Oil Balance Thailand: Jan – May 2021
Adequate refining capacity maintains the stability of country supply

Supply
Import (83%) 919 KBD
Indigenous (17%) 184 KBD

Production
Imported Refined Petroleum Products 41 KBD
Crude/Condensate 878 KBD
PTT’s Associated Refineries: 770 KBD (TOP, PTTGC, IRPC)
Other Refineries: 472 KBD (SPRC, ESSO, BCP)
Total Refining Capacity in Thailand: 1,242 KBD
Refined Products 1,000 KBD*
Refined Products 186 KBD
Crude Export 18 KBD
Domestic
853 KBD (**)
Export
203 KBD

Demand

Source: PTIT
Remark: (*)Refined product from refineries = 908 KBD, including domestic supply of LPG from GSPs and Petrochemical Plants = 92 KBD
(**) Included Inventory
KBD = Thousand Barrels per day
Natural Gas Balance: Jan – Jun 2021
Main driver of the Thai economy

Supply

- Gulf of Thailand (64%)
- Onshore (2%)
- Import (34%)
  - Myanmar, LNG (44%)

Production

- 2,981 MMSCFD
  - PTTEP, 40%
  - Others, 60%

Sales

- 958 MMSCFD (21%)
- 111 MMSCFD
- 1,569 MMSCFD
- 1,618 MMSCFD
- 2,981 MMSCFD

- Ethane/Propane/LPG/NGL
- Methane
- Bypass Gas
- Power (59%)
- Industry (17%)
- NGV (3%)

Remark: MMSCFD = Million Cubic Feet @ Heating Value 1,000 Btu/ft³
### PTT’s Strategic Importance to Thailand

**Market Cap : SET & PTT Group**

<table>
<thead>
<tr>
<th></th>
<th>SET market Cap:</th>
<th>PTT Group:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bt</td>
<td>17,502 bn</td>
<td>2,379bn</td>
</tr>
<tr>
<td>(USD 530 Bn)</td>
<td></td>
<td>(USD 72Bn)</td>
</tr>
</tbody>
</table>

**Robust revenue and net income growth since IPO (MMUSD)**

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>12,553</td>
<td>51,356</td>
</tr>
<tr>
<td>Net Income</td>
<td>702</td>
<td>1,200</td>
</tr>
</tbody>
</table>

CAGR 7% CAGR 3%

**Fully integrated & highly diversified over entire O&G value chain**

- International E&P business: 1,074 mmboe proved reserves or 7 years in 2020
- Sole operator & owner of gas transmission pipelines and Gas Separation Plants (GSPs) in Thailand
- Largest refinery group in Thailand: 3 of 6 refineries
- Largest petrochemical producer group in Thailand: total capacity of olefins, aromatics and styrenics production of more than 15 mtpa
- Leading oil marketing business in Thailand: 2,024 retail stations\(^1\) and ~42%\(^2\) of market share by sales volume
- International oil trading business having traded 37.2 bn liters\(^2\) (75.5 bn liters in 2020)
- Power Plant flagship with committed capacity of 7,102 MW\(^3\) (equity portion)

**Ministry of Finance holds majority stake in PTT**

<table>
<thead>
<tr>
<th></th>
<th>Public</th>
<th>Vayupak Fund</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai Ministry of Finance</td>
<td>51%</td>
<td>12%</td>
<td>86%</td>
</tr>
</tbody>
</table>

**PTT ratings at Thai sovereign level**

- Moody’s: FC Baa1, PTT – FC Baa1, PTT – LC Baa1
- Standard & Poor’s: BBB+, BBB+, BBB+
- FitchRatings: BBB+, BBB+, BBB+

**International and local recognition**

- Platts Top 250 Global Energy Company: 23rd in 2020
- 140th Fortune Global 500 in 2020
- Dow Jones Sustainability Index (DJSI) Member 2011-2020 (9th consecutive years)

\(^1\) 2020 Annual Avg. BDT selling rate USD/THB of 31.46 (Avg. rate)
\(^2\) As of Jun 2021
\(^3\) As of Aug 2021
Contents

01 Overview
02 2Q&1H2021 Performance
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05 Supplementary Information
Key Activities in 2Q2021

1. Acquired 6.66% stake in Lotus Pharmaceutical Company Limited in Taiwan
2. JV with Nove Foods to operate the entire supply chain of Plant-based protein business
3. Signed MOU with Foxconn to collaborate in setting up an open platform to support EV growth in Thailand
4. Establishment of EVME as digital platform to promote EV
5. Establishment of "AeroSky (Thailand) to provide drone-based enterprise solutions
6. Investment in High Value Business (coating resins) (the Acquisition of 100% Shares of Allnex)
7. Investment 41.6% in power project in India (Avaada: 4,560 MW)
8. Investment 25% in offshore wind power projects in Taiwan (CI Changfang and CI Xidao: 595 MW)
9. FID in Bioplastic project plant 2 (Name plate capacity: 75,000 tons per year)

Restructured of Power Business (+12.73% stake increased)
Contract extension of business collaboration to operate 7-Eleven
Award for the JV with BAFS to provide aviation fuel services at U-Tapao International Airport
FID in Refinery Efficiency and Diesel Quality Improvement Project for EURO V Standards (Ultra Clean Fuel)
Investment 15.38% in petrochemical producer (Olefins) in Indonesia (PT Chandra Asri)
Investment 41.6% in power project in India (Avaada: 4,560 MW)
Investment 25% in offshore wind power projects in Taiwan (CI Changfang and CI Xidao: 595 MW)
FID in Bioplastic project plant 2 (Name plate capacity: 75,000 tons per year)
Acquired 6.66% stake in Lotus Pharmaceutical Company Limited in Taiwan
 JV with Nove Foods to operate the entire supply chain of Plant-based protein business
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Establishment of EVME as digital platform to promote EV
Establishment of "AeroSky (Thailand) to provide drone-based enterprise solutions
Investment in High Value Business (coating resins) (the Acquisition of 100% Shares of Allnex)
The Screening Unit and Field Hospitals (End-to-End) under PTT Group’s “Giving Breath Project”

- We aim for the **fast process of screening, sorting, and treating patients**. This project could potentially turn into an operation model where business sector collaborates with the public sector.
- The process starts with the patients’ screening section that sequentially leads into three assign-colored groups; green, yellow, and red field hospitals.
- This is to ensure that all COVID-19 patients get their proper treatments and not being left behind.

The collaboration of PTT Group, Department of Disease Control, Ministry of Public Health, The National Health Security Office, The Foundation of Bangpakok Hospital Group, and Piyavate Hospital.

PTT Group puts all the effort to tackle the outbreak, including manpower, innovation, technology, medical supplies and equipment as well as budget to urgently assist medical sectors to fight the COVID-19 pandemic.

**The 1st section of COVID-19 Screening Unit**

**The 2nd, 3rd and 4th section are the sections of End-to-End Field Hospitals**
Key Business Drivers:

QoQ: Increased in most of product prices as demand improved from vaccines rollout, ease of lockdown, and production cut of OPEC+

HoH: Petroleum and petrochemical prices improved from the demand recovery while pooled gas price dropped
PTT Consolidated Performance: 2Q2021 & 1H2021

QoQ: NI decreased primarily due to non-recurring items despite enhanced operating income

HoH: Robust performance as a result of petroleum & petrochemical demand recovery in line with global trend

**REVENUE**
- Unit: MB
- ▲ 12% QoQ
- ▲ 56% YoY

<table>
<thead>
<tr>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>341,325</td>
<td>477,837</td>
<td>533,256</td>
<td>824,892</td>
<td>1,011,093</td>
</tr>
</tbody>
</table>

**EBITDA**
- Unit: MB
- ▲ 10% QoQ
- ▲ >100% YoY

<table>
<thead>
<tr>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>54,208</td>
<td>102,997</td>
<td>113,166</td>
<td>86,593</td>
<td>216,163</td>
</tr>
</tbody>
</table>

**NI**
- ▲ >100% YoY

<table>
<thead>
<tr>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,053</td>
<td>32,588</td>
<td>24,578</td>
<td>10,499</td>
<td>57,166</td>
</tr>
</tbody>
</table>

---

**Remarks:**
1/ PTT Gas business and affiliates
2/ PTT Trading business and affiliates
3/ Technology and Engineering business mainly contributed from power business
4/ Others business mainly contributed from coal business
5/ Technology and Engineering business mainly contributed from power business
6/ Others business mainly contributed from PTT LNG, PTT NGD, PTTT and PTTGM etc.
2Q21 vs 1Q21 PTT Consolidated Performance (QoQ):
NI dropped from extra items while operating margin improved

**MMTHB**

<table>
<thead>
<tr>
<th>Category</th>
<th>1Q21</th>
<th>2Q21</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margin</td>
<td>15,221</td>
<td>18,566</td>
<td>▲ 20%</td>
</tr>
<tr>
<td>Stock Gain/(Loss)</td>
<td>3,719</td>
<td>4,874</td>
<td>▲ 5%</td>
</tr>
<tr>
<td>OPEX</td>
<td>1,333</td>
<td>1,333</td>
<td>0%</td>
</tr>
<tr>
<td>DD&amp;A</td>
<td>3,572</td>
<td>3,572</td>
<td>0%</td>
</tr>
<tr>
<td>Other Income</td>
<td>6,189</td>
<td>3,170</td>
<td>▼ 51%</td>
</tr>
<tr>
<td>Impairment</td>
<td>1,765</td>
<td>3,170</td>
<td>▲ 80%</td>
</tr>
<tr>
<td>FX &amp; Derivatives</td>
<td>3,483</td>
<td>2,247</td>
<td>▼ 36%</td>
</tr>
<tr>
<td>Int. &amp; CIT Exp. &amp; Other</td>
<td>24,578</td>
<td>22,197</td>
<td>▼ 10%</td>
</tr>
<tr>
<td>Others/1</td>
<td>▼&gt;100%</td>
<td>▼&gt;100%</td>
<td>▼&gt;100%</td>
</tr>
</tbody>
</table>

**Extra Items**

1Q21: GC: Emery Oleochemicals impairment of 1,463 MB and tax form selling stakes of GPSC 2,264 MB
2Q21: EP: Gain on bargain purchase of Oman Block 61

**Others**

- PTT: Lower vol. and spread margin due to higher seasonal demand in 1Q21
- Coal: Lower sales volume from lower production, and higher hedging loss

**TEG** (mainly from power)

- Higher share of profits from Xayaburi
- IPP margin improved due to higher AP from less SD in 2Q21

**Oil & Retail**

- Decreased in sales volume and gross margin from 3rd wave of COVID-19

**Petrochemical & Refining**

- Refinery
  - Lower Stock gain in 2Q21
  - Softer Mkt GRM due to higher crude premium

**PTTEP**

- Higher avg. selling prices from liquid prices increased
- Higher sales vol. from Oman Block 61, and Malaysia block H

**Trading**

- Lower gross margin and crude sales volume
**1H21 vs 1H20 PTT Consolidated Performance (HoH):**
Significantly improved performance in most of PTT Group Businesses

**Net Income ▲ >100%**

- **Operating Net Income excl. Extra items & stock gain/(loss) ▲ 40%**
- **57,166**

**1H21**

<table>
<thead>
<tr>
<th>Margin</th>
<th>10,499</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPEX</td>
<td>61,401</td>
</tr>
<tr>
<td>Other Income</td>
<td>3,177</td>
</tr>
<tr>
<td>Impairment</td>
<td>1,677</td>
</tr>
<tr>
<td>FX &amp; Derivatives</td>
<td>31,782</td>
</tr>
<tr>
<td>Int. &amp; CIT Exp. &amp; Other</td>
<td>52,504</td>
</tr>
</tbody>
</table>

**Extra Items**

- **EP:** Gain from bargain purchase of Oman Block 61
- **GC:** Emery Oleochemicals impairment
- **Others:** BP stake sale

**PTTEP**

- **P& R ▲ >100%**
- **PTT ▲ >100%**

**Others**

- **Coal:** Higher margin due to increased selling prices following Newcastle coal price
- **TEG (mainly from power):**
  - Higher share of profits from XPCL due to higher water level
  - Higher contribution from increasing PTT’s direct holding in GPSC
- **Oil & Retail:**
  - Improved oil margin, and non-oil expansion
  - Lower oil volume due to Covid-19 impact
- **Petrochemical & Refining:**
  - **Refinery:**
    - Higher Stock gain in 1H21
    - Higher Mkt GRM mainly from gasoline spread
  - **Petrochemical:**
    - Olefins: Improved product prices and sales volume
    - Aromatics: Increased in BZ & PX spreads
- **PTT:**
  - Loss from oil price hedging from upward oil price trend
  - Higher Avg. Selling price from liquid prices increased
  - Higher Sales Vol. from Oman Block 61 acquisition, Bongkok, Contract 4, and Malaysia project
- **Gas:**
  - **GSP:** Higher avg. selling prices & volume and lower feed gas cost
  - **S&M:** Higher industrial customers’ selling price linked to FO price, lower pooled gas cost, and higher sales vol. from most of customers
- **Trading:**
  - Lower sales volume from Covid-19 impact

**Remarks:**

1. Others business mainly contributed from PTT LNG, PTT NGD, PTTT and PTTGM etc.
2. Technology and Engineering business mainly contributed from power business
## PTT EBITDA Breakdown by Business

<table>
<thead>
<tr>
<th></th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>QoQ</th>
<th>YoY</th>
<th>1H20</th>
<th>1H21</th>
<th>HoH</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GAS</strong></td>
<td>11,028</td>
<td>21,775</td>
<td>22,134</td>
<td>▲ 2%</td>
<td>▲ &gt;100%</td>
<td>25,461</td>
<td>43,909</td>
<td>▲ 72%</td>
</tr>
<tr>
<td><strong>S&amp;M</strong></td>
<td>1,356</td>
<td>4,775</td>
<td>3,732</td>
<td>▼ 22%</td>
<td>▲ &gt;100%</td>
<td>3,280</td>
<td>8,507</td>
<td>▲ &gt;100%</td>
</tr>
<tr>
<td><strong>TM</strong></td>
<td>8,960</td>
<td>8,120</td>
<td>8,577</td>
<td>▲ 6%</td>
<td>▼ 4%</td>
<td>18,039</td>
<td>16,697</td>
<td>▼ 7%</td>
</tr>
<tr>
<td><strong>GSP</strong></td>
<td>(475)</td>
<td>6,220</td>
<td>7,384</td>
<td>▲ 19%</td>
<td>▲ &gt;100%</td>
<td>1,328</td>
<td>13,604</td>
<td>▲ &gt;100%</td>
</tr>
<tr>
<td><strong>NGV</strong></td>
<td>(684)</td>
<td>(221)</td>
<td>(425)</td>
<td>▼ 92%</td>
<td>▲ 38%</td>
<td>(1,264)</td>
<td>(646)</td>
<td>▲ 49%</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>1,871</td>
<td>2,881</td>
<td>2,866</td>
<td>——</td>
<td>▲ 53%</td>
<td>4,078</td>
<td>5,747</td>
<td>▲ 41%</td>
</tr>
<tr>
<td><strong>Trading</strong></td>
<td>1,251</td>
<td>1,138</td>
<td>907</td>
<td>▼ 20%</td>
<td>▼ 27%</td>
<td>2,158</td>
<td>2,045</td>
<td>▼ 5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>12,279</td>
<td>22,913</td>
<td>23,041</td>
<td>▲ 1%</td>
<td>▲ 88%</td>
<td>27,619</td>
<td>45,954</td>
<td>▲ 66%</td>
</tr>
</tbody>
</table>
Financial Position
Strong Balance Sheets maintained credit ratings

Consolidated Balance Sheets

<table>
<thead>
<tr>
<th></th>
<th>31 Dec 20</th>
<th>30 Jun 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMTHB</td>
<td>2,544,183</td>
<td>2,823,897</td>
</tr>
<tr>
<td>Cash &amp; ST Invest</td>
<td>416,921</td>
<td>462,835</td>
</tr>
<tr>
<td>AR &amp; Other Current Assets</td>
<td>304,010</td>
<td>795,503</td>
</tr>
<tr>
<td>Others Non-current Assets</td>
<td>530,535</td>
<td>874,316</td>
</tr>
<tr>
<td>PPE</td>
<td>1,292,717</td>
<td>1,285,845</td>
</tr>
<tr>
<td>AP &amp; Other Liabilities</td>
<td>438,585</td>
<td>533,678</td>
</tr>
<tr>
<td>Interest Bearing Debt (IBD)</td>
<td>578,987</td>
<td>418,393</td>
</tr>
<tr>
<td>Total Equity</td>
<td>1,387,932</td>
<td>1,415,903</td>
</tr>
</tbody>
</table>

Key Financial Ratios

<table>
<thead>
<tr>
<th>Times</th>
<th>2020</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Debt/EBITDA</td>
<td>1.68</td>
<td>1.23</td>
</tr>
<tr>
<td>Net Debt/Equity</td>
<td>0.29</td>
<td>0.31</td>
</tr>
</tbody>
</table>

PTT Ratings at Sovereign Level

<table>
<thead>
<tr>
<th></th>
<th>Moody's</th>
<th>S&amp;P Global Ratings</th>
<th>Fitch Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign Currency</td>
<td>Baa1</td>
<td>BBB+</td>
<td>BBB+</td>
</tr>
<tr>
<td>Local Currency</td>
<td>Baa1</td>
<td>BBB+</td>
<td>BBB+</td>
</tr>
</tbody>
</table>

+ Increase in Inventories and Account Receivables from the higher product prices
+ Higher PPE from PTTEP’s business acquisition of Oman Block 61 and TOP’s construction in progress of Clean Fuel Project
+ Higher Interest Bearing Debt (IBD) from increase in long-term borrowing mainly from GC, GPSC, and IRPC
+ Increase in Equity due to OR’s capital increase and PTT group’s net profit
Dividend Policy & Historical Payments

Y2020 Dividend payout at 75.8%

Dividend payout

25% PTT’s min. payout ratio Policy

Baht / share

* Split par value from 10 to 1 Baht/share since 24 April 2018
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01 Overview
02 2Q&1H2021 Performance
03 Strategy
04 Outlook
05 Supplementary Information
PTT’s vision is revised to set aspirations along with future trends.

**PURPOSE**
Conduct business that powers the ways of life

---

**Powering Life**
with Future Energy and Beyond

---

**STRATEGIC POSITIONING**
By expanding into the business of future energy and new business beyond energy industry
Powering Life
with future energy and beyond

**Purpose**

*to empower and better life*

Deliver inclusive growth to create economic growth while enhance quality of life – people, society, community, and environment
Moving toward future energy and energy technologies which are clean and environmental friendly as well as stepping into new potential businesses that support people live and drive people well-being.

focus more on future energy trend and new businesses that have potentials to grow
Directing energy business in line with future trend

Reimagine
Upstream

Reinforce
Downstream

Reignite new business at speed and scale
Future Energy

Acceleration into LNG value chain
Fully integrated player in gas and LNG value chain

- Collaboratively build LNG value chain platform
- Accelerate LNG portfolio development through partnership

Focus on Lower-carbon portfolio
- Coal business divestment

Powering Downstream along with Future Energy

- Downstream Business Portfolio Rebalancing
- Resilience for Refinery Business
- To be Global Player with Digital Forefront
- Synchronized Upstream & Downstream Optimization

Expediting execution New Energy & EV & integrate Renewable Energy Value Chain with PTT Group Business

- Renewable Energy
- Energy Storage System
- EV Value Chain
- Energy Platform
- Other potential (e.g. H₂)
Growing along the way of life beyond energy

Reignite New Business at Speed and Scale

**Life Science**
- Pharmaceutical
  - Investment in Generics / Biopharma Company
- Medical Technology
  - (e.g. Covid-19 Test Kit, Meltblown, MED. GLOVES and MED. DEVICE)
- Nutrition

**High Value Business**
through M&A
- Coating and Adhesive
  - Accelerating growth in attractive segments
    (e.g. composites & UPR, coating additives)
- Next HVB
  - Seeking more opportunities in HPP and Composite

**AI, Robotics & Digitalization**
- Explore opportunities in AI, Robotics & Digitalization
  - Robotic / AI
  - Digital platform
  - Cloud service provider, Data center co-location

**Logistics & Infrastructure**
Focus on 3rd Party Logistics (3PL)
segment with interest in 2nd Party Logistics (2PL)
- Rail & Terminal
  - Rail-based intermodal logistics services provider
- Modern Logistics Solution & Platform
  - Seamless logistic solution provider

**Mobility & Lifestyle**
PTT Group’s Marketing Platform
- Mobility
  - Strengthen energy solution for Seamless Mobility
- Lifestyle
  - Strive one-stop solution for All Lifestyle

**Investment in Generics / Biopharma Company**

**Coating and Adhesive**

**Next HVB**

**Seamless Mobility**

**One-stop Solution Ecosystem**
## Overall Strategic Direction to achieve purpose of New Vision

### Long-term target (2030) for new vision

#### New growth

**NI from Future Energy and Beyond > 30%**

#### Business growth

- **LNG**
  - 9 MTA
- **Power (Conventional)**
  - 8 GW
- **Renewable energy**
  - 12 GW

#### Clean growth

**15% GHG reduction** from 2020
(Moving to net zero GHG within 2070)

### Strategic Direction by Business

<table>
<thead>
<tr>
<th>Business</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>E&amp;P</td>
<td>• Expand growth for high return asset &amp; mainly invest in gas assets</td>
</tr>
<tr>
<td>Gas</td>
<td>• Build global LNG portfolio</td>
</tr>
</tbody>
</table>
| P&R      | • Supply chain integration  
          • Move to high value business |
| Oil & Retail | • Grow in retail with customer-oriented  
                        • Move to mobility & lifestyle |
| Power    | • Accelerate growth in Thailand & region |
| New Energy | • Expedite growth in new energy e.g. renewable, energy storage & system related and EV value chain |
| New business | • Scale up potential business e.g. life science, logistics & infrastructure |

### Future Energy & Beyond 32%

- **New business**
  - Future Energy (RE, ESS, EV)
- **Hydrocarbon Business** (E&P, Gas, LNG, Power, P&R, Oil)
- **Hydrocarbon Business CAPEX** (2021 – 2030)
  - PTT Group
  - Business growth
  - 68%
- **New business**
  - 17%
- **PTT Group**
  - 15%
- **Future Energy & Beyond**
  - 32%

* LNG Equity and controlling of portfolio volume
PTT Group Clean & Green Strategic Execution

**2030 GOAL**
- Aim to achieve Carbon Neutrality By 2065-2070 (align with "National Energy Plan")
- Aim to reduce GHG emission 15% from 2020

**STRATEGIC DIRECTION**
- Continue execution in GHG reduction and initiate carbon price application to enable green investment

**Base year**
- 2012
- 2018
- 2021
- 2030

**SCOPE 1+2**
- (Direct and Indirect Greenhouse Gas Emissions)
  - Process Optimization & Energy Efficiency (All facilities)
  - Renewable Energy in Operations (All facilities)
  - CO₂ Utilization and Storage (PTTEP, PTT)
  - Reforestation & Community GHG Project (CSR)

**SCOPE 3**
- (Other Indirect Greenhouse Gas Emission)
  - Biofuel / Low Carbon Product (OR, GC, IRPC, TOP, INI)
  - Circular Economy (GC, IRPC)
  - Renewable/New Energy Investment (PTT, GPSC)

**ENABLER**
- Financial & investment Mechanism
- R&D Partnership
- Carbon Neutral Framework
- Carbon Exchange Platform

**APPLICATION**
- Apply *Carbon Price* in Investment Decision Process
  - As Hidden Price in Feasibility Study

**R&D PARTNERSHIP**
- As Hidden Price in Feasibility Study
- Review and adjust price to ensure meeting GHG reduction target

**CARBON CREDIT OFFSET**
- Carbon Credit Offset

**ELECTRIC MOBILITY**
- Electric Mobility (PTT)

**CIRCULAR ECONOMY**
- Circular Economy (GC, IRPC)

**FINANCIAL & INVESTMENT MECHANISM**
- Financial & investment Mechanism

**ENABLER**
- Carbon Neutral Framework
- Carbon Exchange Platform
PTT Sustainability Strategic Direction

SUSTAINABILITY as Business Goal

- Sufficiency Economy
- Environmental
- Social
- Governance & Economics

PTT's Sustainability DNA

Environmental
- Sustainable Production and Consumption
  - Low Carbon Society
  - Circular Economy

Social
- People's Well-being
- Safety and Human Rights
- Social Shared Value
- Workforce for New Growth

Governance
- Good Governance and Performance Excellence
- Economic Drive by creating ‘Next Growth’
- Operate with Integrity (GRC)

ESG

SDGs

DJSI

Member of Dow Jones Sustainability Indices
Powered by the S&P Global CSA
PTT: Committed CAPEX (PTT and Wholly Owned Subsidiaries)

PTT 5-Years (2021-2025) Committed CAPEX Plan totaling Baht 117,840 million or ~ USD 3.8 bn

Technology & Engineering (TEG), International Trading, Downstream

- 30,743 MB
  - i.e. Restructure of Power Business, VC, EECI (Wangchan Valley)

Gas

- 29,847 MB
  - GSP #7 (To replace GSP#1) and GSP efficiency improvement projects

PTTLNG

- 24,042 MB
  - LNG Terminal 2 (Nong-Fab)

Transmission

- 12,983 MB
  - 5th onshore Pipeline

Other wholly owned subsidiaries

- 20,225 MB
  - i.e. Arun plus, MTP Phase#3 (PTT Tank), Innobic

Unit: MMTHB

- Natural Gas
- Transmission
- PTTLNG

Restructure of PTT’s Power Business (GPSC)
- Arun plus: EV value chain (Scope expansion)

Note: 2021 budget revision approved by BOD on 17 Jun 21
* Revised 2021 only
1/ FX rate (avg.) 31.00 Baht/USD ( Jan – 14 June 2021)
2/ Excluding OR as IPO on 11 Feb 21 (holding from 100% -> 75%) , CAPEX as of Dec 20 included OR amounting to Baht 75,805 million

The Provisional CAPEX ~Bt 312 bn which mainly focus on LNG Value Chain, Southern LNG terminal and pipelines according to PDP 2018, Gas-to-power project, and New Businesses (including Renewable energy, Life sciences, Electricity value chain etc.)
Gas Business Roadmap
Short term Gas Demand growth be maintained

Thailand Gas Demand Outlook (Short Term – 5 year plan)

<table>
<thead>
<tr>
<th>Year</th>
<th>LNG Terminal 2</th>
<th>GSP#7*</th>
<th>Bongkot Erawan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>59%</td>
<td>17%</td>
<td>700 mmscfd</td>
</tr>
<tr>
<td>2021</td>
<td>3%</td>
<td>17%</td>
<td>800 mmscfd</td>
</tr>
<tr>
<td>2022</td>
<td>2%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>2023</td>
<td>2%</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>2024</td>
<td>2%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>2%</td>
<td>17%</td>
<td></td>
</tr>
</tbody>
</table>

Unit: MMSCFD

CAGR (2021-2025) 3.1%

New Supply
Additional capacity (mmscfd)

Bongkot Erawan
700 800

Major Project: COD & Capacity/
Accumulate Pipeline distance

<table>
<thead>
<tr>
<th>Project</th>
<th>Distance</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5th pipeline RA#6 Pipeline</td>
<td>4,702 KM</td>
<td>700 mmscfd</td>
</tr>
<tr>
<td>LNG Terminal 2</td>
<td>+7.5 MTA</td>
<td>800 mmscfd</td>
</tr>
<tr>
<td>GSP#7*</td>
<td>460 mmscfd</td>
<td>800 mmscfd</td>
</tr>
<tr>
<td>BPK-SB** pipeline</td>
<td>4,776 KM</td>
<td>800 mmscfd</td>
</tr>
</tbody>
</table>

*Replace GSP#1
**Bang Pakong– South Bangkok Power Plant
Newly Thailand Power Development Plan

Stronger demand of NG for power plants

PDP 2015*

Natural Gas growth upon
Government fuel diversification policy
for power generation

PDP 2018 Rev.1**

Natural Gas
be the most important source of energy
with highest portion among other fuels

*Source: Ministry of Energy

** Source: EPPO (Public Hearing presentation)
Natural Gas Demand

Growth of natural gas upon Government fuel diversification policy for power generation

Old*

Thailand Gas demand forecast (CAGR during 2018-2032)
- Total: ~0.1%
- Power: ~2%
- GSP: ~-7%
- Industry: ~1%
- NGV: ~-6%

Thailand Gas Demand
Replace: Coal Krabi (800 MW), EE 30%

NEW**

Thailand Gas demand forecast (CAGR during 2021-2035)
- Total: ~2%
- Power: ~3%
- GSP: ~-1%
- Industry: ~2%
- NGV: ~-5%

*Source: Ministry of Energy

** Source: PTT Business plan 2021 approved by BOD on 17 Dec 2020
PTT Group: Upcoming Projects

- **5th onshore pipeline**
  - Length ~ 400 KM.

- **Sabah H**
  - PTTEP hold in Rotan field 56.0% and Remaining Area 42%
  - Gas: 270 MMSCFD (100% project)

- **Oman Block 61**
  - PTTEP hold 20.0%
  - Gas: 1.5 Bcf (100% project)

- **Algeria HBR (Phase I)**
  - Oil: 10-13 KBD
  - PTTEP hold 49.0%

- **MTP Retrofit (Olefins Reconfiguration)**
  - Ethylene 500 KTA, Propylene 250 KTA

- **High value business (Coating Resins): Allnex**
  - *GC hold 100% (1,245 KTA)

- **Olefins investment: PT Chandra Asri**
  - *TOP hold 15.38% (4,243 KTA)

- **Innopolymed Company Limited**
  - Manufacture and sell Non-Woven Fabric (2.1 KTA)

- **Battery Semi-Solid Plant**
  - 30 MWh
  - Avaada Project in India
  - Solar Power: 1,897 MW equity capacity (624 MW in operating/1,273 MW in progress)
  - GPSC hold 41.6%

- **Central Bakery, Mixed Beverage Powder Plant and Distribution Center**

- **LNG Terminal 2**
  - 7.5 MTPA

- **Ole 2 Modification Plant Project**
  - Feed flexibility (propane)

- **GSP #7 (460 MMSCFD)**
  - Replace GSP #1

- **Clean Fuel Project**
  - (275 → 400 KBD)

- **Ultra Clean Fuel (UCF)**
  - Building Competitiveness: Euro 5 diesel

- **ERU Project**
  - (Power 250 MW)

- **Mozambique Area 1**
  - PTTEP hold 8.5%
  - 13.1 MTPA or ~300 KBOED

- **Southwest Vietnam**
  - PTTEP hold 7-8.5%
  - 490 MMSCFD or ~80 KBOED

- **Bang Pakong–South Bangkok Pipeline**
  - Length ~ 80 KM.

- **Gas to Power in Myanmar**
  - Upstream: Gas from Zawtika & M3
  - Pipeline: Length ~ 370 KM
  - Gas-Fired Power Plant: 600MW

- **2021**
  - Central Bakery, Mixed Beverage Powder Plant and Distribution Center

- **2022**
  - Gas to Power in Myanmar

- **2023**
  - ERU Project (Power 250 MW)

- **2024**
  - Gas to Power in Myanmar

- **2025**
  - PTTEP hold 49.0%
<table>
<thead>
<tr>
<th>Contents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Overview</td>
</tr>
<tr>
<td>02</td>
<td>2Q &amp;1H2021 Performance</td>
</tr>
<tr>
<td>03</td>
<td>Strategy</td>
</tr>
<tr>
<td>04</td>
<td>Outlook</td>
</tr>
<tr>
<td>05</td>
<td>Supplementary Information</td>
</tr>
</tbody>
</table>
2021 Petroleum and Gas Outlook

## Dubai
+ Recovered demand driven by a rise in economic activity, vaccination campaigns and mobility recovery, thus demand will gradually improve toward end of this year. However, new Delta cases will drag on near term demand
- Easing supply from OPEC+ following the increase of 2 MBD by year-end & slow supply recovery from U.S. and Iran

## Mogas
+ Increasing demand restrictions are relaxed or lifted in some countries
- Healthy summer driving demand in the US (July-August) to boost short-term gasoline price
- Concern on coronavirus Delta variant situation in some countries
- Slowdown seasonal demand during winter

## Gasoil
+ Demand recovery from the industrial and transportation sectors on the pace of global economic recoveries. However, subdued demand in the near term amid the COVID-19 resurgence in some Asian countries limit the upside
- Higher supply as refineries shifting Jet/Kerosene yield to produce more Gasoil

## Fuel Oil
+ HSFO: Firm demand supported by the power demand in Middle East during summer and the upcoming utility demand in South Asia during winter
+ VLSFO: Healthy bunker demand following the global trade recovery

## Singapore GRM
+ Improved from the recovery in light and middle distillate spreads

---

### Price

<table>
<thead>
<tr>
<th></th>
<th>1Q21(A)</th>
<th>2Q21(A)</th>
<th>1H20(A)</th>
<th>1H21(A)</th>
<th>2020(A)</th>
<th>2021(E)</th>
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</thead>
<tbody>
<tr>
<td>Dubai</td>
<td>66.0</td>
<td>66.9</td>
<td>40.6</td>
<td>63.5</td>
<td>42.2</td>
<td>63-68</td>
</tr>
<tr>
<td>Mogas</td>
<td>67.1</td>
<td>76.8</td>
<td>45.3</td>
<td>72.0</td>
<td>46.6</td>
<td>74-79</td>
</tr>
<tr>
<td>Gasoil</td>
<td>64.8</td>
<td>72.2</td>
<td>49.0</td>
<td>68.5</td>
<td>48.4</td>
<td>71-76</td>
</tr>
<tr>
<td>HSFO (3.5%S)</td>
<td>56.6</td>
<td>61.1</td>
<td>36.2</td>
<td>58.8</td>
<td>39.2</td>
<td>60-65</td>
</tr>
<tr>
<td>VLSFO (0.5%S)</td>
<td>67.6</td>
<td>71.9</td>
<td>50.2</td>
<td>69.8</td>
<td>49.2</td>
<td>70-75</td>
</tr>
<tr>
<td>Singapore GRM</td>
<td>1.8</td>
<td>2.0</td>
<td>0.2</td>
<td>1.9</td>
<td>0.4</td>
<td>2.0-2.5</td>
</tr>
</tbody>
</table>

### Gas/LNG

**Asian Spot LNG:**
- Strong fundamental gas demand growth from Chinese buyers
- Increase gas demand in Europe as carbon and coal prices hiked

**Henry Hub:**
- Increase in economic activity and easing of the COVID-19 pandemic in US

---

*Source: PTT, PRISM Petroleum Rolling as of July 2021*
2021 Petrochemical Outlook

**Olefins**
- Expected demand recovery due to brighter economic prospects to support olefins prices
  - Easing US export supply to put pressure on Asian market sentiment
  - Subdued SEA end-products demand amid rapid spreading of Delta variant COVID-19 and lockdown measures in some countries in 3Q21
  - Incoming additional Asian capacities from Northeast Asia and Southeast Asia especially China in 2H21

**Aromatics**
- Expected more balanced BZ/PX markets from downstream capacities start-up, economic recovery, and firmer upstream crude price
  - Healthy Chinese BZ demand due to relatively low inventories
  - Pressured PX price from persistent squeezed PTA and end-products margins & concerns on a sharp spike of COVID-19 infected cases and lockdown in some Asian countries in 3Q21 to affect downstream demand
  - Cautious BZ/PX market direction from uncertainty on the start-up timing of China’s Zhejiang PC and Saudi Aramco in 2H21

**Naphtha**
- Additional demand from new crackers startup, particularly in China and South Korea, to bolster demand
  - Seasonal demand from Petrochemical sector before New Year holidays
  - Expectation on easing supply from higher refinery runs due to better COVID-19 situation
**Performance Recovery**

**Gas Business**

- **NG Demand**
  Increase ~1% vs 2020

- **Gas Volume Growth:**
  CAGR 3.1% during 2021-2025

- **Improve GSP U-Rate**
  GSP’s U-Rate ~92-94% in 2021

- **Flat Pooled gas cost**

**PTT Group**

**E&P**

- + Crude oil price recovery
- + Vol. rise ~16%
- + Unit Cost drop ~5%

**OIL**

- COVID-19 pandemic will suppress domestic demand
- Strong network through expanding
  - Oil Stations +140 stations
  - EV Charging Stations +100 stations
  - Café Amazon + 471 outlets

**P&R**

- + Refinery U-Rate ~95-97%
- + SG GRM ➔ 2.0 - 2.5$/bbl
- + Petrochemical spread increase
- Power: + Industrial demand increase ~4.5%

**Maintenance Schedule**

**Gas Separation Plants**

- **2H21**
  - GSP#6 Major TA: 26 days
  - GSP#3 SD: 8 days
  - GSP#6 SD: 9 days

**Petrochemical Plants**

- **2H21**
  - Planned Major TA: Ethane Crackers
  - 3Q-4Q: HDPE2: ~1 month
  - 4Q: Oleflex: ~1 month

**Upcoming project**

**On 2H2021**

- **5th Pipeline**
  - Phase I: 98.3% COD: 3Q2021
  - Phase II: 84.7% COD: 1Q2022
  - Phase III: In the process of preparing to construct
  - To COD in Dec 2022

- **RA#6:** Ratchaburi - Wangnoi
  - COD: Sep 2021
  - 100.0%

- **Bakery Plant**
  - COD: Sep 2021

- **Non-woven Fabric Plant** (Innopolymed)
  - 2.1 KTA COD: Dec 2021

- **High-quality Circular Plastic Resin Plant**
  - 45 KTA COD: 4Q2021

- **Aava Solar Power Platform in India**
  - 4,560 MW - GPSC hold 41.6% (1,500 MW in operating / 3,060 MW in progress)
  - COD: 2021-2022
Overview
2Q & 1H2021 Performance
Strategy
Outlook
Supplementary Information
Supplementary Information

- PTT Group Performance: P.36-37
- Cash Flow: P.38-39
- Debt Profile: P.40
- PTT Group Accounting Structure: P.41
- Financial Performance by business: P.42-52
- Natural Gas Price Structure: P.53
- Gas Pipeline Business: P.54
## PTT Group Performance: 2Q2021 (QoQ & YoY)

### Performance 100%

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>QoQ</th>
<th>YoY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Net operating Income</td>
<td>4,963</td>
<td>8,498</td>
<td>9,595</td>
<td>13%</td>
<td>93%</td>
</tr>
<tr>
<td>E&amp;P - PTTEP</td>
<td>4,322</td>
<td>11,534</td>
<td>7,139</td>
<td>-38%</td>
<td>65%</td>
</tr>
<tr>
<td>Petrochemical</td>
<td>1,728</td>
<td>9,778</td>
<td>25,114</td>
<td>&gt;100%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- GC</td>
<td>1,671</td>
<td>9,695</td>
<td>25,035</td>
<td>&gt;100%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- Other</td>
<td>57</td>
<td>83</td>
<td>79</td>
<td>-5%</td>
<td>39%</td>
</tr>
<tr>
<td>Refining</td>
<td>2,069</td>
<td>8,941</td>
<td>6,697</td>
<td>-25%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- TOP</td>
<td>2,480</td>
<td>3,360</td>
<td>2,123</td>
<td>-37%</td>
<td>-14%</td>
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<tr>
<td>- IRPC</td>
<td>(411)</td>
<td>5,581</td>
<td>4,574</td>
<td>-18%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Oil - OR</td>
<td>520</td>
<td>4,003</td>
<td>3,225</td>
<td>-19%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>TEG - GPSC/TP/DCAP/PTTES/PTTDIGITAL/ENCO</td>
<td>2,568</td>
<td>17,037</td>
<td>2,702</td>
<td>-84%</td>
<td>5%</td>
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<tr>
<td>Others Business</td>
<td>2,132</td>
<td>3,485</td>
<td>2,824</td>
<td>-19%</td>
<td>32%</td>
</tr>
<tr>
<td>Inter - PTTER/PTTGM</td>
<td>342</td>
<td>531</td>
<td>345</td>
<td>-35%</td>
<td>1%</td>
</tr>
<tr>
<td>Gas - PTLNG/PTTNGD/PTTGL/TTM(T)/TTM(M)</td>
<td>1,465</td>
<td>2,255</td>
<td>2,282</td>
<td>1%</td>
<td>56%</td>
</tr>
<tr>
<td>Other - PTTT/Others¹</td>
<td>325</td>
<td>699</td>
<td>197</td>
<td>-72%</td>
<td>-39%</td>
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<tr>
<td>Shared of Net Income from Affiliates</td>
<td>13,339</td>
<td>54,778</td>
<td>47,701</td>
<td>-13%</td>
<td>&gt;100%</td>
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<tr>
<td>Tax adjustment for gain on disposal of investment and asset</td>
<td>(12)</td>
<td>300</td>
<td>2</td>
<td>-99%</td>
<td>&gt;100%</td>
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<tr>
<td>PTT Conso. Net Income</td>
<td>18,290</td>
<td>63,576</td>
<td>57,298</td>
<td>-10%</td>
<td>&gt;100%</td>
</tr>
</tbody>
</table>

### Equity Method % PTT

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>QoQ</th>
<th>YoY</th>
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<tbody>
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<td>8,498</td>
<td>9,595</td>
<td>13%</td>
<td>93%</td>
</tr>
<tr>
<td>E&amp;P - PTTEP</td>
<td>2,823</td>
<td>7,524</td>
<td>4,664</td>
<td>-38%</td>
<td>65%</td>
</tr>
<tr>
<td>Petrochemical</td>
<td>845</td>
<td>4,675</td>
<td>1,469</td>
<td>-69%</td>
<td>74%</td>
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<tr>
<td>- GC</td>
<td>788</td>
<td>4,592</td>
<td>1,390</td>
<td>-70%</td>
<td>76%</td>
</tr>
<tr>
<td>- Other</td>
<td>57</td>
<td>83</td>
<td>79</td>
<td>-5%</td>
<td>39%</td>
</tr>
<tr>
<td>Refining</td>
<td>532</td>
<td>4,192</td>
<td>3,215</td>
<td>-23%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- TOP</td>
<td>704</td>
<td>1,615</td>
<td>1,006</td>
<td>-38%</td>
<td>43%</td>
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<tr>
<td>- IRPC</td>
<td>(172)</td>
<td>2,577</td>
<td>2,209</td>
<td>-14%</td>
<td>&gt;100%</td>
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<tr>
<td>Oil - OR</td>
<td>559</td>
<td>3,439</td>
<td>2,439</td>
<td>-29%</td>
<td>&gt;100%</td>
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<tr>
<td>TEG - GPSC/TP/DCAP/PTTES/PTTDIGITAL/ENCO</td>
<td>641</td>
<td>739</td>
<td>949</td>
<td>28%</td>
<td>48%</td>
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<tr>
<td>Others Business</td>
<td>1,702</td>
<td>3,221</td>
<td>2,245</td>
<td>-30%</td>
<td>32%</td>
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<tr>
<td>Inter - PTTER/PTTGM</td>
<td>40</td>
<td>493</td>
<td>3</td>
<td>-99%</td>
<td>-93%</td>
</tr>
<tr>
<td>Gas - PTLNG/PTTNGD/PTTGL/TTM(T)/TTM(M)</td>
<td>1,337</td>
<td>2,029</td>
<td>2,039</td>
<td>0%</td>
<td>53%</td>
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<tr>
<td>Other - PTTT/Others¹</td>
<td>325</td>
<td>699</td>
<td>203</td>
<td>-71%</td>
<td>-38%</td>
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</tbody>
</table>

¹/Including PTTGE, BSA, PTT TCC and RTC
### PTT Group Performance: 1H21 vs 1H20 (HoH)

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
<th>Performance 100%</th>
<th>% PTT holding</th>
<th>Equity Method % PTT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1H20</td>
<td>1H21</td>
<td>HoH</td>
</tr>
<tr>
<td>PTT Net operating Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E&amp;P</td>
<td>- PTTEP</td>
<td>12,935</td>
<td>18,673</td>
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<tr>
<td>Petrochemical</td>
<td>(6,984)</td>
<td>34,892</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- GC</td>
<td>(7,113)</td>
<td>34,730</td>
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<tr>
<td>- Other</td>
<td>129</td>
<td>162</td>
<td>26%</td>
</tr>
<tr>
<td>Refining</td>
<td>(20,590)</td>
<td>15,638</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- TOP</td>
<td>(11,274)</td>
<td>5,483</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- IRPC</td>
<td>(9,316)</td>
<td>10,155</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Oil</td>
<td>- OR</td>
<td>2,418</td>
<td>7,228</td>
</tr>
<tr>
<td>TEG</td>
<td>- GPSC/TP/DCAP/PTTES/PTTDIGITAL/ENCO</td>
<td>4,802</td>
<td>19,739</td>
</tr>
<tr>
<td>Others Business</td>
<td>5,672</td>
<td>6,309</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Inter</td>
<td>- PTTER/PTTGM</td>
<td>448</td>
<td>876</td>
</tr>
<tr>
<td>Gas</td>
<td>- PTTLNG/PTTNGD/PTTGL/TTM(T)/TTM(M)</td>
<td>3,818</td>
<td>4,537</td>
</tr>
<tr>
<td>Other</td>
<td>- PTTT/Others¹</td>
<td>1,406</td>
<td>896</td>
</tr>
<tr>
<td>Shared of Net Income from Affiliates</td>
<td>(1,747)</td>
<td>102,479</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Tax adjustment for gain on disposal of investment and asset</td>
<td>(414)</td>
<td>302</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>PTT Conso. Net Income</td>
<td>4,518</td>
<td>120,874</td>
<td>&gt;100%</td>
</tr>
</tbody>
</table>

¹/Including PTTGE,BSA, PTT TCC and RTC
PTT Consolidated Cash Flows 6M21

Cash Beginning 416,921
ST Investment 84,889
Cash & Cash Equivalents 332,032
Operating 115,148
Investing -203,718
Financing 50,573
Non-Cash Adjustment 152,942
Investment (Sub. & Affiliates) -74,665
CAPEX -64,686
Current Investment -61,192
Others' -6,656
Dividend/Interest Received 3,481

Free Cash Flow -88,570
Cash Out -40,618
Cash Ending 438,585
ST Investment 147,171
Cash & Cash Equivalents 291,414

Unit: MMTHB

*Investment in financial assets, ST/LT lending loans

**Free Cash Flow**
**Cash Out**
**Operating** 115,148
**Investing** -203,718
**Financing** 50,573
**Non-Cash Adjustment** 152,942

**Investing**
Investment (Sub. & Affiliates) -74,665
CAPEX -64,686
Current Investment -61,192
Others' -6,656
Dividend/Interest Received 3,481

**Financing**
Received from Loans/Bonds 66,857
Ordinary Share Issuance of Subsidiaries 53,665
Dividend Paid (33,041)
Loan Repayment (22,829)
Finance Cost Paid (14,010)
Derivatives (69)

*Operating, Investing, Financing, Non-Cash Adjustment, Cash Beginning, Operating, Investing, Financing, Non-Cash Adjustment, Cash Ending, Unit: MMTHB, Investment in financial assets, ST/LT lending loans*
PTT Only Cash Flows 6M21

Operating
- Net Income: 37,251
- Non-Cash Adjustment: 235
- Changes in Assets & Liabilities: (13,018)
- Income Tax: (2,874)

Investing
- Dividend/Interest Received: 20,800
- Current Investment: 8,268
- Investment (Sub. & Affiliates): (26,093)
- CAPEX: (4,036)

Financing
- Dividend Paid: (23,420)
- Finance Cost Paid: (2,726)
- Loan Repayment: (82)
- Others: (43)

Free Cash Flow: +27,176

Cash Beginning: 56,342
Operating: +21,594
Investing: +5,582
Financing: -26,271
Adj & Others: +84
Cash Ending: 91,101

Unit: MMTHB

*Investment in financial assets, ST/LT lending loans
**Debt Profile: Control Cost & Manage Risk**

Managed debt according to financial risk and policy

### Debt Portfolio

**Unit: MMTHB**

<table>
<thead>
<tr>
<th></th>
<th>PTT Only</th>
<th>Consolidated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost of debts</strong></td>
<td>~ 4.60%</td>
<td>~ 3.56%</td>
</tr>
<tr>
<td><strong>% fixed-rate</strong></td>
<td>~ 77.66%</td>
<td>~ 73.59%</td>
</tr>
<tr>
<td><strong>Avg. debt life</strong></td>
<td>~ 17.38 years</td>
<td>~ 11.42 years</td>
</tr>
</tbody>
</table>

**USD&Others**

- 117,381 (28%)
- 146,433 (37%)
- 148,543 (38%)

**THB**

- 32,679 (72%)
- 92,487 (63%)
- 91,451 (62%)

**Debt Outstanding and Repayment Profile**

**Unit: MMTHB**

**Note:** 1. Debt Outstanding for Repayment Profile represents financial data and portion after derivative swaps.
2. Bond repayment amounting 3,884 MB in 2022 is THB swaps to USD and amounting 6,236 MB in 2035 is USD swaps to THB.
3. PTT Data as of 30 Jun 21 (THB/USD = 32.2219 THB/JPY = 0.2940) excluding liabilities from finance leases.
4. Debt Outstanding represents amount and portion before derivative swaps, and reconciled with accounting.

**Note:** Cost of debts, % fixed rate, and avg. debt life took into account the derivative transactions, including withholding tax (update as of 30 Jun 21).

**PTT Only**

<table>
<thead>
<tr>
<th>Year</th>
<th>Debt Outstanding (MMTHB)</th>
<th>Repayment Profile (MMTHB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021</td>
<td>14,200</td>
<td>5,884</td>
</tr>
<tr>
<td>2022</td>
<td>12,000</td>
<td>3,884</td>
</tr>
<tr>
<td>2023</td>
<td>24,354</td>
<td>3,000</td>
</tr>
<tr>
<td>2024</td>
<td>13,000</td>
<td>3,000</td>
</tr>
<tr>
<td>2025</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>2026</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2027</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2028</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2029</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2032</td>
<td>15,458</td>
<td>12,236</td>
</tr>
<tr>
<td>2033</td>
<td>18,386</td>
<td>6,346</td>
</tr>
<tr>
<td>2034</td>
<td>22,555</td>
<td>7,000</td>
</tr>
<tr>
<td>2035</td>
<td>4,000</td>
<td>4,000</td>
</tr>
</tbody>
</table>

**Note:** FX: 32.2219

*PTT Data as of 30 Jun 21 (THB/USD = 32.2219 THB/JPY = 0.2940) excluding liabilities from finance leases.

**Note:** *PTT Data as of 30 Jun 21 (THB/USD = 32.2219 THB/JPY = 0.2940) excluding liabilities from finance leases.

*PTT Data as of 30 Jun 21 (THB/USD = 32.2219 THB/JPY = 0.2940) excluding liabilities from finance leases.
PTT Group Accounting Structure

Data as of 30 Jun 2021

E&P and Gas Business Group

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Exploration &amp; Production Plc.</td>
<td>PTTEP 65.29%</td>
</tr>
<tr>
<td>PTT Natural Gas Distribution Co., Ltd.</td>
<td>PTTNGD 58.00%</td>
</tr>
<tr>
<td>PTT LNG Co., Ltd.</td>
<td>PTTLNG 100.00%</td>
</tr>
<tr>
<td>PTT Global LNG Co., Ltd.</td>
<td>PTTGL 50.00%</td>
</tr>
</tbody>
</table>

Joint Ventures

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trans Thai-Malaysia (Thailand) Co., Ltd.</td>
<td>TTM (T) 50.00%</td>
</tr>
<tr>
<td>Trans Thai-Malaysia (Malaysia) Sdn. Bhd.</td>
<td>TTM (M) 50.00%</td>
</tr>
<tr>
<td>Map Ta Phut Air Products Company Limited</td>
<td>MAP 49.00%</td>
</tr>
</tbody>
</table>

International Trading Business Group

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT International Trading Pte.</td>
<td>PTIT 100.00%</td>
</tr>
<tr>
<td>PTT International Trading London Ltd</td>
<td>PTIT LDN 100.00%</td>
</tr>
<tr>
<td>PTT International Trading USA Inc.</td>
<td>PTIT USA 100.00%</td>
</tr>
</tbody>
</table>

Oil Business Group

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Oil &amp; Retail Business Co., Ltd.</td>
<td>OR 75.00%</td>
</tr>
</tbody>
</table>

Technology and Engineering Business Group

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Power Synergy Co., Ltd.</td>
<td>GPSC 75.23%</td>
</tr>
<tr>
<td>Thai Oil Power Co., Ltd.</td>
<td>TP 26.00%</td>
</tr>
<tr>
<td>PTT Digital Solutions Co., Ltd.</td>
<td>PTT DIGITAL 20.00%</td>
</tr>
<tr>
<td>PTT Energy Solutions Co., Ltd.</td>
<td>PTTES 40.00%</td>
</tr>
<tr>
<td>Energy Complex Co., Ltd.</td>
<td>EnCo 50.00%</td>
</tr>
</tbody>
</table>

Joint Ventures

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Cooling System and Power Plant</td>
<td>DCAP 35.00%</td>
</tr>
</tbody>
</table>

Others

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Fair value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baania (Thailand) Company Ltd.</td>
<td>Baania 2.73%</td>
</tr>
<tr>
<td>HG Robotics Plc.</td>
<td>HG Robotics 9.49%</td>
</tr>
<tr>
<td>Innospace (Thailand)</td>
<td>Innospace 15.75%</td>
</tr>
<tr>
<td>Sunfolding, Inc.</td>
<td>Sunfolding 5.59%</td>
</tr>
<tr>
<td>Luminar Technologies, Inc.</td>
<td>Luminar Technologies 0.06%</td>
</tr>
</tbody>
</table>

Remark:
1. Subsidiaries that PTT holds less than 50% but being consolidated because PTT has the power to control the financial and operating policies.
2. Holding portion of PTT Group (direct & indirect)

International Investment Business Group

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Energy Resources Co., Ltd.</td>
<td>PTTER 100.00%</td>
</tr>
<tr>
<td>PTT Green Energy Pte. Ltd</td>
<td>PTTEG 100.00%</td>
</tr>
<tr>
<td>PTT Global Management Co., Ltd.</td>
<td>PTTGM 100.00%</td>
</tr>
</tbody>
</table>

Others

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Fair value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Service Alliance Co., Ltd.</td>
<td>BSA 25.00%</td>
</tr>
<tr>
<td>PTT Treasury Center Co. Ltd</td>
<td>PTITCC 100.00%</td>
</tr>
</tbody>
</table>

Joint Ventures

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suez Environmental Services Co.,Ltd.</td>
<td>SES 40.00%</td>
</tr>
</tbody>
</table>

Others

<table>
<thead>
<tr>
<th>Subsidiaries</th>
<th>Fair value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sarn Palung Social Enterprise Company Ltd.</td>
<td>SPSE 20.00%</td>
</tr>
<tr>
<td>Dhipaya Insurance Plc.</td>
<td>TIP 13.33%</td>
</tr>
</tbody>
</table>

Remark:
3. Entire business transfer to TOP on 1 Feb. 2021
4. PTT holds 100.00% of BSA’s ordinary shares, PTT’s ownership interest in BSA is 100%
E&P Performance

QoQ: Soften net income without recognition of gain from Oman Block 61 acquisition despite improved operating performance.

HoH: Strengthen performance from higher sales volume and prices.

Product Prices

Sales Volume

KBOED

Net Income (100%)
E&P: Guidance & Strategy

**2021 Guidance**

- **Average Sales Volume**: ~405 Q3 & Full year
- **Average Gas Price**: ~5.7 USD/MMBtu
- **Unit Cost**: ~28–29 USD/BOE
- **EBITDA Margin**: ~70–75% of Sales Revenue

**Note:**
- * Include sales volume from ADNOC Gas Processing (AGP)
- ** Based on average Dubai oil price in 2021 at 67.6 $/BBL

---

**Strengthen Core Business**

**Strategy Focus**

- **E&P Business Growth in Core Area & Strategic Partnership**
- **Non-E&P Business Diversifying into Tech, Power and New Business**

- **Thailand**
  - Ensure domestic gas supply continuity
  - Accelerate resources recovery from onshore assets
  - Find new growth opportunity from OGA and盆地

- **Malaysia**
  - Complete developed and synergistic units
  - Focus on Long Labah (LLB) Development
  - Resources monetization from exploration blocks

- **Myanmar**
  - Pioneer growth in Western Division
  - Unlock full potential of existing assets
  - Strengthen political situation

**Potential Business Opportunities**

1. **Carbon Capture Utilization**
   - Potential Products: Methanol, Hydrocarbons
   - Low carbon initiative by burning CO₂ into high-value products
   - Support GHO reduction targets

2. **New Biz Opportunities**
   - Studying alternative future energy

---

**Directions and Long-Term Targets**

**Execute & Expand**

<table>
<thead>
<tr>
<th>Sustainable E&amp;P Business</th>
<th>Diversification to non-E&amp;P</th>
<th>Resources Preparedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production CAGR 5% in 2030, maintain @70% NKHED after 2026</td>
<td>Net income contribution 20% by 2030</td>
<td>Resilient organization for both E&amp;P and non-E&amp;P</td>
</tr>
<tr>
<td>R/P &gt; 5 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Cost ≤ 25 $/BOE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Strategy:**

- GHG emission intensity reduced by 25% in 2030
- PTTEP’s viability as a Guardian of the Oceans

**New Business – ARV**

- End-to-end 3D/Augmented Reality Inspection Repair and Maintenance (IRM)
- 
  - ROV Inspection & repair
  - Xplorer AUV Inspection & repair
  - Sky Runner Inspection & repair
  - Data & Software Analytics & Insights
- Heart’s Styra Farming and Thrust Prowler Solution
- Shark Sprayer Drusels
- Airius Platforms
- HealthTech

**Business Highlights**

- Delivered ROV support for pipelines maintenance worldwide
- Awarded for Zawaira pipeline survey
- Awarded for ME ROV Support project
- 15 sales opportunities in pipeline
- 1,260 cubic metres of data analytics performed in POC stage
- 31 ROV inspection drones confirmed for sale in the first quarter
- Ongoing discussions with 3 additional installation providers
- Awarded for 48 ROV spraying service
- 15 sales opportunities in pipeline
- 20,000 units of ICT cloud-based service for Covid-19 vaccine
- Ongoing development of COVID-19 risk management platforms (Therapeutica) for Department of Health
- Ongoing health ecosystem platform development (ARUC) with potential 1.3mn users on board
- Ongoing POC, development of wellness platform with DOH

---

*Note:*
- Includes sales volume from ADNOC Gas Processing (AGP)
- Based on average Dubai oil price in 2021 at 67.6 $/BBL
Gas Business

QoQ: Improved NG vol. mainly from power producers during summer while pooled price picked up
HoH: Increased gas sales vol., lower pooled gas cost and higher industrial selling prices referenced to FO price

NG Price VS FO & Customer Breakdown

**NG Price**

<table>
<thead>
<tr>
<th>$/MMBTU</th>
<th>Fuel Oil</th>
<th>Avg. Pooled gas price</th>
</tr>
</thead>
<tbody>
<tr>
<td>416</td>
<td>7.31</td>
<td>Avg. 2019 = 7.25</td>
</tr>
<tr>
<td>422</td>
<td>7.19</td>
<td>Avg. 1H20 = 7.02</td>
</tr>
<tr>
<td>403</td>
<td>7.30</td>
<td>Avg. 1H21 = 6.13</td>
</tr>
</tbody>
</table>

**Customer Breakdown**

- **NGV (3%)**
- **Industry (17%)**
- **GSP (21%)**
- **SPP (28%)**
- **IPP (14%)**
- **EGAT (17%)**

**NGV Price & Sales Volume**

**NGV Avg. price**

- Unit: THB/KG
- AVG. 2Q20 = 14.2
- AVG. 1Q21 = 13.4
- AVG. 1H21 = 13.8

**NGV Sales Vol.**

- Unit: K.Ton/Day
- 2Q20: 3.3
- 1Q21: 3.7
- 2Q21: 3.3
- 1H20: 4.0
- 1H21: 3.5

**Key Highlights**

- **QoQ**
  - Increased overall NG sales volume mainly from power customer during summer and unplanned shutdown of domestic coal power plants
  - NGV vol. reduced from impact of COVID-19 new waves

- **HoH**
  - NG sales vol. increased from almost all customers except NGV due to the recovery of economic activities
  - Lower pooled gas cost benefit to overall gas business
  - Industrial selling prices increased according to FO price linked
Gas Business: Gas Separation Plant (GSP)

QoQ: GSP performance enhanced from higher selling prices & volume
HoH: Outperformed GSP performance due to higher selling prices & volume together with lower feed cost

**GSP Sales Vol. & U-Rate**

<table>
<thead>
<tr>
<th></th>
<th>U-Rate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>81.5%</td>
<td>94.7%</td>
<td>95.9%</td>
</tr>
</tbody>
</table>

Unit: kTon

**1% QoQ**

**20% YoY**

**GSP Feed Cost vs Petchem. Price**

Unit: $/Ton

<table>
<thead>
<tr>
<th></th>
<th>LPG*</th>
<th>Pentane (1%)</th>
<th>Propane (15%)</th>
<th>Ethane (32%)</th>
<th>NGL (9%)</th>
<th>LPG (43%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Q19</td>
<td>456</td>
<td>309</td>
<td>309</td>
<td>1,062</td>
<td>1,441</td>
<td>1,493</td>
</tr>
<tr>
<td>2Q19</td>
<td>453</td>
<td>314</td>
<td>314</td>
<td>1,062</td>
<td>1,441</td>
<td>1,780</td>
</tr>
<tr>
<td>3Q19</td>
<td>457</td>
<td>314</td>
<td>314</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>4Q19</td>
<td>469</td>
<td>334</td>
<td>334</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>1Q20</td>
<td>472</td>
<td>331</td>
<td>331</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>2Q20</td>
<td>472</td>
<td>331</td>
<td>331</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>3Q20</td>
<td>472</td>
<td>331</td>
<td>331</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>4Q20</td>
<td>472</td>
<td>331</td>
<td>331</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>1Q21</td>
<td>472</td>
<td>331</td>
<td>331</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
<tr>
<td>2Q21</td>
<td>472</td>
<td>331</td>
<td>331</td>
<td>1,062</td>
<td>1,441</td>
<td>1,797</td>
</tr>
</tbody>
</table>

*Note: LPG Domestic ** Feed cost calculation per GSP production volume

**Key Highlights**

**QoQ**

- Higher GSP's selling prices following referenced global petrochemical prices
- Increased sales volume & U-Rate according to higher petrochemical demand & no planned maintenance shutdown
- Feed gas cost increased in line with gulf gas

**HoH**

- Increased GSP's selling prices following global petrochemical prices
- Higher sales volume according to higher petrochemical demand and less plants' shutdown
- Lower feed gas cost
Trading Business:
QoQ: Performance decreased owing to lower gross margin and sales volume
HoH: Lower EBITDA due to lower sales volume impacted from Covid-19 pandemic

Gross Margin

<table>
<thead>
<tr>
<th>Unit1: THB/Liter</th>
<th>0.09</th>
<th>0.09</th>
<th>0.07</th>
<th>0.08</th>
<th>0.08</th>
</tr>
</thead>
</table>

- ▼ 22% QoQ
- ▼ 22% YoY

Trading – EBITDA

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
<th>1,251</th>
<th>1,138</th>
<th>907</th>
<th>2,158</th>
<th>2,045</th>
</tr>
</thead>
</table>

- ▼ 20% QoQ
- ▼ 27% YoY
- ▼ 5%

Sales Volume

<table>
<thead>
<tr>
<th>Unit2: MM Liter</th>
<th>18,411</th>
<th>18,933</th>
<th>18,224</th>
<th>38,425</th>
<th>37,157</th>
</tr>
</thead>
</table>

- ▼ 4% QoQ
- ▼ 1% YoY
- ▼ 3%

Key Highlights

Expanding on LNG business by increasing our shipments across the world (10 shipments; 628 KT in 1H21)

QoQ▼
- Decreased gross margin from lower spread of LNG, LPG, and FO despite improved domestic condensate
- Lower sales vol. from Crude & Condensate import impacted by Covid-19 new waves and seasonal winter demand of LNG, LPG, and FO in 1Q21
- Declined EBITDA following lower gross margin and sales volume

HoH▼
- Volume decreased due to lower out-out & out-in transactions of crude oil impacted by Covid-19 pandemic started since March 2020

▼ Overall gross margin remained stable with improved domestic condensate margin in 1H21 offset with lower sharing from Joint Trade Agreement (JTA)
- EBITDA dropped from lower volume impact

1 PTT Trading BU + trading subsidiaries: FX Adjusted + gain/loss on derivatives + Joint Trade Agreement (JTA)
2 PTT Trading BU + trading subsidiaries + JTA
3 PTT Trading BU + trading subsidiaries: FX Adjusted + gain/loss on derivatives
Oil Business: OR Group

QoQ: NI dropped from lower oil margin and sales volume pressured by new waves of COVID-19
HoH: Improved performance from higher oil margin despite decreased oil sales volume as well as non-oil expansion

Oil Business

Dubai (USD/BBL)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>1Q20</th>
<th>2Q20</th>
<th>3Q20</th>
<th>4Q20</th>
<th>1Q21</th>
<th>Apr'21</th>
<th>May'21</th>
<th>Jun'21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. H21</td>
<td>40.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. 2Q21</td>
<td>66.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Margin* (THB/Litre)</th>
<th>0.83</th>
<th>1.31</th>
</tr>
</thead>
<tbody>
<tr>
<td>1H21</td>
<td>1.23</td>
<td></td>
</tr>
</tbody>
</table>

Sales Volume (MM Liter)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>5,433</td>
<td>5,910</td>
<td>5,542</td>
<td>5,191</td>
<td>5,433</td>
</tr>
<tr>
<td>Gasoline</td>
<td>24%</td>
<td>25%</td>
<td>24%</td>
<td>25%</td>
<td>24%</td>
</tr>
<tr>
<td>Fuel Oil</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>Diesel</td>
<td>51%</td>
<td>47%</td>
<td>47%</td>
<td>47%</td>
<td>47%</td>
</tr>
<tr>
<td>Aviation LPG</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
</tr>
</tbody>
</table>

*Gross margin included stock gain/(loss)

Non-Oil Business

Amazon

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cups</td>
<td>60 MM Cups</td>
<td>73 MM Cups</td>
<td>70 MM Cups</td>
<td>128 Cups</td>
<td>143 Cups</td>
</tr>
<tr>
<td>3,084 Outlets</td>
<td>3,376 Outlets</td>
<td>3,452 Outlets</td>
<td>3,084 Outlets</td>
<td>3,452 Outlets</td>
<td></td>
</tr>
</tbody>
</table>

C-Store (7-11, Jiffy)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>1Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cups</td>
<td>1,938 Outlets</td>
<td>1,995 Outlets</td>
<td>2,018 Outlets</td>
<td>1,938 Outlets</td>
<td>2,018 Outlets</td>
</tr>
<tr>
<td>4% QoQ</td>
<td>4% YoY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Net Income

Unit: MMTHB

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>520</td>
<td>4,003</td>
<td>3,225</td>
<td>2,418</td>
<td>7,228</td>
</tr>
<tr>
<td>QoQ</td>
<td>19% QoQ</td>
<td>19% YoY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HoH</td>
<td>&gt;100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

QoQ: Oil : Lower gross margin and dropped sales volume from new waves of COVID-19
Non-Oil: Slightly increased margin from lower operating expenses despite reduced sales from COVID-19 impact
HoH: Oil : Better gross margin while sales volume dropped mainly from Aviation fuel
Non-Oil: Improved gross margin from outlet expansion
P&R Businesses

QoQ: Performance enhanced mainly from petrochemical business especially Aromatics despite lower stock gain.

HoH: Significantly improved performance from stock gain and petrochemical prices bounced back following global economic recovery.

### Olefins

<table>
<thead>
<tr>
<th>U-Rate</th>
<th>PP:</th>
<th>HDPE:</th>
<th>LLDPE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td></td>
<td>104%</td>
<td>93%</td>
</tr>
<tr>
<td>2Q20</td>
<td></td>
<td>1,365</td>
<td>1,146</td>
</tr>
<tr>
<td>1Q21</td>
<td></td>
<td>1,336</td>
<td>1,191</td>
</tr>
<tr>
<td>2Q21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. Price</td>
<td>$/Ton</td>
<td>871</td>
<td>760</td>
</tr>
<tr>
<td>QoQ:</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Aromatics

<table>
<thead>
<tr>
<th>U-Rate</th>
<th>PP:</th>
<th>PX:</th>
<th>BZ:</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td></td>
<td>102%</td>
<td>100%</td>
</tr>
<tr>
<td>2Q20</td>
<td></td>
<td>99%</td>
<td></td>
</tr>
<tr>
<td>1Q21</td>
<td></td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>2Q21</td>
<td></td>
<td>74%</td>
<td></td>
</tr>
</tbody>
</table>

### Refinery

<table>
<thead>
<tr>
<th>U-Rate</th>
<th>Avg. Dubai</th>
<th>Acc. GRM</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>95%</td>
<td>96%</td>
</tr>
<tr>
<td>2Q20</td>
<td>30.6</td>
<td>1.5</td>
</tr>
<tr>
<td>1Q21</td>
<td>60.0</td>
<td>6.9</td>
</tr>
<tr>
<td>2Q21</td>
<td>67.0</td>
<td>4.4</td>
</tr>
</tbody>
</table>

### Net Income (100%)

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
<th>&gt;100% YoY</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>2Q20</td>
<td>31,811</td>
</tr>
<tr>
<td>1Q21</td>
<td>83</td>
</tr>
<tr>
<td>2Q21</td>
<td>79</td>
</tr>
</tbody>
</table>

### P&R: Projects Update

<table>
<thead>
<tr>
<th>Year</th>
<th>Project/Investment</th>
<th>Objective/Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>PO/Polyols</td>
<td>Create value added in Polyurethane chain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PO (200 KTA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polyols (130 KTA)</td>
</tr>
<tr>
<td>2021</td>
<td>MTP Retrofit (Olefins Reconfiguration)</td>
<td>Ethylene (500 KTA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Propylene (250 KTA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Olefins capacity 2,988 $\rightarrow$ 3,738 KTA</td>
</tr>
<tr>
<td></td>
<td>The establishment of Innopolymed</td>
<td>40% stake held by Innobic and 60% stake held by IRPC with a registered capital of Baht 260 million.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To manufacture and sell Non-Woven Fabric products as well as medical consumables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total capacity around 1,245 KTA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*100% in progress as of Dec 2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*The Company completed its registration in 2Q21</td>
</tr>
<tr>
<td>2023</td>
<td>Olefins investment (Investment in PT Chandra Asri: CAP)</td>
<td>To diversify geographic targets in specialty chemical and expand global footprint (Basic chemical $\rightarrow$ Performance Chemicals &amp; Green Chemicals)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Global producer of industrial coating resins and additives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total capacity around 1,245 KTA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Realized CAP contribution in 4Q21 onwards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Expected closing deal in 4Q21</td>
</tr>
<tr>
<td></td>
<td>CFP (Clean Fuel Project)</td>
<td>Further extend Hydro-Carbon value chain to Olefins</td>
</tr>
<tr>
<td></td>
<td>Ole 2 Modification plant project</td>
<td>Use excess feedstock from CFP project (Naphtha) to create more flexibility and competitiveness.</td>
</tr>
<tr>
<td></td>
<td>Ultra Clean Fuel</td>
<td>Investment 15.38% in petrochemical producer (Olefins) in Indonesia with total capacity around 4,232 KTA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*Increase 75 KBD of diesel capacity in Diesel Hydro-treating Unit</td>
</tr>
</tbody>
</table>

#### CAPEX
<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>888 MMUSD</td>
</tr>
<tr>
<td>2021</td>
<td>985 MMUSD</td>
</tr>
<tr>
<td></td>
<td>€4,002 million or equivalent to 148,417 MB</td>
</tr>
<tr>
<td></td>
<td>not exceed 1,183 M.USD or equivalent to 39,116 MB</td>
</tr>
<tr>
<td></td>
<td>4.8 Bn.USD incl. ERU unit 757 MMUSD</td>
</tr>
<tr>
<td></td>
<td>165 MMUSD or equivalent to 5,198 MB</td>
</tr>
<tr>
<td></td>
<td>13,300 MB</td>
</tr>
</tbody>
</table>

#### COD
<table>
<thead>
<tr>
<th>Year</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>Dec’2020</td>
</tr>
<tr>
<td>2021</td>
<td>2Q2021 (Jun)</td>
</tr>
<tr>
<td></td>
<td>Within 4Q2021</td>
</tr>
<tr>
<td></td>
<td>July 2021</td>
</tr>
<tr>
<td></td>
<td>CAP2 : 2026</td>
</tr>
<tr>
<td></td>
<td>1Q2023 (FID Jul’18)</td>
</tr>
<tr>
<td></td>
<td>1Q2023</td>
</tr>
<tr>
<td></td>
<td>Jan’2024</td>
</tr>
</tbody>
</table>
Other Business: Coal business (SAR)

QoQ: NI declined due to lower sales volume, and hedging loss as New Castle price spiked
HoH: NI increased from higher selling prices due to referenced New Castle price surged and lower DD&A

Avg. Selling Price\(^1\) & Cash cost\(^1\)

<table>
<thead>
<tr>
<th>Unit: $/Ton</th>
<th>New Castle</th>
<th>Total Cash Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2Q20</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>1Q21</td>
<td>52</td>
<td>46</td>
</tr>
<tr>
<td>2Q21</td>
<td>68</td>
<td>52</td>
</tr>
<tr>
<td>1H20</td>
<td>76</td>
<td>61</td>
</tr>
<tr>
<td>1H21</td>
<td>72</td>
<td>55</td>
</tr>
</tbody>
</table>

\(^1\) Average Calorific value ~ 5,400 kcal/kg

Sales Volume

<table>
<thead>
<tr>
<th>kTon</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Castle</td>
<td>1,622</td>
<td>1,468</td>
<td>1,251</td>
<td>3,257</td>
<td>2,719</td>
</tr>
<tr>
<td>Jembayan</td>
<td>1,472</td>
<td>1,468</td>
<td>1,221</td>
<td>3,257</td>
<td>2,689</td>
</tr>
</tbody>
</table>

Net Income (100%)

<table>
<thead>
<tr>
<th>Unit: MMUSD</th>
<th>2Q20</th>
<th>1Q21</th>
<th>2Q21</th>
<th>1H20</th>
<th>1H21</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>0.9</td>
<td>3.0</td>
<td>13.1</td>
<td>25.2</td>
<td></td>
</tr>
</tbody>
</table>

Key Highlights

QoQ
- Lower sales volume caused by lower production plan and rainy season in Indonesia
- NI declined mainly from hedging loss, as New Castle price rose

HoH
- Selling price largely improved following referenced New Castle price
- Cash cost increased from higher mining cost and gas oil price
- Sales volume dropped from lower production plan and cease operation of the Sebuku coal mine
- NI increased mainly from higher margin from sharply increased selling prices and lower DD&A from impairment of assets in 2020
TEG Business: Power - GPSC

QoQ: Higher NI from XPCL’s contribution, higher IPP’s gross profit, and partial insurance claim of Glow Energy Phase 5

HoH: NI increased mainly from XPCL’s contribution

**Sales Volume**

<table>
<thead>
<tr>
<th>Unit: Power: GWh / Steam: '000 Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power</strong></td>
</tr>
<tr>
<td><strong>QoQ</strong></td>
</tr>
<tr>
<td>2Q20</td>
</tr>
<tr>
<td>4,968</td>
</tr>
<tr>
<td>3,705</td>
</tr>
</tbody>
</table>

**Gross profit & Gross profit margin**

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross profit</strong></td>
</tr>
<tr>
<td><strong>Gross profit margin</strong></td>
</tr>
<tr>
<td><strong>QoQ</strong></td>
</tr>
<tr>
<td>2Q20</td>
</tr>
<tr>
<td>5,650</td>
</tr>
<tr>
<td>31%</td>
</tr>
</tbody>
</table>

**Net Income**

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QoQ</strong></td>
</tr>
<tr>
<td>2Q20</td>
</tr>
<tr>
<td>1,896</td>
</tr>
<tr>
<td>3% QoQ</td>
</tr>
<tr>
<td>317</td>
</tr>
<tr>
<td>2%</td>
</tr>
</tbody>
</table>

**QoQ**

+ Higher shares of profit of Xayaburi (XPCL) due to higher power sales
+ Higher gross profit
  + IPP: higher gross profit from higher AP due to lower plants maintenance in 2Q21
  - SPP: lower gross profit due to increased natural gas and coal cost
+ Recognized other income from partial insurance claim of Glow Energy Ph. 5 incident

**HoH**

+ Higher shares of profit of XPCL due to increased water level in this year
- Lower gross profit margin from IPP due to unplanned outage of GHECO 1 despite SPP higher demand from Industrial power
Upcoming Projects to Bolster Future Growth

- **SCOD | ERU**
  - Electricity (MW): 250
  - Steam (ton/day): 175

- **SCOD | Q4/2022**
  - Electricity (MW): 355
  - Steam (ton/day): 300

**Strategic Directions and Growth Strategy (3S Strategy)**

1. **Notes:**
   - Maintain original capacity of Glow Cogeneration plants
   - SPP Replacement Stage 1: Glow Energy Phase 2 (new plant with 2 PPAs with EGAT, total capacity of 192 MW electricity and 300 T/h steam; SCOD in 2022; SPP Replacement Stage 2: Glow SPP2 and Glow SPP3 is under feasibility study for internal investment approval)

**GPSC | Electricity Growth Pipeline**

- **4,750 MW**
  - 5,845 MW equity capacity
  - Total capacity

- **6,608 MW**
  - Total capacity

- **7,102 MW**
  - Total capacity

**GPSC | Corporate Strategy 2021: Strategic house (2021 – 2030)**

- **Vision:**
  - The global leading innovative and sustainable power company

- **Aspiration:**
  - To be the #1 power company in Southeast Asia with more than half of MW from green portfolio

- **Mission:**
  - To be a PTT GROUP power and smart energy flagship that innovatively pursue operational excellence to create value for stakeholders by delivering reliable products to customers with responsibility to the planet

- **Strategic Objectives:**
  - Retain existing customers and expand core offerings to new customers
  - Embrace energy transition, sustainability and convergence trends to offer new solutions
  - Develop competitive advantages in core and new businesses
  - Become a regional player by diversifying geographic focus to tap into fast-growing power markets

**Strategic Pillars:**

1. **Strengthen and expand the Core**
   - First class operators
   - Customer-centric value
   - Expansion into technologies (e.g., water)

2. **Scale-up Green energy**
   - Solar power scale-up
   - Wind power scale-up
   - EG-RE hybrid power energy

3. **S-curve & Batteries**
   - Energy storage systems
   - EV & Flexibility batteries
   - New S-Curves

4. **Shift to Customer-centric Solutions**

**Geography:**

- Thailand
- India
- Vietnam
- Taiwan

**Enablers:**

- Partnerships
- Financial discipline
- Technology & Digitalization
- Sustainability
- Agile & Resilient Organization
- Operational Excellence
Natural Gas Price Structure: As of Jun 2021

Gas prices are mostly agreed under long term contracts and volatility pass-through to ensure stable returns

<table>
<thead>
<tr>
<th>Customers</th>
<th>Sales Price Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Producers 59%</td>
<td>Gas Pool Price + Supply Margins + Pipeline Tariffs</td>
</tr>
<tr>
<td>: EGAT 17%</td>
<td>Average Purchased Gas Price: 1.75% *</td>
</tr>
<tr>
<td>: IPP 14%</td>
<td>1.75% *</td>
</tr>
<tr>
<td>: SPP 28%</td>
<td>9.33% *</td>
</tr>
<tr>
<td>GSP 21%</td>
<td>21.7 Bt/MMBtu</td>
</tr>
</tbody>
</table>

**Power Producers 59%**
- Charged at the same price structure of power producers
- EGAT IPP and SPP Supply Margins not more than 2.1525 and 11.4759 Bt/MMBtu respectively

**GSP 21%**
- Petrochemicals Feedstocks
  - Ethane, Propane, LPG
- NGL
- Local Cooking Gas
- Export Cooking Gas

**Industry 17%**

**NGV 3%**

### Charged at the same price structure of power producers
- Profit-sharing mechanism based on market prices of petrochemicals
- Reference to Naphtha market price
- At GSPs cost (adjusted every 3 months)
- Reference to a bi-weekly average of Platt’s FOB Arub Gulf price

### Charged at prices comparable to fuel oil
- Charged at Avg. gas cost + Operating cost (3.892 Bt/kg) for both Public & Private vehicles
- NGV’s selling price reflects the natural gas cost and operating cost* (including gas quality adjustment)
  * The allowed operating cost is still regulated and not fully cover PTT’s operating cost
- As of 16 Jul 2021 = 14.55 Baht/Kg.

### Public transportation vehicles: regulated and capped to minimize the impact from the rising global crude prices on end-users
- Since 16 May 2018: Allowance to adjust NGV public price from 10.62 Baht/Kg. to 13.62 Baht/Kg. by every 4 month (16 May 19, 16 Sep 19 and 16 Jan 20)
- Since 3 Jan 2021: Use the same pricing as private vehicles
- Since 1 Jan 2021: Public transportation vehicles: regulated and capped to minimize the impact from the rising global crude prices on end-users
- Since 5 Sep 2017: Allowance to adjust +0.46 Baht/Kg. to 3.8920 Baht/Kg. for gas quality improvement cost

### Private vehicles: reflect the natural gas cost, gas quality adjustment and operating cost (not fully cover PTT’s operating cost)
- Since 16 Jul 2016: The retail price is set to reflect the natural gas cost but operating cost is still regulated
- Since 16 Jul 2016: The retail price is set to reflect the natural gas cost but operating cost is still regulated
- Since 5 Sep 2017: Allowance to adjusted +0.46 Baht/Kg. to 3.8920 Baht/Kg. for gas quality improvement cost
Gas Business Generates Stable Returns

Overview

- Sole owner and operator of entire gas transmission pipelines in Thailand (~4,000 km), a regulated business
  - IRROE ranges between 12.5% - 18% for transmission pipeline investment
- Supply & marketing of natural gas provides fixed margin with long-term contracts of 25-30 years
- 6 Gas Separation Plants: Total production 6.7 MTA; are on petrochemical market price-linked profit sharing basis

Gas Separation Plant Capacity

- Unit 1: 420 MMcf/d
- Unit 2 and 3: 820 MMcf/d
- Unit 4: 170 MMcf/d
- Unit 5: 580 MMcf/d
- Unit 6: 880 MMcf/d

Gas transmission pipeline capacity
Thank you

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