Investor Update

December 2021

POWERING LIFE
with FUTURE ENERGY and BEYOND
ขับเคลื่อนทุกชีวิตด้วยพลังแห่งอนาคต

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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

Imported Refined Petroleum Products 36 KBD

Crude/ Condensate 854 KBD

Crude/ Condensate 162 KBD

PTT's Associated Refineries : 770 KBD
(TOP, PTTGC, IRPC)

Other Refineries : 472 KBD
(SPRC, ESSO, BCP)

Crude Export 17 KBD

Demand

Domestic

Refined Products 979 KBD*

817 KBD (**)

Refined Products 201 KBD

Export

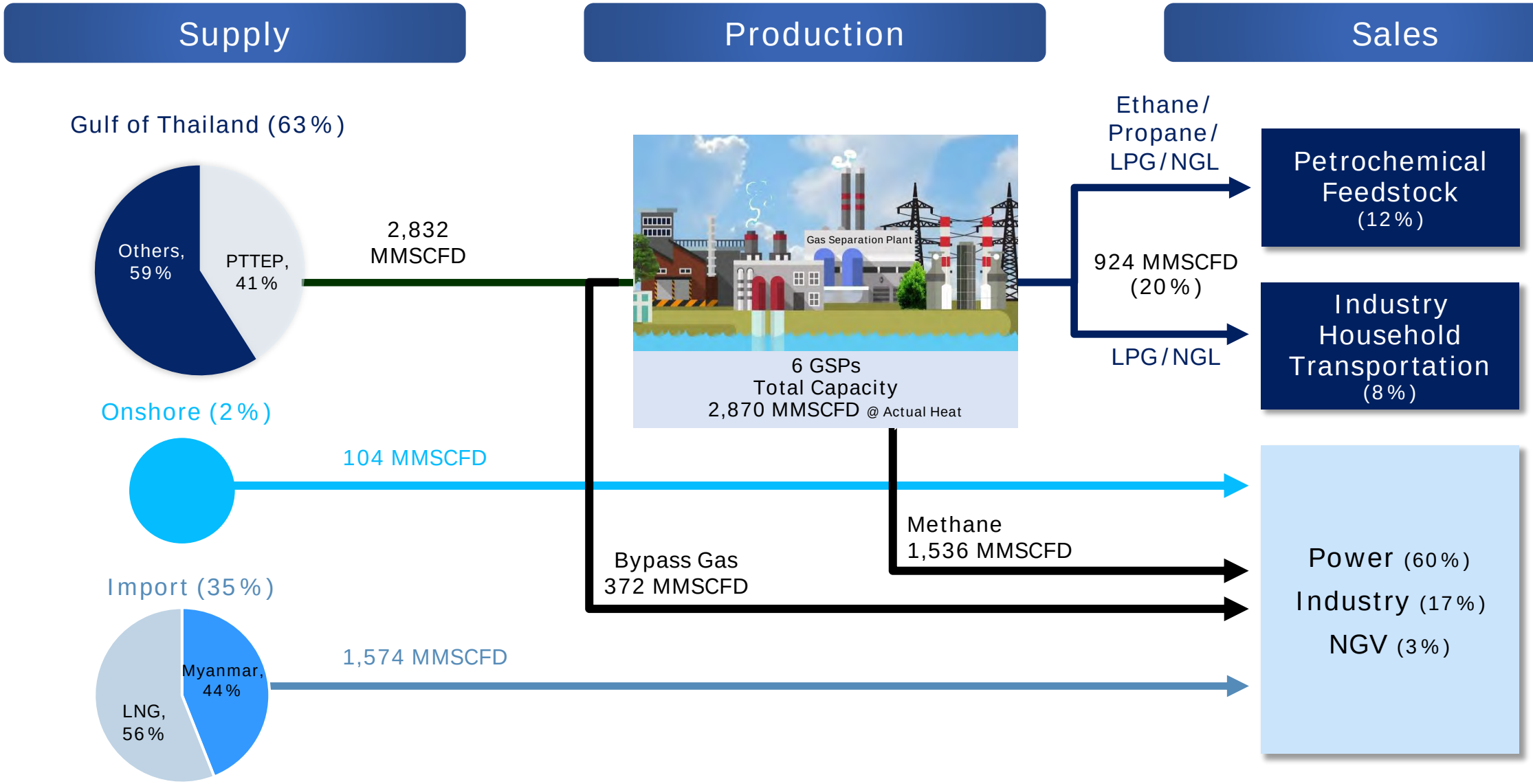
218 KBD

Source: PTIT

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

Natural Gas Balance: Jan – Sep 2021

Main driver of the Thai economy



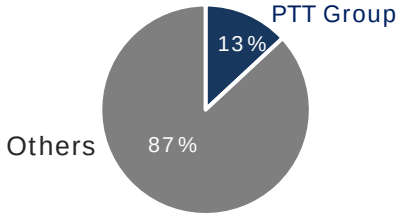
Remark: MMSCFD = Million Cubic Feet @ Heating Value 1,000 Btu/ft^3

PTT's Strategic Importance to Thailand

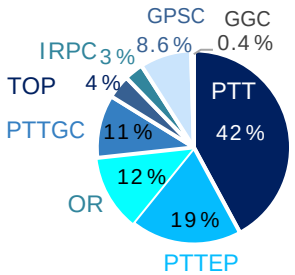
Market Cap : SET & PTT Group

Note: As of Nov 30, 2021

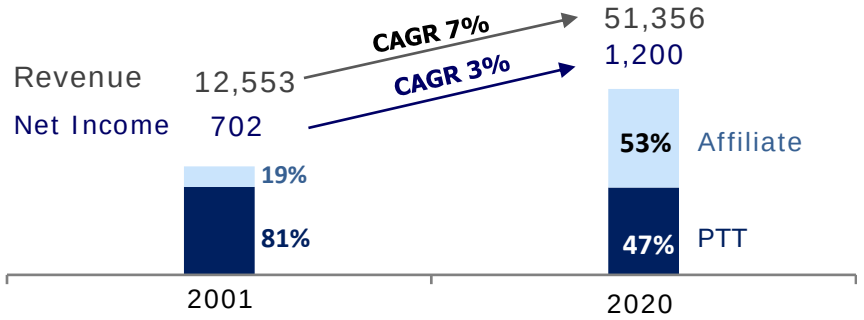
SET market Cap:
Bt 18,410 bn *(USD 585Bn)*



PTT Group:
Bt 2,408 bn *(USD 77Bn)*



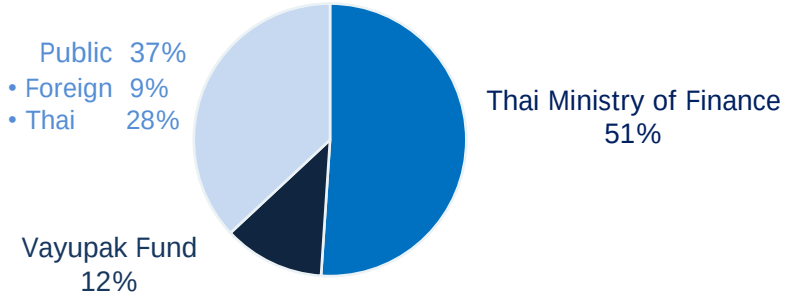
Robust revenue and net income growth since IPO (MMUSD) [1]



[1] *2020 Annual Avg. BOT selling rate USD/THB of 31.46 (Avg. rate)*

Ministry of Finance holds majority stake in PTT

Note: As of Sep 30, 2021



PTT ratings at Thai sovereign level

	Moody's	Standard & Poor's	Fitch Ratings
FC	Baa1	BBB+	BBB+
PTT – FC	Baa1	BBB+	BBB+
PTT – LC	Baa1	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[2] and ~42%[2] of market share by sales volume
- International oil trading business having traded 54.1 bn litters[2] (75.5 bn liters in 2020)
- Power Plant flagship with committed capacity of 7,102 MW[2] (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	Platts Top 250 Global Energy Company	Fortune 500	Dow Jones Sustainability Indexes
170th in 2020 165th in 2019 156th in 2018 190th in 2017 337th in 2016	23rd in 2020 21st in 2019 10th in 2018 12th in 2017 63th in 2016	140th Fortune Global 500 in 2020 130th in 2019 163th in 2018 192th in 2017 146th in 2016 93th in 2015	Dow Jones Sustainability Index (DJSI) DJSI Member 2011-2021 (10th consecutive years)

PTT Group Businesses and Activities

Upward Integration
(PTT Operate through our subsidiaries)

E & P

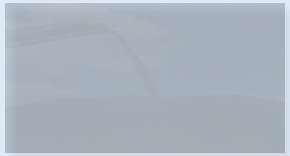
PTTEP (65.29%)
- Oil, Gas, Condensate
- > 40 Projects in 15 Countries
- 1,074 mmboe proved reserves or 7 years in 2020

LNG

ptt GLOBAL LNG (50%) ptt LNG (100%)

- LNG Value Chain
- LNG Receiving Facilities

Coal

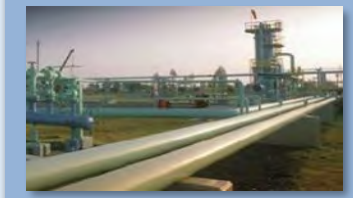


Coal Mine in Indonesia ptt GM (100%)

(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[1]

Technology & Engineering

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

Downward Integration
(PTT Operate through our subsidiaries)

Oil & Retail

OR (75%)

Market Share ~ 42%[1]
- Oil (2,039 stations in Thailand[1])
- Non-oil Retail
- Lubricants
- International Oil & Retail

Refineries

Thaioil GC IRPC (~48%)

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

Petrochemicals

GC IRPC (~48%)

Market Share > 50%
- Integrated Refineries & Petrochemical

Power

GPSC (~ 75%[2])
7,102 MW[1] (equity portion)
- Electricity
- Steam & Chill Water
- Energy Storage

New Business

Future Energy

- Renewable Energy — GRP (50%), GPSC (~ 75%) — PTT Group's renewable energy portfolio is ~2.7 GW[1]
- EV Chain — ARUN (100%), EVme (100%), SWAP4GO (100%), OR (75%), GPSC (~ 75%)
  - EV Service platform & Electric Vehicles/ Batteries
  - 41 EV Charging stations

Beyond Energy
- Life Sciences
- AI Robotics

Innobic (100%)

- Pharmaceutical — Lotus (6.66%)*
- Medical device — Inno Polymed — JV with IRPC (PTT 40 : IRPC 60)
- Nutrition — NRF — JV with NRF (50:50)

- AI / Robotics — RAiSE (50%)
- Cloud service, Data center — Mekha Tech (100%)
- Digital platform — Ecosys (100%)

Remark: Percentage holding as of Sep 2021 [1] As of Sep 2021 / [2] Holding portion of PTT Group (direct & indirect) * Increase stakes to 37% (direct&indirect) in 1Q2022

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Key Activities in 3Q2021

What we have done so far?

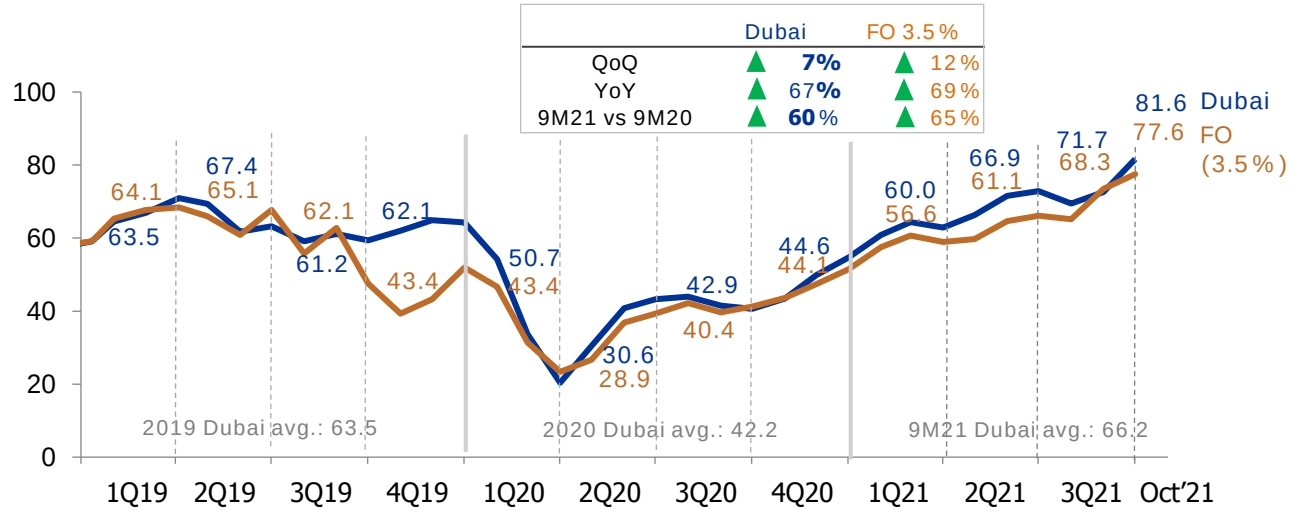
- Establishment of EVME PLUS as digital service platform to promote EV
- JV (60%) with FOXCONN for the electric vehicle manufacturing business
- MOU with Hozon to explore opportunities for EV market expansion and production with the facility of JV between Arun+ and Foxconn in Thailand
- JV (50%) with 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)

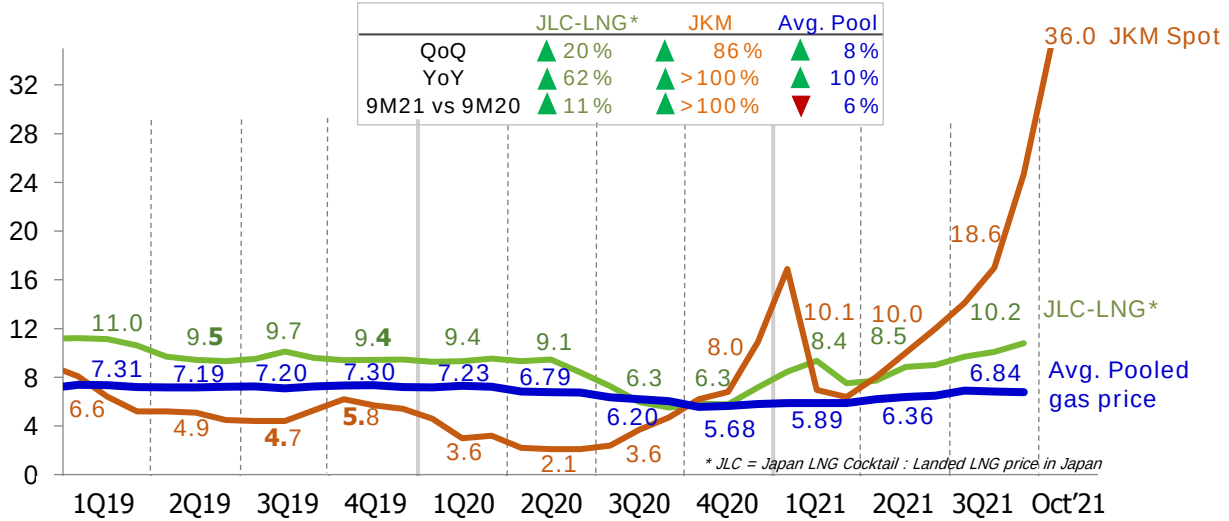
Key Business Drivers:

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

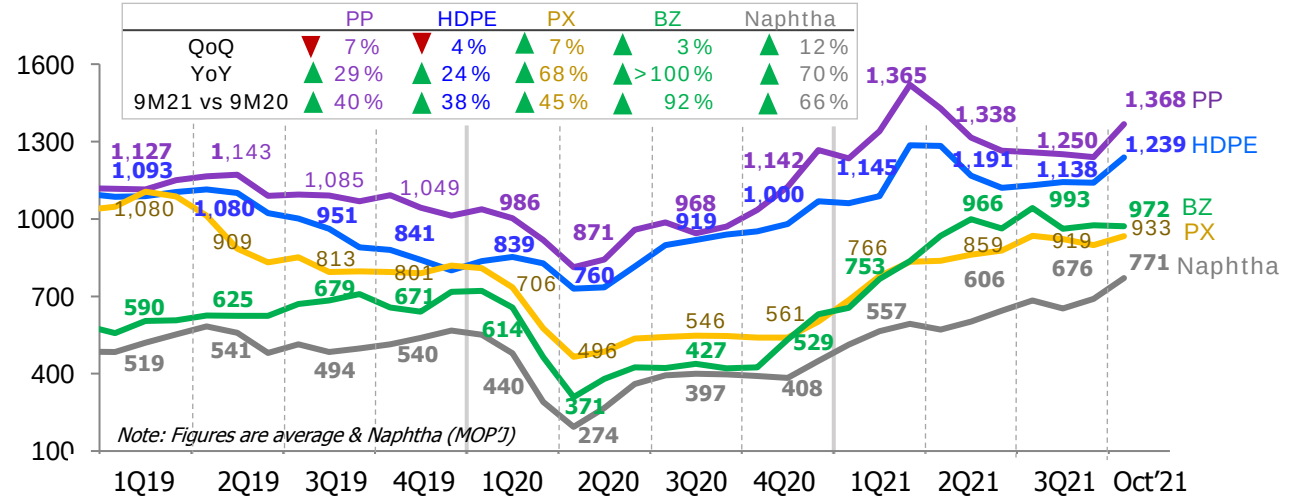
AVG. Petroleum Prices ($/bbl)



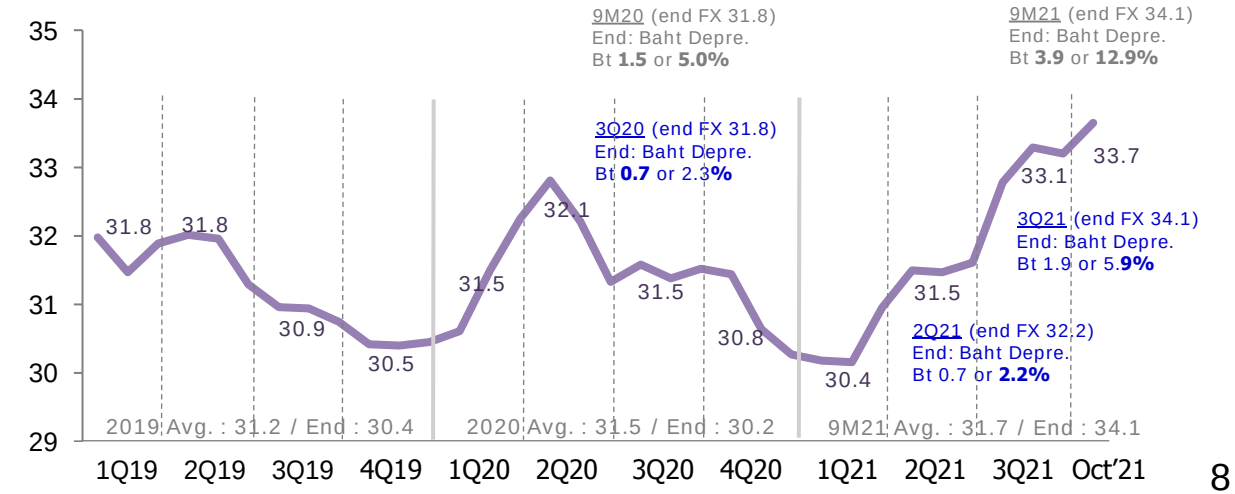
AVG. NG Prices ($/MMBTU)



Petrochemical Prices (Avg. $/ton)

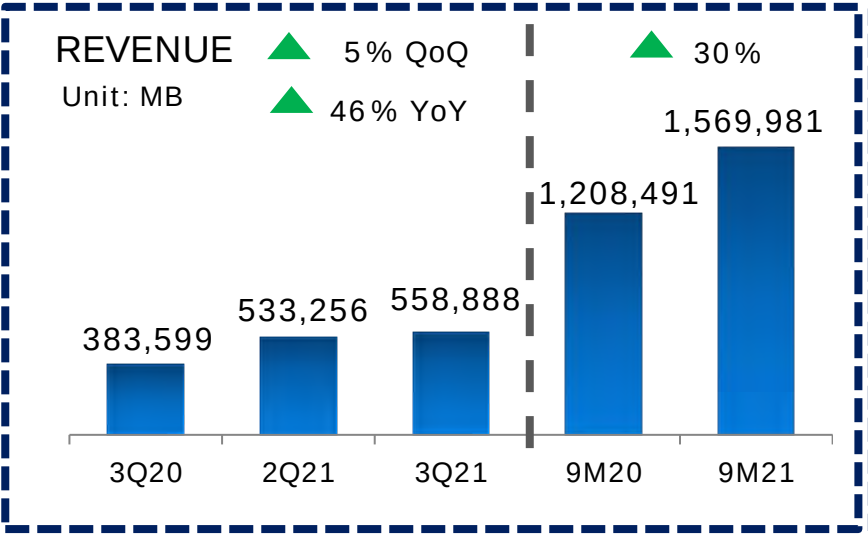


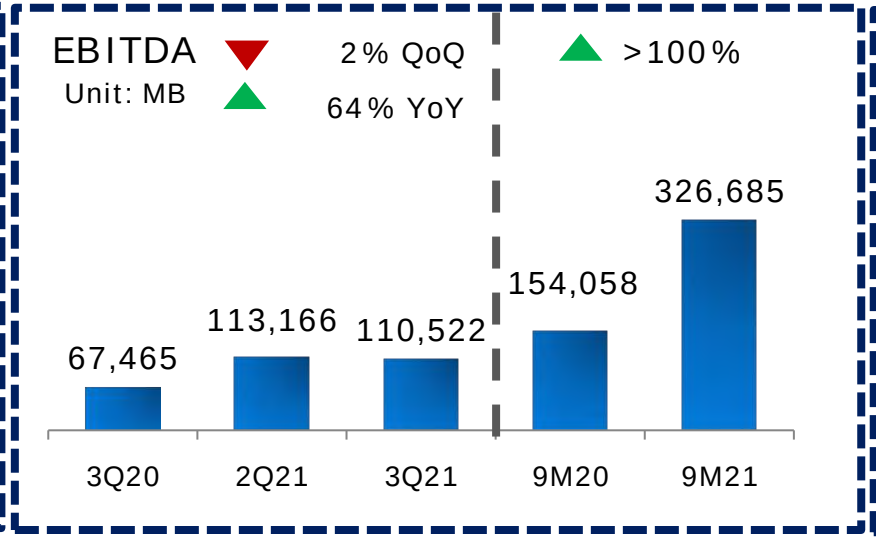
AVG. FX (THB/USD)

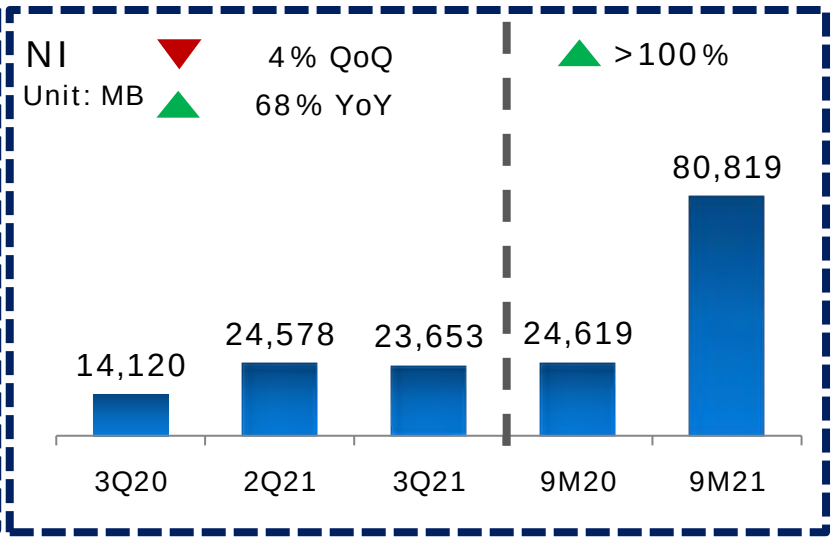


PTT Consolidated Performance: 3Q2021 & 9M2021

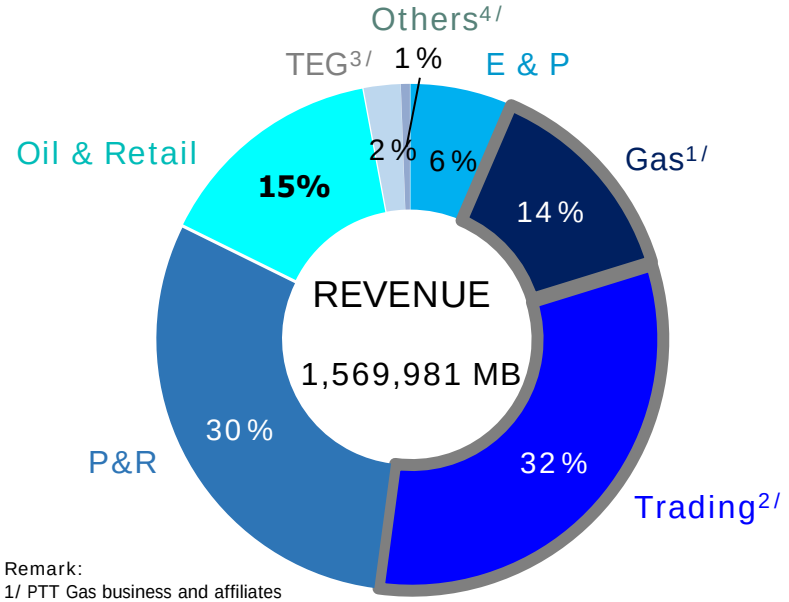
QoQ: NI soften primarily from P&R and Oil businesses due to lower demand impact of Covid-19 Delta variant
9M21 vs 9M20: Robust performance as a result of petroleum & petrochemical demand recovery in line with global trend

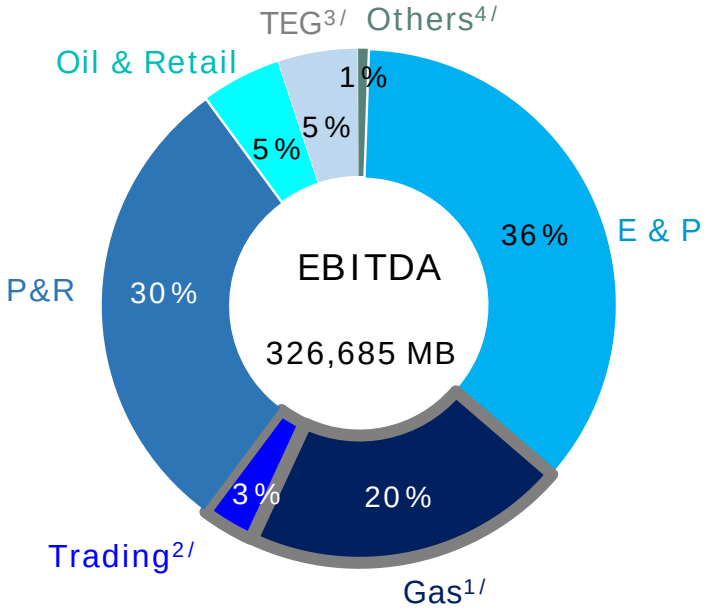


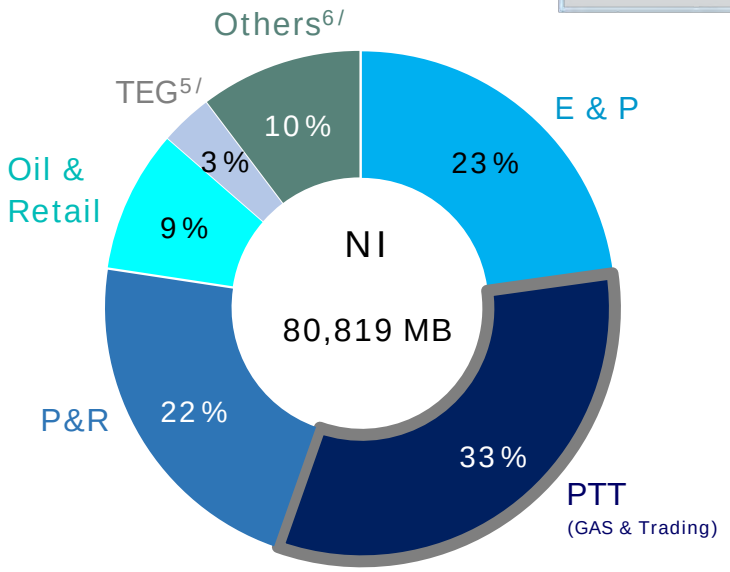




9M2021







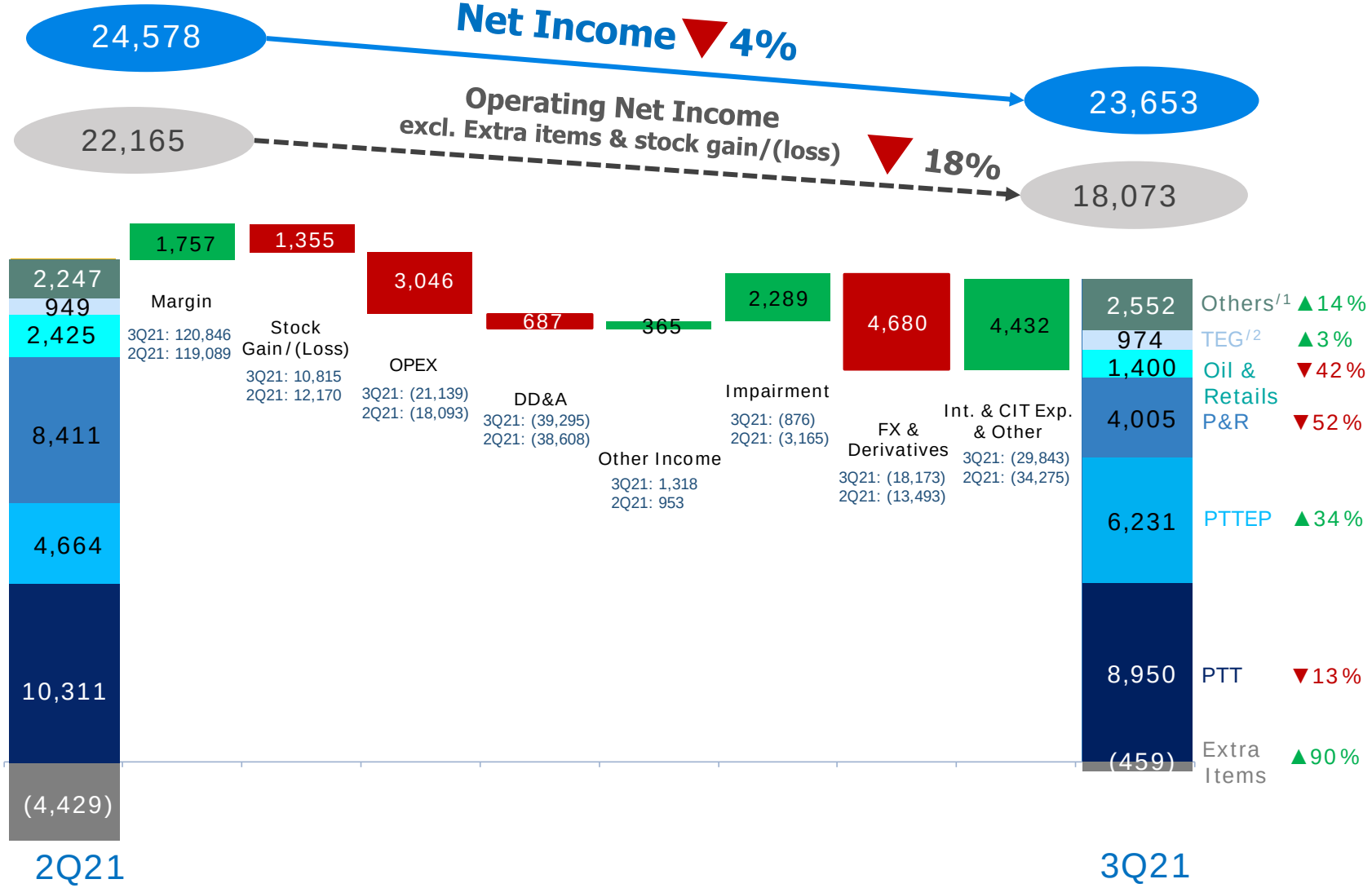
Remark:
1/ PTT Gas business and affiliates
2/ PTT Trading business and affiliates
3/ Technology and Engineering business mainly contributed from power business
4/ Others business mainly contributed from coal business

Remark:
5/ Technology and Engineering business mainly contributed from power business
6/ Others business mainly contributed from PTT LNG, PTT NGD, PTTT and PTTGM etc.

3Q21 vs 2Q21 PTT Consolidated Performance (QoQ):

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

MMTHB



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

▲ Extra Items* *(*PTT's portion net tax amount)*

3Q21 : PTT's write-off on obsolete materials and supplies of 702 MB and TOP's gain on divestment of UBE 233 MB

2Q21 : 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-out margin of crude and petroleum products
+ PTTNGD: 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

▼ Petrochemical

- 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

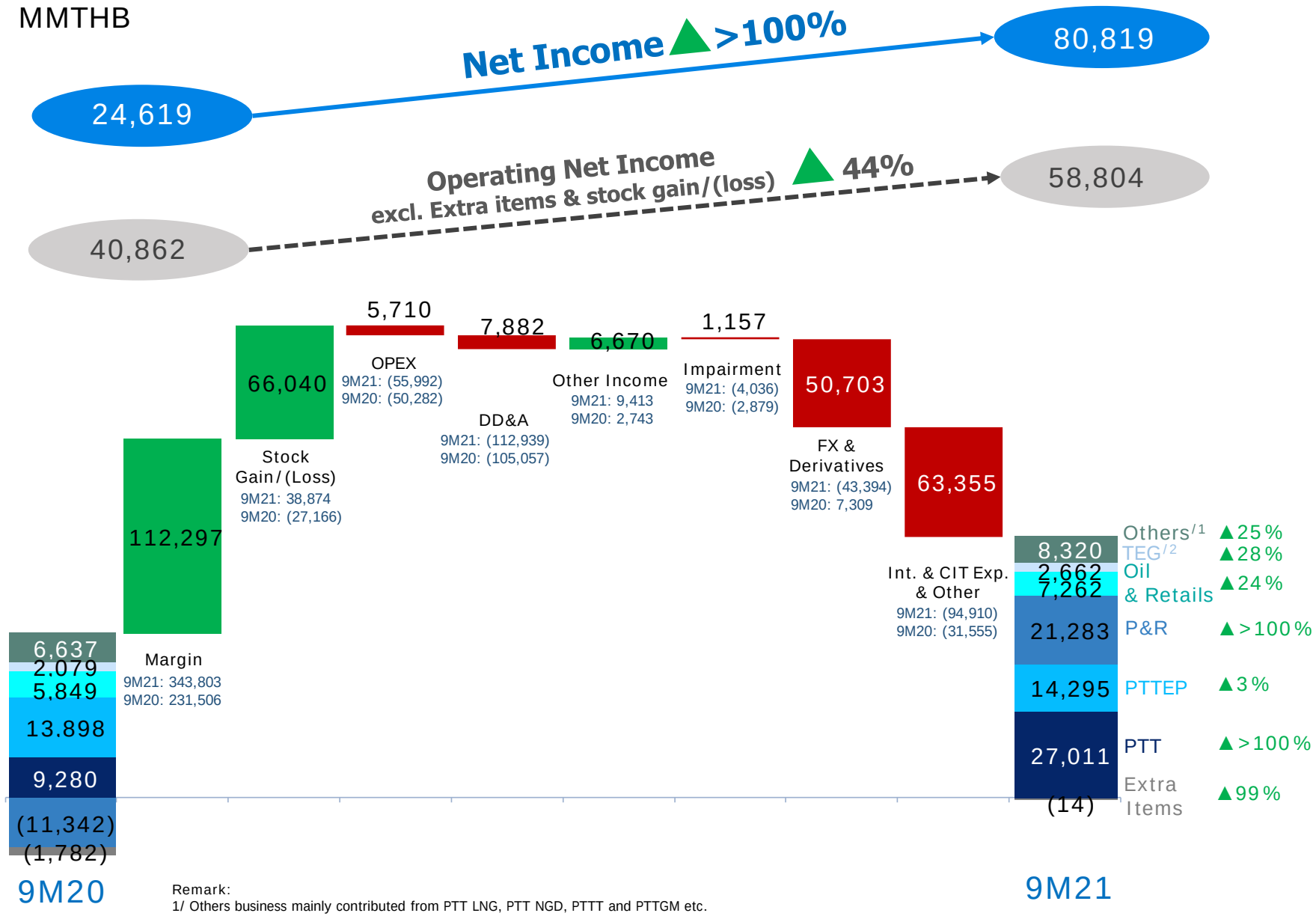
▲ Trading

+ Higher domestic condensate margin

▼ Higher loss on FX due to more Baht depreciation

9M21 vs 9M20 PTT Consolidated Performance (YTD):

Escalated performance driven from most of PTT Group Businesses



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

▲Extra Items* *(*PTT's portion net tax amount)*

9M21 : EP: Gain on bargain purchase of Oman Block 61 7,033 MB, offset write-off assets in Brazil 2,909 MB
GC: Emery Oleochemicals impairment of 1,463 MB, and tax from selling stakes in GPSC 2,264 MB

9M20 : EP: Mariana Oil Sands impairment of 925 MB
PTTGM: Coal mining impairment of 857 MB

Others
- ▲ Coal: Higher margin due to increased selling prices following Newcastle coal price
- ▲ PTTNGD: Higher industrial selling price referenced to FO

▲ TEG (mainly from power)
+ Higher share of profits from XPCL due to higher water level

▲ Oil & Retail
+ Improved oil margin
- Lower oil volume due to Covid-19 impact
- Non-oil was pressured from Covid-19 lockdown

▲ Petrochemical & Refining
- ▲ Refinery
  + Higher stock gain in 9M21
  + Higher mkt GRM mainly from gasoline spread
  - Lower sales volume from lower demand
- ▲ Petrochemical
  + Olefins: Improved product prices and sales volume
  + Aromatics: Increased in BZ & PX spreads and sales volume

▲ PTTEP
+ Higher sales vol. from Oman Block 61 acquisition, Bongkot, Contract4, and Malaysia project
+ Higher avg. Selling price from liquid prices increased

▲ PTT
- ▲ Gas
  + GSP: Higher avg. selling prices, sales volume, and lower feed gas cost
  + S&M: Higher industrial customers' selling price linked to FO price, lower pooled gas cost, and higher gas sales vol. from most of customers
- ▲ Trading
  + Higher domestic condensate margin despite lower sales volume

PTT EBITDA Breakdown by Business

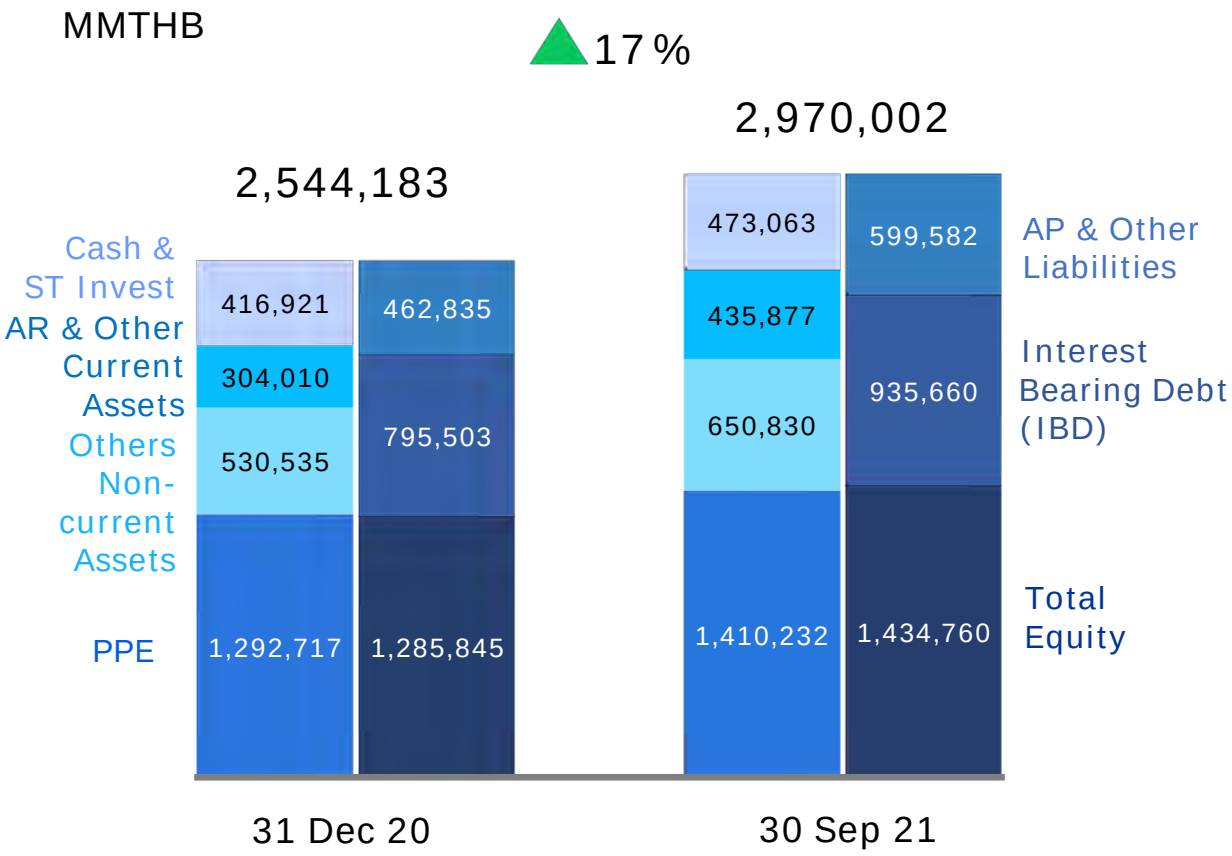
Unit: MMTHB

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

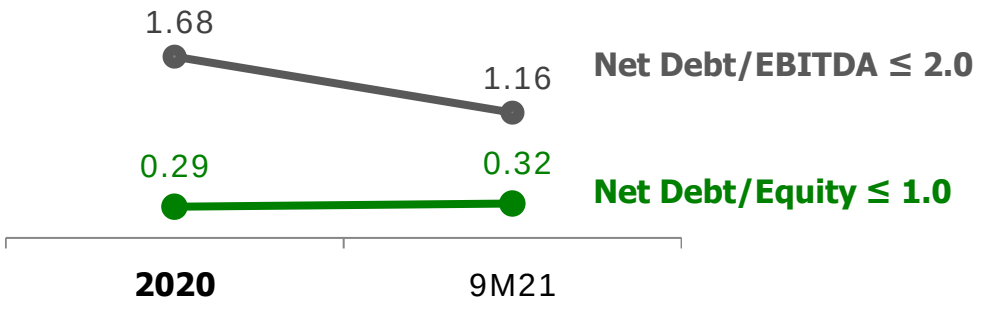
Financial Position

Strong Balance Sheets maintained credit ratings

Consolidated Balance Sheets



Key Financial Ratios



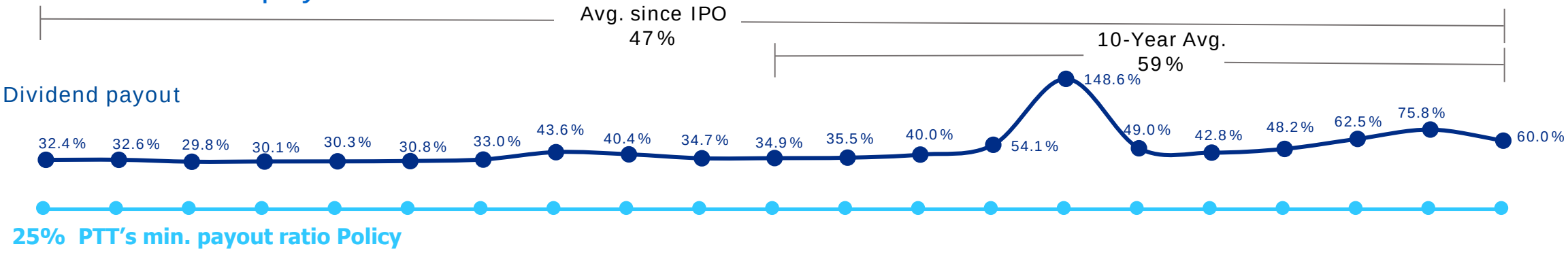
PTT Ratings at Sovereign Level

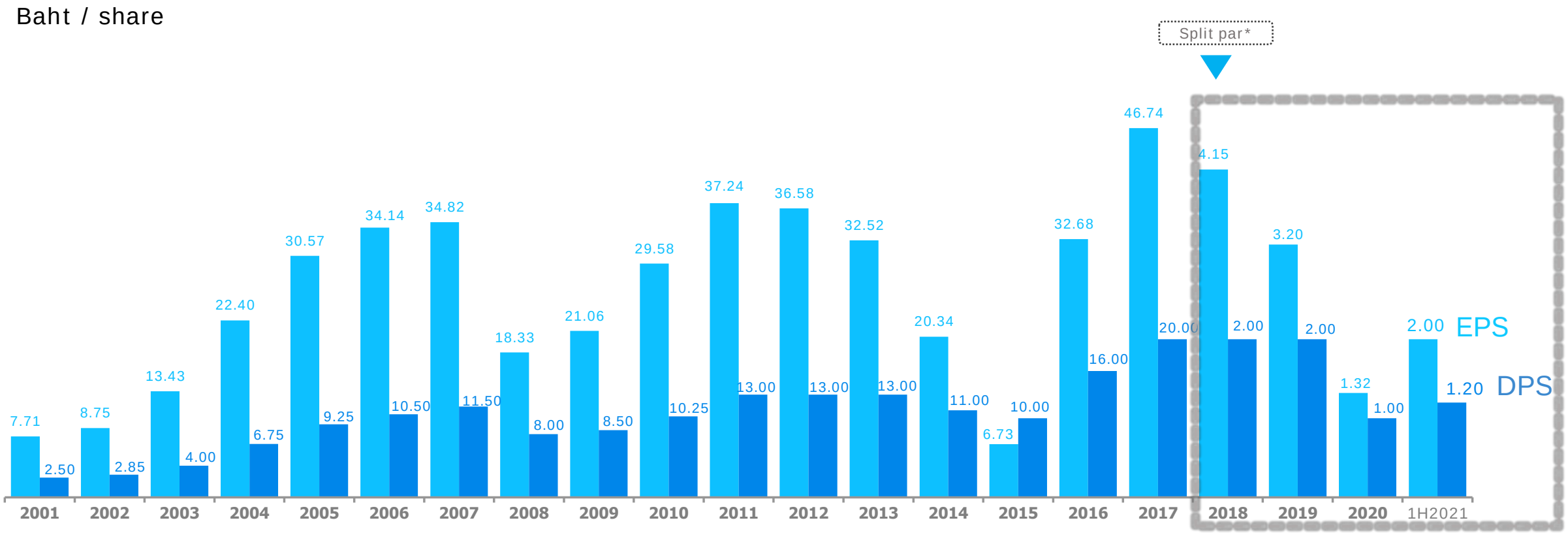
	Moody's	S&P Global Ratings	FitchRatings
Foreign Currency	Baa1	BBB+	BBB+
Local Currency	Baa1	BBB+	BBB+

+ 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%





* Split par value from 10 to 1 Baht/share since 24 April 2018

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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

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

Powering life with

Future Energy and Beyond

Strategic Positioning

focus more on future energy trend

and new businesses that have potentials to grow

Future Energy

Beyond

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**

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

Reinforce **Downstream**

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

Reignite new business at speed and scale **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. H_2)

Growing along the way of life beyond energy

Reignite New Business at Speed and Scale

Life Science

Innobic

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

GC

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

PTT DIGITAL, MEKHA TECH, RAiSE, ECOSYS, PTTEP AI AND ROBOTICS VENTURES

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

OR

PTT Group's Marketing Platform

Mobility

Strengthen energy solution for **Seamless Mobility**

Oil Ecosystem → Energy Solution Ecosystem

Lifestyle

Strive one-stop solution for **All Lifestyle**

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

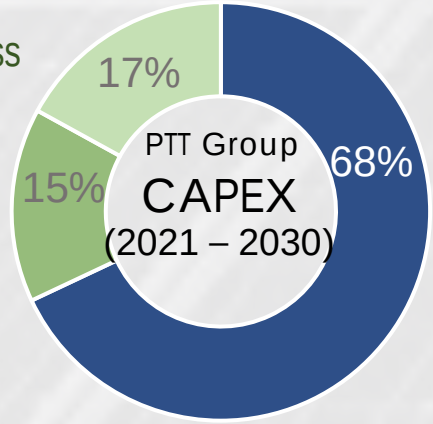
15% GHG reduction from 2020

(Moving to net zero GHG within 2070)

Future Energy & Beyond 32%

New business

Future Energy (RE, ESS, EV)



Hydrocarbon Business (E&P, Gas, LNG, Power, P&R, Oil)

Strategic Direction by Business

Business	Direction
E&P	• Expand growth for high return asset & mainly invest in gas assets
Gas	• Build global LNG portfolio
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

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

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 | 2018 | 2021 | 2030

STRATEGIC DIRECTION
to achieve GHG reduction
and manage carbon intensity

Apply *Carbon Price* in Investment Decision Process
As Hidden Price in Feasibility Study
20 USD per ton CO_2e

Review and adjust price to ensure meeting GHG reduction target

Scope 1+2
(Direct and Indirect Greenhouse Gas Emissions)

- Process Optimization & Energy Efficiency (All facilities)
- Renewable Energy in Operations (All facilities)
- CO_2 Utilization and Storage (PTTEP, PTT)
- Reforestation & Community GHG Project (CSR)
- Carbon Credit Offset

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)
- Electric Mobility (PTT)

Enabler

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

PTT Sustainability Strategic Direction

SUSTAINABILITY as Business Goal

Sufficiency Economy

Moderation

Reasonableness

Prudence

Knowledge

Virtues

Sufficiency Economy

Environmental

Social

Governance & Economics

ESG

Member of
Dow Jones Sustainability Indices
Powered by the S&P Global CSA

DJSI

SDGs

PTT's Sustainability DNA

ENVIRONMENTAL

Sustainable Production and Consumption

โลกเราต้องรักษ์

- Low Carbon Society
- Circular Economy

SOCIAL

People's Well-being

สังคมไทยเราต้องอุ้มชู

- Safety and Human Rights
- Social Shared Value
- Workforce for New Growth

GOVERNANCE

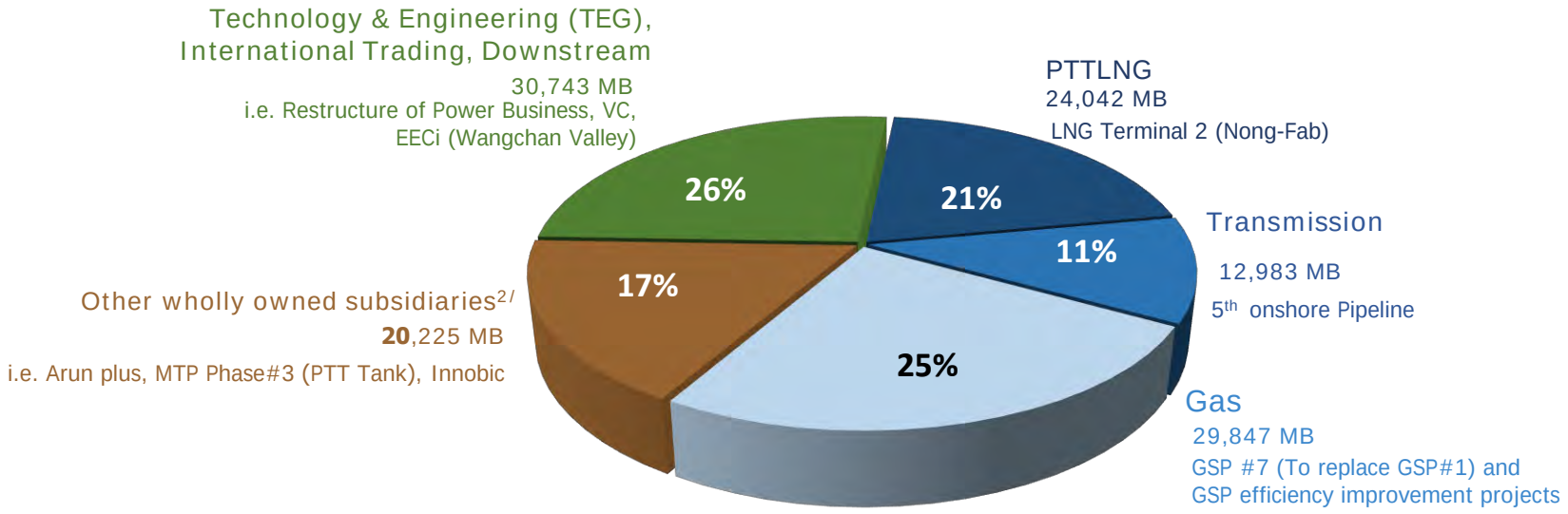
Good Governance and Performance Excellence

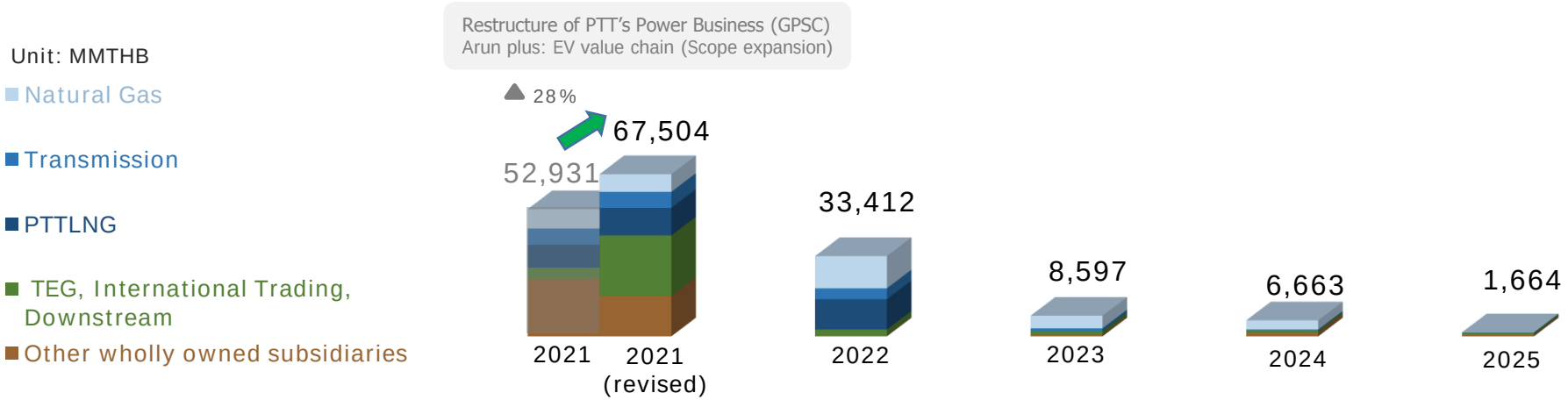
ผลดำเนินงานเราต้องเลิศ

- 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[1/]





Note: 2021 budget revision approved by BOD on 17 Jun 21
** Revised 2021 only*

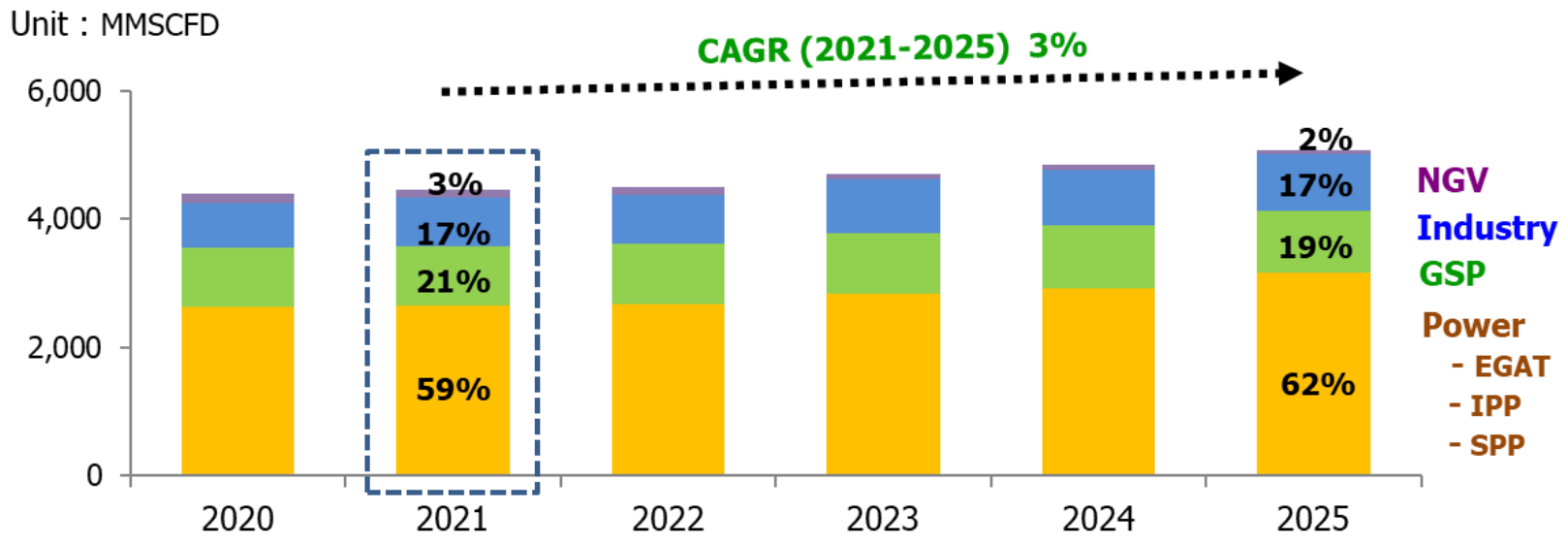
1/ FX rate (avg.) 31.00 Baht/USD (Jan – 14 June 2021)
2/ Excluding OR as IPO on 11 Feb 21 (holding from 100% -> 75%) , CAPEX as of Dec 20 included OR amounting to Baht 75,805 million

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)



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*

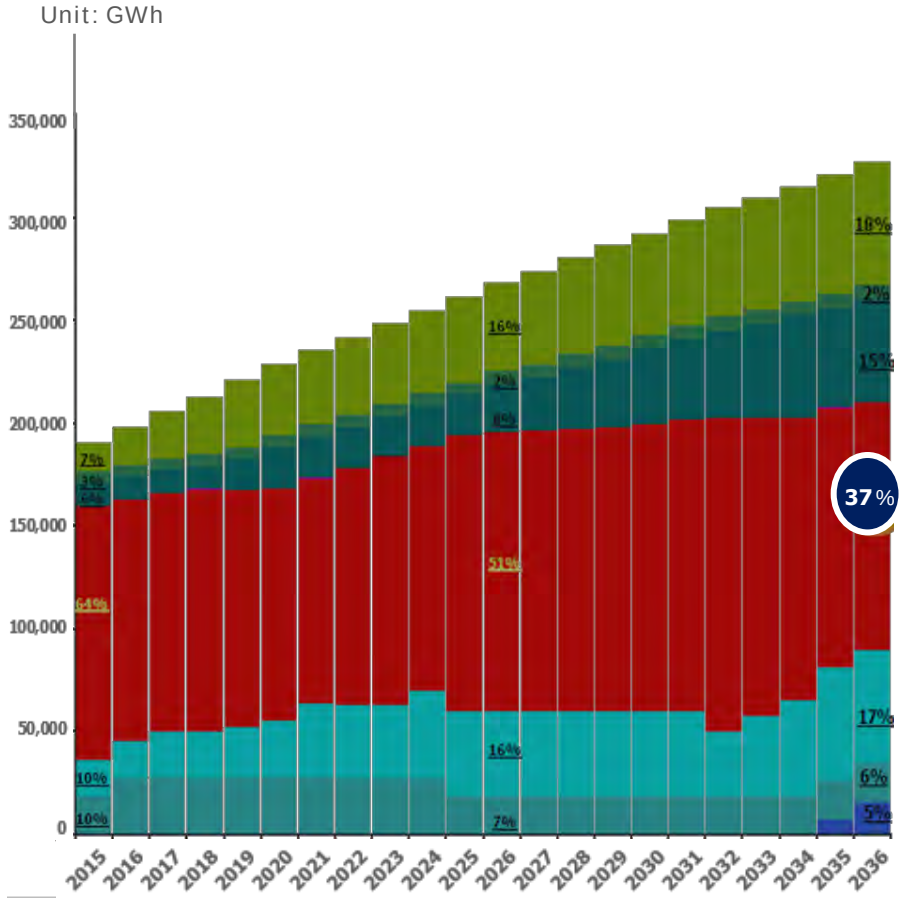
***Bang Pakong– South Bangkok Power Plant*

Newly Thailand Power Development Plan

Stronger demand of NG for power plants

PDP 2015*

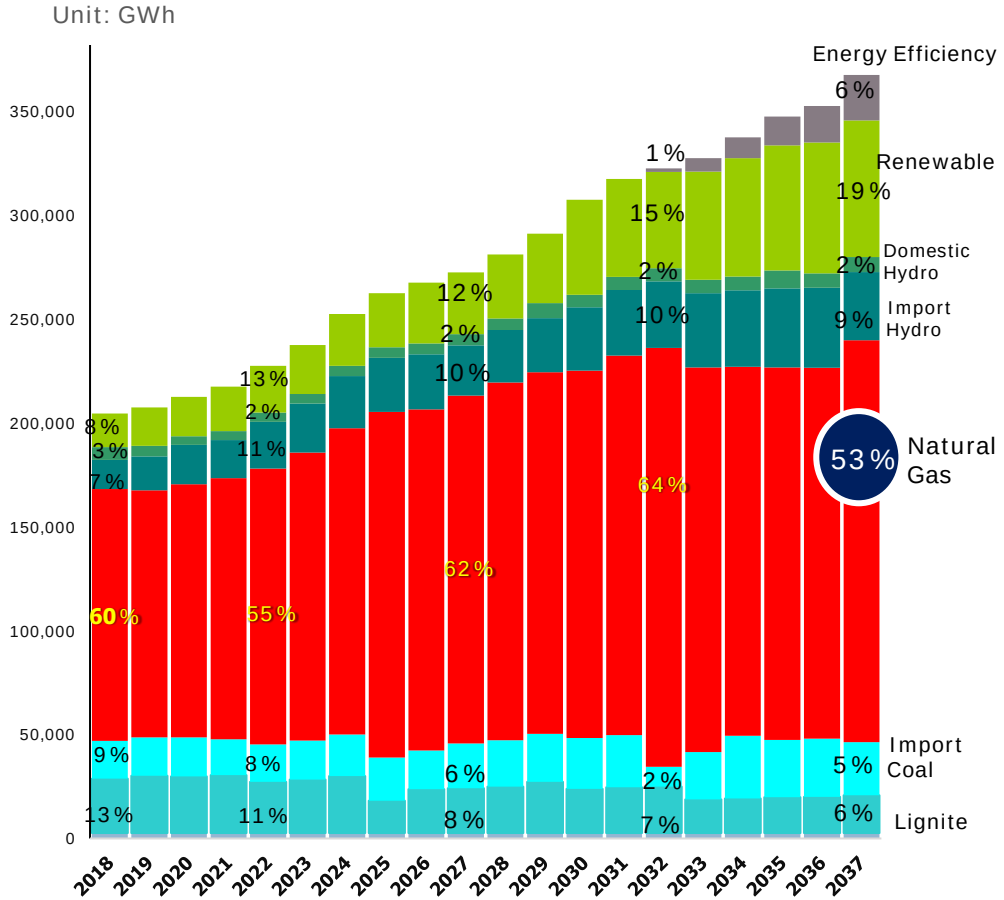
Natural Gas growth upon
Government fuel diversification policy
for power generation



*Source: Ministry of Energy

PDP 2018 Rev.1**

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



** Source : EPPO (Public Hearing presentation)

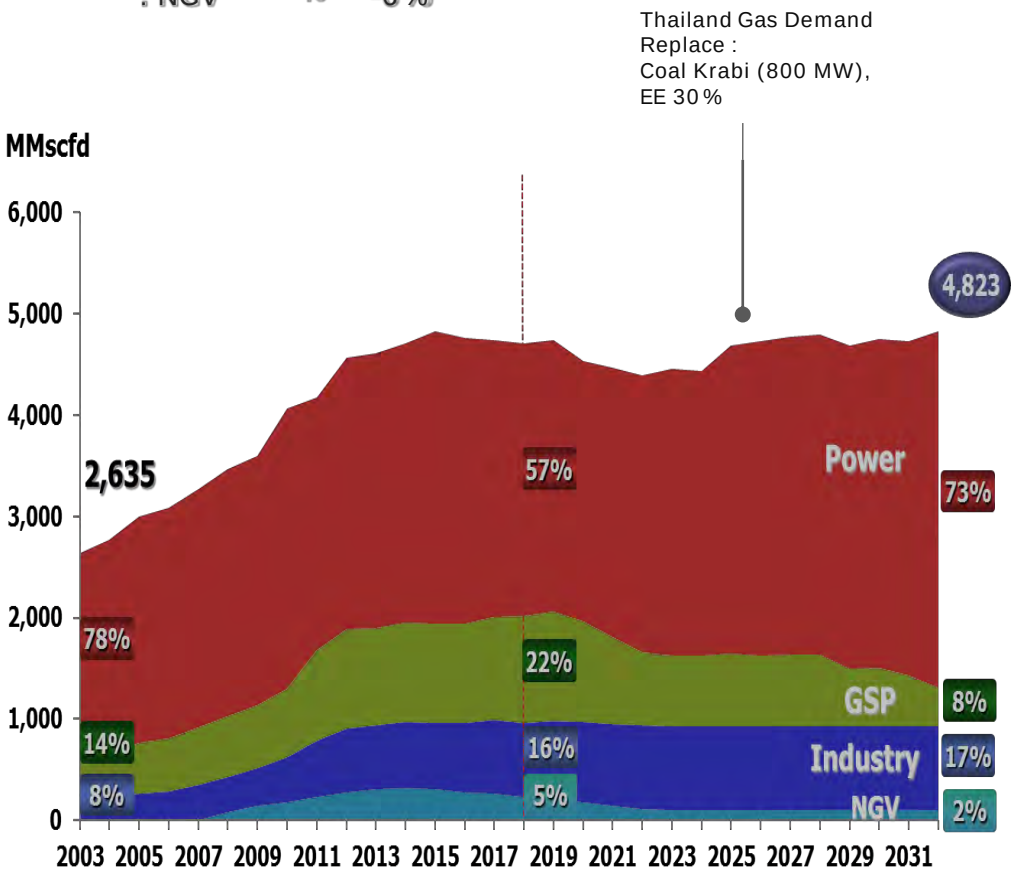
Natural Gas Demand

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%

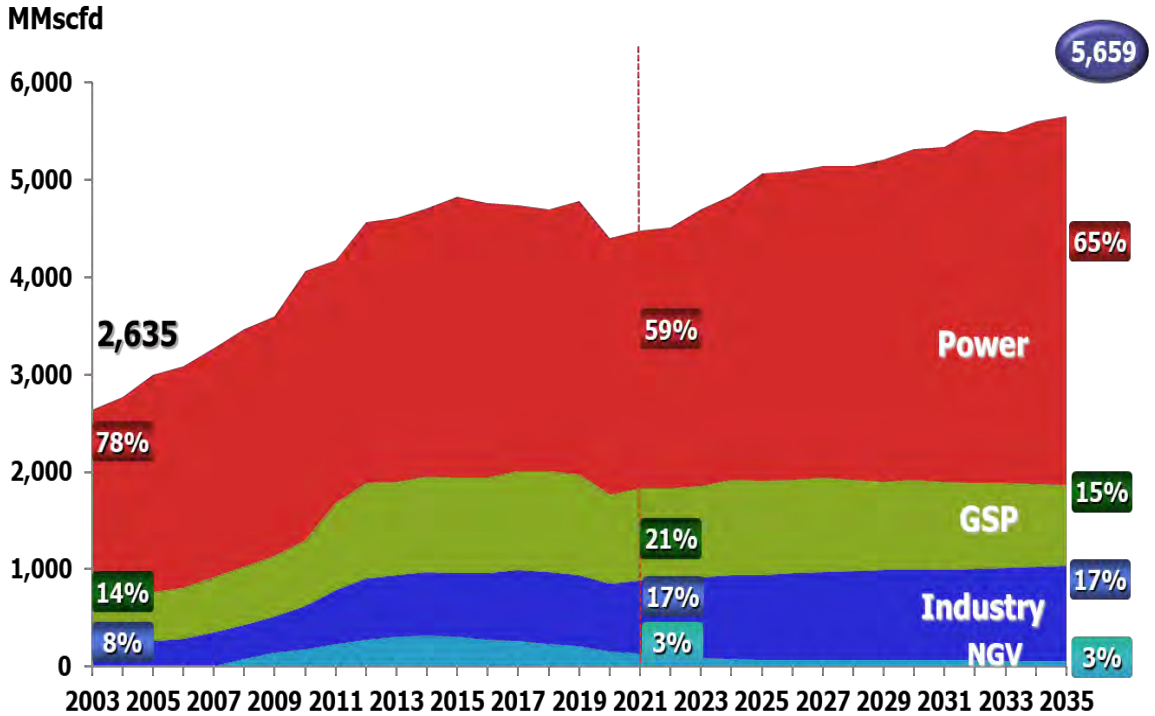


*Source: Ministry of Energy

NEW**

Thailand Gas demand forecast (CAGR during 2021-2035)

- : Total ~ 2%
- : Power ~ 3%
- : GSP ~ -1%
- : Industry ~ 2%
- : NGV ~ -5%



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

PTT Group : Upcoming Projects

- Completed
- In progress
- Wait for FID

2021

5th onshore pipeline (Phase I)
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)

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 (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

2022

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
*PTTEP hold 49.0%

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

Changfang & Xidao Project in Taiwan
Offshore Wind power: 149 MW equity capacity
(COD 24 MW in 2022 & 125 MW in 2023)
GPSC hold 25%

2023

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)

2024

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

2025

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

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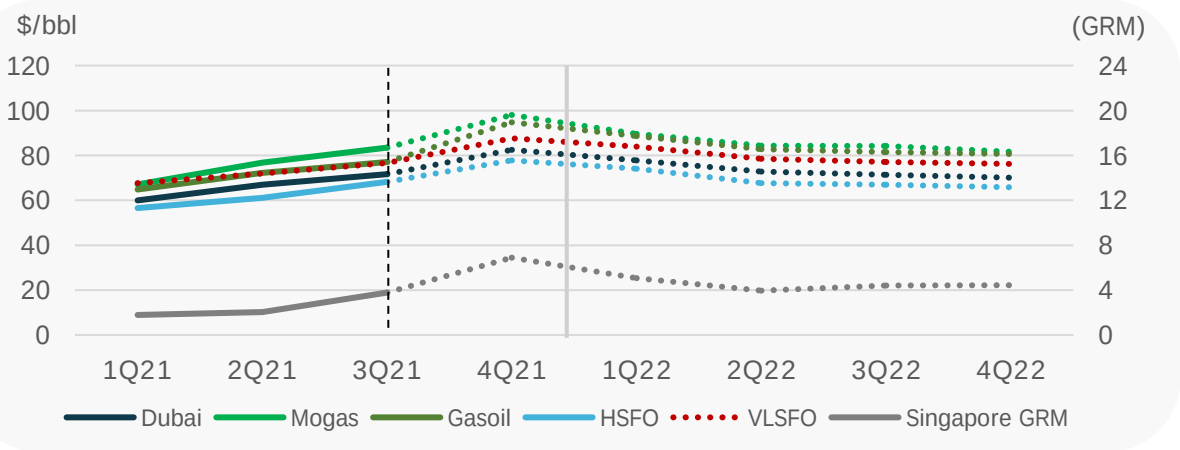
2022 Petroleum and Gas Outlook

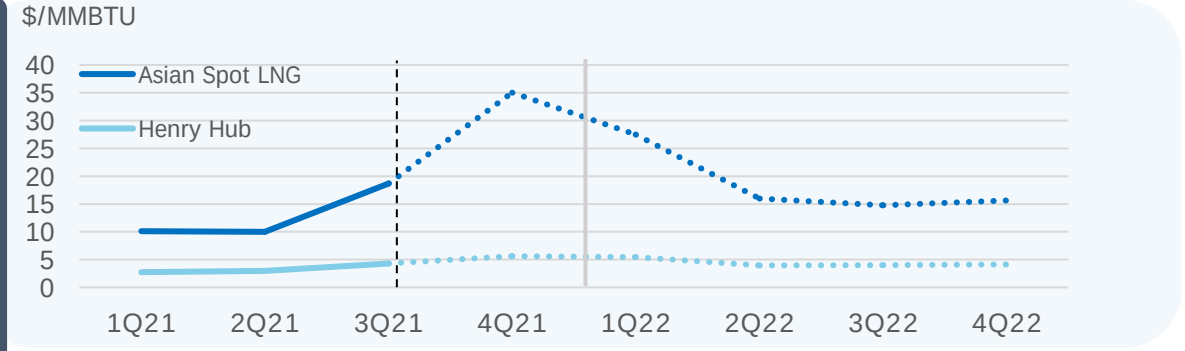
Petroleum



Price	2Q21	3Q21	9M20	9M21	2021(E)	2022(E)
Dubai	**66.9**	71.7	**41.4**	66.2	68-73	71-76
Mogas	**76.8**	83.4	**46.0**	75.8	79-84	82-87
Gasoil	72.2	77.1	**48.4**	71.3	75-80	81-86
HSFO (3.5%S)	61.1	68.3	**37.6**	62.0	63-68	66-71
VLSFO (0.5%S)	71.9	76.6	48.8	72.1	73-78	76-81
Singapore GRM	2.1	3.8	**0.1**	2.5	3.1-4.1	4.0-5.0

Source: PTT, PRISM Petroleum Rolling as of October 2021

Gas/LNG



Price	2Q21	3Q21	9M20	9M21	2021(E)	2022(E)
Asian Spot LNG	10.0	18.7	**3.1**	13	15.5	17.8
Henry Hub (HH)	3.0	4.3	**1.9**	3.4	3.6	4.0

▲ 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:

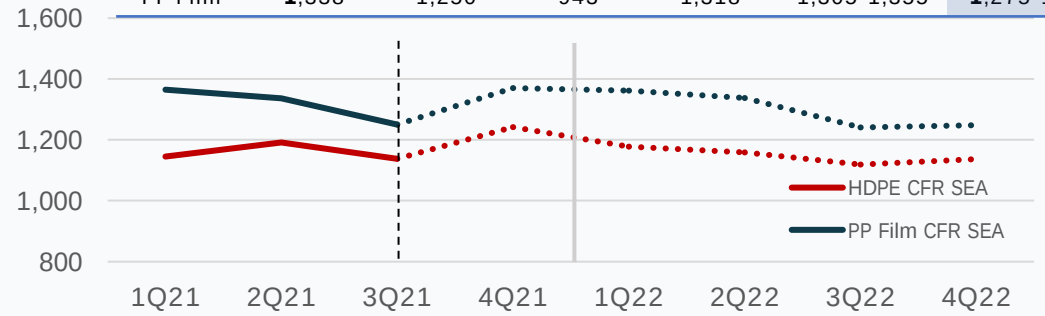
+ Higher demand following the recovery of economic activities and easing of COVID-19 situation in US

2022 Petrochemical Outlook

Olefins

$/Ton

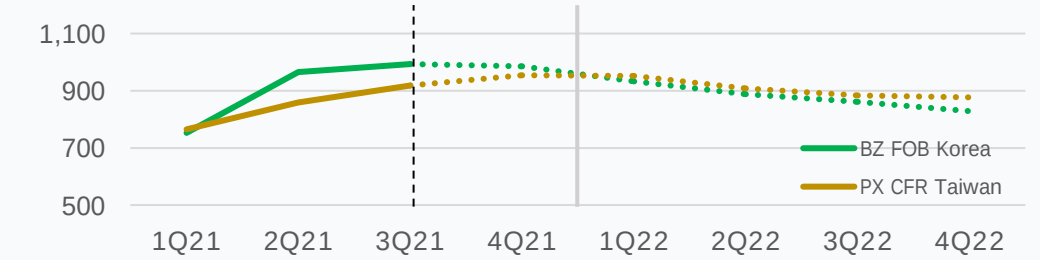
Price	2Q21	3Q21	9M20	9M21	2021(E)	2022(E)
HDPE	1,191	1,138	839	1,158	1,160-1,210	1,120-1,170
PP Film	**1**,338	1,250	943	1,318	1,305-1,355	**1**,275-1,325



Aromatics

$/Ton

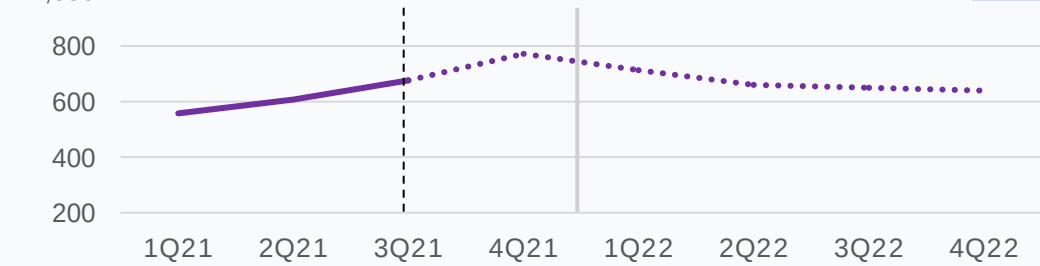
Price	2Q21	3Q21	9M20	9M21	2021(E)	2022(E)
BZ	966	993	471	904	900-950	850-900
PX	859	919	583	848	850-900	870-920



Naphtha

$/Ton

Price	2Q21	3Q21	9M20	9M21	2021(E)	2022(E)
Naphtha MOPJ	606	676	370	613	650-660	660-670



Source: PTT, PRISM Petrochemical Rolling as of Oct 2021

▼ 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

PTT Group Guidance

4Q21

Gas business outlook

Higher Pooled gas price
20-25% QoQ

Stable Domestic Gas demand compared to 3Q21

Project COD

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

Planned Shutdown

GSP#3 SD & ESP TD 60%: 6 days
GSP#6 SD : 9 days

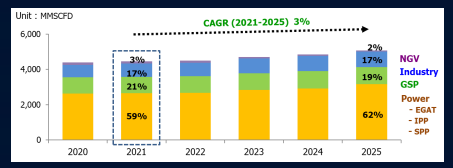
Ethane Crackers
Oleflex : ~1 month

2022

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



CAGR 3.0 % during 2021 -2025

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	Phase II	Phase III
98.8%	86.9%	In the process of preparing to construct
COD: Dec 2021	COD: Jan 2022	To COD in Dec 2022

LNG Terminal#2

83.4%

Full COD: Dec 2022

High-quality Circular Plastic Resin Plant
: 45 KTA
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)
COD: 4Q2021-2022

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

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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	Performance 100%					% PTT holding	Equity Method % PTT				
	3Q20	2Q21	3Q21	QoQ	YoY		3Q20	2Q21	3Q21	QoQ	YoY
PTT Net operating Income	2,601	9,595	8,250	-14%	>100%		2,601	9,595	8,248	-14%	>100%
E&P - PTTEP	7,202	7,139	9,545	34%	33%	65.29%	4,603	4,664	6,231	34%	35%
Petrochemical	994	25,114	7,083	-72%	>100%		475	1,469	3,545	>100%	>100%
- GC	908	25,035	7,005	-72%	>100%	48.18%	389	1,390	3,467	>100%	>100%
- Other	86	79	78	-1%	-9%		86	79	78	-1%	-9%
Refining	2,271	6,697	4,217	-37%	86%		1,312	3,215	693	-78%	-47%
- TOP	715	2,123	2,062	-3%	>100%	48.03%	599	1,006	(337)	<-100%	<-100%
- IRPC	1,556	4,574	2,155	-53%	38%	48.05%	713	2,209	1,030	-53%	44%
Oil - OR	3,450	3,225	1,893	-41%	-45%	75.00%	3,426	2,439	1,410	-42%	-59%
TEG - GPSC/TP/DCAP/PTTES/PTTDIGITAL/ENCO	3,517	2,704	2,263	-16%	-36%		874	949	974	3%	11%
Others Business	1,624	2,824	3,358	19%	>100%		1,509	2,245	2,552	14%	69%
Inter - PTTER/PTTGM	(988)	345	538	56%	>100%	100%	(878)	3	36	>100%	>100%
Gas - PTTLNG/PTTNGD/PTTGL/TTM(T)/TTM(M)	2,298	2,282	2,427	6%	6%		2,073	2,039	2,118	4%	2%
Other - PTTT/Others[1/]	314	197	393	99%	25%		314	203	398	96%	27%
Shared of Net Income from Affiliates	19,058	47,703	28,359	-41%	49%		12,199	14,981	15,405	3%	26%
Tax adjustment for gain on disposal of investment and asset	(680)	2	-	-100%	100%		(680)	2	-	-100%	100%
PTT Conso. Net Income	20,979	57,300	36,609	-36%	75%		14,120	24,578	23,653	-4%	68%

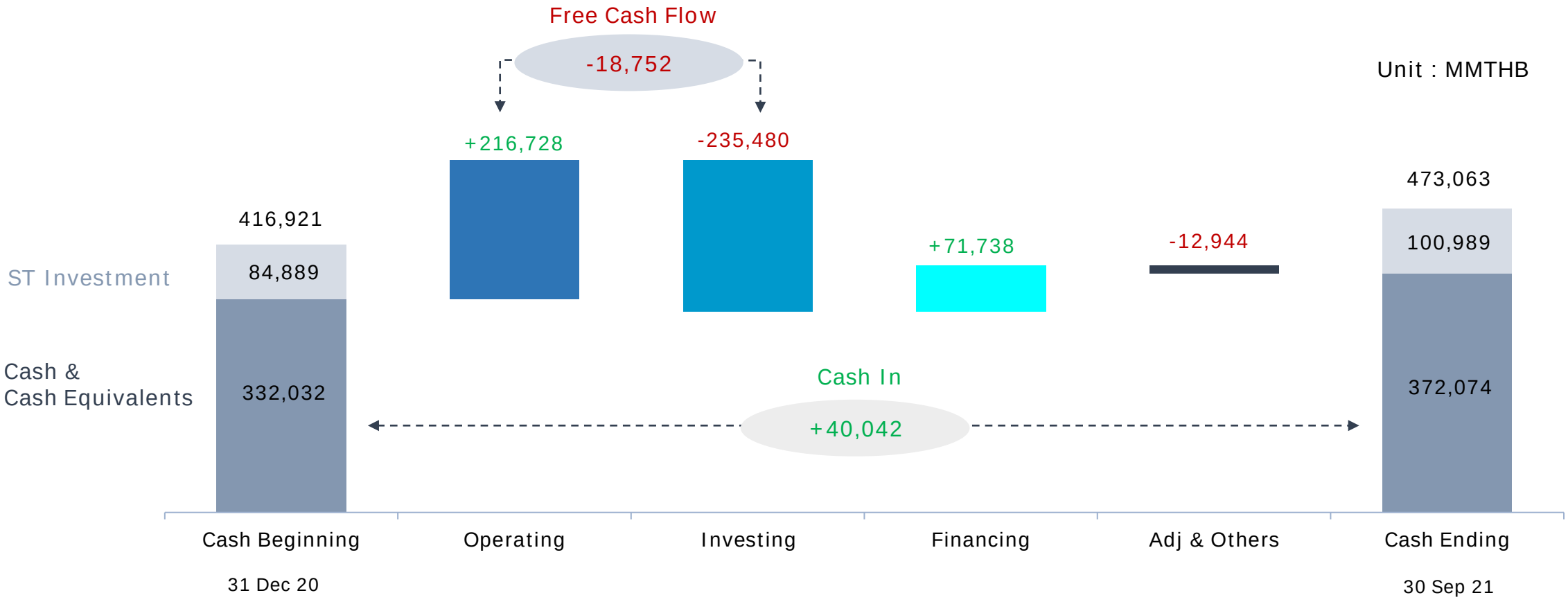
1/Including PTTGE,BSA, PTT TCC and RTC

PTT Group Performance : 9M21 vs 9M20

Unit : MMTHB		Performance 100%			% PTT holding	Equity Method % PTT		
		9M20	9M21	9M21 VS 9M20		9M20	9M21	9M21 VS 9M20
PTT Net operating Income		9,280	26,343	>100%		9,280	26,341	>100%
E&P	- PTTEP	20,137	28,218	40%	65.29%	13,122	18,419	40%
Petrochemical		(5,990)	41,975	>100%		(2,717)	9,689	>100%
	- GC	(6,205)	41,735	>100%	48.18%	(2,933)	9,449	>100%
	- Other	215	240	12%		216	240	11%
Refining		(18,319)	19,855	>100%		(8,707)	8,100	>100%
	- TOP	(10,559)	7,545	>100%	48.03%	(5,025)	2,284	>100%
	- IRPC	(7,760)	12,310	>100%	48.05%	(3,682)	5,816	>100%
Oil	- OR	5,868	9,121	55%	75.00%	5,849	7,288	25%
TEG	- GPSC/TP/DCAP/PTTES/PTTDIGITAL/ENCO	8,319	22,002	>100%		2,079	2,662	28%
Others Business		7,317	9,667	32%		6,807	8,018	18%
Inter	- PTTER/PTTGM	(519)	1,414	>100%	100%	(709)	532	>100%
Gas	- PTTLNG/PTTNGD/PTTGL/TTM(T)/TTM(M)	6,116	6,964	14%		5,796	6,186	7%
Other	- PTTT/Others[1/]	1,720	1,289	-25%		1,720	1,300	-24%
Shared of Net Income from Affiliates		17,332	130,838	>100%		16,433	54,176	>100%
Tax adjustment for gain on disposal of investment and asset		(1,094)	302	>100%		(1,094)	302	>100%
PTT Conso. Net Income		25,518	157,483	>100%		24,619	80,819	>100%

1/Including PTTGE,BSA, PTT TCC and RTC

PTT Consolidated Cash Flows 9M21



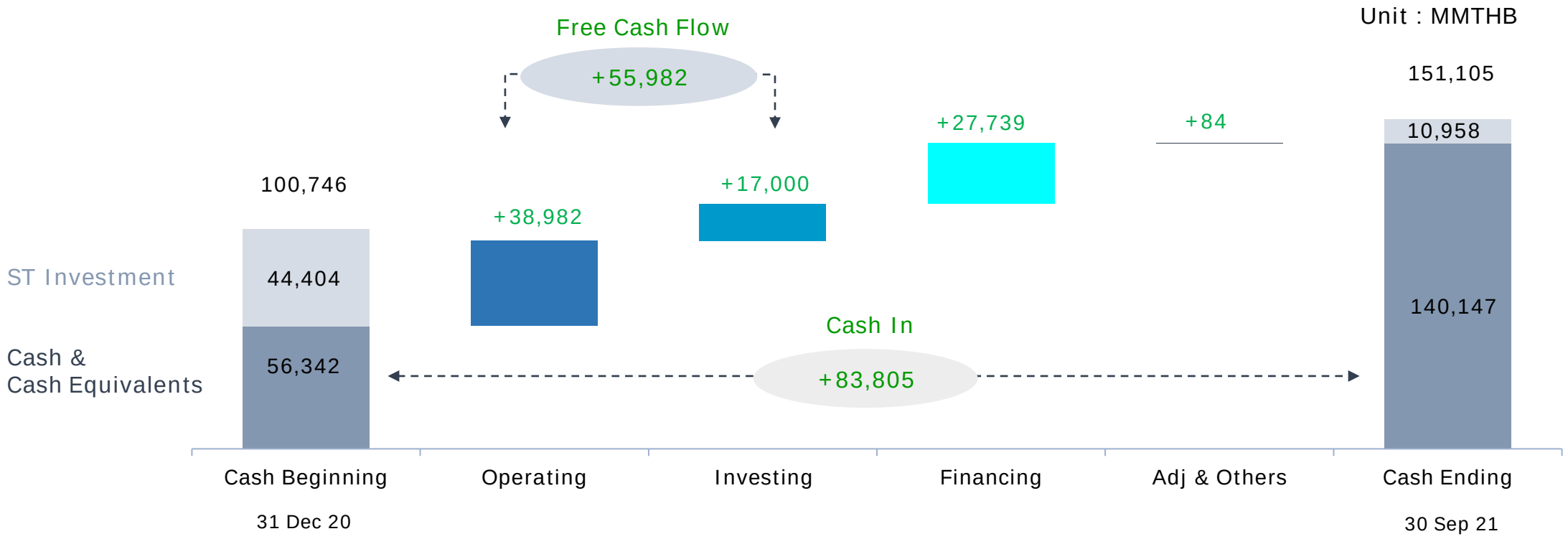
Operating	216,728
Non-Cash Adjustment	237,581
Net Income	80,819
Changes in Assets & Liabilities	(57,314)
Income Tax	(44,358)

Investing	(235,480)
Investment (Sub. & Affiliates)	(119,505)
CAPEX	(100,647)
Current Investment	(12,521)
Others *	(7,777)
Dividend/Interest Received	4,970

Financing	71,738
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



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)

*Investment in financial assets, ST/LT lending loans

Debt Profile : Control Cost & Manage Risk

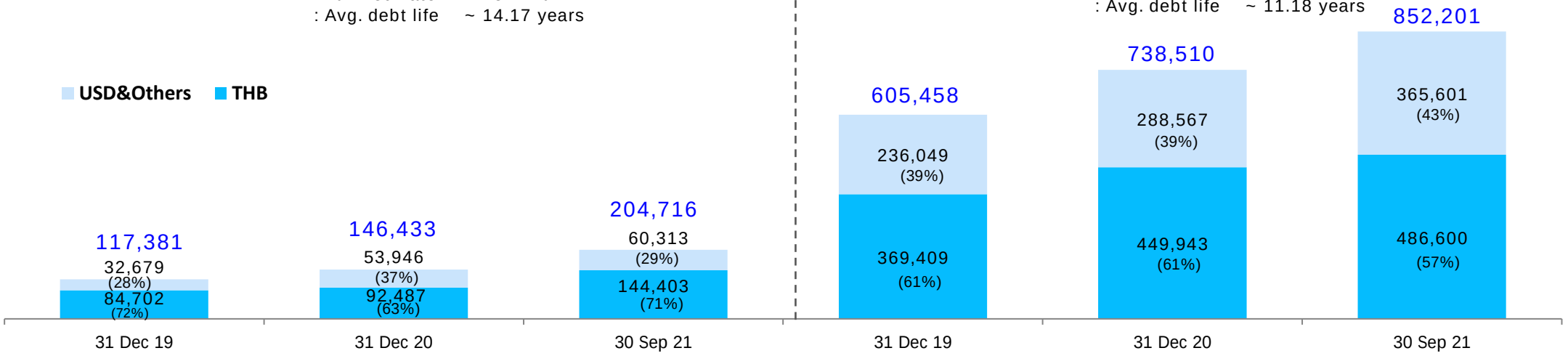
Managed debt according to financial risk and policy

Debt Portfolio

Unit : MMTHB

PTT Only : Cost of debts ~ 3.71%
: % fixed-rate ~ 75.24%
: Avg. debt life ~ 14.17 years

Consolidated : Cost of debts ~ 3.37%
: % fixed-rate ~ 70.59%
: Avg. debt life ~ 11.18 years



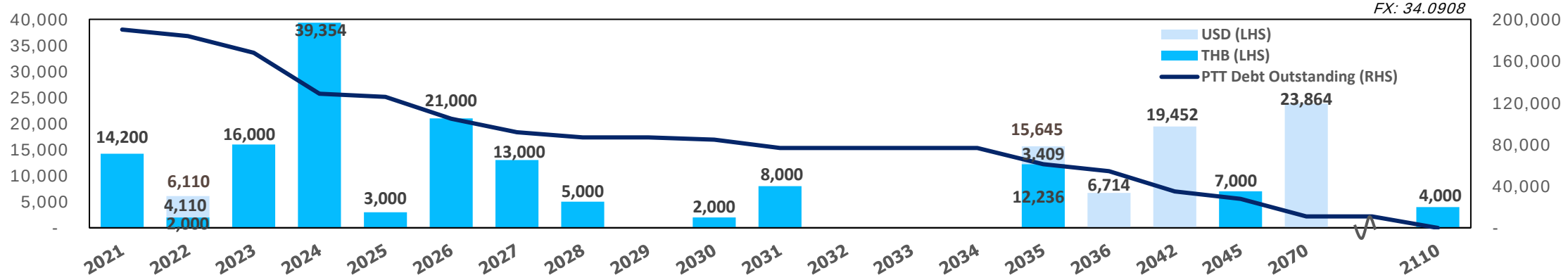
Note : 1. PTT Data as of 30 Sep 21 (THB/USD = 34.0908 THB/JPY = 0.3071) excluding liabilities from finance leases.
2. Debt Outstanding represents amount and portion before derivative swaps, and reconciled with accounting.
3. Cost of debts, % fixed rate, and avg. debt life took into account the derivative transactions, including withholding tax (update as of 30 Sep 21).

PTT Only : Debt Outstanding and Repayment Profile

Unit : MMTHB

As of 30 Sep 21

FX: 34.0908



Note: 1. Debt Outstanding for Repayment Profile represents financial data and portion after derivative swaps
2. 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

*PTTC10DA (Century Bonds) is due on 2 Dec 2110

PTT Group Accounting Structure

Data as of 30 Sep 2021

E&P and Gas Business Group

Subsidiaries		Consolidate
PTT Exploration & Production Plc.	PTTEP	65.29% [2/]
PTT Natural Gas Distribution Co., Ltd.	PTTNGD	58.00%
PTT LNG Co., Ltd.	PTTLNG	100.00%
PTT Global LNG Co., Ltd	PTTGL	50.00%

Joint Ventures		Equity
Trans Thai-Malaysia (Thailand) Co., Ltd.	TTM (T)	50.00%
Trans Thai-Malaysia (Malaysia) Sdn. Bhd.	TTM (M)	50.00%
Map Ta Phut Air Products Company Limited	MAP	49.00%

International Trading Business Group

Subsidiaries		Consolidate
PTT International Trading Pte.	PTTT	100.00%
PTT International Trading London Ltd	PTTT LDN	100.00%
PTT International Trading USA Inc.	PTTT USA	100.00%

Oil Business Group

Subsidiaries		Consolidate
PTT Oil & Retail Business Co., Ltd.	OR	75.00%

Petrochemicals & Refining Business Group

Petrochemical Subsidiaries		Consolidate
PTT Global Chemical Plc. [1/]	GC	48.18% [2/]
PTT Tank Terminal Co., Ltd.	PTTTANK	100.00%

Refining Subsidiaries		Consolidate
Thai Oil Plc. [1/]	TOP	48.03% [2/]
IRPC Plc. [1/]	IRPC	48.05% [2/]

Technology and Engineering Business Group

Subsidiaries		Consolidate
Global Power Synergy Co., Ltd[1/]	GPSC	75.23% [2/]
PTT Digital Solutions Co., Ltd. [1/]	PTT DIGITAL	20.00%
PTT Energy Solutions Co., Ltd. [1/]	PTTES	40.00%
Energy Complex Co., Ltd.	EnCo	50.00%

Joint Ventures		Equity
District Cooling System and Power Plant	DCAP	35.00%

Others		Fair value
Baania (Thailand) Company Ltd.	Baania	2.73%
HG Robotics Plc.	HG Robotics	9.49%
Innospace (Thailand)	Innospace	13.61%
Sunfolding, Inc.	Sunfolding	5.59%
Luminar Technologies, Inc.	Luminar Technologies	0.06%
Ample, Inc.	AMPLE	1.16%

International Investment Business Group

Subsidiaries		Consolidate
PTT Energy Resources Co., Ltd.	PTTER	100.00%
PTT Green Energy Pte. Ltd	PTTGE	100.00%
PTT Global Management Co., Ltd.	PTTGM	100.00%

Others

Subsidiaries		Consolidate
Business Service Alliance Co., Ltd. [1/]	BSA	25.00% [3/]
PTT Treasury Center Co. Ltd	PTT TCC	100.00%

Joint Ventures		Equity
Suez Environmental Services Co.,Ltd.	SES	40.00%

Others		Fair value
Sarn Palung Social Enterprise Company Ltd.	SPSE	20.00%
Dhipaya Group Holdings Pub Co., Ltd.	TIPH	13.46%

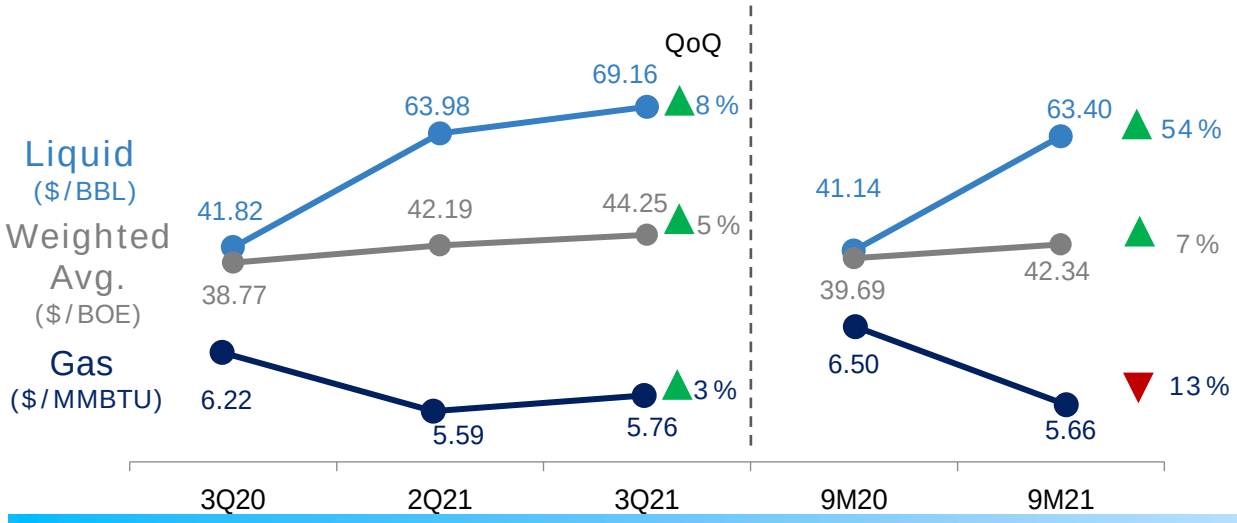
Remark : [1/] Subsidiaries that PTT holds less than 50% but being consolidated because PTT has the power to control the financial and operating policies.
[2/] Holding portion of PTT Group (direct & indirect)

[3/] **PTT holds 100.00% of BSA's ordinary shares, PTT's ownership interest in BSA is 100%**

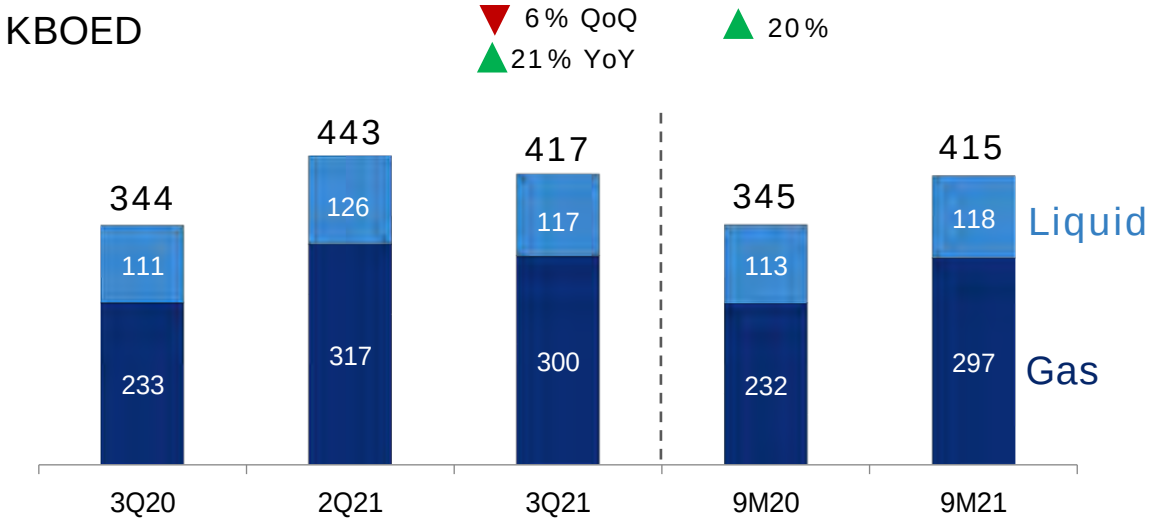
E&P Performance

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

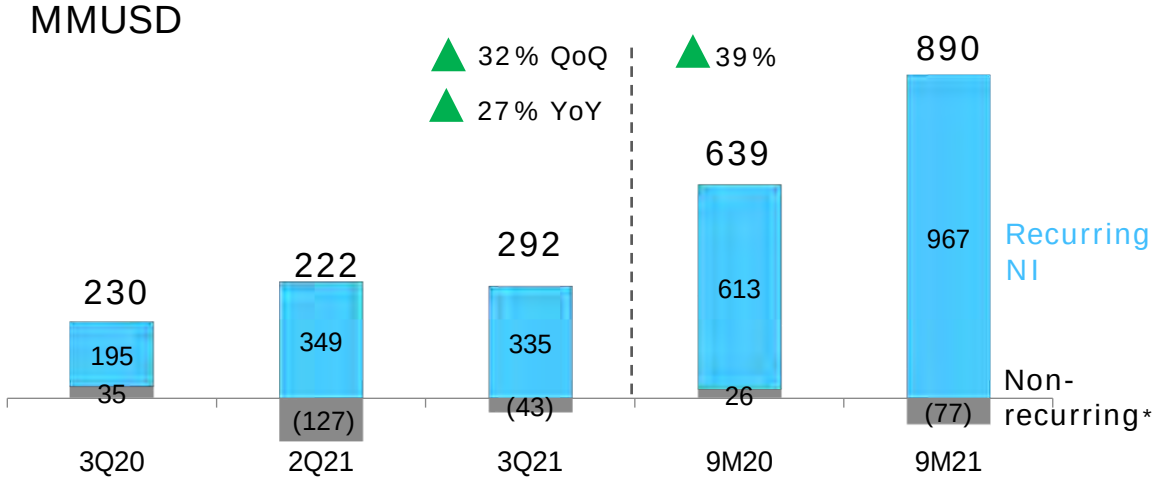
Product Prices



Sales Volume



Net Income (100%)



* 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.

QoQ ▲

- 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

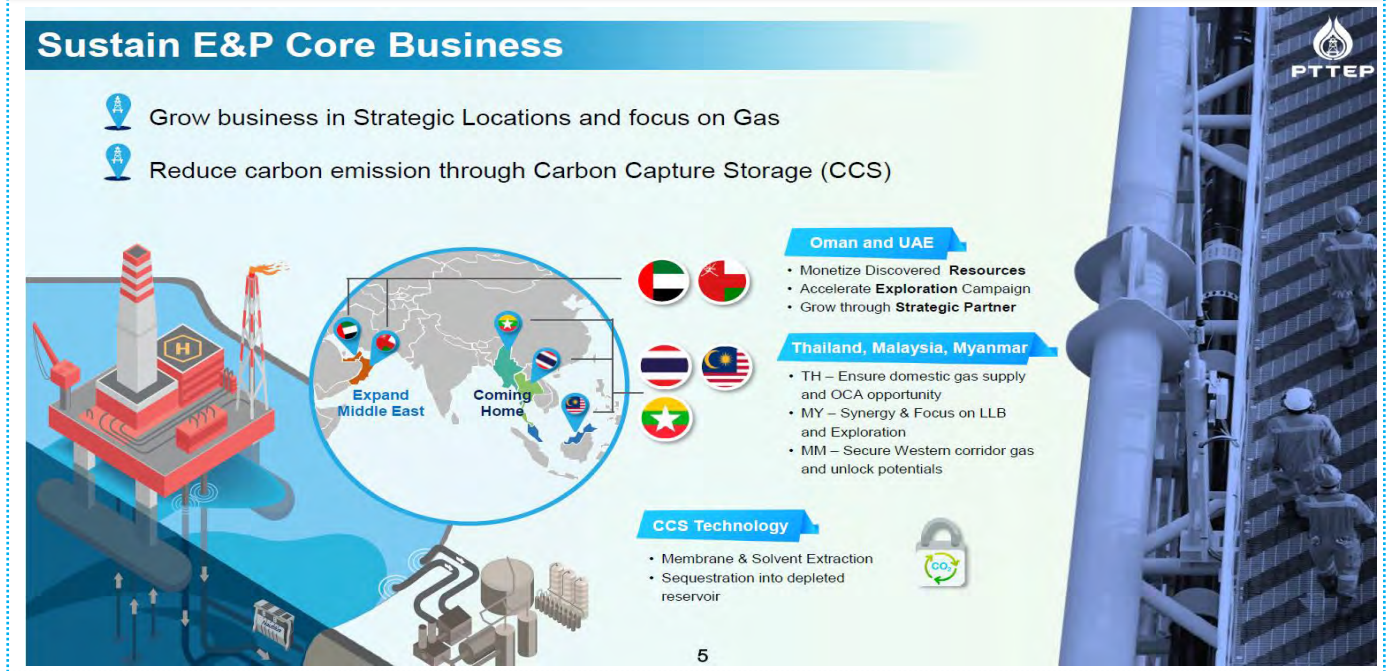
9M21 VS 9M20 ▲

\+ Recurring NI : significantly enhanced from higher sales volume and selling prices and lower unit cost

- 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

E&P: Guidance & Strategy

Strengthen Core Business



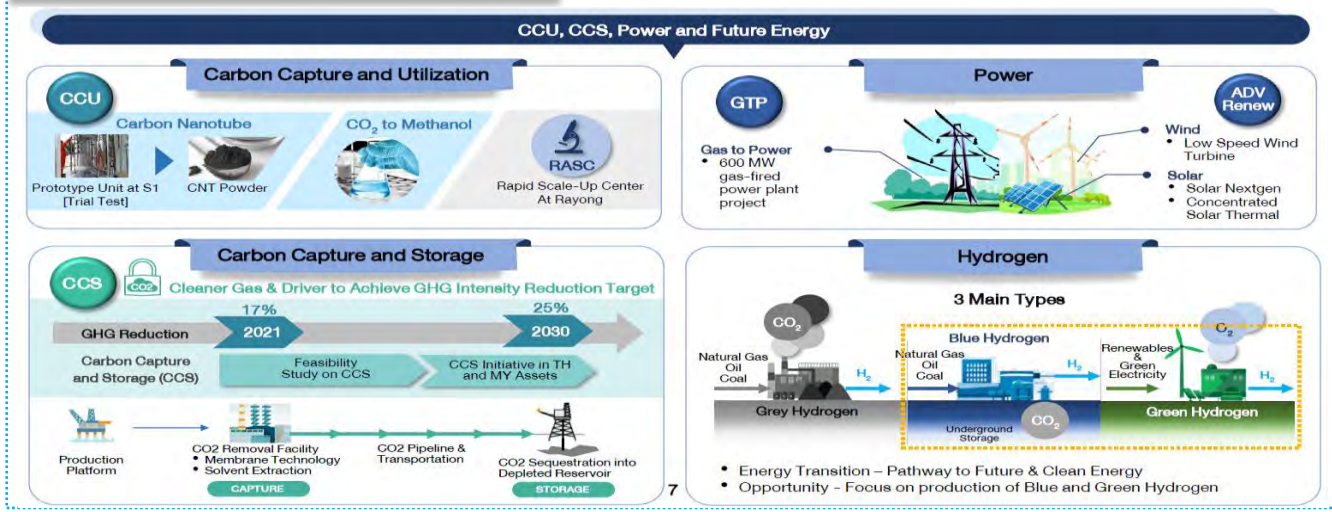
2021 Guidance

2021 Guidance

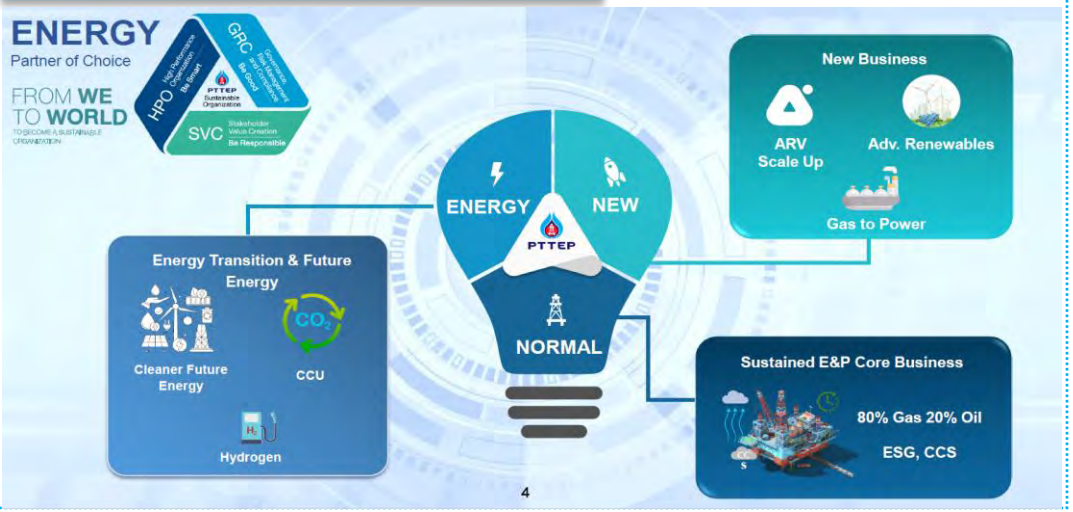
Average Sales Volume*	Average Gas Price**	Unit Cost	EBITDA Margin
KBOED	USD/MMBTU	USD/BOE	% of Sales Revenue
~417	~5.7	~28–29	~70–75%

Note:
** Include sales volume from ADNOC Gas Processing (AGP)*
*** Based on average Dubai oil price in 2021 at 67.2 $/BBL*

Non-E&P Business Directions



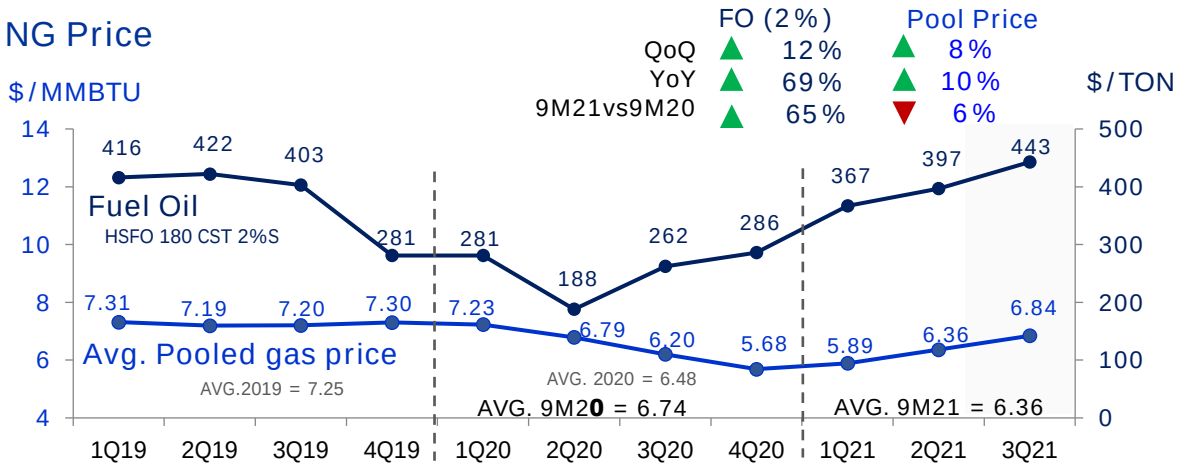
Energy New Normal

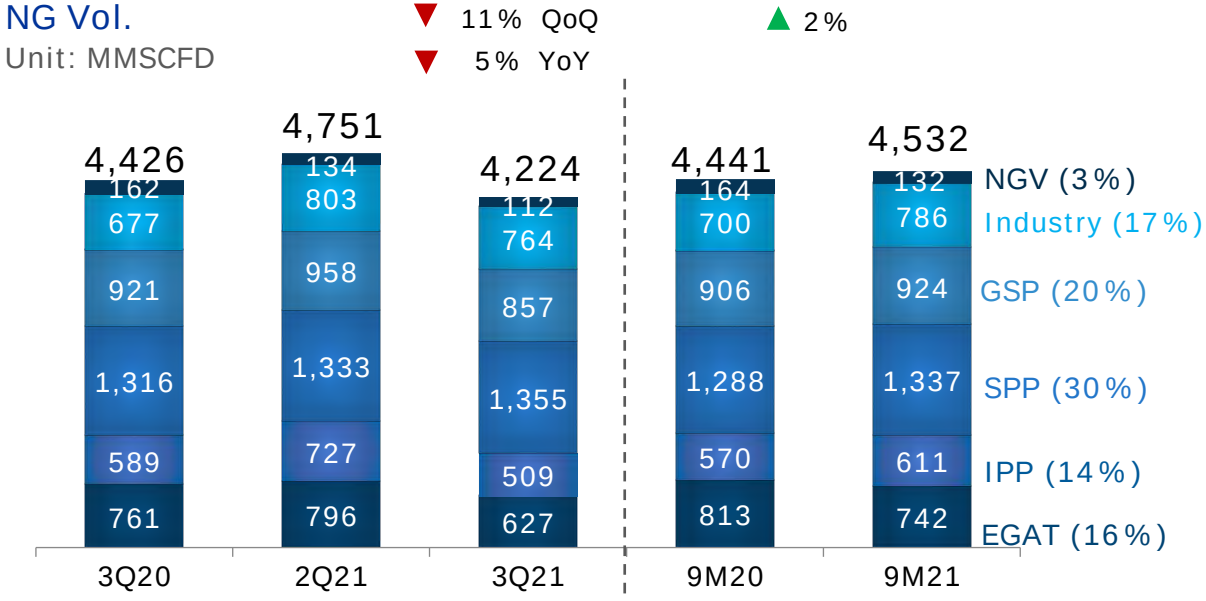


Gas Business

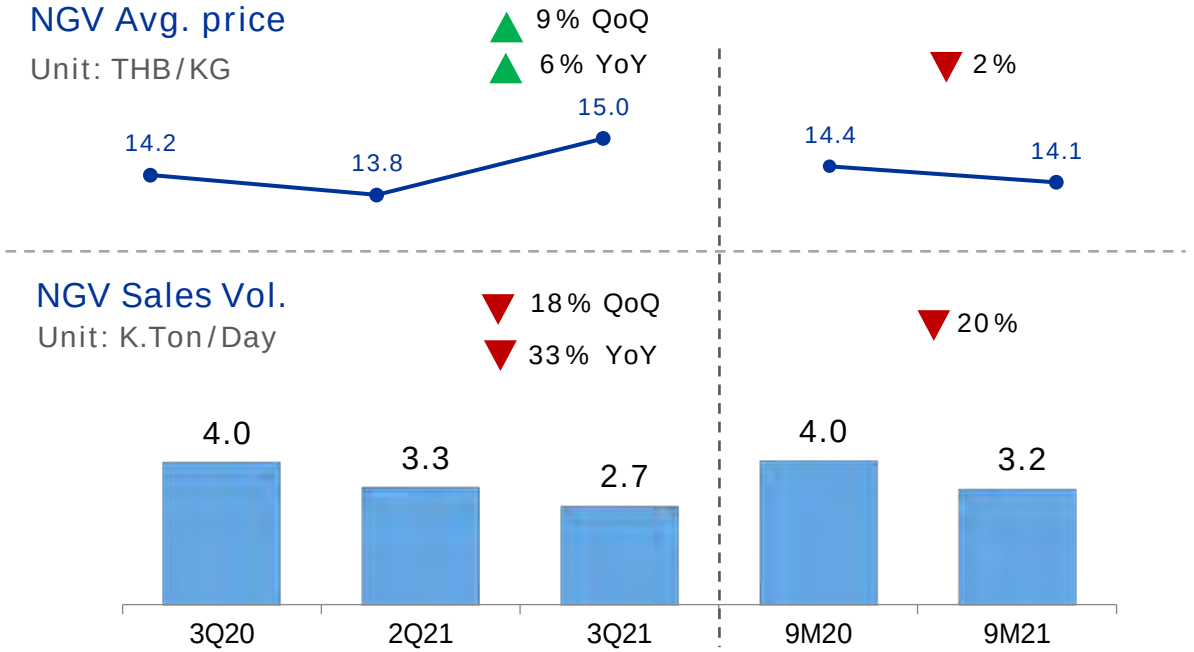
QoQ : Lower NG vol. from all customers esp. power producers and GSP
9M21 vs 9M20 : Increased gas sales vol., higher industrial selling prices referenced to FO price and lower pooled gas cost

NG Price VS FO & Customer Breakdown





NGV Price & Sales Volume



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

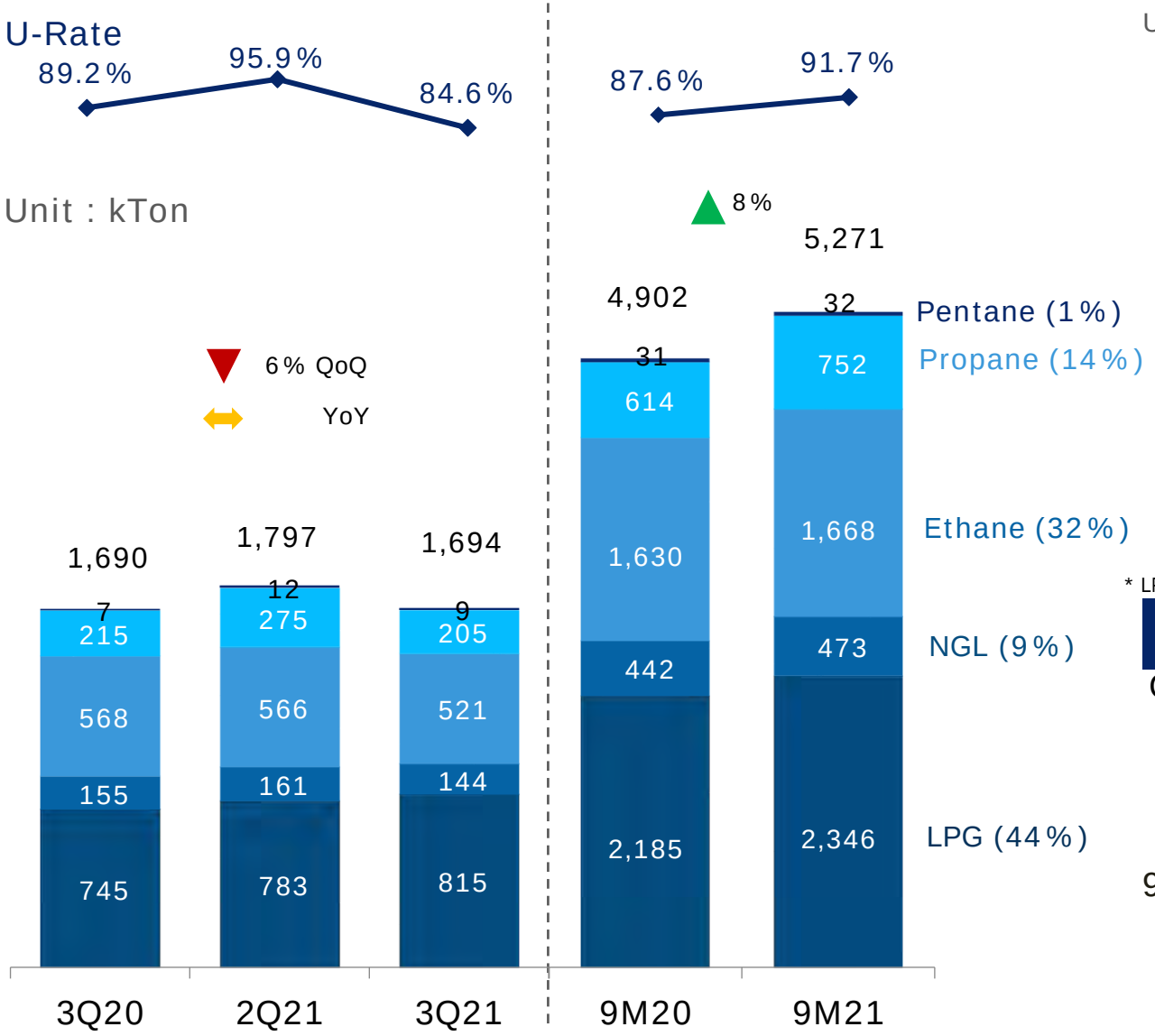
9M21 vs 9M20

+ 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

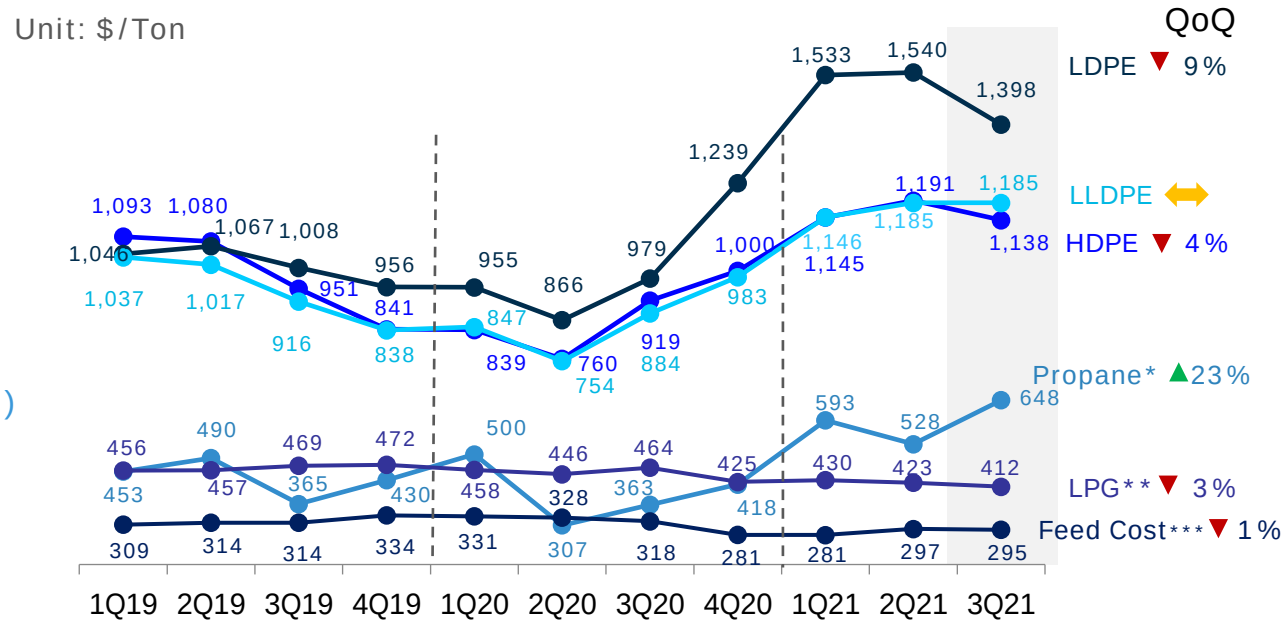
Gas Business : Gas Separation Plant (GSP)

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



GSP Feed Cost vs Petchem. Price



* LPG price selling to Petro customers close to propane **LPG Domestic ***feed cost calculation per GSP production volume

Key Highlights

QoQ ▲

- \+ 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

9M21 vs 9M20 ▲

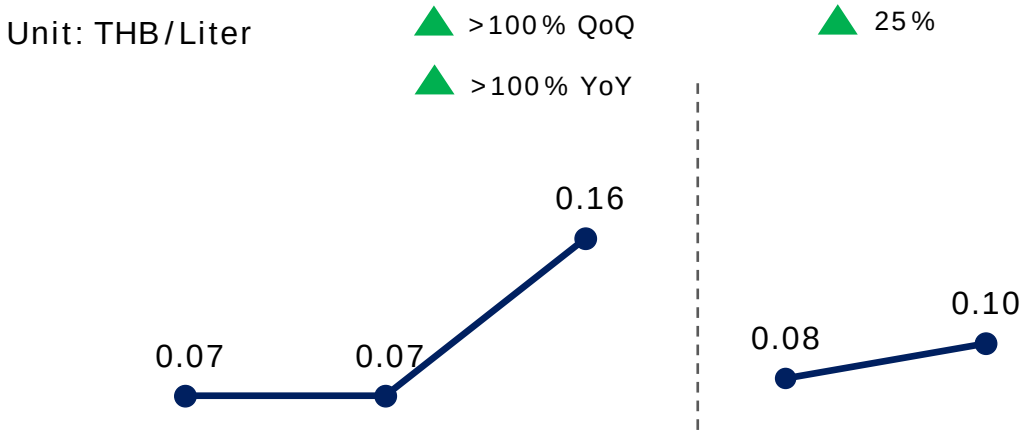
- \+ Increased GSP's selling prices following global petrochemical prices
- \+ Higher sales volume according to higher petrochemical demand and less plants' shutdown compared to 9M20
- \+ Lower feed gas cost

Trading Business:

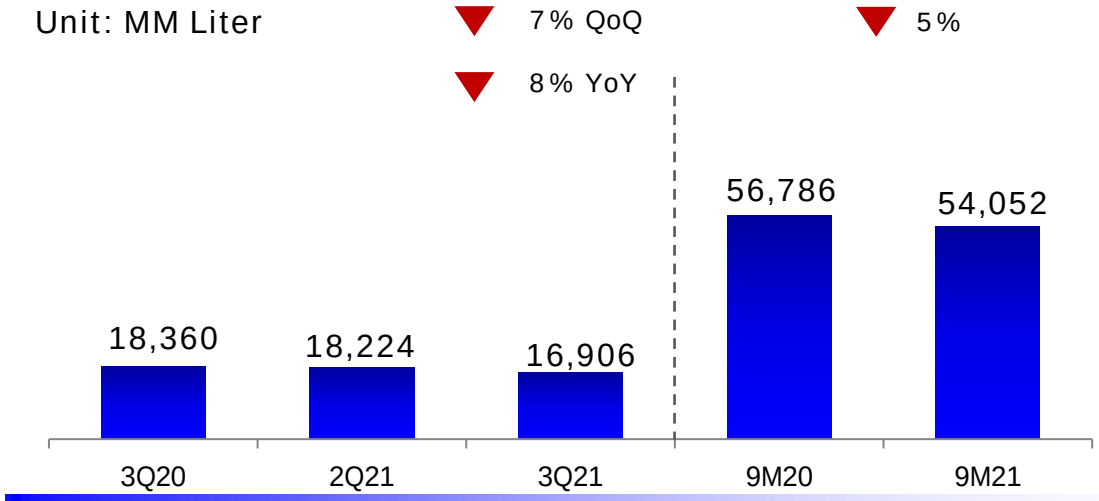
QoQ: Performance improved owing to sharply increased gross margin while sales volume dropped

9M21 vs 9M20 : Enhanced EBITDA mainly due to improved domestic condensate margin

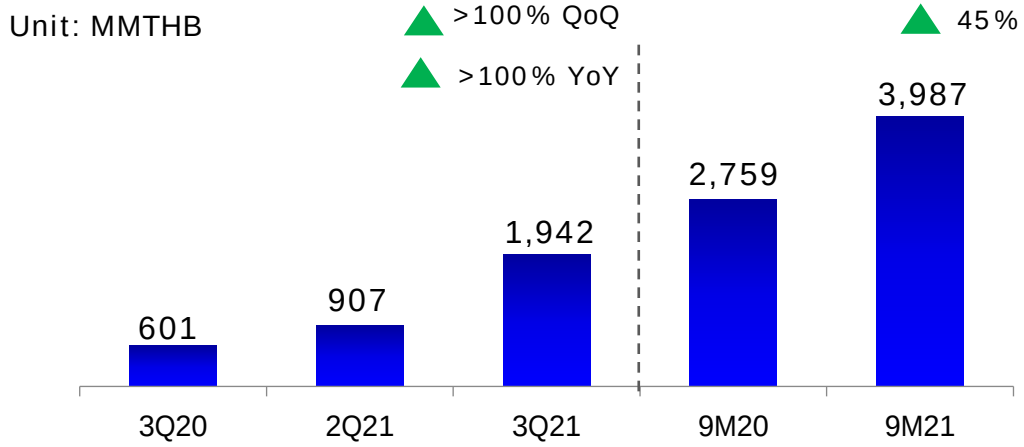
Gross Margin[1]



Sales Volume[2]



Trading – EBITDA[3]



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

[1] PTT Trading BU + trading subsidiaries: FX Adjusted + gain/loss on derivatives + Joint Trade Agreement (JTA)

[2] PTT Trading BU + trading subsidiaries + JTA

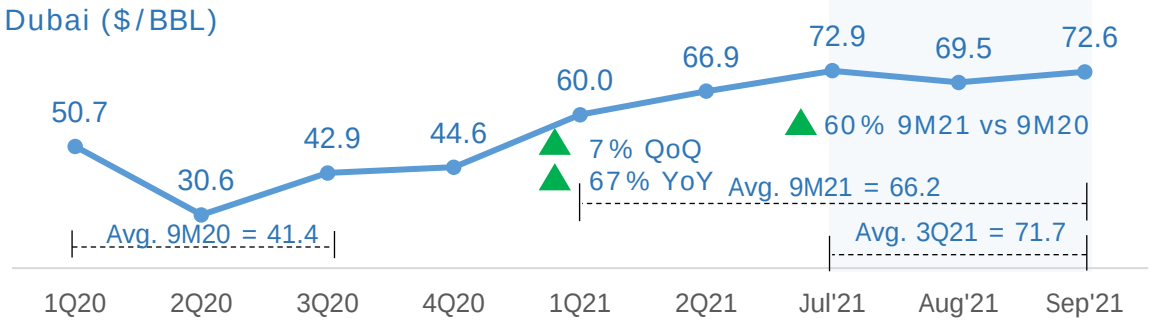
[3] PTT Trading BU + trading subsidiaries: FX Adjusted + gain/loss on derivatives

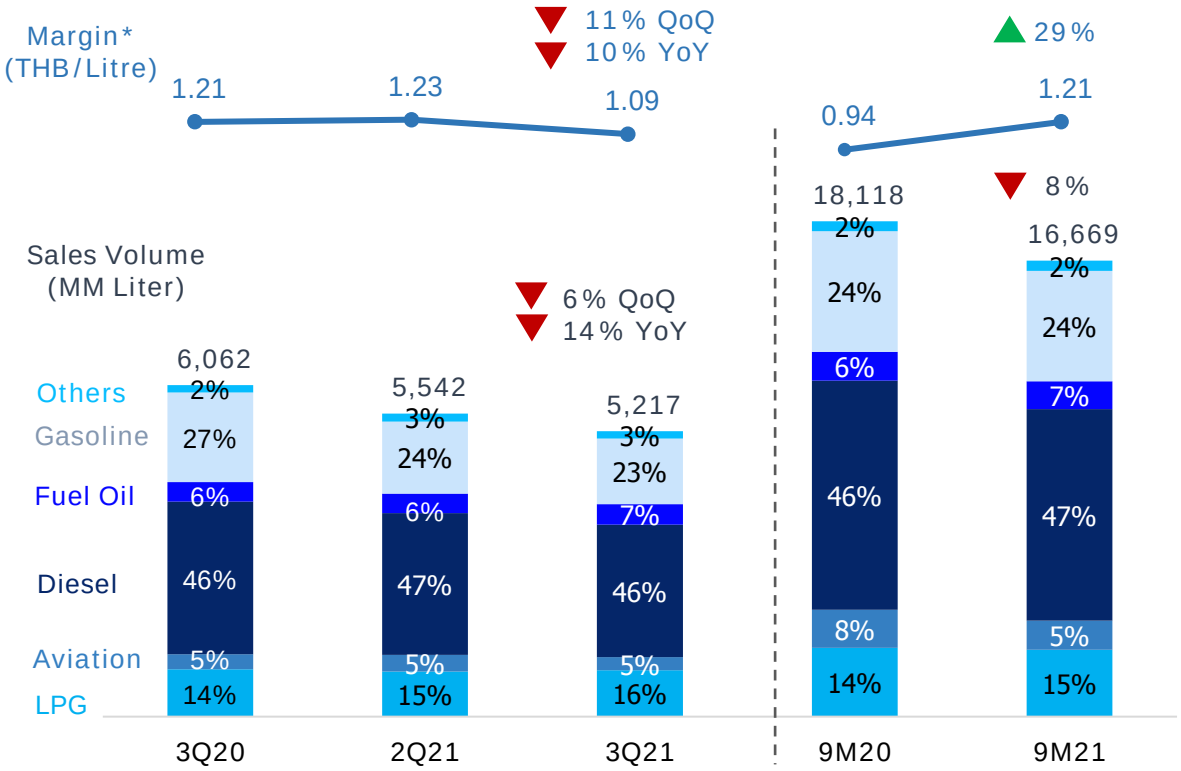
Oil Business : OR Group

QoQ : NI 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





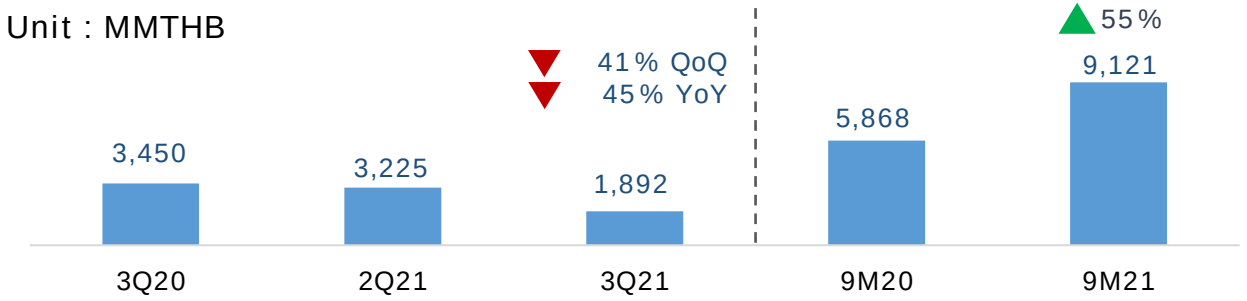
*Gross margin included stock gain/(loss)

Non-Oil Business

	3Q20	2Q21	3Q21	9M20	9M21
Amazon[1/]			Cups ▼ 3% QoQ ▼ 6% YoY		▲ 6%
	72 MM Cups 3,188 Outlets	70 MM Cups 3,452 Outlets	68 MM Cups 3,512 Outlets	200 MM Cups 3,188 Outlets	211 MM Cups 3,512 Outlets
C-Store (7-11, Jiffy) [2/]			C-Store ▲ 1% QoQ ▲ 4% YoY		▲ 4%
	1,960 Outlets	2,018 Outlets	2,041 Outlets	1,960 Outlets	2,041 Outlets

[1/] Thailand, Japan, Oman, Myanmar, and Malaysia
[2/] Thailand

Net Income



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 sale

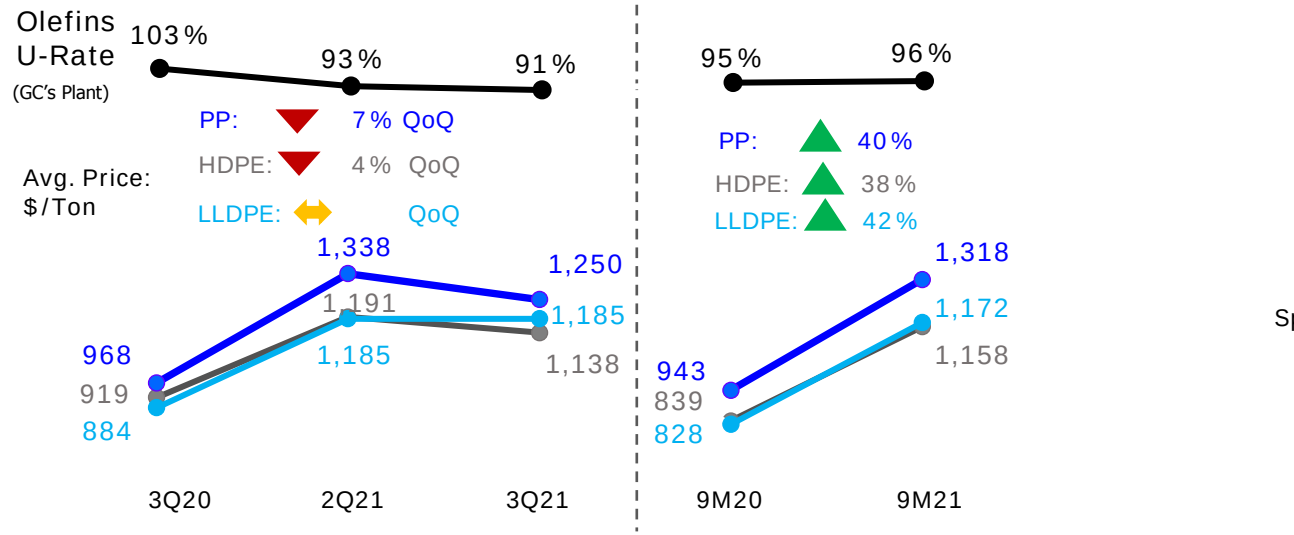
9M21 vs 9M20:
▲ Oil : Better gross margin while sales volume dropped from diesel, gasoil, and aviation
▼ Non-Oil : Soften performance from higher promotion expense during lockdown despite continued outlet expansion

P&R Businesses

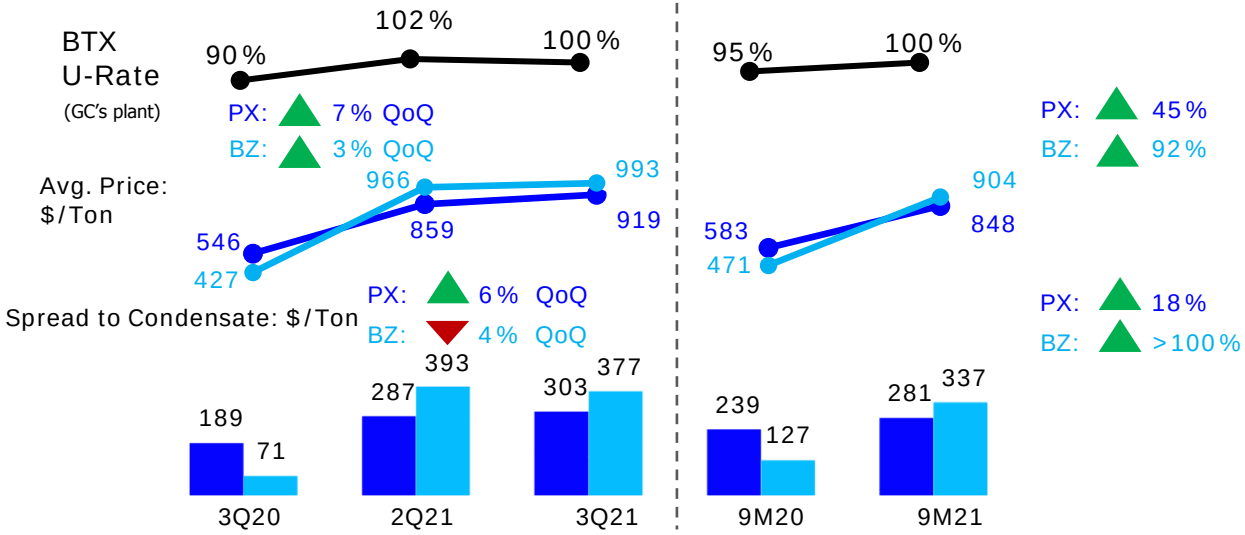
QoQ: Soften performance mainly from refinery's shutdown, increased feed cost, and higher hedging loss

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

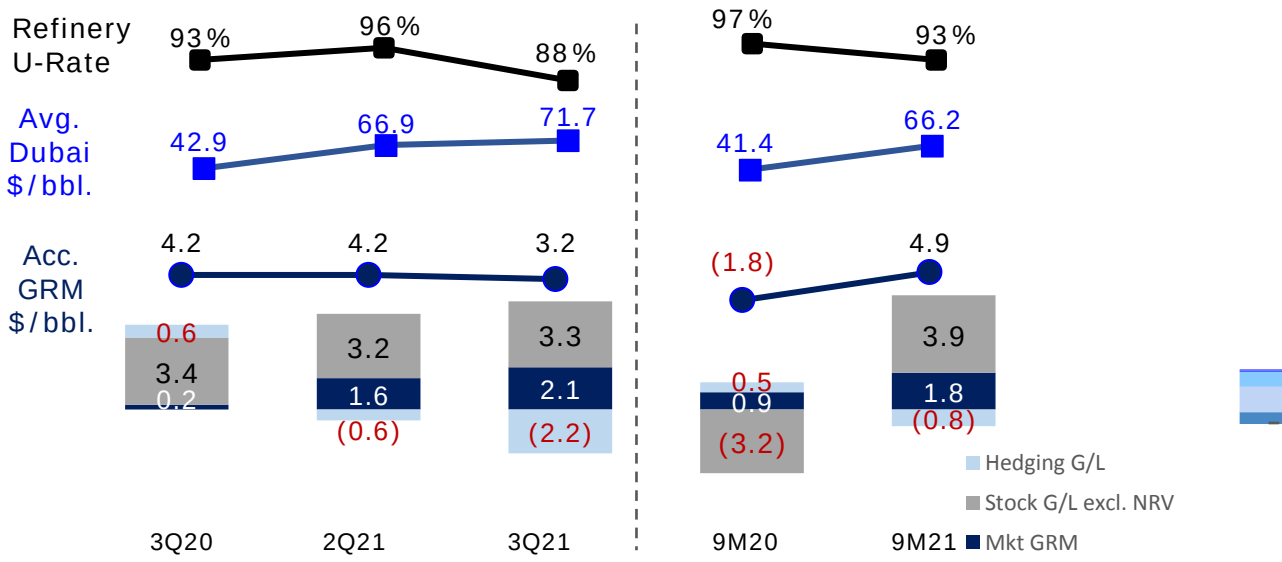
Olefins



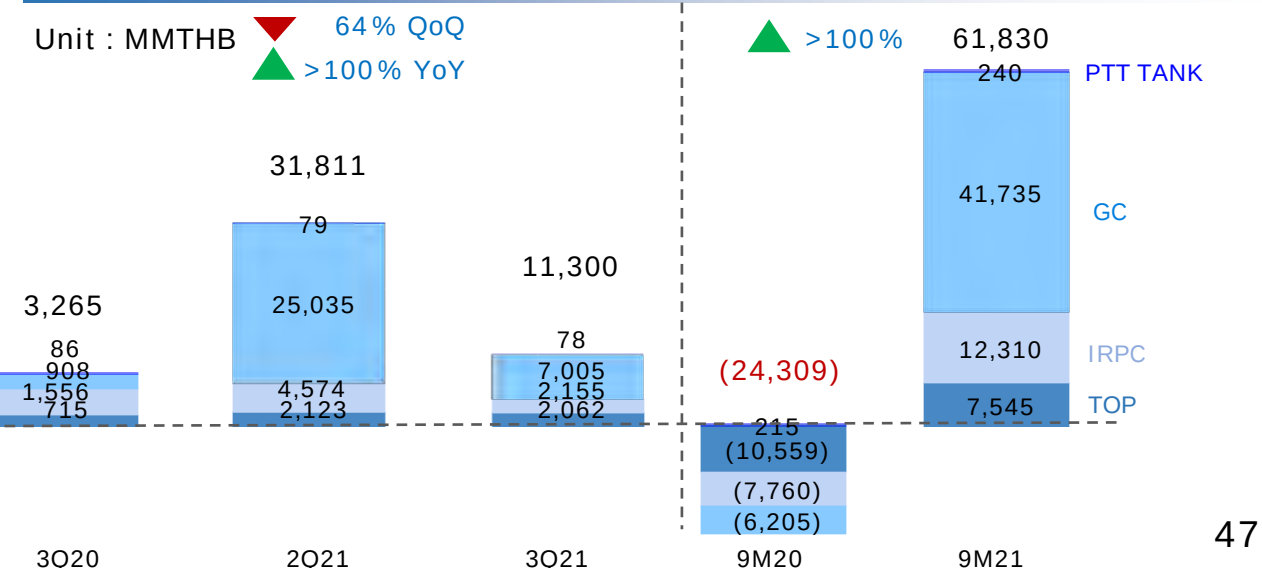
Aromatics



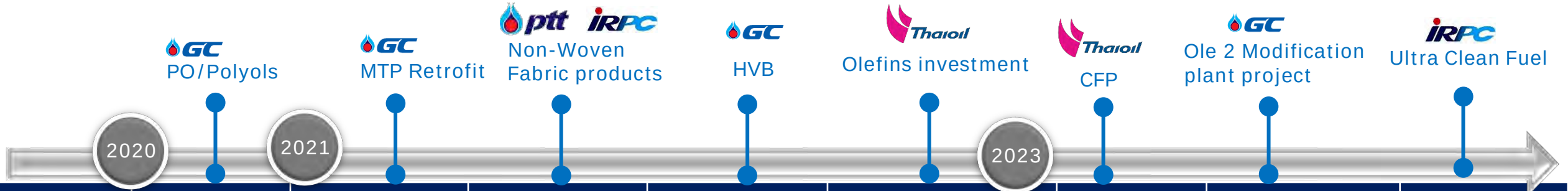
Refinery



Net Income (100%)



P&R : Projects Update

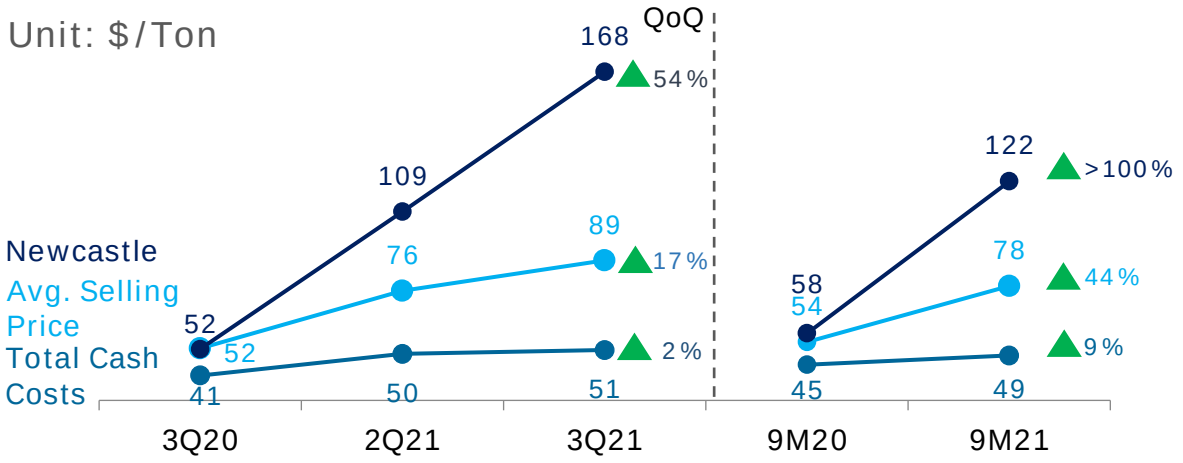


	PO/ Polyols	MTP Retrofit (Olefins Reconfiguration)	The establishment of Innopolymed	High value business (HVB) Acquired 100% share of Allnex	Olefins investment (Investment in PT Chandra Asri: CAP)	CFP (Clean Fuel Project)	Ole 2 Modification plant project	Ultra Clean Fuel
Objective/Capacity	• Create value added in Polyurethane chain • PO (200 KTA) • Polyols (130 KTA)	• Ethylene (500 KTA) • Propylene (250 KTA) • Olefins capacity 2,988 ➔ 3,738 KTA *100% in progress as of Dec 2020	• 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 *The Company completed its registration in 2Q21	• 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 *Expected closing deal in 4Q21	• 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 *CAP2 : expected FID in 2022	• Upgrade lower value products ➔ higher value products • Ability to process heavier (cheaper) crude oil • Refining capacity 275 ➔ 400 KBD	• 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	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	**Dec'2020**	2Q2021 (Jun)	Within 4Q2021	July 2021	CAP2 : 2026	1Q2023 (FID **Jul'18)**	1Q2023	**Jan'2024**

Other Business : Coal business (SAR)

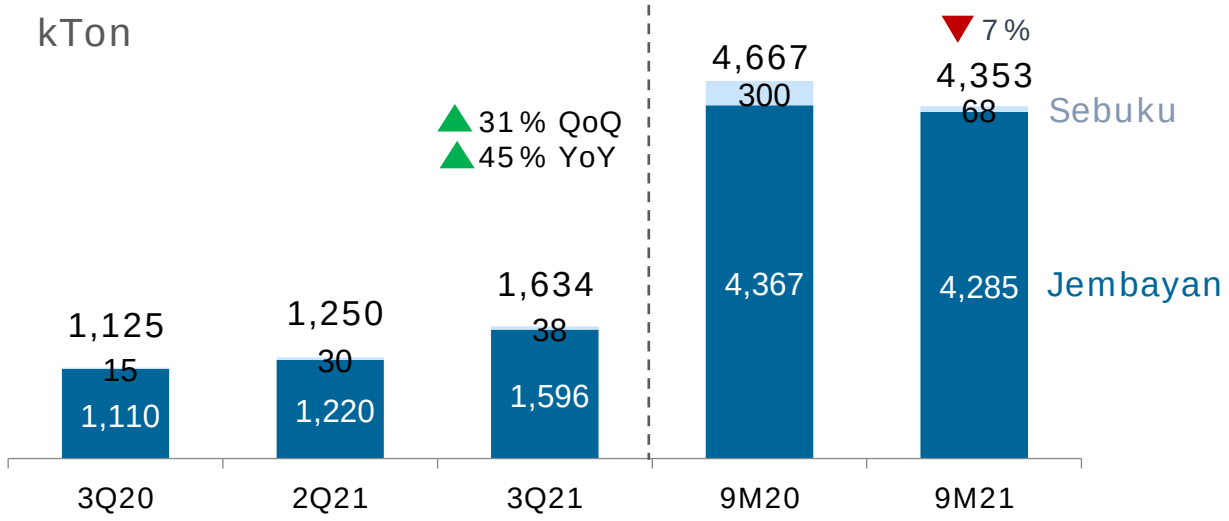
QoQ: NI flat due to rising selling price and sales volume offsetting with higher income tax and hedging loss
9M21 vs 9M20: NI increased from higher selling prices referenced to Newcastle price surged and lower DD&A

Avg. Selling Price[1/] & Cash cost[1/]

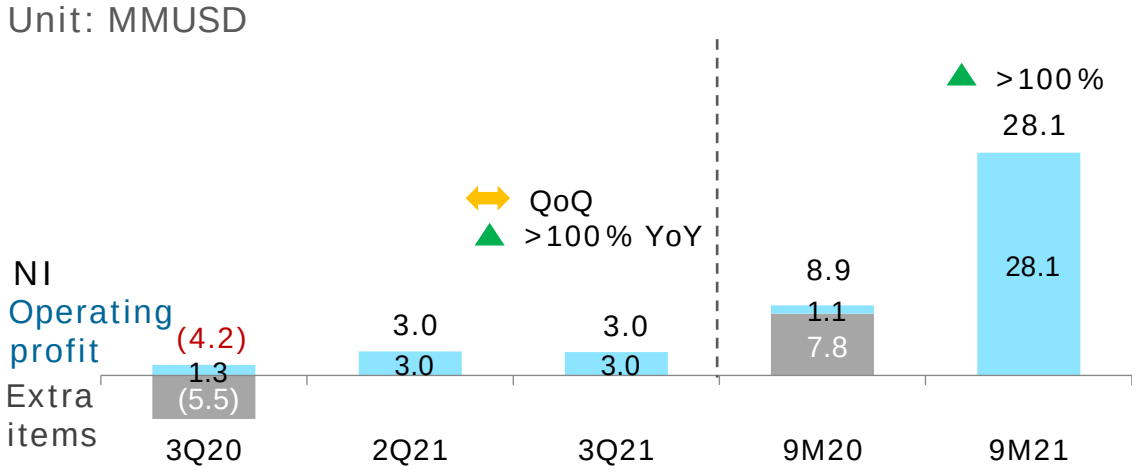


[1/] Average Calorific value ~ 5,400 kcal/kg

Sales Volume



Net Income (100%)



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

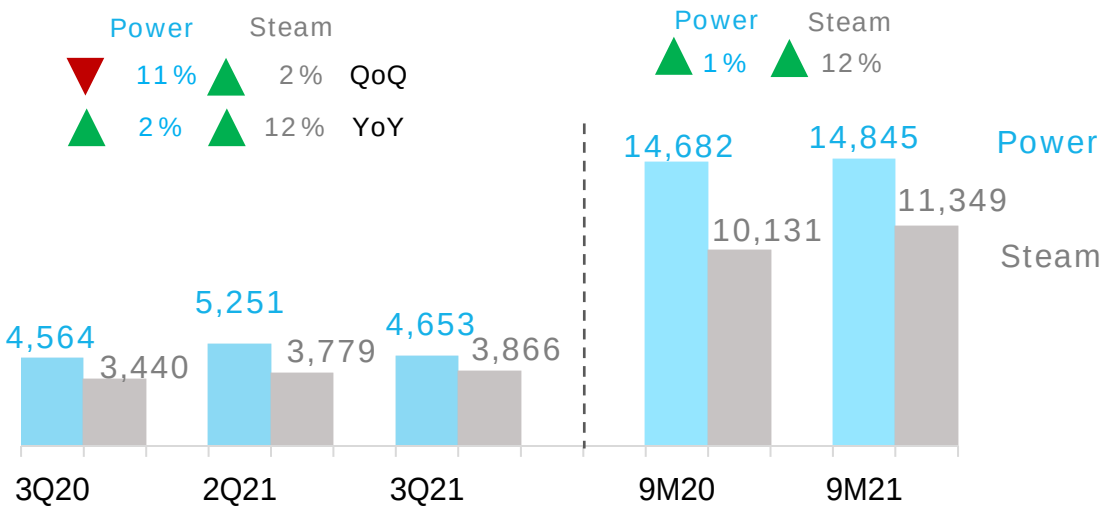
TEG Business: Power - GPSC

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

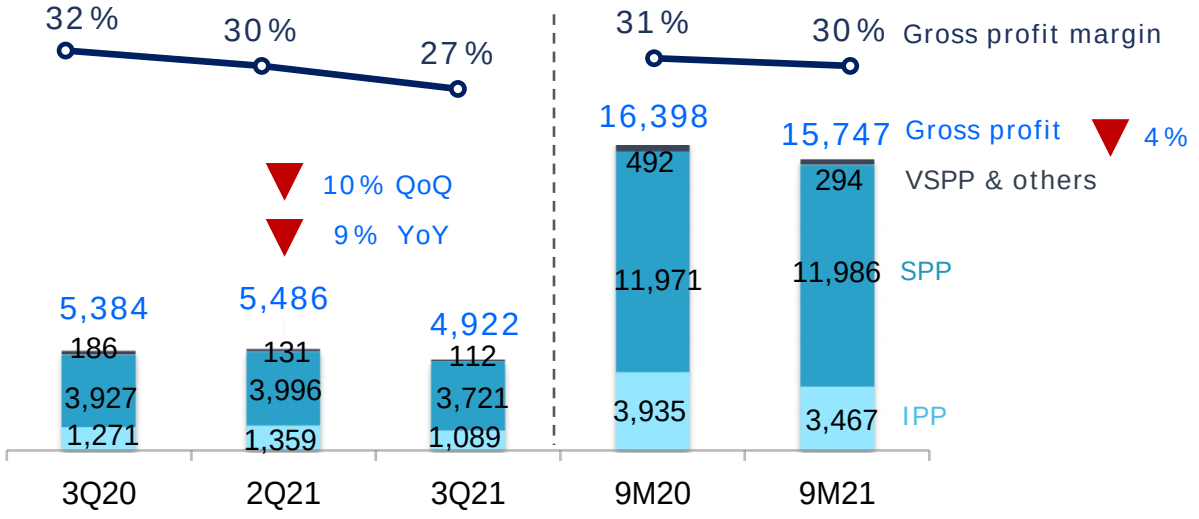
Sales Volume

Unit: Power: GWh / Steam: '000 Ton



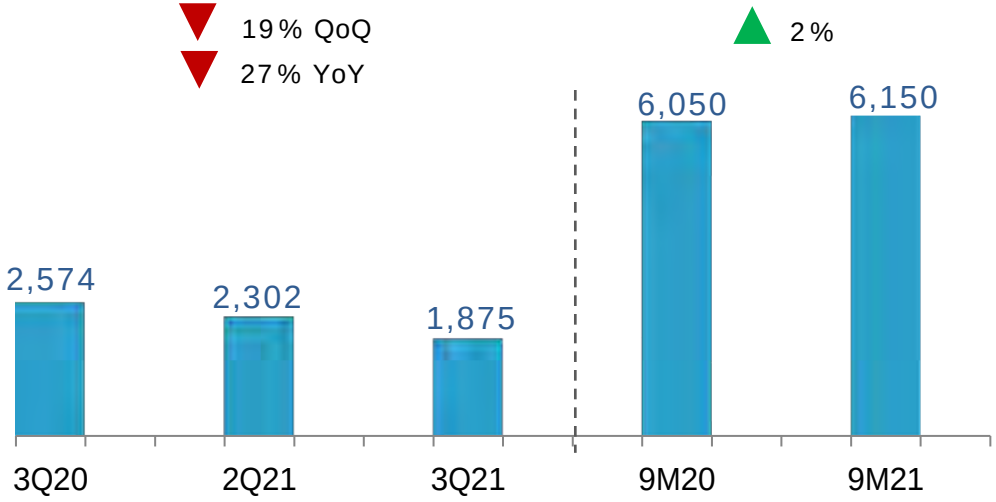
Gross profit & Gross profit margin

Unit: MMTHB



Net Income

Unit: MMTHB



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

TEG Businesses : Power - GPSC

Upcoming Projects to Bolster Future Growth

Energy Recovery Unit (ERU)

SCOD | 2023

SPP Replacement - Stage 1 | Glow Energy Phase 2

SCOD | Q4/2022

Avaada : Solar Power Platform in India

Operational Projects

Under Construction Projects

Contracted Capacity
4,560 MW

GPSC Hold
41.6% of shares

Project	MW	COD
Operating (13 projects)	1,500	As of Q3/2021
Under construction (13 projects)	3,060	Q4/2021 - 2023

CFXD : Offshore wind in Taiwan

Under Construction Projects

Contracted Capacity
595 MW

GPSC Hold
25% of shares

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 the 1Q2024

Strategic Directions and Growth Strategy

GPSC | Corporate Strategy 2021

S1 — Strengthen & Expand the Core
- Best in class operations
- Customer-centric utility
- Expansion into adjacencies *(e.g., water)*

S2 — Scale-up Green energy
- Solar power scale-up
- Wind power scale-up
- ESS-RE hybrid power entry

S3 — S-curve & Batteries
- Energy storage systems
- EV & Mobility batteries
- New S-Curves

S4 — Shift to Customer-centric Solutions
- Distributed generation
- District cooling
- Energy Management Services (EMS)

Scale-up Green energy

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

Strategic pillar	Key focus	
Thailand	▪ Seeking new opportunities of hybrid RE ▪ Solar PPPA ▪ Capture the opportunities with new National Energy Plan (NEP)	GPSC, hpp
India	▪ Using Avaada investment platform to execute projects ▪ To dispatch staffs as the secondment to build expertise & keep monitoring performance to GPSC	GRSC
Taiwan	▪ Focusing on current project including; - **Sheng Yang Energy**: Solar project of 25 MW equity capacity through GRP - **CFXD**: Offshore wind of 149 mw equity capacity through GRSC TW	GRSC, GRP
Vietnam	▪ Joint development with PTT group and strategic partners	GRSC, GRP

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

Customers	Sales Price Structure		
	Gas Pool Price +	Supply Margins +	Pipeline Tariffs
Power Producers 60%	Average Purchased Gas Price		21.9 Bt/MMBtu
: EGAT 16%		1.75% *	
: IPP 14%		1.75% *	
: SPP 30%		9.33% *	
GSP 20%	Charged at the same price structure of power producers		
Petrochemicals Feedstocks			
Ethane, Propane, LPG	Profit-sharing mechanism based on market prices of petrochemicals		
NGL	Reference to Naphtha market price		
Local Cooking Gas	At GSPs cost (adjusted every 3 months)		
Export Cooking Gas	Reference to a bi-**weekly average of Platt's FOB** Arub Gulf price		
Industry 17%	Charged at prices comparable to fuel oil		
NGV 3%	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 Nov 2021 = 15.59 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 1 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		

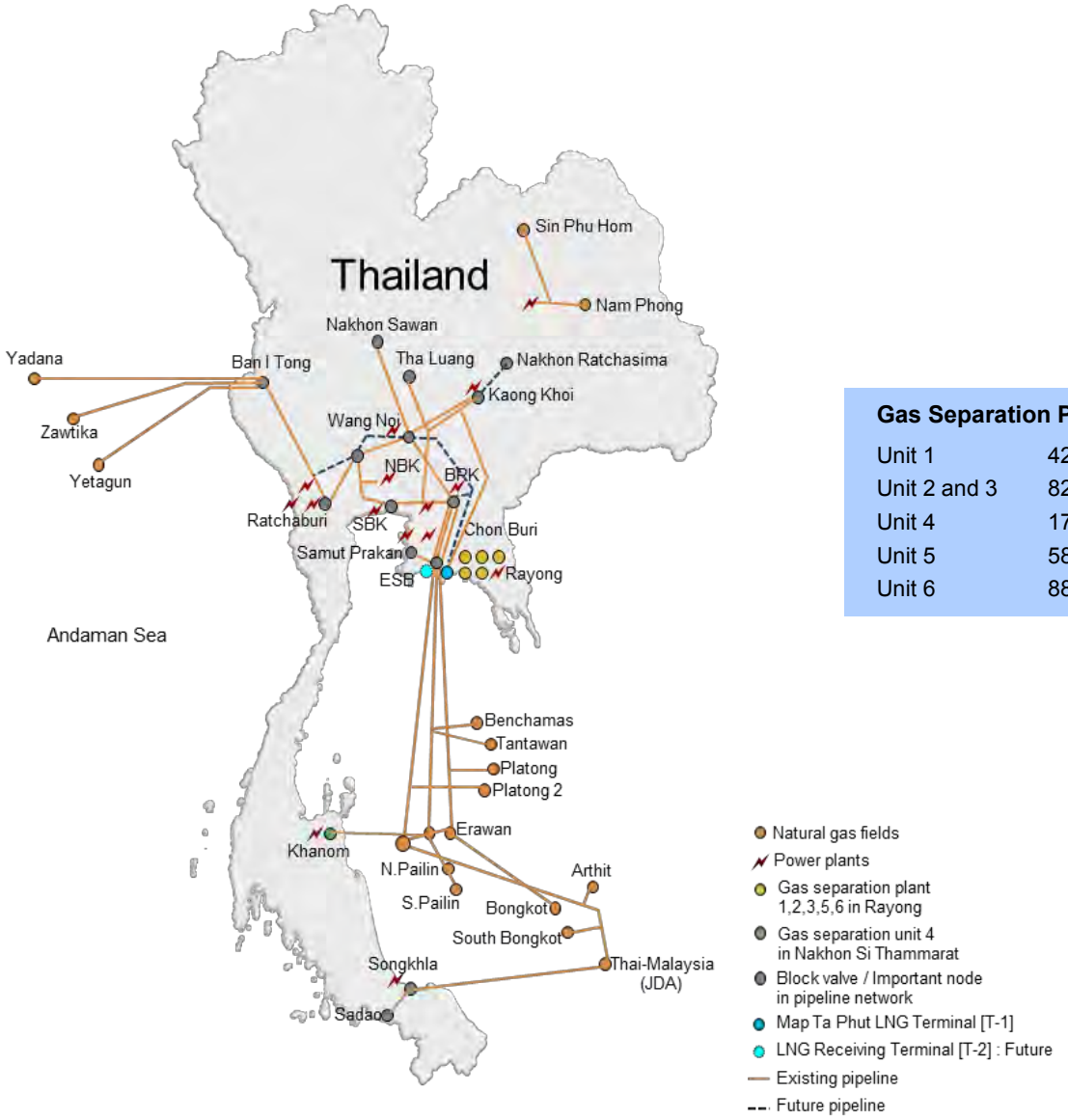
* EGAT IPP and SPP Supply Margins not more than 2.1525 and 11.4759 bt/mmbtu respectively

Gas Business Generates Stable Returns

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 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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