTTEP
  - 16% of total sales volume
  - Myanmar being most important with gas production mostly supplied into Thailand
  - Other producing assets in Vietnam (oil) and Indonesia (gas)

North & South America
- Opportunities in an early phase:
  - Oil Sand project in Alberta
  - Deepwater exploration in Brazil with prominent partners

Africa
- An area for growth, key projects include:
  - Producing: Algeria’s Bir Seba oil field has started up with current flow rate of approximately 15 KBPD
  - Pre-development and Appraisal: Mozambique LNG and Algeria’s Hassi Bir Rakaiz

Book Value of Assets*** (by region)
- Thailand 58.3%
- SE Asia 17.7%
- Africa 14.7%
- America 4.4%
- Australasia 4.9%

Total Assets USD 19 billion

*** Information as of 31 December 2016
Natural Gas Business

- Sole owner and operator of entire gas transmission pipelines in Thailand (~4,000 km), a regulated business
- Supply & marketing of natural gas

**Current Situation:**
- Current pipeline length: 4,073 km.
- Onshore 1,940 km
- Offshore 2,133 km

**Future expansion:**
- Pipeline network additional distance of approximately 710 km for:
  - Interconnection offshore
  - The expansion of 5th transmission pipeline from LNG Receiving Terminal to central region and RA-6 to western region
  - The construction plan of provincial pipeline to Nakhonrachasrima province

**Gas Separation Plant**
- PTT has 6 GSP with total capacity 2,740 MMscfd:
  - GSP #1: 400 MMscfd
  - GSP #2, 3: 800 MMscfd
  - GSP #4: 170 MMscfd
  - GSP #5: 570 MMscfd
  - GSP #6: 800 MMscfd

**Gas Transmission Pipeline**
- Sole owner and operator of entire gas transmission pipelines in Thailand (~4,000 km), a regulated business
- Supply & marketing of natural gas
LNG Receiving Terminal in Thailand

Map Ta Put is 194 km, Southeast from Bangkok

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<tr>
<th></th>
<th>1st Phase</th>
<th>2nd Phase</th>
<th>Total</th>
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<tbody>
<tr>
<td>Jetty (m³)</td>
<td>264,000 m³</td>
<td>264,000 m³</td>
<td>264,000 m³</td>
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<tr>
<td>(x 1)</td>
<td>(x 1)</td>
<td>(x 2)</td>
<td></td>
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<tr>
<td>LNG Tank (m³)</td>
<td>160,000 m³</td>
<td>160,000 m³</td>
<td>160,000 m³</td>
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<tr>
<td>(x 2)</td>
<td>(x 1)</td>
<td>(x 3)</td>
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</tr>
<tr>
<td>Regas Capacity</td>
<td>5 MTPA (700 MMSCFD)</td>
<td>5 MTPA (700 MMSCFD)</td>
<td>10 MTPA (1400 MMSCFD)</td>
</tr>
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**Downstream: Oil Business**
Investment both domestic and international

- **Import**
- **Refinery**
  - PTT’s Associated Refineries: 635 KBD (TOP, PTTGC, IRPC)
- **Retail**: 1530 Stations
- **Other Industrial / Commercial Use**

**Our International Footprint Has Been Growing Steadily**

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<tr>
<td>Stations</td>
<td>72</td>
<td>80</td>
<td>103</td>
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<td>Amazon</td>
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<td>Jiffy</td>
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- **Total branches 5-Yr CAGR**: 29.5%

**Strong Regional Footprint with Global Presence (as of 31 Dec 2016)**

- **International Operations**
  - **Myanmar**: 9
  - **Thailand**: 1,530
  - **Cambodia**: 28
  - **Japan**: 1
  - **Laos**: 32
  - **Philippines**: 112

- **36 countries**

[Map showing countries and stations]
Conclusion: Fully Integrated Oil & Gas Company

Integrated Oil & Gas Value Chain
Create more Value Added from Gas Sources
Thailand Oil and Gas Outlook

PTT Group Business Overview & Update

Collaboration with +3 Countries
Collaboration with +3 Countries: Japan

Ichinoseki Solar Power

Type of Business: Solar Power Plant
Capacity: 20.8 MW
Customer: Electric Power

1st Branch
- Open on 1st November 2016
- At Kawauchi Village, Fukushima Province
Collaboration with +3 Countries: China, Korea

Existing:
- PTT PM reps. office in Guangzhou.
- PTT Trading reps. Office in Shanghai.

Future plan:
- Expanding Café Amazon with potential investor
- Establish of Lubricant distribution center.

Existing:
- Consultant services.
- Engineering/contractor services

Future plan:
- LNG Regas terminal
- Cold utilization

- Collaboration on new technology i.e. EV, Battery, Energy storage system, Smart city
Thank You