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

**Supply**
- Import (83%) 890 KBD
- Indigenous (17%) 179 KBD

**Production**
- Crude/ Condensate 854 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

**Demand**
- Domestic
- Refined Products 979 KBD*
- Refined Products 201 KBD
- Export
- Crude Export 17 KBD
- 817 KBD (**)
- 218 KBD

**Remark:**
(*) Refined product from refineries = 888 KBD, including domestic supply of LPG from GSPs and Petrochemical Plants = 91 KBD
(**) Included Inventory
KBD = Thousand Barrels per day

Source: PTIT
Natural Gas Balance: Jan – Sep 2021

Main driver of the Thai economy

Supply

Gulf of Thailand (63%)
- PTTEP, 41%
- Others, 59%

Onshore (2%)

Import (35%)
- Myanmar, 44%
- LNG, 56%

Production

2,832 MMSCFD

Bypass Gas
372 MMSCFD

6 GSPs
Total Capacity
2,870 MMSCFD @ Actual Heat

Methane
1,536 MMSCFD

Ethane/
Propane/
LPG/NGL

Petrochemical Feedstock
(12%)

Industry House
Hold Transportation
(8%)

Power (60%)

Industry (17%)

NGV (3%)

Sales

924 MMSCFD
(20%)

1,574 MMSCFD

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

**Market Cap : SET & PTT Group**

- SET market Cap: Bt 18,410 bn (USD 585Bn)
- PTT Group: Bt 2,408 bn (USD 77Bn)

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

- Revenue: 12,553 and CAGR 7%
- Net Income: 702 and CAGR 3%

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue</th>
<th>Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>702</td>
<td>19%</td>
</tr>
<tr>
<td>2020</td>
<td>1,200</td>
<td>47%</td>
</tr>
</tbody>
</table>

Note: As of Nov 30, 2021

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

- Thai Ministry of Finance: 51%
- Vayupak Fund: 12%
- Public: 37%
- Foreign: 9%
- Thai: 28%

Note: As of Sep 30, 2021

**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+

**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: 2,039 retail stations and ~42% of market share by sales volume
- International oil trading business having traded 54.1 bn liters (75.5 bn liters in 2020)
- Power Plant flagship with committed capacity of 7,102 MW (equity portion)

1. 2020 Annual Avg. BOT selling rate USD/THB of 31.46 (Avg. rate)
2. As of Sep 2021

**International and local recognition**

- The Forbes Global 2000:
  - 170th in 2020
  - 165th in 2019
  - 156th in 2018
  - 190th in 2017
  - 337th in 2016

- Platts Top 250 Global Energy Company:
  - 23rd in 2020
  - 21st in 2019
  - 10th in 2018
  - 12th in 2017
  - 63th in 2016

- Fortune Global 500:
  - 140th in 2020
  - 130th in 2019
  - 163rd in 2018
  - 192nd in 2017
  - 146th in 2016
  - 93rd in 2015

- Dow Jones Sustainability Index (DJSI):
  - Dow Jones Sustainability Index (DJSI): Member 2011-2021 (10th consecutive years)
PTT Group Businesses and Activities

**Upward Integration** (PTT Operate through our subsidiaries)

- **E & P**
  - PTTEP (65.29%)
    - Oil, Gas, Condensate
    - > 40 Projects in 15 Countries
    - 1,074 mmboe proved reserves or 7 years in 2020

- **LNG**
  - (50%)
  - (100%)
    - LNG Value Chain
    - LNG Receiving Facilities

- **Coal**

Coal Mine in Indonesia
(In process for divestment)

**PTT Own Businesses** (PTT’s own operation)

- **Natural Gas**
  - 4 gas pipelines
  - 6 Gas Separation Plants
  - Procurement & Marketing
  - NGV

- **Trading**
  - Crude Procurement
  - Import/Export
  - Commodity Hedging
  - Int'l Office: China/ Singapore/ Abu Dhabi/ London/ USA/ Thailand
    - Traded 54.1 bn liters

- **Technology & Engineering**
  - Engineering & Project Mgt.
  - Asset management
  - Innovation & Digital

**Downward Integration** (PTT Operate through our subsidiaries)

- **Oil & Retail**
  - Market Share ~ 42%
    - Oil (2,039 stations in Thailand)
  - Non-oil Retail
  - Lubricants
  - International Oil & Retail

- **Refineries**
  - Market Share > 50%
    - Largest refinery group in Thailand: 3 of 6 refineries

- **Petrochemicals**
  - Market Share > 50%
    - Integrated Refineries & Petrochemical

- **Power**
  - 7,102 MW (equity portion)
    - Electricity
    - Steam & Chill Water
    - Energy Storage

- **LNG**
  - LNG Value Chain
  - LNG Receiving Facilities

**PTT Group’s renewable energy portfolio is ~2.7 GW**

- **Future Energy**
  - Renewable Energy
  - EV Chain
  - ARUN (100%)
  - meso (100%)
  - SWAPGO (75%)
  - IOPC (75%)
  - GPSC (100%)

- **Beyond Energy**
  - Life Sciences
  - AI Robotics
  - INNIBIC (100%)
  - Pharmaceutical
  - Medical device
  - Nutrition
  - (6.66%)*
  - JV with IRPC (PTT 40 : IRPC 60)
  - JV with NRF (50:50)

- **New Business**
  - AI / Robotics
  - Cloud service, Data center
  - Digital platform

Remark: Percentage holding as of Sep 2021
1 As of Sep 2021 / 2 Holding portion of PTT Group (direct & indirect) / Increase stake to 37% (direct&indirect) in 1Q2022
Key Activities in 3Q2021

What we have done so far?

- Establishment of EVME PLUS as digital service platform to promote EV
- JV (60%) with FOXCONN for the electric vehicle manufacturing business
- MOU with Hozon to explore opportunities for EV market expansion and production with the facility of JV between Arun+ and Foxconn in Thailand
- JV (50%) with BGRIM for operating in LNG Business to procure and supply LNG (Seeking for further business opportunities related to LNG value chain)
- PTT – EGAT renewed 10 years Gas purchase agreement for Nam Phong Power Plant

- Established 7 subsidiaries to support future investment, especially in AI and Robotics such as
  - ROVULA: Marine inspection
  - SKYLLER: Integrated asset inspection via drone
  - VARUNA: Smart farming
  - CARIVA: Health data network
- Establishment of ORZON VENTURES to invest in high-potential startup companies in Thailand and Southeast Asia
- Investment in Imsub Global Cruisine to strengthen OR’s food and beverage business
- Establishment of GC Marketing Solutions (Shanghai) to support trading business (Polymer) in China
- Investment in HVB (coating resins) (Acquired 100% in Allnex)
- FID Bioplastic project plant 2 (capacity: 75,000 tons per year)
- Investment 15.4% in petrochemical producer (Olefins) in Indonesia (PT Chandra Asri)
- FID Refinery Efficiency and Diesel Quality Improvement Project for EURO V Standards (Ultra Clean Fuel)
- 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)
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Key Business Drivers:
QoQ: Crude and most of product prices increased from improved demand following easing of lockdown while supply remained tight.
9M21 vs 9M20: All petroleum and petrochemical prices improved from the demand recovery still pooled gas price dropped with lag time.

AVG. Petroleum Prices ($/bbl)

AVG. NG Prices ($/MMBTU)

Petrochemical Prices (Avg. $/ton)

AVG. FX (THB/USD)
PTT Consolidated Performance: 3Q2021 & 9M2021

QoQ: NI soften primarily from P&R and Oil businesses due to lower demand impact of Covid-19 Delta variant
9M21 vs 9M20: Robust performance as a result of petroleum & petrochemical demand recovery in line with global trend

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.

PTT Consolidated Performance: 3Q2021 & 9M2021

- **REVENUE**
  - QoQ: 5% growth, YoY: 46%
  - 9M2021: 1,569,981 MB
  - 9M2020: 1,208,491 MB

- **EBITDA**
  - QoQ: 2% decrease, YoY: >100%
  - 9M2021: 326,685 MB
  - 9M2020: 154,058 MB

- **NI**
  - QoQ: 4% decrease, YoY: >100%
  - 9M2021: 80,819 MB
  - 9M2020: 326,685 MB

- **Oil & Retail**
  - 9M2021: 326,685 MB

- **Trading**
  - 9M2021: 24,619 MB

- **Gas**
  - 9M2021: 24,619 MB

- **Others**
  - 9M2021: 80,819 MB
3Q21 vs 2Q21 PTT Consolidated Performance (QoQ):

NI slightly declined from impact of Covid-19 Delta variant while upstream and gas remained resilient

**Net Income ▼ 4%**

22,165

**Operating Net Income excl. Extra items & stock gain/(loss) ▼ 18%**

18,073

**PTT’s write-off on obsolete materials and supplies of 702 MB and TOP’s gain on divestment of UBE 233 MB**

- GC’s Emery Oleochemicals impairment of 1,463 MB, tax from selling stakes of GPSC 2,264 MB, and PTT’s reverse gain from LNG reloaded 580 MB

**Others**

- PTTT: Improved out-of-margin of crude and petroleum products
- PTNGD: Higher industrial selling price referenced to FO
- Coal: Increased in selling prices, and sales volume due to higher demand from energy shortage crisis offset with increased income tax and hedging loss

**TEG (mainly from power)**

- Increased in shareholding in GPSC despite lower GPSC’s performance from IPP & SPP’s outages and rising fuel cost

**Oil & Retail**

- Both oil and non-oil have decreased sales volume and gross margin impacted by from COVID-19 Delta variant

**Petrochemical & Refining**

- Refinery:
  - Lower sales volume from shutdown and higher crude premium
  - Increased hedging loss despite higher Mkt GRM

- Olefins: Lower PE prices and higher feedstock price
- Aromatics: Increase in PX spreads from tight supply despite lower BZ spread

**PTTEP**

- Lower loss from oil price hedging
- Higher avg. selling prices from higher liquid gas prices
- Sales volume dropped from Bongkot, MTJDA, and Yadana project

**PTT Gas**

- GSP: Higher avg. selling prices mainly from LPG and propane while there was major turnaround of GSP#6
- S&M: Higher industrial selling price referenced to FO despite lower gas sales volume

**Trading**

- Higher domestic condensate margin
- Higher loss on FX due to more Baht depreciation

**Remark:**

1. Others business mainly contributed from PTT LNG, PTNGD, PTTT and PTGVM etc.
2. Technology and Engineering business mainly contributed from power business

**Extra Items**

* (*PTT’s portion net tax amount)*
### 9M21 vs 9M20 PTT Consolidated Performance (YTD):
Escalated performance driven from most of PTT Group Businesses

<table>
<thead>
<tr>
<th>Category</th>
<th>9M20</th>
<th>9M21</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(MMTHB)</td>
<td>(MMTHB)</td>
<td>(Change)</td>
</tr>
<tr>
<td><strong>Net Income</strong></td>
<td>24,619</td>
<td>80,819</td>
<td>&gt;100%</td>
</tr>
<tr>
<td><strong>Operating Net Income</strong> excl. Extra items &amp; stock gain/(loss)**</td>
<td>40,862</td>
<td>58,804</td>
<td>44%</td>
</tr>
</tbody>
</table>

#### MMTHB

<table>
<thead>
<tr>
<th>Category</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Margin</strong></td>
<td>6,637</td>
<td>2,079</td>
</tr>
<tr>
<td><strong>Stock Gain/(Loss)</strong></td>
<td>5,849</td>
<td>13,898</td>
</tr>
<tr>
<td><strong>9M20</strong></td>
<td>9,280</td>
<td>27,011</td>
</tr>
</tbody>
</table>

#### Extra Items*

<table>
<thead>
<tr>
<th>Category</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP: Gain on bargain purchase of Oman Block 61</td>
<td>2,909 MB</td>
<td>2,909 MB</td>
</tr>
<tr>
<td>GC: Emery Oleochemicals impairment of 1,463 MB, and tax from selling stakes in GPSC 2,264 MB</td>
<td>2,909 MB</td>
<td>2,264 MB</td>
</tr>
<tr>
<td>PTTGM: Coal mining impairment of 857 MB</td>
<td>2,909 MB</td>
<td>857 MB</td>
</tr>
</tbody>
</table>

#### Others

<table>
<thead>
<tr>
<th>Category</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coal</strong></td>
<td>28%</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Petrochemical &amp; Refining</strong></td>
<td>3%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td><strong>Refinery</strong></td>
<td>99%</td>
<td>25%</td>
</tr>
<tr>
<td><strong>PTTNGD</strong></td>
<td>25%</td>
<td>&gt;100%</td>
</tr>
<tr>
<td><strong>TEG (mainly from power)</strong></td>
<td>2%</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Oil &amp; Retail</strong></td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Extra Items</strong></td>
<td>10%</td>
<td>9%</td>
</tr>
</tbody>
</table>

#### Remark:

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’s portion net tax amount*
## PTT EBITDA Breakdown by Business

<table>
<thead>
<tr>
<th>Business</th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
<th>QoQ</th>
<th>YoY</th>
<th>9M20</th>
<th>9M21</th>
<th>9M21 vs 9M20</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAS</td>
<td>13,279</td>
<td>22,134</td>
<td>23,388</td>
<td>▲ 6%</td>
<td>▲ 76%</td>
<td>38,740</td>
<td>67,297</td>
<td>▲ 74%</td>
</tr>
<tr>
<td>S&amp;M</td>
<td>2,044</td>
<td>3,732</td>
<td>4,281</td>
<td>▲ 15%</td>
<td>▲ &gt;100%</td>
<td>5,324</td>
<td>12,788</td>
<td>▲ &gt;100%</td>
</tr>
<tr>
<td>TM</td>
<td>8,727</td>
<td>8,577</td>
<td>8,463</td>
<td>▼ 1%</td>
<td>▼ 3%</td>
<td>26,766</td>
<td>25,160</td>
<td>▼ 6%</td>
</tr>
<tr>
<td>GSP</td>
<td>582</td>
<td>7,384</td>
<td>8,198</td>
<td>▲ 11%</td>
<td>▲ &gt;100%</td>
<td>1,910</td>
<td>21,802</td>
<td>▲ &gt;100%</td>
</tr>
<tr>
<td>NGV</td>
<td>(413)</td>
<td>(425)</td>
<td>(465)</td>
<td>▼ 9%</td>
<td>▼ 13%</td>
<td>(1,677)</td>
<td>(1,111)</td>
<td>▲ 34%</td>
</tr>
<tr>
<td>Others</td>
<td>2,339</td>
<td>2,866</td>
<td>2,911</td>
<td>▲ 2%</td>
<td>▲ 24%</td>
<td>6,417</td>
<td>8,658</td>
<td>▲ 35%</td>
</tr>
<tr>
<td>Trading</td>
<td>601</td>
<td>907</td>
<td>1,942</td>
<td>▲ &gt;100%</td>
<td>▲ &gt;100%</td>
<td>2,759</td>
<td>3,987</td>
<td>▲ 45%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,880</td>
<td>23,041</td>
<td>25,330</td>
<td>▲ 10%</td>
<td>▲ 82%</td>
<td>41,499</td>
<td>71,284</td>
<td>▲ 72%</td>
</tr>
</tbody>
</table>

Unit: MMTHB
Financial Position
Strong Balance Sheets maintained credit ratings

Consolidated Balance Sheets

MMTHB

\[\begin{array}{c|c|c}
\text{Cash & ST Invest AR & Other} & \text{PPE} & \\
\text{Current Assets} & & \\
\text{Others Non-current} & & \\
\text{Assets} & & \\
\hline
31 Dec 20 & 416,921 & 304,010 & 1,292,717 \\
30 Sep 21 & 462,835 & 795,503 & 1,285,845 \\
\end{array}\]

\[\begin{array}{c|c|c}
\text{AR & Other Current} & \text{AP & Other} & \text{Total} \\
\text{Assets} & Liabilities & Equity \\
\hline
31 Dec 20 & 473,063 & 599,582 \\
30 Sep 21 & 435,877 & 935,660 \\
\end{array}\]

\[\begin{array}{c|c|c|c}
\text{Interest Bearing Debt (IBD)} & & & \\
\hline
31 Dec 20 & 650,830 & & \\
30 Sep 21 & 935,660 & & \\
\end{array}\]

\[\begin{array}{c|c|c}
\text{Total Equity} & & \\
\hline
31 Dec 20 & 1,410,232 & \\
30 Sep 21 & 1,434,760 & \\
\end{array}\]

Key Financial Ratios

- Net Debt/EBITDA ≤ 2.0
- Net Debt/Equity ≤ 1.0

PTT Ratings at Sovereign Level

<table>
<thead>
<tr>
<th></th>
<th>Moody’s</th>
<th>S&amp;P Global</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
+ Increase in Long-term investments from TOP’s investment in CAP and GPSC’s investment in Avaada
+ Higher PPE from PTTEP’s business acquisition of Oman Block 61 and TOP’s construction in progress of Clean Fuel Project
+ Increase in Equity due to PTT group’s net profit and OR’s capital increase
+ Higher Interest Bearing Debt (IBD) from increase in long-term borrowing mainly from PTT, GC, and TOP
Dividend Policy & Historical Payments

1H2021 Dividend payout at 60.0%

Avg. since IPO 47%

Dividend payout

32.4% 32.6% 29.8% 30.1% 30.3% 30.8% 33.0% 43.6% 40.4% 34.7% 34.9% 35.5% 40.0% 54.1% 49.0% 42.8% 48.2% 62.5% 75.8% 60.0%

25% PTT’s min. payout ratio Policy

Baht / share

* Split par value from 10 to 1 Baht/share since 24 April 2018
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
to empower and better life

Growth along the way of life

Positive Contribution to enhance livelihood

Low Carbon Society

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.
Directing energy business in line with future trend

**Reimagine**
- **Upstream**
  - Collaboration: Build LNG value chain platform
  - Accelerate: LNG portfolio development through partnership

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

**Reignite new business at speed and scale**

- **Future Energy**
  - Powering Downstream
  - Along with Future Energy
  - Expedite 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)

Focus on Lower-carbon portfolio
- Coal business divestment
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

Oil Ecosystem ➔ Energy Solution Ecosystem

F&B Ecosystem ➔ One-stop Solution Ecosystem
Overall Strategic Direction to achieve purpose of New Vision

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

1. **New growth**
   - **NI from Future Energy and Beyond > 30%**

2. **Business growth**
   - **LNG** 9 MTA
   - **Power (Conventional)** 8 GW
   - **Renewable energy** 12 GW

3. **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 |

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

**2030 GOAL**
Aim to achieve Carbon Neutrality By 2050, and Net Zero By 2065 (align with "National Energy Plan")
Aim to reduce GHG emission 15% from 2020

**2012** Base year

---

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

**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)
- CO₂ Credit Offset
- Circular Economy (GC, IRPC)
- Renewable/New Energy Investment (PTT, GPSC)

**SCOPE 3**
(Other Indirect Greenhouse Gas Emission)
- Biofuel / Low Carbon Product (OR, GC, IRPC, TOP, INI)
- Circularity Economy (GC, IRPC)
- Electric Mobility (PTT)

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

---

- **2018**
- **2021**
- **2030**
PTT Sustainability Strategic Direction

SUSTAINABILITY as Business Goal

Sufficiency Economy

Moderation

Reasonableness

Prudence

Knowledge

Virtues

Environmental

Social

Governance & Economics

ESG

DJSI

SDGs

PTT’s Sustainability DNA

ENVIRONMENTAL
Sustainable Production and Consumption

Low Carbon Society
Circular Economy

SOCIAL
People’s Well-being
Safety and Human Rights
Social Value

Workforce for New Growth

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

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

Transmission
12,983 MB
5th onshore Pipeline

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

Other wholly owned subsidiaries
20,225 MB
i.e. Arun plus, MTP Phase#3 (PTT Tank), Innobic

Unit: MMTHB
- Natural Gas
- Transmission
- PTTLNG
  - TEG, International Trading, Downstream
  - Other wholly owned subsidiaries

2021
2021 (revised)
2022
2023
2024
2025

67,504
52,931
33,412
8,597
6,663
1,664

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 ~Baht 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)

Unit: MMSCFD

CAGR (2021-2025) 3%

New Supply
Additional capacity (mmscfd)

Bongkot Erawan
700 800

Major Project: COD & Capacity/
Accumulate Pipeline distance

5th pipeline RA#6 Pipeline 4,702 KM
LNG Terminal 2 +7.5 MTA
GSP#7* 460 mmscfd
BPK-SB** pipeline 4,776 KM

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

Stronger demand of NG for power plants

Natural Gas growth upon
Government fuel diversification policy
for power generation

Unit: GWh

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

Unit: GWh

**Source: EPPO (Public Hearing presentation)**
Old*

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

NEW**

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

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

*Source: Ministry of Energy

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

**5th onshore pipeline (Phase I)**
- Length ~ 400 KM.

**5th onshore pipeline (Phase II&III)**
- LNG Terminal 2
  - 7.5 MTPA

**Increased stake in Lotus pharmaceutical**
- Entering into pharma business
- PTT hold ~37%

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

**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)

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

**GSP #7**
- (460 MMSCFD)
- Replace GSP #1
- EV manufacturing (JV with Foxconn)
  - *Arun+ holds 60%
  - Total Capacity 150,000 units/year

**ERU Project (Power 250 MW)**

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

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

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

**8th Gas Separation Plant**
- Bang Pakong–South Bangkok Pipeline
  - Length ~ 80 KM.

**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

**Completed**
- **In progress**
- **Wait for FID**
Contents

01 Overview
02 3Q2021 & 9M2021 Performance
03 Strategy
04 Outlook
05 Supplementary Information
2022 Petroleum and Gas Outlook

- **Dubai**
  - + Recovered demand driven by a rise in economic activity and vaccination campaigns
  - + Higher demand of power sector from gas-to-oil switching on the back of high LNG prices
  - + OPEC+ decided to maintain a gradual increase in production by 0.4 MBD every month
  - - Supply recovery from OPEC+, Iran, and US due to higher price and new budget year 2022

- **Mogas**
  - + Increasing demand as COVID-19 situation stabilizes and restrictions are lifted
  - + Low inventory level in U.S. and Europe
  - - Rising supply from higher refinery utilization rate along with recovered demand

- **Gasoil**
  - + Demand recovery from the industrial and transportation sectors
  - + High natural gas prices and coal shortages have incentivized the use of diesel generators
  - + Lower Chinese export from improved domestic demand and tighter government mandates to reduce carbon emission such as Dual control policy
  - - Rising supply from higher utilization rate along with recovered demand from Dec'21 onwards

- **Fuel Oil**
  - **HSFO:** + Firm power demand in South Asia and the utility demand during winter
  - - Easing supply from OPEC+ (High heavy distillate yield)
  - **VLSFO:** + Improved bunker demand and incremental heating demand amid high LNG price
  - - Easing supply from higher utilization rate and new capacity from Kuwait

- **Singapore GRM**
  - + Improved due to the continued strength of the light distillate and middle distillate spreads

- **Gas/LNG**
  - **Asian Spot LNG:** + Low European gas inventory level, strong demand to prepare for the winter
  - + Global trend to replace fossil fuel to cleaner energy driving more demand for LNG especially, China
  - **Henry Hub:** + Higher demand following the recovery of economic activities and easing of COVID-19 situation in US
### 2022 Petrochemical Outlook

#### Olefins
- **Incoming additional Asian capacities** from Northeast Asia and Southeast Asia especially China in 4Q2021-Y2022
- **Chinese government’s coal intervention** and **Easing US export supply** to put pressure on Asian market sentiment until Y2022
- **Chinese tight supply** from power outage and run rates reduction as a result of dual energy control policy
- **Expected demand recovery** according to brighter economic prospects and vaccination campaigns to support olefins prices in 4Q2021 - Y2022

#### Aromatics
- **Incoming additional Asian capacities** from Northeast Asia and Southeast Asia especially China in 4Q2021-Y2022
- **Dual energy control policy** and **Crude import quota** to put pressure on Asian market sentiment in Y2022
- **Expected more balanced BZ/PX markets** from new downstream demand, economic recovery in 4Q2021-Y2022

#### Naphtha
- **Demand recovery in 2022**
- **Low-to-no LPG substitution level amid high LPG prices**
- **Expectation on easing supply from higher refinery runs** due to better COVID-19 situation

---

**Price**

<table>
<thead>
<tr>
<th></th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
<th>2021(E)</th>
<th>2022(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HDPE</strong></td>
<td>1,191</td>
<td>1,138</td>
<td>839</td>
<td>1,158</td>
<td>1,160-1,210</td>
<td>1,120-1,170</td>
</tr>
<tr>
<td><strong>PP Film</strong></td>
<td>1,338</td>
<td>1,250</td>
<td>943</td>
<td>1,318</td>
<td>1,305-1,355</td>
<td>1,275-1,325</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
<th>2021(E)</th>
<th>2022(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BZ</strong></td>
<td>966</td>
<td>993</td>
<td>471</td>
<td>904</td>
<td>900-950</td>
<td>850-900</td>
</tr>
<tr>
<td><strong>PX</strong></td>
<td>859</td>
<td>919</td>
<td>583</td>
<td>848</td>
<td>850-900</td>
<td>870-920</td>
</tr>
</tbody>
</table>

**Price**

<table>
<thead>
<tr>
<th></th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
<th>2021(E)</th>
<th>2022(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Naphtha MOPJ</strong></td>
<td>606</td>
<td>676</td>
<td>370</td>
<td>613</td>
<td>650-660</td>
<td>660-670</td>
</tr>
</tbody>
</table>

---

Source: PTT, PRISM Petrochemical Rolling as of Oct 2021
**Business Outlook in 2022**

**E&P**: Improve crude oil price with competitive cost

**GAS**: + Domestic gas demand slightly increase despite higher gas cost compared to 2021

- **OIL**: + Resuming domestic demand + Strong network through expanding both of the oil and retail business

- **P&R**: + Refinery:
  - Improving Demand after the easing lockdown in Asia (SG GRM ➔ 4.0 – 5.0$/bbl)
  - PTT Group U-Rate ~94–97%
  - Petchem: more capacities addition from new plants will pressure the product prices

**Power**: Recover domestic electricity consumption

**New Energy**: + Expansion of EV charger
- Arun (+1,350 units & OR +~200 stations)
- FID - EV Platform (JV with Foxconn)

**Upcoming project**

- **5th Pipeline**
  - Phase I: 98.8% COD: Dec 2021
  - Phase II: 86.9% COD: Jan 2022
  - Phase III: In the process of preparing to construct To COD in Dec 2022

- **LNG Terminal #2**
  - 4,560 MW - GPSC hold 41.6% (1,500 MW in operating / 3,060 MW in progress)
  - Full COD: Dec 2022 COD: 1Q2022

- **Avaada Solar Power Platform in India**: 4,560 MW - GPSC hold 41.6%
  - 1,500 MW in operating / 3,060 MW in progress

**Maintenance Schedule**

- **Gas Separation Plants**
  - 2Q: ESP Major TA & GSP#2&3 TD: 23 days
  - 4Q: GSP#5 SD: 15 days

- **Petrochemical & Refinery Plants**
  - 2Q: Ole 3 & ARO I Major TA: ~1 month
  - 4Q: Ole 2/2 & HDPE Major TA: ~1 month
  - Refinery Plant Major TA: 50 days
  - 4Q: Refinery Plant Major TA: ~1 month
Supplementary Information

- PTT Group Performance: P.35-36
- Cash Flow: P.37-38
- Debt Profile: P.39
- PTT Group Accounting Structure: P.40
- Financial Performance by business: P.41-51
- Natural Gas Price Structure: P.52
- Gas Pipeline Business: P.53
## PTT Group Performance: 3Q2021 (QoQ & YoY)

### Unit: MMTHB

<table>
<thead>
<tr>
<th>Performance 100%</th>
<th>% PTT holding</th>
<th>Equity Method % PTT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3Q20</strong></td>
<td><strong>2Q21</strong></td>
<td><strong>3Q21</strong></td>
</tr>
<tr>
<td>PTT Net operating Income</td>
<td>2,601</td>
<td>9,595</td>
</tr>
<tr>
<td>E&amp;P</td>
<td>- PTTEP</td>
<td></td>
</tr>
<tr>
<td>Petrochemical</td>
<td>994</td>
<td>25,114</td>
</tr>
<tr>
<td>- GC</td>
<td>908</td>
<td>25,035</td>
</tr>
<tr>
<td>- Other</td>
<td>86</td>
<td>79</td>
</tr>
<tr>
<td>Refining</td>
<td>2,271</td>
<td>6,697</td>
</tr>
<tr>
<td>- TOP</td>
<td>715</td>
<td>2,123</td>
</tr>
<tr>
<td>- IRPC</td>
<td>1,556</td>
<td>4,574</td>
</tr>
<tr>
<td>Oil</td>
<td>- OR</td>
<td></td>
</tr>
<tr>
<td>TEG</td>
<td>- GPSC/TP/DCAP/PTTES/PTT DIGITAL/ENCO</td>
<td>3,517</td>
</tr>
<tr>
<td>Others Business</td>
<td>1,624</td>
<td>2,824</td>
</tr>
<tr>
<td>Inter</td>
<td>- PTTER/PTTGM</td>
<td>(988)</td>
</tr>
<tr>
<td>Gas</td>
<td>- PTT LNG/PTT NGD/PTTGL/TTM(T)/TTM(M)</td>
<td>2,298</td>
</tr>
<tr>
<td>Other</td>
<td>- PTTT/Others</td>
<td>314</td>
</tr>
<tr>
<td>Shared of Net Income from Affiliates</td>
<td>19,058</td>
<td>47,703</td>
</tr>
<tr>
<td>Tax adjustment for gain on disposal of investment and asset</td>
<td>(680)</td>
<td>2</td>
</tr>
<tr>
<td>PTT Conso. Net Income</td>
<td>20,979</td>
<td>57,300</td>
</tr>
</tbody>
</table>

1/Including PTTGE, BSA, PTT TCC and RTC
<table>
<thead>
<tr>
<th>Unit</th>
<th>Performance 100%</th>
<th>% PTT holding</th>
<th>Equity Method % PTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Net operating Income</td>
<td>9,280</td>
<td>26,343</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>E&amp;P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PTTEP</td>
<td>20,137</td>
<td>28,218</td>
<td>40%</td>
</tr>
<tr>
<td>Petrochemical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- GC</td>
<td>(5,990)</td>
<td>41,975</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- Other</td>
<td>215</td>
<td>240</td>
<td>12%</td>
</tr>
<tr>
<td>Refining</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- TOP</td>
<td>(10,559)</td>
<td>7,545</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>- IRPC</td>
<td>(7,760)</td>
<td>12,310</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- OR</td>
<td>5,868</td>
<td>9,121</td>
<td>55%</td>
</tr>
<tr>
<td>TEG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- GPSC/TP/DCAP/PTTES/PTTDIGITAL/ENCO</td>
<td>8,319</td>
<td>22,002</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Others Business</td>
<td></td>
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</tr>
<tr>
<td>Inter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PTTER/PTTGM</td>
<td>(519)</td>
<td>1,414</td>
<td>&gt;100%</td>
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<tr>
<td>Gas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PTTLNG/PTTNGD/PTTGL/TTM(T)/TTM(M)</td>
<td>6,116</td>
<td>6,964</td>
<td>14%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- PTTT/Others1/</td>
<td>1,720</td>
<td>1,289</td>
<td>-25%</td>
</tr>
<tr>
<td>Shared of Net Income from Affiliates</td>
<td>17,332</td>
<td>130,838</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>Tax adjustment for gain on disposal of investment and asset</td>
<td>(1,094)</td>
<td>302</td>
<td>&gt;100%</td>
</tr>
<tr>
<td>PTT Conso. Net Income</td>
<td>25,518</td>
<td>157,483</td>
<td>&gt;100%</td>
</tr>
</tbody>
</table>

1/Including PTTGE, BSA, PTT TCC and RTC
PTT Consolidated Cash Flows 9M21

**Free Cash Flow**

- Operating: 216,728
- Investing: -235,480
- Financing: 71,738
- Non-Cash Adjustment: 237,581
- Investment (Sub. & Affiliates): -119,505
- Received from Loans/Bonds: 160,229
- Units: MMTHB

**Cash & Cash Equivalents**

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>ST Investment</td>
<td>84,889</td>
<td>416,921</td>
<td>+216,728</td>
<td>-235,480</td>
<td>+71,738</td>
<td>-12,944</td>
<td>372,074</td>
</tr>
<tr>
<td>Cash &amp; Cash Equivalents</td>
<td>332,032</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>473,063</td>
</tr>
</tbody>
</table>

**Operating**

- Non-Cash Adjustment: 237,581
- Net Income: 80,819
- Changes in Assets & Liabilities: (57,314)
- Income Tax: (44,358)

**Investing**

- Investment (Sub. & Affiliates): (119,505)
- CAPEX: (100,647)
- Current Investment: (12,521)
- Others*: (7,777)
- Dividend/Interest Received: 4,970

**Financing**

- Received from Loans/Bonds: 160,229
- Ordinary Share Issuance of Subsidiaries: 55,152
- Loan Repayment: (78,050)
- Dividend Paid: (43,406)
- Finance Cost Paid: (22,050)
- Derivatives: (137)

*Investment in financial assets, ST/LT lending loans
PTT Only Cash Flows 9M21

Free Cash Flow

+55,982

Cash Beginning

100,746

31 Dec 20

Operating

+38,982

+17,000

Investing

+83,805

Financing

+27,739

Adj & Others

+84

Cash Ending

151,105

30 Sep 21

Operating

38,982

Net Income

58,643

Changes in Assets & Liabilities

(12,120)

Income Tax

(6,997)

Non-Cash Adjustment

(544)

Investing

17,000

Dividend/Interest Received

35,018

Current Investment

31,068

Investment (Sub. & Affiliates)

(29,259)

Others*

(13,226)

CAPEX

(6,601)

Financing

27,739

Received from loans/Bonds

52,953

Loan Repayment

3,124

Dividend Paid

(23,421)

Finance Cost Paid

(4,874)

Others

(43)

Cash & Cash Equivalents

44,404

56,342

Unit : MMTHB

+84

140,147

10,958

ST Investment

56,342

44,404

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

**Managed debt according to financial risk and policy**

### Debt Portfolio

<table>
<thead>
<tr>
<th>Unit: MMTHB</th>
<th>PTT Only</th>
<th>Consolidated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost of debts</strong></td>
<td>~ 3.71%</td>
<td>~ 3.37%</td>
</tr>
<tr>
<td><strong>% fixed-rate</strong></td>
<td>~ 75.24%</td>
<td>~ 70.59%</td>
</tr>
<tr>
<td><strong>Avg. debt life</strong></td>
<td>~ 14.17 years</td>
<td>~ 11.18 years</td>
</tr>
</tbody>
</table>

### Debt Outstanding and Repayment Profile

**Unit: MMTHB**

<table>
<thead>
<tr>
<th>Date</th>
<th>USD&amp;Others</th>
<th>THB</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 Dec 19</td>
<td>117,381 (28%)</td>
<td>32,679 (23%)</td>
</tr>
<tr>
<td>31 Dec 20</td>
<td>146,433 (37%)</td>
<td>53,946 (37%)</td>
</tr>
<tr>
<td>30 Sep 21</td>
<td>204,716 (63%)</td>
<td>60,313 (61%)</td>
</tr>
</tbody>
</table>

**Consolidated**

<table>
<thead>
<tr>
<th>Date</th>
<th>USD&amp;Others</th>
<th>THB</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 Dec 19</td>
<td>605,458 (39%)</td>
<td>236,049 (39%)</td>
</tr>
<tr>
<td>31 Dec 20</td>
<td>738,510 (61%)</td>
<td>449,943 (61%)</td>
</tr>
<tr>
<td>30 Sep 21</td>
<td>852,201 (57%)</td>
<td>486,600 (57%)</td>
</tr>
</tbody>
</table>

**Note:**
1. PTT Data as of 30 Sep 21 (THB/USD = 34.0908 THB/JPY = 0.3071) excluding liabilities from finance leases.
2. Cost of debts, % fixed rate, and avg. debt life took into account the derivative transactions, including withholding tax (update as of 30 Sep 21).

### Additional Information

- Debt Outstanding for Repayment Profile represents financial data and portion after derivative swaps.
- Bond repayment amounting 4,110 MB in 2022 is THB swaps to USD and amounting 6,236 MB in 2035 is USD swaps to THB.
### PTT Group Accounting Structure

#### Subsidiaries

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Exploration &amp; Production Plc.</td>
<td>PTTEP</td>
</tr>
<tr>
<td>PTT Natural Gas Distribution Co., Ltd.</td>
<td>PTTNGD</td>
</tr>
<tr>
<td>PTT LNG Co., Ltd.</td>
<td>PTTLNG</td>
</tr>
<tr>
<td>PTT Global LNG Co., Ltd.</td>
<td>PTTGL</td>
</tr>
<tr>
<td>PTT International Trading Pte.</td>
<td>PTITT</td>
</tr>
<tr>
<td>PTT International Trading London Ltd.</td>
<td>PTITTLDN</td>
</tr>
<tr>
<td>PTT International Trading USA Inc.</td>
<td>PTTTUSA</td>
</tr>
</tbody>
</table>

#### Joint Ventures

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

#### Technology and Engineering Business Group

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Power Synergy Co., Ltd.</td>
<td>GPSC</td>
</tr>
<tr>
<td>PTT Digital Solutions Co., Ltd.</td>
<td>PTTDIGITAL</td>
</tr>
<tr>
<td>PTT Energy Solutions Co., Ltd.</td>
<td>PTTEES</td>
</tr>
<tr>
<td>Energy Complex Co., Ltd.</td>
<td>EnCo</td>
</tr>
</tbody>
</table>

#### Others

<table>
<thead>
<tr>
<th>Others</th>
<th>Fair value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baania (Thailand) Company Ltd.</td>
<td>Baania</td>
</tr>
<tr>
<td>HG Robotics Plc.</td>
<td>HG Robotics</td>
</tr>
<tr>
<td>Innospace (Thailand)</td>
<td>Innospace</td>
</tr>
<tr>
<td>Sunfolding, Inc.</td>
<td>Sunfolding</td>
</tr>
<tr>
<td>Luminar Technologies, Inc.</td>
<td>Luminar Technologies</td>
</tr>
<tr>
<td>Ample, Inc.</td>
<td>AMPLE</td>
</tr>
</tbody>
</table>

#### Remarks

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 Trading Business Group

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Consolidate</th>
</tr>
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<tbody>
<tr>
<td>PTT International Trading Pte.</td>
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<td>PTITTLDN</td>
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<td>PTTTUSA</td>
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</table>

#### Oil Business Group

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

#### Petrochemicals & Refining Business Group

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTT Global Chemical Plc.</td>
<td>GC</td>
</tr>
<tr>
<td>PTT Tank Terminal Co., Ltd.</td>
<td>PTTTANK</td>
</tr>
</tbody>
</table>

#### Refining Subsidiaries

<table>
<thead>
<tr>
<th>Subsidiary</th>
<th>Consolidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai Oil Plc.</td>
<td>TOP</td>
</tr>
<tr>
<td>IRPC Plc.</td>
<td>IRPC</td>
</tr>
</tbody>
</table>

#### E&P and Gas Business Group

<table>
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<tbody>
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</table>

#### Remarks

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)

Remark: Subsidiary PTT holds 100.00% of BSA's ordinary shares, PTT's ownership interest in BSA is 100%
E&P Performance

QoQ: Increased earning from higher average selling prices and lower oil price hedging loss

9M21 VS 9M20: Strengthen performance due to higher sales volume and selling prices

Product Prices

Sales Volume

Net Income (100%)

- Recurring NI: decreased from lower sales volume and higher unit cost despite higher selling prices

+ Non-recurring: improved mainly from lower oil price hedging loss

9M21 VS 9M20

- Recurring NI: significantly enhanced from higher sales volume and selling prices

+ Non-recurring: lower primarily from higher oil price hedging loss and write-off of Brazil’s project despite gain from bargain purchase of Oman Block 61

* Includes Gain/(Loss) on FX, Deferred tax from Functional currency, Current Tax from FX Revaluation, Gain/(Loss) from Financial Instruments, Impairment loss on assets and etc.
E&P: Guidance & Strategy

Strengthen Core Business

Sustain E&P Core Business

- Grow business in Strategic Locations and focus on Gas
- Reduce carbon emission through Carbon Capture Storage (CCS)

Non-E&P Business Directions

Energy New Normal

2021 Guidance

- Average Sales Volume: ~417 KBOE
- 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 $67.2/bbl
Gas Business

QoQ: Lower NG vol. from all customers esp. power producers and GSP

9M21 vs 9M20: Increased gas sales vol., higher industrial selling prices referenced to FO price and lower pooled gas cost

NG Price VS FO & Customer Breakdown

NG Price

<table>
<thead>
<tr>
<th>$/MMBTU</th>
<th>1Q19</th>
<th>2Q19</th>
<th>3Q19</th>
<th>4Q19</th>
<th>AVG. 2021 = 7.25</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.441</td>
<td>4.421</td>
<td>4.221</td>
<td>4.532</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Avg. Pooled gas price

| AVG. 2021 = 6.74 |
| 3Q21 |
| 4.441 |

Key Highlights

QoQ
- Decreased overall NG sales volume from all customers esp. power producers and GSP due to seasonal demand and planned major shutdown of GSP#6
- NGV vol. reduced from impact of Lockdown
+ Industrial selling prices linked to FO increased

9M21 vs 9M20
+ NG sales vol. increased from almost all customers except NGV due to the recovery of economic activities and lower shutdown days
+ Industrial selling prices improved according to FO price linked
+ Lower pooled gas cost from gulf and Myanmar gas benefit to overall gas business
**Gas Business : Gas Separation Plant (GSP)**

QoQ: GSP performance enhanced from higher average selling prices despite lower volume due to major shutdown

9M21 vs 9M20: 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>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-Rate</td>
<td>89.2%</td>
<td>6%</td>
<td>95.9%</td>
<td>84.6%</td>
<td></td>
</tr>
<tr>
<td>Unit: kTon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GSP Feed Cost vs Petchem. Price**

- Higher average GSP's selling prices following referenced global petrochemical prices esp. LPG and Propane
- Decreased sales volume & U- Rate according to major planned shutdown of GSP#6
  - Feed cost remained stable

**Key Highlights**

9M21 vs 9M20

- Increased GSP’s selling prices following global petrochemical prices
- Higher sales volume according to higher petrochemical demand and less plants’ shutdown compared to 9M20
- Lower feed gas cost

---

* LPG price selling to Petro customers close to propane
** LPG Domestic
*** Feed cost calculation per GSP production volume
Trading Business:
QoQ: Performance improved owing to sharply increased gross margin while sales volume dropped
9M21 vs 9M20: Enhanced EBITDA mainly due to improved domestic condensate margin

Gross Margin

- Improved spread of domestic condensate
- Decreased sales vol. from lower crude out activities from lower demand of
  West African and Mediterranean crude in Asia since Brent/Dubai spread widen
- Improved EBITDA following higher gross margin
- Higher domestic condensate margin and margin per unit of LNG, LPG, and
  Aromatics products increased from out-out trading
- Volume decreased due to lower out-out & out-in transactions of crude oil
  impacted by Covid-19 pandemic started since March 2020
- EBITDA improved from higher gross margin

Sales Volume

Trading – EBITDA

Key Highlights

QoQ ▲
- Improved spread of domestic condensate
  - Decreased sales vol. from lower crude out-out activities from lower demand of
    West African and Mediterranean crude in Asia since Brent/Dubai spread widen
  - Improved EBITDA following higher gross margin

9M21 vs 9M20 ▲
- Higher domestic condensate margin and margin per unit of LNG, LPG, and
  Aromatics products increased from out-out trading
  - Volume decreased due to lower out-out & out-in transactions of crude oil
    impacted by Covid-19 pandemic started since March 2020
- EBITDA improved from higher gross margin
Oil Business: OR Group

QoQ: NI declined from both of oil and non-oil sales volume and margin pressured by Covid-19 Delta variant

9M21 vs 9M20: Improved performance from wider oil margin despite reduced oil sales volume and non-oil performance

**Oil Business**

**Dubai ($/BBL)**

- **Q120:** 50.7
- **Q220:** 30.6
- **Q320:** 42.9
- **Q420:** 44.6
- **Q121:** 60.0
- **Q221:** 66.9
- **Jul'21:** 72.9
- **Aug'21:** 69.5
- **Sep'21:** 72.6

Avg. 9M20 = 41.4

Avg. 9M21 = 66.2

Avg. 3Q21 = 71.7

**Margin* (THB/Litre)**

- Q120: 1.21
- Q220: 1.23
- Q320: 1.09
- Q420: 0.94
- Q121: 1.21
- Q221: 1.21

**Sales Volume (MM Liter)**

- **Others:** 6,062
- **Gasoline:** 5,542
- **Fuel Oil:** 5,217
- **Diesel:** 18,118
- **Aviation:** 1,218
- **LPG:** 3,450

**Margin**

- 6% QoQ
- 14% YoY

**LPG**

- **Aviation:** 3,450
- **Diesel:** 6,062
- **Fuel Oil:** 5,542
- **Gasoline:** 5,217
- **Others:** 18,118

**QoQ**: Oil: Reduced sales volume and gross margin impacted from Covid-19 Delta variant

**Non-Oil**: Lower gross margin and increased promotion expenses to boost sales

**9M21 vs 9M20**: Oil: Better gross margin while sales volume dropped from diesel, gasoil, and aviation

**Non-Oil**: Softer performance from higher promotion expenses during lockdown despite continued outlet expansion

**Non-Oil Business**

**Amazon**

- **3Q20:** 72 MM Cups
- **2Q21:** 70 MM Cups
- **3Q21:** 68 MM Cups
- **9M20:** 200 MM Cups
- **9M21:** 211 MM Cups

**C-Store (7-11, Jiffy)**

- **3Q20:** 1,960 Outlets
- **2Q21:** 2,018 Outlets
- **3Q21:** 2,041 Outlets
- **9M20:** 1,960 Outlets
- **9M21:** 2,041 Outlets

**Net Income**

**Unit**: MMTHB

- **3Q20:** 3,450
- **2Q21:** 3,225
- **3Q21:** 1,892
- **9M20:** 5,868
- **9M21:** 9,121

**QoQ**: Oil: Reduced sales volume and gross margin impacted from Covid-19 Delta variant

Non-Oil: Lower gross margin and increased promotion expenses to boost sales

**9M21 vs 9M20**: Oil: Better gross margin while sales volume dropped from diesel, gasoil, and aviation

Non-Oil: Softer performance from higher promotion expenses during lockdown despite continued outlet expansion
P&R Businesses

QoQ: Soften performance mainly from refinery’s shutdown, increased feed cost, and higher hedging loss

9M21 vs 9M20: Robust performance from stock gain and petrochemical prices hiked following global demand recovery

### Olefins

<table>
<thead>
<tr>
<th></th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Price</td>
<td>$/Ton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>96%</td>
<td>93%</td>
<td>103%</td>
</tr>
<tr>
<td>HDPE</td>
<td>91%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td>LLDPE</td>
<td>91%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td>Avg.</td>
<td>94%</td>
<td>95%</td>
<td>95%</td>
</tr>
</tbody>
</table>

### Aromatics

<table>
<thead>
<tr>
<th></th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Price</td>
<td>$/Ton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>90%</td>
<td>96%</td>
<td>102%</td>
</tr>
<tr>
<td>HDPE</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>LLDPE</td>
<td>91%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Avg.</td>
<td>95%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Refinery

<table>
<thead>
<tr>
<th></th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg. Dubai</td>
<td>$/bbl</td>
<td>42.9</td>
<td>66.9</td>
</tr>
<tr>
<td>Acc. Dubai</td>
<td>$/bbl</td>
<td>4.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Acc. GRM</td>
<td>$/bbl</td>
<td>0.6</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.6</td>
<td>3.2</td>
</tr>
</tbody>
</table>

### Net Income (100%)

<table>
<thead>
<tr>
<th></th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit: MMTHB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTT TANK</td>
<td>64%</td>
<td>&gt;100%</td>
<td></td>
</tr>
<tr>
<td>GC</td>
<td>66%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRPC</td>
<td>64%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOP</td>
<td>&gt;100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hedging G/L
Stock G/L excl. NRV
Mkt GRM

Spread to Condensate: $/Ton

Avg. Price: $/Ton

BZ:          3% QoQ
PX:          7% QoQ

BZ:          4%  QoQ
PX:          6%  QoQ

BZ:          92%  
PX:          45%  

BZ:          >100%  
PX:          18%  

BZ:          47%  
PX:          45%  

Avg. Dubai

3Q20 2Q21 3Q21

3Q20 2Q21 3Q21

3Q20 2Q21 3Q21
## P&R: Projects Update

### Objective/Capacity

<table>
<thead>
<tr>
<th>2020</th>
<th>PO/Polyols</th>
<th>MTP Retrofit (Olefins Reconfiguration)</th>
<th>The establishment of Innopolymed</th>
<th>High value business (HVB) Acquired 100% share of Allnex Olefins investment (Investment in PT Chandra Asri: CAP)</th>
<th>CFP (Clean Fuel Project)</th>
<th>Ole 2 Modification plant project</th>
<th>Ultra Clean Fuel</th>
</tr>
</thead>
</table>
| PO/Polyols | • Create value added in Polyurethane chain  
• PO (200 KTA)  
• Polyols (130 KTA) | • Ethylene (500 KTA)  
• Propylene (250 KTA)  
• Olefins capacity 2,988 ➔ 3,738 KTA | • 40% stake held by Innobic and 60% stake held by IRPC with a registered capital of Baht 260 million.  
• to manufacture and sell Non-Woven Fabric products as well as medical consumables | • To diversify geographic targets in specialty chemical and expand global footprint (Basic chemical ➔ Performance Chemicals & Green Chemicals)  
• Global producer of industrial coating resins and additives  
• Total capacity around 1,245 KTA | • Further extend Hydro-Carbon value chain to Olefins  
• Use excess feedstock from CFP project (Naphtha) to create more flexibility and competitiveness.  
• Investment 15.38% in petrochemical producer (Olefins) in Indonesia with total capacity around 4,232 KTA | *Realized CAP contribution in 4Q21 onwards  
*Expected closing deal in 4Q21 | To increase Propane usage as feedstock  
To enhance feedstock flexibility and long-term competitiveness  
To increase refinery plant’s efficiency and upgrade diesel quality to meet the Euro 5 standard  
Increase 75 KBD of diesel capacity in Diesel hydro-treating Unit |

### CAPEX

<table>
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<th>Ole 2 Modification plant project</th>
<th>Ultra Clean Fuel</th>
</tr>
</thead>
</table>
| CAPEX | 888 MMUSD  
985 MMUSD  
260 MB | €4,002 million or equivalent to 148,417 MB  
not exceed 1,183 M.USD or equivalent to 39,116 MB | 4.8 Bn.USD incl. ERU unit  
757 MMUSD  
165 MMUSD or equivalent to 5,198 MB  
13,300 MB |

### COD

<table>
<thead>
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<th>CFP (Clean Fuel Project)</th>
<th>Ole 2 Modification plant project</th>
<th>Ultra Clean Fuel</th>
</tr>
</thead>
</table>
| COD  | Dec’2020  
2Q2021 (Jun)  
Within 4Q2021  
July 2021  
CAP2 : 2026 | 1Q2023  
(FID Jul’18)  
1Q2023  
Jan’2024 | 48
Other Business: Coal business (SAR)

QoQ: NI flat due to rising selling price and sales volume offsetting with higher income tax and hedging loss
9M21 vs 9M20: NI increased from higher selling prices referenced to Newcastle price surged and lower DD&A

Avg. Selling Price\(^1\) & Cash cost\(^1\)\n
<table>
<thead>
<tr>
<th>Unit: $/Ton</th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avg. Selling Price</td>
<td>52</td>
<td>76</td>
<td>89</td>
<td>168</td>
<td>122</td>
</tr>
<tr>
<td>Total Cash Costs</td>
<td>51</td>
<td>50</td>
<td>51</td>
<td>45</td>
<td>49</td>
</tr>
</tbody>
</table>

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

Sales Volume

<table>
<thead>
<tr>
<th>Unit: kTon</th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jembayan</td>
<td>1,125</td>
<td>1,250</td>
<td>1,634</td>
<td>4,667</td>
<td>4,353</td>
</tr>
<tr>
<td>Sebuku</td>
<td>1,110</td>
<td>1,220</td>
<td>1,596</td>
<td>4,367</td>
<td>4,285</td>
</tr>
</tbody>
</table>

\(\triangle\) 31% QoQ, \(\triangle 45\% \) YoY

Key Highlights

QoQ
- Selling price increased due to escalated Newcastle price
- Higher sales volume from higher China's demand due to energy shortage crisis
- NI flat resulted from increased operating margin offset with higher income tax and commodity hedging loss

9M21 vs 9M20
- Selling price largely improved following referenced Newcastle price
- Sales volume dropped from lower production plan and ceased operation of the Sebuku coal mine
- NI improved mainly from sharply increased selling prices and lower DD&A from impairment of assets in 2020

Net Income (100%)

<table>
<thead>
<tr>
<th>Unit: MMUSD</th>
<th>3Q20</th>
<th>2Q21</th>
<th>3Q21</th>
<th>9M20</th>
<th>9M21</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI Operating profit</td>
<td>(4.2)</td>
<td>3.0</td>
<td>3.0</td>
<td>8.9</td>
<td>28.1</td>
</tr>
<tr>
<td>Extra items</td>
<td>1.3</td>
<td>3.0</td>
<td>3.0</td>
<td>7.8</td>
<td>28.1</td>
</tr>
</tbody>
</table>
TEG Business: Power - GPSC

QoQ: Soften NI due to IPP and SPP’s unplanned outages together with higher fuel costs

9M21 vs 9M20: Better performance mainly from XPCL’s contribution

**Sales Volume**
Unit: Power: GWh / Steam: '000 Ton

<table>
<thead>
<tr>
<th></th>
<th>Power</th>
<th>Steam</th>
</tr>
</thead>
<tbody>
<tr>
<td>3Q20</td>
<td>4,564</td>
<td>3,440</td>
</tr>
<tr>
<td>2Q21</td>
<td>5,251</td>
<td>3,779</td>
</tr>
<tr>
<td>3Q21</td>
<td>4,653</td>
<td>3,866</td>
</tr>
<tr>
<td>9M20</td>
<td>14,682</td>
<td>10,131</td>
</tr>
<tr>
<td>9M21</td>
<td>14,845</td>
<td>11,349</td>
</tr>
</tbody>
</table>

**Gross profit & Gross profit margin**
Unit: MMTHB

<table>
<thead>
<tr>
<th></th>
<th>Power</th>
<th>Steam</th>
</tr>
</thead>
<tbody>
<tr>
<td>9M21</td>
<td>16,398</td>
<td>11,971</td>
</tr>
<tr>
<td>9M20</td>
<td>15,747</td>
<td>11,986</td>
</tr>
</tbody>
</table>

**Net Income**
Unit: MMTHB

<table>
<thead>
<tr>
<th></th>
<th>Power</th>
<th>Steam</th>
</tr>
</thead>
<tbody>
<tr>
<td>9M20</td>
<td>6,050</td>
<td>186</td>
</tr>
<tr>
<td>9M21</td>
<td>6,150</td>
<td>131</td>
</tr>
</tbody>
</table>

**QoQ**
- Lower gross profit
  - SPP: higher natural gas & coal costs and Glow Energy Phase 5’s unplanned outage
  - IPP: lower AP mainly from GHECO-One’s unplanned outage
  + Higher shares of profit from Xayaburi Power Plant (XPCL) due to rainy season

**9M21 vs 9M20**
+ Higher shares of profit from XPCL due to drought situation last year
- Lower gross profit
  - Lower gross profit of IPP due to unplanned outage of GHECO-One
  + SPP’s gross profit slightly increased from recovered demand of industrial customers
Upcoming Projects to Bolster Future Growth

**Phase 1:** 96 MW, first power in 2022

**Phase 2:** 499 MW, first power in 2023

The project is expected to start full COD in 1Q2024

Strategic Directions and Growth Strategy

**Scale-up Green energy**

Priority 2nd home market and focusing on platform growth in Renewable energy

**Strategic pillar**

- Thailand
- India
- Taiwan
- Vietnam

**Key focus**

- Seeking new opportunities of hybrid RE
- Solar PPA
- Capture the opportunities with new National Energy Plan (NEP)
- Using Avenue investment platform to execute projects
- To dispatch staffs as the secondment to build expertise & keep monitoring performance to GPSC
- Focusing on current project including:
  - Sheng Yang Energy Solar project at 25 MW equity capacity through GPSC
  - GPSC: Offshore wind of 149 MW equity capacity through GPSC TW
- Joint development with PTT group and strategic partners

GPSC Aspiration: "To be top 3 power company in SEA with more than half of MW from green portfolio"
# Natural Gas Price Structure: As of Sep 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><strong>Power Producers 60%</strong></td>
<td></td>
</tr>
<tr>
<td>: EGAT 16%</td>
<td></td>
</tr>
<tr>
<td>: IPP 14%</td>
<td></td>
</tr>
<tr>
<td>: SPP 30%</td>
<td></td>
</tr>
<tr>
<td><strong>GSP 20%</strong></td>
<td></td>
</tr>
<tr>
<td>Petrochemicals Feedstocks</td>
<td></td>
</tr>
<tr>
<td>Ethane, Propane, LPG</td>
<td></td>
</tr>
<tr>
<td>NGL</td>
<td></td>
</tr>
<tr>
<td>Local Cooking Gas</td>
<td></td>
</tr>
<tr>
<td>Export Cooking Gas</td>
<td></td>
</tr>
<tr>
<td><strong>Industry 17%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NGV 3%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Sales Price Structure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Gas Pool Price</strong> + <strong>Supply Margins</strong> + <strong>Pipeline Tariffs</strong></td>
<td></td>
</tr>
<tr>
<td>Average Purchased Gas Price</td>
<td>1.75% *</td>
</tr>
<tr>
<td><strong>Charged at the same price structure of power producers</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Profit-sharing mechanism based on market prices of petrochemicals</strong></td>
<td></td>
</tr>
<tr>
<td>Reference to Naphtha market price</td>
<td></td>
</tr>
<tr>
<td>At GSPs cost (adjusted every 3 months)</td>
<td></td>
</tr>
<tr>
<td>Reference to a bi-weekly average of Platt’s FOB Arub Gulf price</td>
<td></td>
</tr>
<tr>
<td><strong>Charged at prices comparable to fuel oil</strong></td>
<td></td>
</tr>
<tr>
<td>Charged at Avg. gas cost + Operating cost (3.892 bt/kg) for both Public &amp; Private vehicles</td>
<td></td>
</tr>
<tr>
<td>NGV’s selling price reflects the natural gas cost and operating cost* (including gas quality adjustment)</td>
<td></td>
</tr>
<tr>
<td>* The allowed operating cost is still regulated and not fully cover PTT’s operating cost</td>
<td></td>
</tr>
<tr>
<td>As of 16 Nov 2021 = 15.59 Baht/Kg.</td>
<td></td>
</tr>
</tbody>
</table>

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

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 5 Sep 2017: Allowance to adjusted +0.46 Baht/Kg. to 3.8920 Baht/Kg. for gas quality improvement cost

* EGAT IPP and SPP Supply Margins not more than 2.1525 and 11.4759 bt/mmbtu respectively
Gas Business Generates Stable Returns

- 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

Overview

Gas Transmission Pipeline Capacity

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
Thank you

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