

# BETTER LIVING THROUGH RESILIENCE

**ANNUAL REGISTRATION STATEMENTS/  
ANNUAL REPORT 2020**  
(Form 56-1 One Report)  
PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

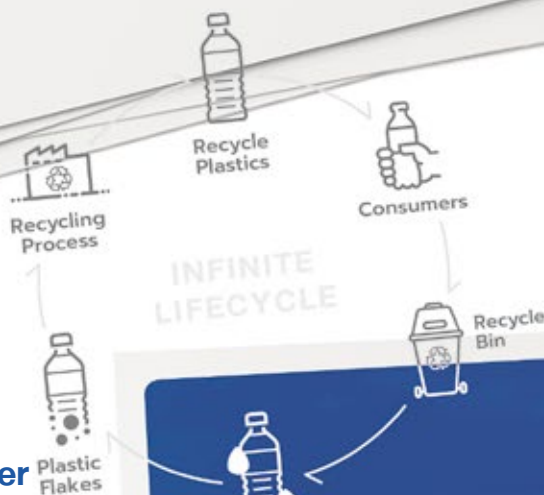
# BETTER LIVING THROUGH RESILIENCE

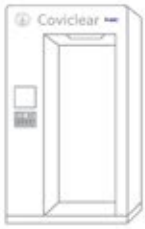
GC prioritizes preparedness for every risk arising from rapid economic, social, and environmental changes. To this end, GC maintains its status as PTT Group's chemical flagship and strives to develop business resilience against volatility resulting from climate change and social crises that exert impact across the world.

Taking small steps to create momentous changes, GC has continuously laid a business and technological foundation alongside people development to strengthen the organization, ensure business continuity, and create opportunities for growth in the face of greater challenges.

## Strong Step for Better Environment

As the environment is vital to all lives on earth, GC strives to ensure its sustainability by establishing a long-range climate strategic plan, which seeks to reduce environmental impacts and reduce risks from climate change alongside the preservation of water resources, which are essential to life.





Decompose to be biomass

Succinic Acid

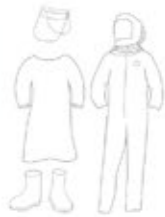
Bioplastic Products



Bioplastic Resins

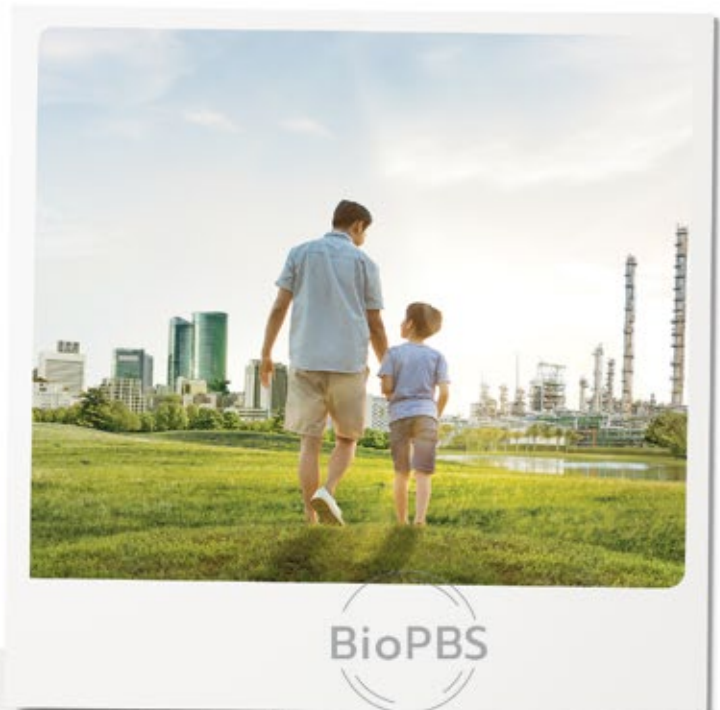
## Promising for Better Life

During difficult times, nothing is more important than standing side by side and caring for each other. GC has supplied plastic materials and chemical products as well as carried out research and development of innovative plastics for the production of medical equipment for hospitals and other agencies. GC also promotes proper waste separation for a better quality of life in society.

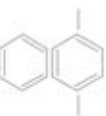


## Transcend Challenges for Business Resilience

With every crisis and new challenge come opportunities. GC adjusts its business strategies in keeping with volatility and seeks new opportunities for growth both at home and overseas to ensure business continuity throughout the supply chain, while also taking care of its people and providing support to their operations with care.



GC keeps itself prepared to handle new challenges accompanying every change by methodically following its strategic plan, learning and adapting to the changing situation, and seeking new opportunity towards success at every stage of the business.





# Better Living Through Resilience

## GC RANKED



**in DJSI in sustainable development among global chemical companies**

In 2020, GC was ranked No. 1 in the Dow Jones Sustainability Indices (DJSI) in sustainable development for the 2<sup>nd</sup> consecutive year and placed in the top 10 of the DJSI World Index and the DJSI Emerging Market index in chemicals sector for the 8<sup>th</sup> consecutive year.

MEMBER OF

**Dow Jones Sustainability Indices**



In collaboration with

a RobecoSAM brand

## GC given A-rating by the Carbon Disclosure Project



RATING OF

# A

GC is Thailand's first and only company to receive the highest rating of A in Leadership Level for its climate change and water security management based on the assessment framework of the Carbon Disclosure Project (CDP), one of the world's most reliable sustainability assessment institutions, in 2020.

## Huai Mahat Forest Restoration Project

GC's "Huai Mahat Forest Restoration Project" was certified by the Thailand Greenhouse Gas Management Organization (Public Organization) as a privately-operated Low-Emission Support Scheme (LESS) in the category of forestry and green areas. According to the performance assessment (2013-2018).

The project captured,

# 32,807.199

tons of carbon dioxide equivalent

Comparable to the quantity of greenhouse gas emissions absorbed

by **125,000** trees







## GC Circular Living Symposium 2020: Tomorrow Together

GC, in collaboration with National Geographic, hosted GC Circular Living Symposium 2020: Tomorrow Together to drive its Circular in Action initiative. The world-class symposium was attended by over 40 pioneers, leaders innovators, creators, and circular economy drivers from various areas, who came to share concrete practical guidelines and join hands for tomorrow.



This event reduced  
**269,155**

kilograms of carbon dioxide equivalent  
The reduced carbon footprint

is equivalent to growing **29,906** large trees  
(the amount of carbon dioxide absorbed by these trees)



## Climate Change Strategies and Targets



GC has established greenhouse gas reduction targets:

Reduction of greenhouse gas emissions in business as usual (Scopes 1 and 2)

**↓ 20%**

by 2030

Reduction of greenhouse gas emissions per production unit (Scopes 1 and 2) according to a Science-Based Targets initiative

**↓ 52%**

by 2050 compared to the base year of 2012



As Thailand's first mobile upcycling plant, "Trashpresso | Funtastic Upcycling Plastics" is a collaboration between GC and Taiwan's Miniwiz, the world's leader in the processing of post-consumer products into value-added products. Used HDPE, LDPE, LLDPE, PP, PS and PET undergo the upcycling process which consists of four steps:



Shredding



Cleaning



Melting



Molding into desired shapes

Trashpresso helps reduce plastic waste and brings about a shift from the use-and-dispose resource consumption model to material circulation that maximizes resource efficiency. Trashpresso was first unveiled at GC Circular Living Symposium 2020: Tomorrow Together.



# YOU เทิร์น

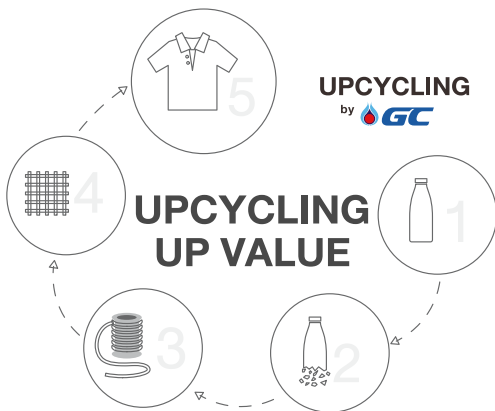
BY GC CIRCULAR LIVING



YOUTURN is GC's integrated plastic waste management platform that seeks to put waste through a proper recycling process and uses a digital system to enhance data collection. Serving as a pilot for other projects, such as Plastics Reborn (GC X OR), this platform adds to GC's success in its Circular Economy initiatives and paves the way towards a sustainable solution to waste problems at the national level.



GC joined forces with 11 world-class Thai designers to launch the Upcycling Upstyling Project, in which plastic waste was upcycled into a diverse range of eco-design products. The project sought to elevate the value of upcycled products, expand business opportunities, and promote resource efficiency.



GC promotes resource efficiency by upcycling used plastics into value-added fashion products under the brand Upcycling by GC.

GC and partners have so far transformed over 505,000 PET bottles into diverse upcycled products and successfully reduced greenhouse gas emissions by 45 tons of carbon dioxide equivalent.

**505,000** bottles

Comparable to the quantity absorbed by

**5,000** trees



## Stronger Together



GC provided

over **300,000** pcs. environmentally-friendly packaging products

for use in food deliveries to **200** partner

restaurants of **wongnai** X **M LINEMAN**

to help them cope with a decline in sales as a result of COVID-19. All the food packaging products did not contribute to further waste or environmental problems as they were certified with the GC Compostable label, **meaning they were made from bio-based plastics and were compostable.**



## GC stands with all Thais in the fight against COVID-19

### GC provided Personal Protective Equipment (PPE) to medical professionals to protect them from COVID-19.

GC joined forces with partners to develop powered air purifying respirator (PAPR) prototypes to protect medical professionals working in operation rooms and exposed to high risk of COVID-19 infection.

**PAPR**

**PE Gown**  
(Single use)

"This PE Gown protects users from secretions and reduces infection risks"

Produced with GC's **InnoPlus** high-quality polyethylene

**Coverall**  
(Reusable)

"The coverall protects medical teams at screening stations and during minor procedures"

Made 100% with recycled plastic resin (rPET)

The world's first Level 2 PPE to be reusable for 20 times, available under the brand **Greater Care**

**Shoe Cover**  
(Reusable)

The reusable shoe cover is produced from 100% recycled plastic (rPET) under the brand **Greater Care** by **Greater Care**

## CoviClear

GC and Mahidol University's Faculty of Engineering put together their expertise to develop CoviClear, Thailand's first disinfection unit to reduce the risk of COVID-19 infection among medical professionals.



## Plastic entrepreneurs and Thai people weather through COVID-19 project

GC Group joined forces with plastic companies to donate plastic films to hospitals and health facilities across Thailand for applications related to the prevention of COVID-19, including partitions in patient screening zones, bed covers,

and medical equipment a total of **905** hospitals

and health facilities in all **77** provinces across Thailand requested the plastic films.

GC and the other plastic companies in this project shared the same goal of giving back to society by demonstrating the value of plastic in healthcare applications.



In collaboration with its partners, GC has further advanced the research and development of its innovations to produce medical equipment through healthcare solutions under the brand **Greater Care** by GC, including a coverall made from 100% recycled PET (rPET) – the world's first Level 2 PPE to be reusable for as many as 20 times. These medical innovations elevate medical care and the quality of life in society, in line with **GC's philosophy** "Chemistry for Better Living."







MEMBER OF

**Dow Jones  
Sustainability Indices**



In collaboration with a RobecoSAM brand



# GC Rated Number One

**in the World for Sustainability  
in DJSI's Chemicals Sector for  
the Second Consecutive Year,  
recognizing its Commitment  
to Drive Sustainability  
throughout the Supply Chain**

It's another year of pride for Thais by Thais to maintain a standout performance on the global stage when PTT Global Chemical Public Company Limited or GC was recently rated number one in the world for sustainability in the 2020 Dow Jones Sustainability Indices (DJSI) in chemicals sector for the 2<sup>nd</sup> consecutive year, and also ranked among the top 10 companies in the chemicals sector for the 8<sup>th</sup> consecutive year. These rankings reflect GC's standard of operational excellence as equivalent with the world's leading companies in taking responsibility on society, the environment, and all stakeholders while building credibility to investors in the long run.

**GC Chemistry for Better Living**

# Contents

Vision, Mission and Corporate Strategies	02
Financial Highlights	06
Awards and Recognitions	08
Major Events and Activities in 2020	10
Message of the Chairman	20

## 1 Business Operation and Performance 23

Business Structure	26
Business Value Chain	28
Nature of Business	32
• Group Performance Center-Refinery and Shared Facilities	33
• Group Performance Center-Aromatics	34
• Group Performance Center-Olefins	36
• Polymers Business Unit	38
• EO-Based Performance Business Unit	40
• Green Chemicals Business Unit	42
• Phenol Business Unit	46
• Performance Materials and Chemicals Business Unit	47
• Services and Others	49
Market and Competition	51
Safety, Occupational Health, and Environmental Management	62
Shareholding Structure in Subsidiaries and Affiliates	74
Securities	78
Issuance of Other Securities	78
Dividend Payment Policy	79
Risk Management	80
Driving Business towards Sustainability	96
Management Discussion and Analysis	102
Company Information and Other Important Information	116

## 2 Corporate Governance 119

Corporate Governance Policy	120
Organization Structure	130
Key Information:	
• Board of Directors	131
• Sub-committees	136
• Executives	148
• Employees	170
• Other Important Information	180
Corporate Governance Report	182
Audit Committee Report	200
Report of the Corporate Governance Committee	203
Report of the Nomination and Remuneration Committee	206
Report of the Risk Management Committee	208
Internal Control and Connected Transactions	210

## 3 Financial Reports and Financial Statements 227

Report of the Board of Directors' Accountability to Financial Report	228
Report of the Independent Certified Public Accountants	229
Financial Statements	233
Notes to the Financial Statements	245

## 4 Appendix 347

Assets Used in Business Operations and Details of Asset Valuations	348
GC Policy and Practices of Corporate Governance and Business Code of Conduct	360
Technical Terms and Abbreviations	361

# Vision, Mission and Corporate Strategies

## Vision

To be a Leading Global Chemical Company for Better Living This means:

- “Leading Global” means GC Group, a world-class chemical company.
- “Chemical Company” means GC Group, producers of integrated petrochemicals and chemicals throughout the value chain, growing business through local and international investment, with a focus on high value-added products.
- “Better Living” means GC Group, producers striving to meet customers’ needs with high-value products, producers with socio-environmental responsibility, and committed to improving the quality of life with chemicals consumed in the downstream market as well as green chemicals.

## Mission



We deliver the best business performance through trustworthiness to create fair and sustainable value for shareholders.



We provide superior solutions from innovative products and services to be the best choice for our business partners.



We integrate social and environmental responsibility into our business practices to achieve sustainable development.



We build an organization that is prepared for change and learning by providing a happy working environment that promotes the development of employees’ capabilities and abilities, enabling them to meet new challenges with dedication to the organization and to professional excellence.

## Objectives and Goals:

PTT Global Chemical Public Company Limited (GC) systematically reviews its corporate vision, mission and direction annually for alignment with the current business context and long-term trends. It aspires to become a leader in three aspects as follow;

### Business Growth

GC is committed to being a world-class petrochemical and chemical manufacturer with an integrated value chain, fostering growth, and generating profit in a sustainable and uninterrupted manner, with emphasis on growing investment in performance and specialty chemicals, green businesses, and international investments.



### Return on Investment

GC is committed to achieving a return on investment on par with leading industry players in Asia-Pacific.



### Sustainability

GC is committed to operating its businesses under the framework of sustainability by consistently working towards international acceptance as a global leader in sustainability.





## Corporate Strategies:

In 2020, GC was faced with COVID-19 pandemic, which brought manufacturing throughout the value chain and investment around the world to a standstill and triggered a global economic crisis that had far-reaching impact on the petrochemical industry. This was further compounded by price volatility brought on by the U.S.-China trade war that raged on from 2019 onwards and a negative factor resulting from a crude oil price war. To cope with the volatility, minimize impact on its operating results and ability to steer its business operations according to its corporate direction, and optimize recovery, GC has analyzed various trends, from the overall society and economy to the industrial situation, and evaluated new-normal trends that may have both short-term and long-term business impacts against pre-crisis megatrends so as to ensure that

it can operate and establish long-term directions efficiently under these uncertainties. GC has also established guidelines for adjusting short-term and long-term business and corporate plans to ensure suitability and preparedness for future uncertainties and has monitored the situation as well as adjust its strategies accordingly.

GC's business directions and strategic plans strive to build and maintain competitiveness, sustainable business growth, and readiness in various aspects in support of future growth. GC uses these directions and strategic plans as frameworks for business operations and regularly monitor outcomes to accomplish short-term and long-term corporate goals, with emphasis on the following four strategic focuses:

### 1 STEP CHANGE

GC actively strengthens its business competitiveness by enhancing resilience and creating an advantage over competitors to create a foundation for future growth. Below are the key strategies:

- Maintaining operational excellence in terms of production safety and stability continuously, as well as creating value-added through MTP Integration, an extension and improvement of MAX Infinity based on the creation of synergy among Map Ta Phut plants through integrated supply chain management, from feedstock sourcing and manufacturing to product delivery to customers, for reducing production costs, preventing losses, and adding value to products.
- Elevating the competitiveness of upstream petrochemical businesses through feedstock management and feedstock flexibility enhancement so as to achieve competitive production costs and long-term feedstock security and extend the value chain to downstream petrochemical businesses to meet the growing demand.
- Expanding the home base and strategic markets to foster long-term distribution security, increase market shares, and expanding opportunities to create business partners in Thailand, Cambodia, Laos, Myanmar, Vietnam, and Indonesia, all of which have consistently shown high growth, as core targets. GC has also set China and India as strategic markets to build sales agility.
- Implementing market-focused business strategies, placing emphasis on High Value Products (HVP) and diverse applications to better meet the needs of the market and end-users, while also fostering product development collaborations with partners across the value chain, developing markets of the existing products, and generating demand among new customers.

GC is playing a key role in driving the domestic economy by supporting petrochemical projects with capable partners in the Eastern Economic Corridor (EEC), which raises the domestic petrochemical industry's competitiveness, establishes regional market connectivity, and bolsters investors' confidence. With over Baht 106 billion already invested in New S-Curve businesses in the EEC in 2017-2020, GC has plans to invest an addition Baht 28 billion in 2021-2025. It is also GC's policy to promote bioeconomy for sustainable development through investment in bioindustrial projects outside EEC worth over Baht 25.5 billion in the next five years.

## 2 STEP OUT

GC is seeking to invest in High Value Businesses (HVB) with a focus on growth products with superior profitability which will meet consumer needs according to megatrends. The Company is seeking for the Merger and Acquisition (M&A) opportunities, which would enable GC to rapidly growth, particularly into performance chemical businesses. GC also seeks new business opportunities by utilizing Corporate Venture Capital (CVC) to enter new businesses with outstanding technologies and innovations, which can be used to further strengthen and expand current businesses, including by building new production bases overseas to gain competitive feedstock advantages and market growth.

## 3 STEP UP

GC elevates its sustainability operation for business connectivity in response to industrial trends as well as strikes a sustainability balance in three aspects: economic, social, and environment, to become a model of sustainability operation at the international level. The key activities are as follows:

- **Climate and Water Leader:** GC has established climate change management guidelines that focus on the use of renewable resources, product efficiency enhancement through technology and digital systems, as well as energy management and sustainable water management, which will enable GC to continuously cut energy consumption, greenhouse gas emissions, and reduce risks of water crisis for GC's business operations.
- **Circular Economy Enhancement:** GC has applied the concept of circular economy to its business conduct and consistently developed related initiatives with stakeholders through the value chain under three principles: (1) Smart Operating (2) Responsible Caring, and (3) Loop Connecting. As part of its operational direction, GC has plans to expand its circular practices and become a model of circular economy actions to foster mutual strength with public and private sectors throughout the value chain, create business value, and open up opportunity for expansion in related businesses.
- **Corporate Social Responsibility (CSR) Transformation to Social Enterprise Model:** GC focuses on CSR activities that reflect the value of sustainability and meet the expectations of all stakeholders. To this end, GC joins hands with agencies and organizations to drive community and social development alongside sustainable business practices with the goal of becoming a partner of choice.

## 4 TRANSFORMATION

To ensure that GC can adapt to volatile business conditions and drive growth according to the defined plans, GC will improve and lean its operations to improve efficiency, agility, and adaptability. Therefore, GC has initiated a people development plan for existing employees to enhance the knowledges, capabilities, and skills that are compatible with the corporate strategy. GC is also implementing lean and process improvement through the FIT Project, which focuses on end-to-end process adjustment and digitization to reduce costs, improve operational efficiency, enhance system effectiveness, boost agility, and decrease risks. GC also strives to create a corporate culture that improves preparedness for change, as well as strengthens supporting units and lays down the foundation for effective Governance, Risk management and internal control, and Compliance (GRC), to ensure compliance with laws, rules, and regulations and assure transparency and accountability to its stakeholders.

# Background and Significant Development

PTT Global Chemicals Public Company Limited (GC) was founded through the amalgamation of PTT Chemical Public Company Limited (PTTCH) and PTT Aromatics and Refining Public Company Limited (PTTAR). It was registered on October 19, 2011 to be PTT Group's Chemical Flagship.



At present

**GC's registered and paid-up capital:**  
Baht **45,088,491,170**

**Number of common shares:**  
**4,508,849,117** shares

**Par value:**  
Baht **10** per share

## Debenture Issuance and Offering

(1) In 2020, GC issued and offered name-registered, unsubordinated, and unsecured debentures with a debentureholder's representative No. 1/2020 in the aggregate principal amount of Baht 15 billion to institutional investors and high net worth investors. The use of proceed received from the offering of debenture are for financing its working capital and/or business expansion and/or debt repayment with financial institutions which due within two years. The details are as follows:



Debenture Series 1 Due B.E. 2570, bear the fixed interest rate at 2.60 percent per annum, payable every 6 months throughout the tenor of 7 years with principal amount of Baht 1,530 million (PTTGC274A)



Debenture Series 2 Due B.E. 2573, bear the fixed interest rate at 2.99 percent per annum, payable every 6 months throughout the tenor of 10 years with principal amount of Baht 3,310 million (PTTGC304A)



Debenture Series 3 Due B.E. 2575, bear the fixed interest rate at 3.29 percent per annum, payable every 6 months throughout the tenor of 12 years with principal amount of Baht 4,360 million (PTTGC324A)



Debenture Series 4 Due B.E. 2578, bear the fixed interest rate at 3.50 percent per annum, payable every 6 months throughout the tenor of 15 years with principal amount of Baht 5,800 million (PTTGC354A)

(2) The aforementioned debentures are under the enforcement and interpretation of the laws of Thailand.



# Financial Highlights

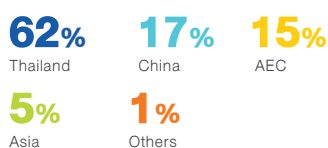
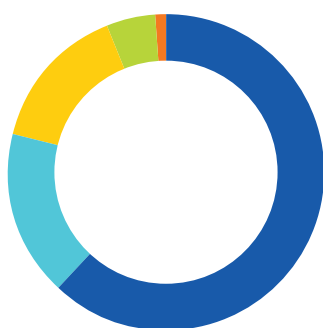
## SALES REVENUE

Unit: Baht Million



### SALES REVENUE OF MAIN PRODUCTS

Breakdown by Geography  
Year 2020



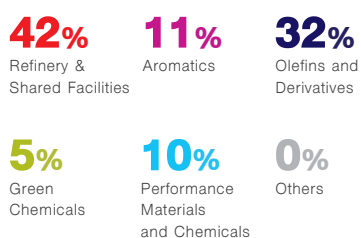
(Excluding AEC, China & Thailand)

**Notes:**

- Represent the sales revenue based on the geographical location of customers.
- More than 90% of consolidated sales revenue is generated from companies in Thailand.

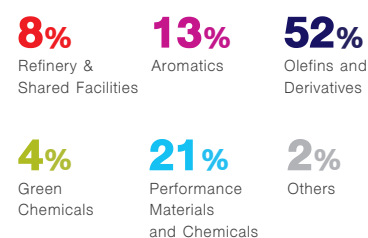
### SALES REVENUE

Breakdown by Business  
Year 2020: Baht 326,270 Million



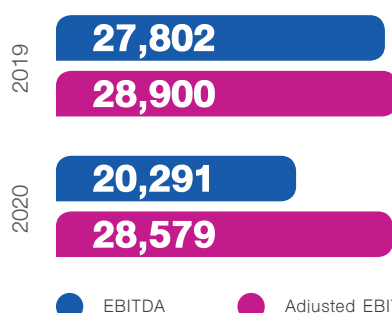
### ADJUSTED EBITDA\*

Breakdown by Business  
Year 2020: Baht 28,579 Million



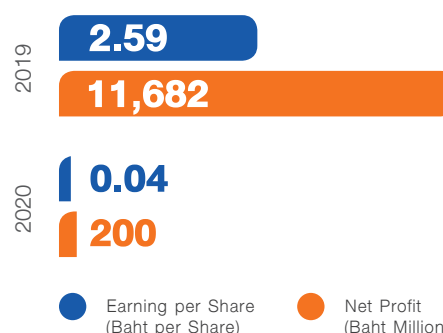
### EBITDA & ADJUSTED EBITDA\*

Unit: Baht Million



● EBITDA ● Adjusted EBITDA\*

### NET PROFIT



● Earning per Share (Baht per Share) ● Net Profit (Baht Million)

Note: \* Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss), NRV and Extra item

**STATEMENT OF FINANCIAL POSITION**

(Unit: Baht Million)

	2018	2019	2020
<b>Total Assets</b>	<b>469,255</b>	<b>452,514</b>	<b>489,383</b>
Cash and Cash Equivalents + Current investments in financial Assets	53,562	25,560	60,658
Other Current Assets	90,748	78,934	69,253
Property, Plant and Equipment	250,330	264,564	269,177
Non-Current Assets	74,615	83,457	90,295
<b>Total Liabilities</b>	<b>165,773</b>	<b>158,919</b>	<b>200,389</b>
Interest Bearing Debt (IBD)	96,907	107,087	155,083
Other Liabilities	68,866	51,832	45,306
<b>Total Equity</b>	<b>303,482</b>	<b>293,595</b>	<b>288,994</b>

**STATEMENT OF FINANCIAL POSITION**

	2018	2019	2020
Current Ratio (times)	1.95	1.97	2.20
EBITDA to Total Revenues (%)	11.30	6.79	6.22
Net Profit on Total Revenues (%)	7.77	2.85	0.06
Return on Total Assets (%)	10.36	3.50	0.86
Return on Equity (%)	14.04	4.02	0.07
Interest Bearing Debt to Equity (times)	0.32	0.36	0.54
Net Interest Bearing Debt to Equity (times)	0.14	0.28	0.33
Net Interest Bearing Debt to EBITDA (times)	0.74	2.93	4.65

**DIVIDEND PAID**

(Baht/Share)

	2018	2019	2020 <sup>(1)</sup>
1 <sup>st</sup> Half	1.75	1.00	0.00
2 <sup>nd</sup> Half	2.50	1.00	1.00
Full Year	4.25	2.00	1.00
Earning per Share (Baht/Share)	8.89	2.59	0.04
Dividend Payout Ratio (%)	48%	77%	>200%

**Remarks:**

- (1) The Board of Directors' Meeting No. 2/2021 held on February 15, 2021, agreed to propose the 2021 Annual General Meeting of Shareholders to consider and approve on the dividend payment for the year 2020 operating performance of Baht 1.00 per share, or dividend payout ratio of over 200% of the net profit of consolidated financial statements. No interim dividend was paid, and the final dividend payment of Baht 1.00 per share is to be proposed to the 2021 Annual General Meeting of Shareholders for approval.

# Awards and Recognitions

Our outstanding performance in the economic, social and environmental dimensions in 2020 has been recognized by leading organizations in both national and international levels.

## GLOBAL RECOGNITIONS



### Dow Jones Sustainability Indices (DJSI)

GC has been ranked as the first in the 2020 Dow Jones Sustainability Indices (DJSI) in the chemicals sector for two consecutive years and also ranked among the top 10 companies in the DJSI World and Emerging Markets Index for the eighth consecutive year.



### UN Global Compact LEAD

GC has been a signatory to the UN Global Compact for 10 years and has been recognized as Global Compact Lead among other 41 organizations across the world since 2016.



### Carbon Disclosure Project

GC is the first and only company in Thailand that have been recognized the CDP "A-List" for its best-practice initiatives in climate change and water security.



### MSCI ESG Rating

GC received "A" rating the Commodity Chemicals sector by MSCI, which uplifted from the BBB rating (Top 5). The assessment represents how GC gains investor confidence by running its operations in accordance with the Environmental, Social and Governance (ESG) principles.



### FTSE4Good Index

GC passed the evaluation criteria of FTSE with a ranking of the Top 3 in the chemicals sector. It also remains a constituent of the FTSE4Good Index Series for the fifth consecutive year. This demonstrates its commitments in taking responsibilities on a basis of Environmental, Social and Governance (ESG).



### The Asset Awards

GC received two awards from the Asset Awards 2020, which were Platinum Award for ESG and Best Investor Relations Team from The Asset magazine, a regional leading financial magazine.



## NATIONAL RECOGNITIONS



### Low Carbon and Sustainable Business Index (LCSI)

GC has been recognized as a leading company in the Low Carbon and Sustainable Business Index (LCSI) with an excellent score for two consecutive years. This demonstrates GC's commitment to lower greenhouse gas emissions with an aim to reduce environmental impact.



### Low Emission Support Scheme (LESS) Certificate

GC received the Low Emission Support Scheme certificate in recognition of its Khao Huai Mahat project in improving the quality of life, economy, and local communities as well as encouraging people in the community to participate in environmental conservation based on sustainability principles.



### CSR-DIW Continuous Award

GC's subsidiaries (17 plants) received the CSR-DIW Continuous Award for the 13<sup>th</sup> consecutive year. This demonstrates that GC has conducted business activities on the environmentally-friendly basis activities, as well as focused on sustainable community development.



### Thai Chamber of Commerce (TCC) Outstanding Ethics Award

GC received the Business Ethics for Sustainable Development from Thai Chamber of Commerce (TCC). This demonstrates that GC conducts business under the good corporate governance and integrity, fairness for stakeholders, and awareness of resource efficiency. The award truly represents a sustainable achievement for the organization.



### Thailand Sustainability Investment (THSI)

GC has been honored on the list of Thailand Sustainability Investment for the sixth consecutive year (2015-2020). This represents GC's efforts in creating a balance between the Environmental, Social and Governance that is in line with the THSI assessment and international standards.



### Thailand Corporate Excellence Award

GC received a Distinguished award in Sustainable development excellence category from the Thailand Management Association (TMA) for the first year. This award reflects GC's commitment to operating its business with a focus on sustainability, which has been recognized by the executives at all levels and become GC's key strategies.



### Thai Private Sector Collective Action Against Corruption: CAC

GC has expressed its intention to join the Thai Private Sector Collective Action Against Corruption (CAC) since July 18, 2012, and has been certified as a member of Thai CAC on July 4, 2014. With the outstanding anti-corruption policies, guidelines and best practices, GC has been continually certified as a member of Thai CAC for the second and third consecutive year on May 25, 2017 and June 30, 2020 respectively.



# Major Events and Activities in 2020




## Supporting and Caring for Thai Society during the COVID-19 Pandemic


In 2020, guided by care for Thai society, GC Group promptly provided protective equipment made with GC Group's innovations to medical professionals, nurses, and Village Health Volunteers (VHV) in more than 900 hospitals nationwide during both the first and new COVID-19 outbreaks: The contributions included the following:

GC gave over 120,000 disposable medical gowns made from InnoPlus plastic resins to medical professionals across Thailand to protect them from infection as well as donated more than 27,000 pieces of cloth face masks made from upcycled materials to various important places.



 Medical gowns



 The PAPR equipment's filter box

GC collaborated with the Faculty of Medicine Vajira Hospital, Navamindradhiraj University and delivered materials for the production of 500 protective medical suits that would serve as prototypes for the first phase of development. Each protective medical suit consisted of: an isolation gown made from spunbond fabric mixed with meltblown made from Polypropylene (PP); a coverall suit; and a Powered Air-Purifying Respirator (PAPR) helmet.

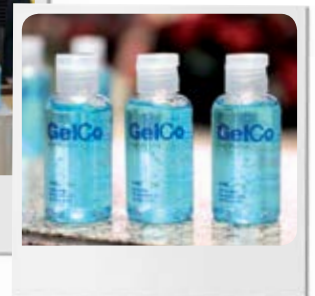
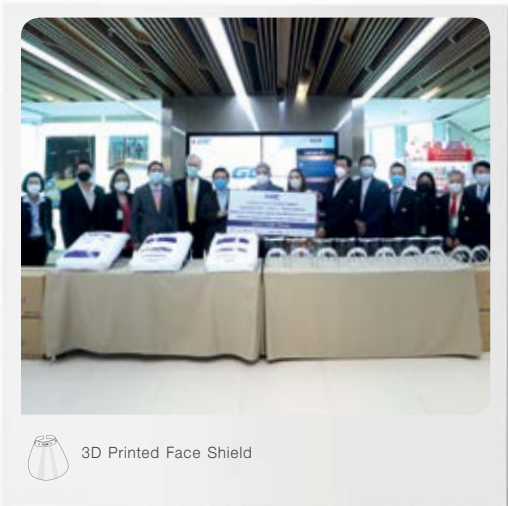
The PAPR equipment's filter box were molded with GC's 3D printing technology. The protective medical suit would be designed and developed by the Faculty of Medicine Vajira Hospital, Navamindradhiraj University, for use in Vajira Hospital and affiliated hospitals. The protective medical suit, which met high quality standards, was specifically intended for use in operating rooms and Intensive Care Units (ICUs) reserved for patients with severe COVID-19 symptoms and an elevated risk of transmitting the virus to others. The suit was meant for medical personnel performing procedures or working in labs only, and not for medical staff conducting routine operations.

GC partnered with Mahidol University's Faculty of Engineering and NPC Safety and Environmental Services Limited (NPC S&E) to develop CoviClear, Thailand's first disinfection unit. GC provided two innovative materials for the production of disinfectants. The first material was triethanolamine (TEA), for which GC is the only manufacturer in Thailand, and which allows nanoparticle ions to attach to clothing and skin, thus providing a protective effect for 24 hours. The second material was glycerine, which causes the nanoparticle ion to become a suspended solid in the liquid disinfectant without any sedimentation, moisturizing the skin without causing irritation. GC also supported the manufacturing of CoviClear units. The first hospital in Thailand to receive CoviClear was Siriraj Hospital. GC delivered a total of 13 CoviClear units to hospitals and several important places.



GC donated plastic films to hospitals and health facilities across Thailand for applications related to the prevention of COVID-19. A total of 905 hospitals and health facilities in 77 provinces across Thailand requested plastic films from GC, which was subsequently distributed to them, starting from April 8, 2020. The project showed the collaborative of Thai plastic companies, which shared the same goal of giving back to society by demonstrating the value of plastic to the medical community. GC Group donated 30 tons of high quality LDPE/LLDPE/HDPE plastic resin under the InnoPlus brand. The durable and flexible resin was subsequently given to 25 plastic companies to produce plastic films of 20-100 micron thicknesses, which lent themselves to different medical applications.

GC provided over 96,000 3D-printed face shields. Made from bioplastic using 3D printing technology, the face shields were born out of an internal collaboration in the design innovation R&D unit. The 3D printed face shields were tough, durable, and also sterilized with 70% alcohol.



GC collaborated with ThaiBev to produce alcohol-based hand sanitizers under the brand GelCo. GC contributed two main ingredients, namely triethanolamine (TEA) and pharmaceutical-grade glycerine. One million bottles of hand sanitizers, totaling over 70,000 liters, were given to Village Health Volunteers (VHV) and hospitals across Bangkok.

GC collaborated with KMUTNB, VISTEC and Polyfoam to develop and deliver two medical robots called “The Shared Robots,” to the Faculty of Medicine Vajira Hospital, Navamindradhiraj University, and Somdej Phranangchaosirikit Hospital, Naval Medical Department.



The Shared Robots



Wall Shield

GC provided acrylic wall shields made of a substrate from GC Group to Siam Piwat for use throughout ONESIAM Group’s shopping malls, consisting of Siam Paragon, Siam Center, Siam Discovery, and ICONSIAM, in response to the new normal trend. GC also joined hands with Wongnai x LINE MAN to provide wall shields to a total of 50 eateries affected by COVID-19 in LINE MAN’s network in Yaowarat and Charoen Krung areas for use to prevent transmission after the easing of lockdown so that they could reopen their business.



Medical protective gear developed under the brand Greater Care by GC

GC joined forces with its partners to help restaurant operators fight against COVID-19 through their “Stronger Together” project, in which over 300,000 environmentally-friendly packaging products (bioplastic-coated cups, bioplastic bags, and sets of bioplastic forks and spoons) certified with the GC compostable label were provided to over 200 participating restaurants in the Wongnai network through the LINE MAN app for use in food deliveries. This ensured that consumers would receive their food in safe, biodegradable, and eco-friendly packaging.



Protective medical suits



GC donated medical protective gear developed under the brand Greater Care by GC, consisting of 50,000 PE gowns and 1,000 coveralls that were Level 2 PPE according to the ANSI/AAMI PB70 standard and made in Thailand with 100% recycled PET (rPET). Coated with polytetrafluorethylene, the coverall was the world’s first water-repellent and water-impermeable coverall to be reusable up to 20 times, making it ideal for use at screening points and in minor surgical procedures. It has the same standard as the “Rao Su” PPE gown currently used by the Ministry of Public Health. GC also urgently provided 1,000 liters of Gelco alcohol gel to the Ministry of Public Health to help combat the new wave of COVID-19 in Samut Sakhon.

GC provided a total of 11,750 sets of protective medical suits, each consisting of a PE medical gown, a coverall, and a Powered Air-Purifying Respirator (PAPR) helmet, to nine public hospitals and government agencies in Rayong at Rayong Public Health Office to reduce risks of infection among medical professionals and patients visiting hospitals during a new wave of COVID-19.





## Supporting Strategies to Enhance Competitiveness

### GC JOINED HANDS WITH GPSC TO OPERATE THAILAND'S LARGEST SMART ENERGY STORAGE SYSTEM – A PROTOTYPE OF ENERGY TECHNOLOGY AND INNOVATION

GC, in collaboration with Global Power Synergy Public Company Limited (GPSC), began the operation of a 1.5 MW/hr Smart Energy Storage System (ESS), the largest industrial back-up power system in Thailand to ensure the stability and efficiency of the power systems for GC's office buildings and Innovation and Technology Center. A prototype of PTT Group's energy technology and innovations, the ESS can reduce electricity costs by 520,000 electrical units, or 8.7% per year. Plans are underway to expand the adoption of this system to other companies in Eastern Thailand to help GC become a leader in energy innovations in Thailand.



FEBRUARY 18, 2020

### GC SIGNED LOAN AGREEMENTS WITH KBANK, KTB, AND SCB TO SUPPORT ITS BUSINESS OPERATION AND GROWTH IN LINE WITH ITS CORPORATE STRATEGY

JUNE 10, JUNE 30,  
AND JULY 1, 2020

GC signed loan agreements with three banks including a 5-year loan agreement worth Baht 10 billion with Kasikorn Bank Public Company Limited (KBANK), a 7-year loan agreement worth Baht 10 billion with Krung Thai Bank Public Company Limited (KTB), and a 5-year loan agreement worth Baht 10 billion with Siam Commercial Bank Public Company Limited (SCB). The objective is to support GC's operations and business growth according to its corporate strategy.

### GC JOINED HANDS WITH TAIWAN'S DYNACHEM GROUP TO ACQUIRE 41.5% SHARES IN "DYNACHISSO THAI" TO ADVANCE ITS ENGINEERING PLASTIC AND PP COMPOUND BUSINESS

Solution Creation Company Limited, a subsidiary of GC Group, successfully acquired 41.5% of the shares of Dynachisso Thai Company Limited (DYCT) from the previous owner Dynachem (Hong Kong) Limited (Dynachem). The foray into the compounding business will expand the

development and value creation of GC Group's plastic resins and present an opportunity for the GC to access target industrial markets with high growth both in Thailand and ASEAN countries.



JULY 31, 2020

DYCT is a plastic compounding business that modifies plastic resins by adding reinforcement materials or other additives to achieve customers' desired specifications. DYCT has an installed capacity of 30,000 tons per year and a bill of materials that is widely accepted by leading customers in the automotive, electrical appliances, and electronics industries.





AUGUST 19, 2020



**GC PARTNERED WITH PTT AND GCME TO DEVELOP MICROCHANNEL HEAT EXCHANGER TECHNOLOGY, SAVE BAHT 40 MILLION, REPLACING IMPORTS, AND REINFORCING PTT GROUP'S LEADERSHIP**

GC, PTT Public Company Limited (PTT) and GC Maintenance and Engineering Company Limited (GCME) signed a license agreement to launch the Microchannel Heat Exchanger Project at PTT Headquarters in Bangkok.

In the collaborative development of this microchannel heat exchanger, GC, PTT, and GCME brought together their knowledge and expertise to take this technology from the laboratory to commercial applications. The technology would save as much as Baht 40 million annually and pave the way for new markets by replacing existing heat exchangers used in the LNG, LPG, and HVAC industries as well as the food industry.

**PTT GROUP UNVEILED THAILAND'S FIRST 'FLOATING SOLAR' – A SUSTAINABLE ALTERNATIVE ENERGY INNOVATION**

GC, Global Power Synergy Public Company Limited (GPSC) and PTT Tank Terminal Company Limited (PTT Tank) attended the opening ceremony of a 100 kW floating solar power installation project, which leveraged the innovation and technology expertise of PTT Group to maximize energy management efficiency. As Thailand's first floating solar farm to be installed in the ocean, the project not only generated clean energy and contributed to environmental conservation but also helped extend innovations towards new energy businesses. The project launch took place at PTT Tank in Rayong province, which is located along the coast and therefore a suitable project site. In the first stage, the power produced will be fed to offices as part of a pilot study for business model development.



OCTOBER 6, 2020



## Supporting Strategies to Foster Business Sustainability and Adopt Circular Economy Practices

GC LAUNCHED THE “WASTE THIS WAY: HELP SAVE THE EARTH THE RIGHT WAY” CAMPAIGN AT THE 74<sup>TH</sup> CHULALONGKORN-THAMMASAT TRADITIONAL FOOTBALL MATCH, DEMONSTRATING THE POWER OF COLLABORATION FOR COMPREHENSIVE WASTE MANAGEMENT

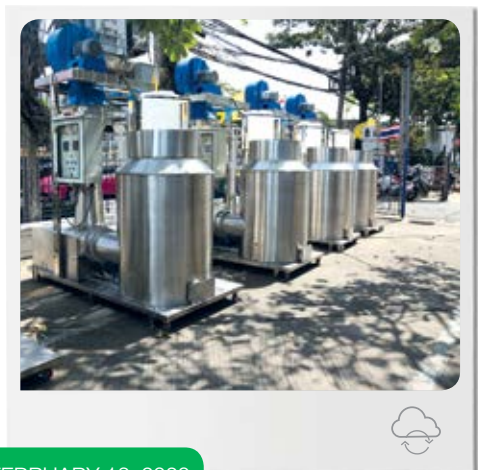


FEBRUARY 8, 2020

GC launched the “Waste This Way: Help Save the Earth the Right Way” Campaign to promote effective waste management at the 74<sup>th</sup> Chulalongkorn-Thammasat Traditional Football Match – the first such event to advocate the management of 100% of the waste produced. The event also promoted the Circular Living lifestyle, which strives to bring about resource efficiency in our everyday lives through the concept of ‘Reduce, Change, Sort,’ which involves reducing waste at the source, encouraging a transition to eco-friendly materials, and promoting proper waste separation. As a result of this campaign, the waste

produced at the event was recycled or upcycled to shoes and school bags for students in remote area. The campaign helped reduce 18,121 kilograms of carbon equivalent (KgCO<sub>2</sub>e) – comparable to growing 2,013 trees. GC aimed to cultivate eco-consciousness in new generations, who would shape the future of the country, as well as foster participation in a bid to solve waste issues at the National Stadium, Bangkok.

THE RAJAPRAJANUGROH FOUNDATION UNDER ROYAL PATRONAGE AND GC SIGNED AN MOU ON THE PERFORMANCE TESTING AND DEVELOPMENT PROJECT OF AN AIR PURIFIER TO TACKLE POLLUTION AND PM 2.5 PARTICULATE MATTER



FEBRUARY 13, 2020

GC and the Rajaprajanugroh Foundation under Royal Patronage signed a memorandum of understanding on the Performance Testing and Development Project of an Air Purifier to Tackle Pollution and PM 2.5 Particulate Matter, in response to His Majesty the King’s royal policy to mitigate the ongoing pollution situation. The installation project of the prototype air purifier aimed at alleviating the problem of air pollution and the PM 2.5 particulate matter for Thai citizens. The signing ceremony was held at The Rajaprajanugroh Foundation under Royal Patronage, Bangkok.

**GC JOINED FORCES WITH THE MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT TO LAUNCH THE “MODEL OF INTEGRATED WASTE MANAGEMENT IN NATIONAL PARKS AS A CIRCULAR ECONOMY PROTOTYPE FOR THE COUNTRY” PROJECT**

GC and the Ministry of Natural Resources and Environment signed a memorandum of understanding on the “Model of Integrated Waste Management in National Parks as a Circular Economy Prototype for the Country” project, which aimed to promote effective plastic waste management in Thailand’s national parks. The signing ceremony was held at Energy Complex, Bangkok.



MARCH 20, 2020

**GC UNVEILED THE “SEND PLASTIC HOME” PILOT PROJECT-THAILAND’S FIRST PROACTIVE CIRCULAR ECONOMY INITIATIVE AND PUBLIC-PRIVATE PARTNERSHIP FOR THE RECOVERY OF FOOD DELIVERY WASTE**

GC joined the press conference at the launch of the “Send Plastic Home” Project, hosted by the Securities and Exchange Commission (SEC) at SEC’s office. The COVID-19 crisis and the ensuing lockdowns altered people’s behavior and led to a 15% increase in the daily amount of waste from plastic food packaging from food deliveries. Thus, GC initiated this project as a prototype for Thailand in collaboration with Ministry of Natural Resources and Environment, the Thailand Responsible Business Network (TRBN), existing partners, and new allies, to create Thailand’s first “Circular Hotspot” on Sukhumvit Road. The project also sought to create a mechanism for proper waste sorting and install drop-off points on its allies’ properties.



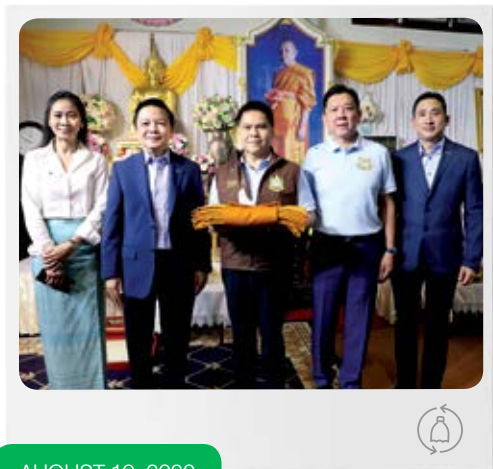
MAY 18, 2020

**GC JOINED HANDS WITH BUSINESS OWNERS AND DESIGNERS TO UNVEIL ECO-DESIGN PRODUCTS FROM THE UPCYCLING UPSTYLING PROJECT**

GC hosted an exhibition showcasing ECO-Design products made from its plastic materials as part of the Upcycling Upstyling Project, launched earlier in February 2020. The featured products were developed by converters and brand owners in collaboration with leading designers in various areas and involved the upcycling of materials to create added value and functionalities that met consumer needs. The project not only expanded business opportunities and promoted the efficient use of resources in all sectors but was also in line with the principle of the circular economy and paved the way towards the application of the GC Circular Living concept to daily life. A total of 19 business owners who were GC’s partners were given the opportunity to co-develop products with 10 experts of style in different areas who had been handpicked by GC to assist them. The exhibition was held at Energy Complex, Bangkok.



JULY 14, 2020



AUGUST 19, 2020

### THE “MAKING MERIT WITH PLASTIC” PROJECT TURNED PET PLASTIC BOTTLES INTO MONK’S ROBES, REDUCING GREENHOUSE GAS EMISSIONS

GC, together with the Ministry of Natural Resources and Environment, donated monk’s robes from the “Making Merit with Plastic” Project to Wat Pa Lelai Worawihan in Amphoe Muang, Suphan Buri. The robes were made from PET bottles collected from the drop-off point located at an agency in the Ministry. The project marked its initial first phase of success in line with national strategic plastic management plans, and would be expanded to the next phases.

A large number of partners participated in this project, through which PET plastic bottles went through the upcycling process producing 40 sets of three-piece value-added garments for Buddhist monks, consisting of a robe, a sarong-like garment, and an outer robe. One set took 40 PET plastic bottles to make and was tailored by local residents in the Wat Chak Daeng community, Samut Prakan. The project helped reduce greenhouse gas emissions by 82.79 kilograms of carbon equivalent (KgCO<sub>2</sub>e).

### GC ANNOUNCED ITS SUPPORT FOR THE “RAYONG ORGANIC LIVING” PROJECT, HIGHLIGHTING THE GC CIRCULAR LIVING CONCEPT THROUGH ORGANIC PRODUCTS

GC announced its collaboration with Patom Organic Living through the “Rayong Organic Living” Project. Based on the Sampran Model, the project brought together local wisdom and innovations and technology to develop and produce organic Thai products with the Circular Living concept. The local organic produce grown by Hom Mahad group’s organic farming network in the Khao Huai Mahat area was processed by the Luffala Community Enterprise in Nong Fab Community into four types of organic Thai products: shampoo, liquid soap, skincare cream, and hand soap. Ten percent of the proceeds went back to farmers and community enterprises to build more sustainable communities.



SEPTEMBER 15, 2020



**GC, THE MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT, AND FOOD DELIVERY SERVICE OPERATORS SIGNED AN MOU ON THE “ENVIRONMENTALLY-FRIENDLY FOOD DELIVERY IN THE NEW NORMAL” CAMPAIGN**

GC signed a memorandum of understanding with the Ministry of Natural Resources and Environment to reduce the use of single-use plastics in food delivery services as part of the “Environmentally-friendly Food Delivery in the New Normal” Campaign,” along with the Pollution Control Department, the Department of Environmental Quality Promotion, a group of food delivery service providers, and 13 related agencies. This network members were willing to work together to reduce the use of single-use plastics by food delivery services and shift to eco-friendly alternatives. The signing ceremony took place at the Department of Environmental Quality Promotion, Bangkok.



SEPTEMBER 30, 2020

In addition, GC worked in collaboration with partners to launch the Stronger Together Project to help restaurant operators and offer over 300,000 pieces of green packaging with the GC Compostable label (bioplastic-coated paper cups, bioplastic bags, and bioplastic spoon-fork sets) to over 200 partner restaurants of Wongnai x LINE MAN for use in food deliveries, allowing consumers to enjoy their food with safe, biodegradable, eco-friendly plastic packaging.

**GC, P&G THAILAND, AND HABITAT FOR HUMANITY TEAMED UP TO BUILD THAILAND’S FIRST UPCYCLED HOUSE**



SEPTEMBER 24, 2020

GC partnered with Procter & Gamble Trading (Thailand) Limited and Habitat for Humanity to build Thailand’s first upcycled house. The materials consisted of over three tons of HDPE bottles and multilayered flexible packaging collected and separated in the community, which were developed through the application of GC’s knowledge and innovations into eco-boards and an eco-roof. An eligible family in the community was chosen to move in. The project could be scaled up into partnerships with all sectors and help to foster a better understanding of plastic waste management in the future.



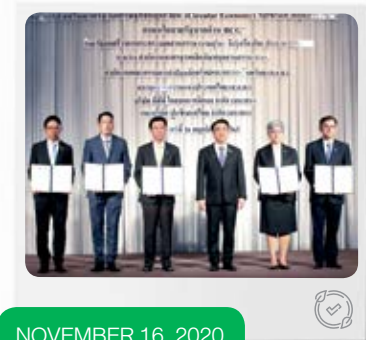
**GC'S "CIRCULAR LIVING SYMPOSIUM 2020: TOMORROW TOGETHER" GLOBAL CONFERENCE BROUGHT TOGETHER THOUGHT LEADERS, INNOVATORS, AND INVESTORS TO JOINTLY PUT IDEAS INTO PRACTICE FOR A BETTER TOMORROW**

GC held GC Circular Living Symposium 2020: Tomorrow Together at Siam Paragon in Bangkok to advance the concept of Circular in Action, which placed importance on maximizing the use of limited resources by applying the principles of the circular economy both in daily life and in the company's activities through the GC Circular Living approach.



NOVEMBER 12, 2020

Thought leaders, innovators, and business operators from around the world were invited to share their knowledge and perspective on the circular economy. At the event, GC also presented Circular City, a simulation that offered participants a chance to experience the GC Circular Living lifestyle through various exhibits.



NOVEMBER 16, 2020

**GC, TISI, AND SCG SIGNED AN MOU TO ADVANCE CIRCULAR ECONOMY STANDARDS FOR THAILAND'S INDUSTRIAL SECTOR THROUGH BCG POLICIES**

GC, the Ministry of Industry, the Thai Industrial Standards Institute (TISI), and the Siam Cement Public Company Limited (SCG) signed a memorandum of understanding on "the Promotion of Circular Economy Standards within the Industrial Sector in Response to the Government's Bio-Circular-Green (BCG) Economic Policy." The goal was to encourage Thailand's industrial sector to sustainably reduce environmental impacts throughout the entire supply chain as well as foster a quality of life in line with the government's BCG economic policy. The signing ceremony took place at the Grand Ballroom, Century Park Hotel, Bangkok.

**GC JOINED FORCES WITH OR TO LAUNCH "SEND PLASTIC HOME" PROJECT AND PROMOTE THE CIRCULAR ECONOMY THROUGH LOOP CONNECTING**

GC developed YOUTURN, an integrated plastic waste management platform that seeks to put used plastics from the source through a recycling or upcycling process and turn them into added-value products for consumers again. GC also signed a memorandum of understanding to initiate the "Send Plastic Home" Project with PTT Oil and Retail Business Public Company Limited (OR), Thailand's number one gas station operators, with gas stations nationwide for setting up drop-off points for pre-cleaned used plastics. The signing ceremony took place at the Customer Solution Center (CSC), Energy Complex, Bangkok. The project would be piloted in Bangkok first, with plans to be expanded to PTT stations across the country.



DECEMBER 24, 2020



# Message of the Chairman



The year 2020 was an incredibly challenging year for the global economy and society as a result of the coronavirus disease 2019 (COVID-19) pandemic, which has devastating impacts on the world and is still raging on, coupled with the trade war between two global superpowers China and the United States that continued on from 2019 and an oil price war in early 2020. All of these negative factors triggered a global economic crisis and ushered in the new normal, which caused energy demand to contract greatly, severely affecting the industrial business sector across the supply chain and investment projects across the world. Furthermore, Thailand was also faced with droughts, which posed a major risk to industries in Eastern Thailand.

PTT Global Chemical Public Company Limited (GC) assessed these global situations, especially the COVID-19 pandemic, which was considered a black swan, and, in response, established proactive management strategies to equip ourselves to handle these crises. Furthermore, we reviewed our corporate direction and strategies, short- and long-term investments, and risk management, while closely monitoring world events and the global economy. Consequently, we were able to respond to the situation promptly and minimize impact from external factors and economic volatility. In 2020, we posted Baht 329,291 million in revenues from sale of goods and rendering of services, Baht 7,356 million in operating profit, and Baht 200 million in net profit, equivalent to Baht 0.04 in earnings per share.

Following our corporate direction and strategies, we strive to foster internal strength by enhancing operational efficiency and the resilience of our production while also placing emphasis on industry-leading safety standards, market development, and restructuring our product portfolio towards businesses with higher growth and profitability, such as High Value Products (HVPs). To take advantage of the current situation, we have reviewed all investment projects to ensure their suitability and compatibility with changing circumstances following the COVID-19 pandemic both in the medium- and long-term. To this end, we focus on investing in High Value Businesses (HVBs) through Mergers and Acquisitions (M&A) due to their higher profitability and stability, which will strengthen our businesses and further stabilize our profit and operating results. In addition, we have adjusted our strategies to accommodate competition in the future by initiating corporate transformation alongside organizational restructuring and digitalization to maximize efficiency as well as carrying out the FiT Project to enhance the organization's capabilities and strength.

We also place emphasis on taking a balanced approach to all dimensions under the framework of good corporate governance with respect to initiatives related

to interorganizational relations, stakeholder engagement and social and environmental responsibility, which we have been carrying out both prior to and during the COVID-19 pandemic. To offer assistance to customers, suppliers, employees, the public, medical professionals, and related parties, we have leveraged our plastic and chemical expertise in collaboration with our partners to research and develop medical protective gear under the brand Greater Care by GC, made with Polyethylene (PE) and 100% recycled plastic (rPET). In terms of social and environmental initiatives, we have reduced the use of freshwater from natural sources and cut down water consumption in the manufacturing process as well as collaborated with the public and industrial sectors and communities in water conservation and quality preservation programs.

In addition, we are committed to giving back to society and the country and contributing to a better quality of life, in line with its philosophy Chemistry for Better Living. As a result of our dedication, we were ranked as the world's number one on the Dow Jones Sustainability Indices (DJSI) in the chemicals sector for the second consecutive year and placed among the top ten of the DJSI World Index and the DJSI Emerging Market index in the chemicals sector for the eighth consecutive year, with the top score in risk and crisis management for the second consecutive year – a testament to GC's internationally accepted risk management standard. We also received the highest rating of A in Leadership Level for climate change and water security management from the Carbon Disclosure Project (CDP), one of the world's most reliable sustainability assessment institutions, and were recertified as a member of Thai Private Sector Collective Action against Corruption (CAC) for the third time. These accolades are an affirmation of our commitment to sustainable development in every aspect.

With the diverse experiences, knowledge, and expertise of the Board of Directors, which is responsible for prescribing GC's vision, policies, and directions, together with the devotion and commitment of our Management Team and employees, I believe that we will be able to handle challenges from external factors, create opportunities, strive towards long-term goals with stability, and return benefits to all stakeholders, include shareholders. On behalf of the Board of Directors, the Management, and employees, I would like to express my sincerest appreciation to the shareholders and stakeholders in all sectors for their continued cooperation and support.



**(Mr. Piyasvasti Amranand)**  
Chairman





**GC Group stands side by side with all Thais to combat COVID-19**

GC Group has provided innovative plastic materials and chemical products to help protect medical professions and all Thais against COVID-19.



**500** sets

of medical protective suits and Powered Air-Purifying Respirators (PAPR)



**1,865** suits

**Coverall**  
(Greater Care by GC)  
made with rPET



**203,570** suits

disposable plastic gowns, distributed to 181 hospitals and government agencies nationwide



**13** units

CoviClear nanosilver disinfection



**600** pairs

of Shoe Cover



**94,500** pieces

Face Shield



**74,636** liters

of alcohol-based hand sanitizer



**26** tons

of plastic film for COVID-19 prevention applications, given to 900 hospitals in 77 provinces across Thailand



**300** red bins

**35,000** red bags

made with high-quality InnoPlus plastic, for infectious waste to prevent the spread of pathogens

# **BUSINESS OPERATION** **AND PERFORMANCE**

**PTT Global Chemical Public Company Limited  
has a combined petrochemical and chemical  
capacity of approximately 11.65 million tons per year  
and crude oil and condensate distillation capacity  
of 280,000 barrels per day.**

It is considered Thailand's largest integrated petrochemical and refining company and a leader in Southeast Asia in terms of size and the variety of petrochemical products, both olefins and aromatics, which enhances its competitiveness and shields it from the intense competition in the petrochemical industry. A leading petrochemical company is required to possess a large production capacity to achieve economy of scale and reduce costs per unit and must be fully integrated to be able to add value to products, especially in the expansion to downstream businesses, which result from adding value to existing products and reducing costs by maximizing existing assets. It must also be equipped with capabilities for production and market optimization. GC consists of eight core business groups:

1. REFINERY AND SHARED FACILITIES



2. AROMATICS



3. OLEFINS



4. POLYMERS



5. EO-BASED PERFORMANCE



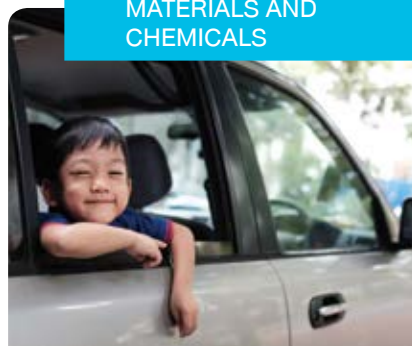
6. GREEN CHEMICALS



7. PHENOL

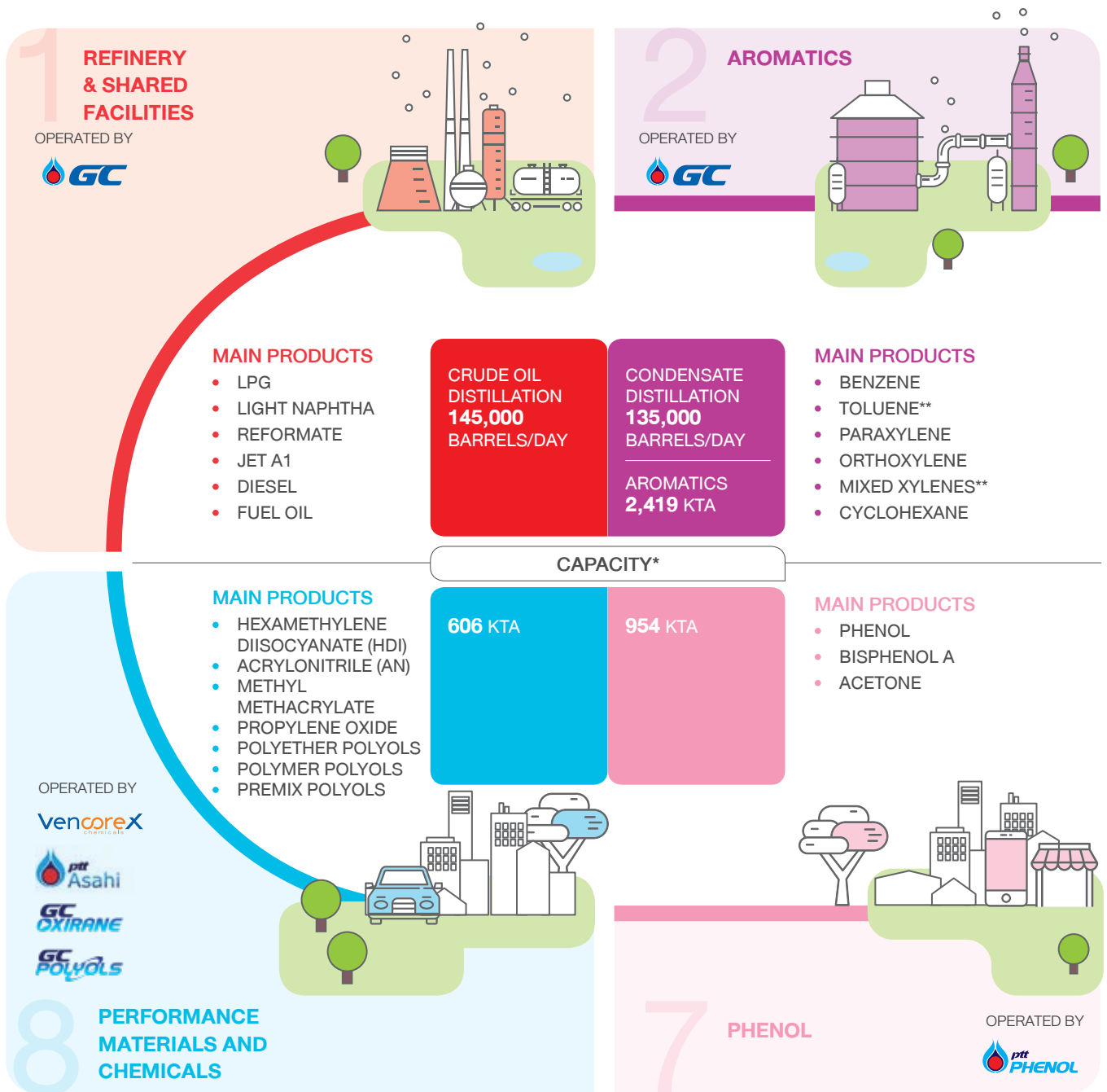


8. PERFORMANCE MATERIALS AND CHEMICALS



# Business Structure

In 2020, GC, as a Chemical Flagship of PTT Group with a combined chemical and petrochemical capacity of 11.65 million tons per year and crude oil and condensate distillation capacity of 280,000 barrels per day. GC consists of 8 business groups and has other businesses and services which GC invested for supporting 8 business groups, summarized in the diagram as follows:





## Services and Others

- Jetty and chemical tank farm
- Utility business
- Plant maintenance and engineering design services
- Safety, occupational health, and environmental, and security services
- Pipeline infrastructural services
- Information and communication technology service
- Labor outsourcing service
- Marketing and sales of methyl amine derivatives, plastic compounds, specialty products, and health and nutrition products

Operated by TTT  
 Operated by GPSC  
 Operated by GCME and PTES  
 Operated by NPC S&E and NPCSG  
 Operated by EFT  
 Operated by PTT Digital  
 Operated by BSA  
 Operated by Solution Creation

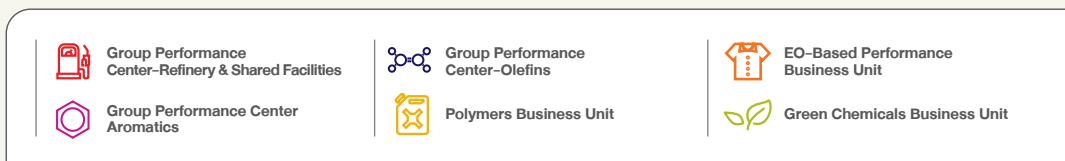
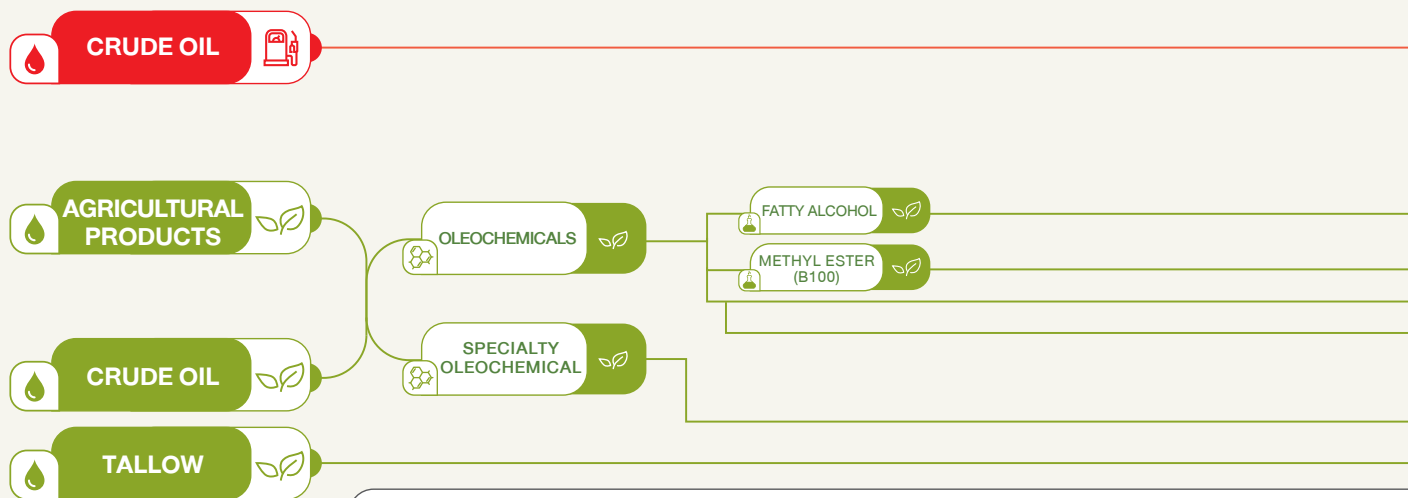
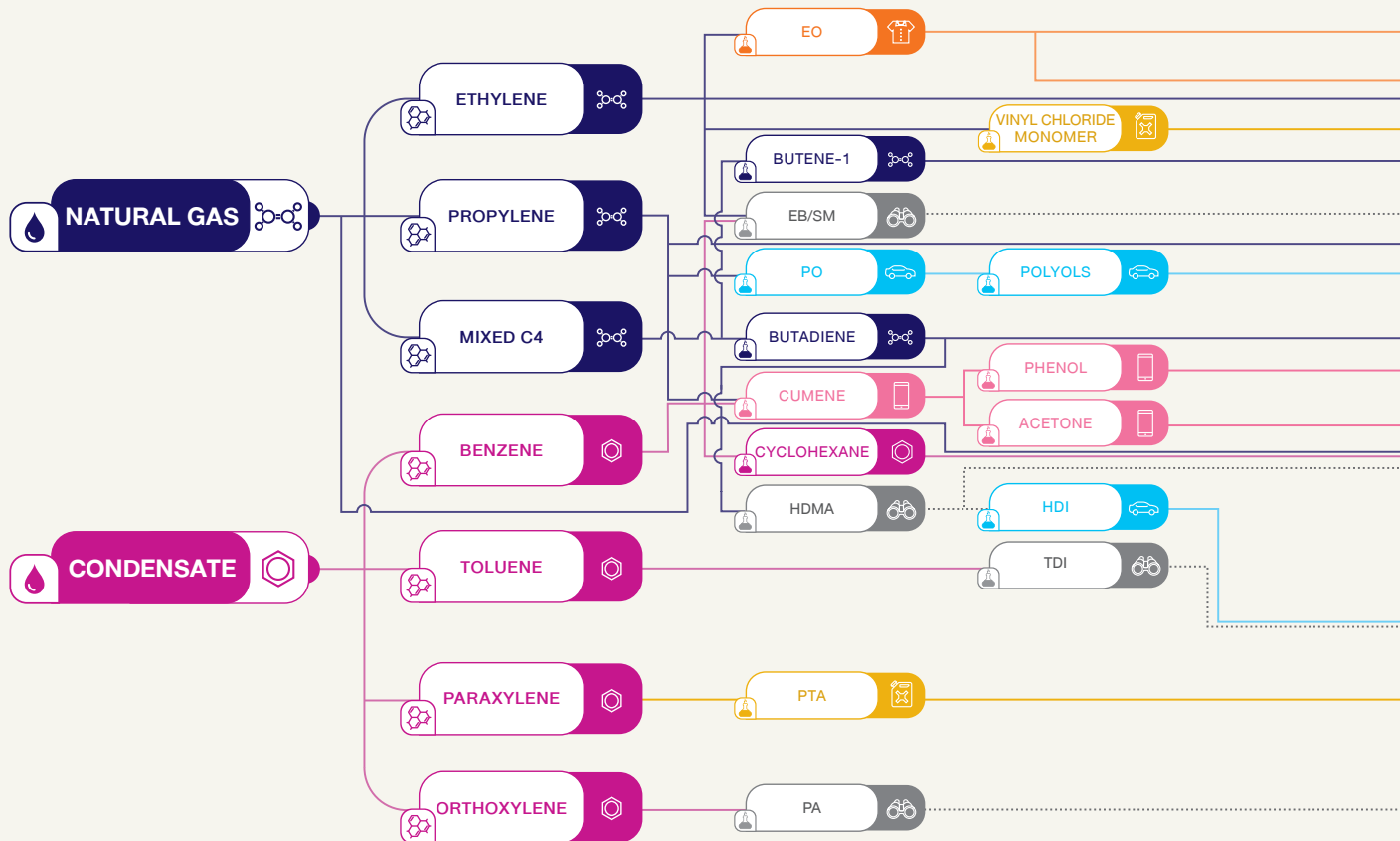
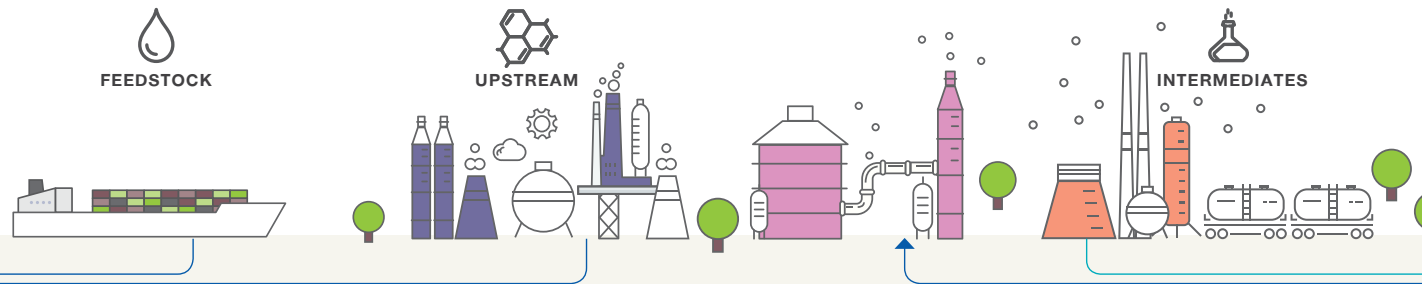
- Polymer sales services
- Logistics services
- GC Group's liquidity management and financing service
- Management consultancy
- Manufacture procure, sell products and/ or provide services that contributes to society
- Plastic packaging development support
- Land and property management
- Corporate venture capital investment

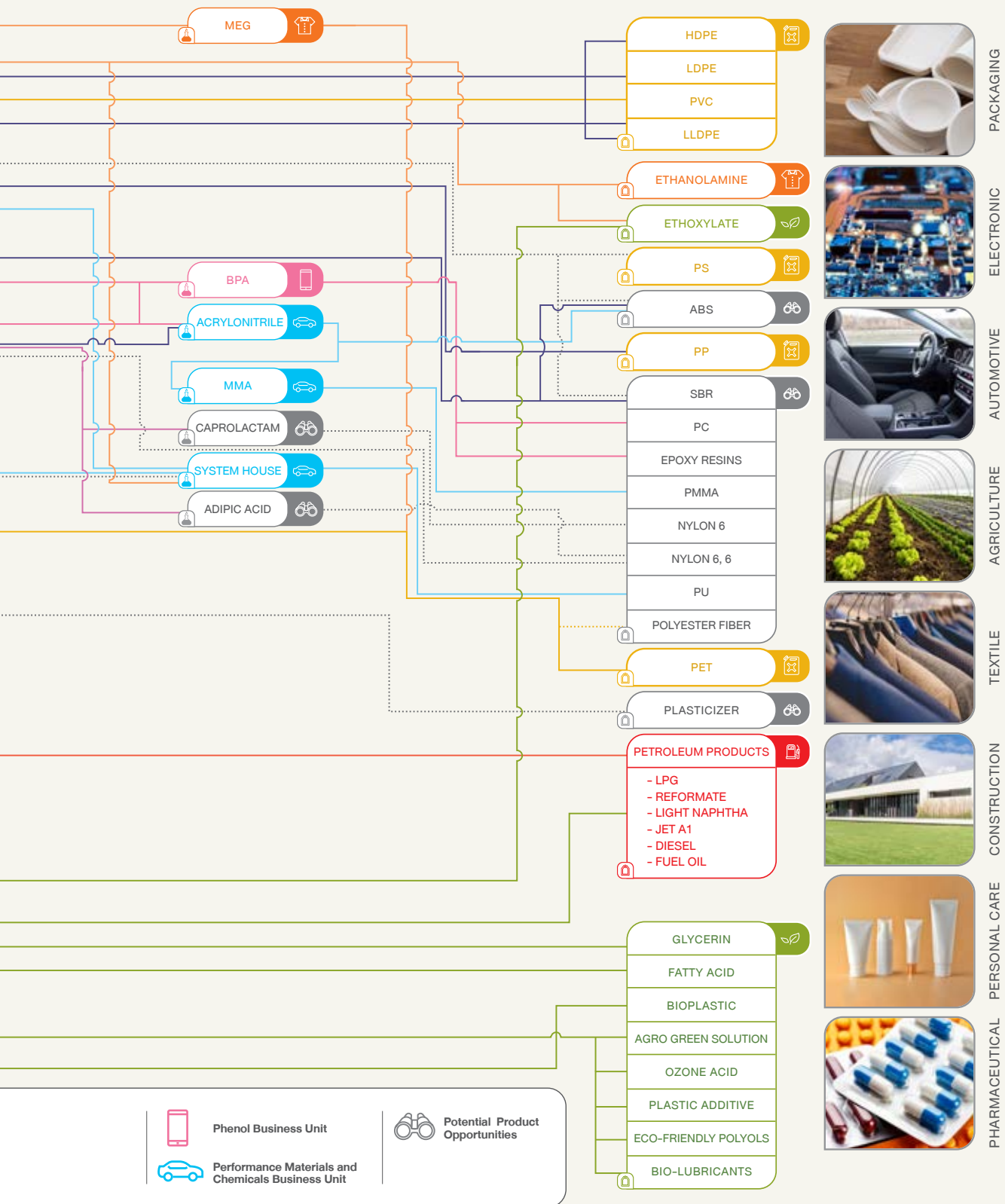
Operated by GCM (Polymers Business Unit)  
 Operated by GCL (Polymers Business Unit)  
 Operated by GCTC  
 Operated by PRS Rayong  
 Operated by SPSE  
 Operated by SPIG  
 Operated by GCEC  
 Operated by GCV and GCVA



Remarks: \* Only capacity that GC hold equal to or more than 25% share and calculate proportion by percent share.  
 \*\* For internal use

# Business Value Chain





# Company Information

<b>NAME</b>	PTT Global Chemical Public Company Limited
<b>INITIAL</b>	PTTGC
<b>WEBSITE</b>	www.pttgcgroup.com
<b>REGISTERED NUMBER</b>	0107554000267
<b>NUMBER AND VALUE</b>	As at December 31, 2020, the Company's registered share capital was of Baht 45,088,491,170 comprising of 4,508,849,117 common shares at a par value of Baht 10 per share. Paid-up capital was Baht 45,088,491,170
<b>ESTABLISHMENT</b>	October 19, 2011
<b>FIRST DAY TRADE ON THE SET</b>	October 21, 2011
<b>BUSINESS STRUCTURE</b>	Group Performance Center - Refinery & Shared Facilities
<b>AND VALUE CHAIN</b>	Group Performance Center - Aromatics
	Group Performance Center - Olefins
	Polymers Business Unit
	EO-Based Performance Business Unit
	Green Chemicals Business Unit
	Phenol Business Unit
	Performance Materials and Chemicals
	Services & Others
<b>NUMBER OF EMPLOYEES</b>	6,883 as of December 31, 2020

## CONTACT

<b>INVESTOR RELATION DEPARTMENT</b>	<b>CORPORATE GOVERNANCE DEPARTMENT</b>
Tel: 66 (0) 2 265 8400	Tel: 66(0) 2 265-8645, 66(0) 2 140-8759
EXT. 8576, 8637, 8513, 8364, 8533	E-mail: cg@pttgcgroup.com
E-mail: ir@pttgcgroup.com	

<b>HEAD OFFICE</b>	<b>BRANCH 1: RAYONG OFFICE</b>
555/1 Energy Complex, Building A, 14 <sup>th</sup> -18 <sup>th</sup> Floor Vibhavadi Rangsit Road, Chatuchak Sub-District, Chatuchak District, Bangkok 10900	59 Ratniyom Road, Noen-Phra Sub-District, Muang Rayong District, Rayong Province 21150
Tel: 66 (0) 2 265-8400	Tel: 66 (0) 3899-4000
Fax: 66 (0) 2 265-8500	Fax: 66 (0) 3899-4111



<p><b>BRANCH 2:</b> <u>OLEFINS 1</u>  14 I-1 Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3899-4000  Fax: 66 (0) 3899-4111</p>	<p><b>BRANCH 8:</b> <u>AROMATICS TANK FARM</u>  11 I-4 Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3897-1000  Fax: 66 (0) 3899-4111</p>
<p><b>BRANCH 3:</b> <u>OLEFINS 2</u>  9 I-4 Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3899-4000  Fax: 66 (0) 3899-4111</p>	<p><b>BRANCH 9:</b> <u>LABORATORY SERVICE CENTER</u>  24/9 Pakorn Songkrorat Road,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3899-4000  Fax: 66 (0) 3899-4111</p>
<p><b>BRANCH 4:</b> <u>AROMATICS I</u>  4 I-2 Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3897-1000  Fax: 66 (0) 3899-4111</p>	<p><b>BRANCH 10:</b> <u>GC 10</u>  555/1 Energy Complex, Building A, 1<sup>st</sup>, 10<sup>th</sup> Floor  Vibhavadi Rangsit Road, Chatuchak Sub-District,  Chatuchak District, Bangkok 10900  Tel: 66 (0) 2 265-8400  Fax: 66 (0) 2 265-8500</p>
<p><b>BRANCH 5:</b> <u>AROMATICS II</u>  98/9 Rayong Highway Road 3191, RIL Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3897-1000  Fax: 66 (0) 3899-4111</p>	<p><b>BRANCH 11:</b> <u>OLEFINS III</u>  8 Padaeng Road, Map Ta Phut Sub-District,  Muang Rayong District, Rayong Province 21150  Tel: 66 (0) 3899-4000  Fax: 66 (0) 3897-6205</p>
<p><b>BRANCH 6:</b> <u>REFINERY</u>  8 I-8 Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3897-1000  Fax: 66 (0) 3899-4111</p>	<p><b>BRANCH 12:</b> <u>POLYETHYLENE</u>  8 I-10 Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3899-4000  Fax: 66 (0) 3897-6977</p>
<p><b>BRANCH 7:</b> <u>JETTY AND BUFFER TANK FARM</u>  19 Rong-Pui Road, Map Ta Phut Industrial Estate,  Map Ta Phut Sub-District, Muang Rayong District,  Rayong Province 21150  Tel: 66 (0) 3899-4000  Fax: 66 (0) 3899-4111</p>	<p><b>BRANCH 13:</b> <u>INNOPLUS SOLUTION CENTER</u>  83/9-10 Moo 5, Tub-ma Sub-District,  Muang Rayong District, Rayong Province 21000  Tel: 66 (0) 3899-4526  Fax: 66 (0) 3899-4452</p> <p><b>BRANCH 14:</b> <u>GC 14</u>  32 Rong Pui Road, Map Ta Phut Sub-District,  Muang Rayong District, Rayong Province 21150  Tel: 66 (0) 3897-5000  Fax: 66 (0) 3899-4111</p>

# Nature of Business

## REVENUE STRUCTURE OF GC AND SUBSIDIARIES CATEGORIZED BY BUSINESS GROUPS

Business Group	2018		2019		2020	
	Revenue (Million THB)	%	Revenue (Million THB)	%	Revenue (Million THB)	%
<b>1. Refinery and Shared Facilities</b>						
Total	227,034	43.8	175,036	42.4	136,155	41.3
<b>2. Aromatics</b>						
Total	92,601	17.8	54,653	13.2	34,224	10.4
<b>3. Olefins</b>						
Total	29,267	5.6	22,437	5.4	16,744	5.1
<b>4. Polymers</b>						
Total	89,353	17.2	99,760	24.2	81,232	24.7
<b>5. EO-Based Performance</b>						
Total	16,506	3.2	10,141	2.5	8,271	2.5
<b>6. Green Chemicals</b>						
Total	15,233	2.9	12,017	2.9	16,593	5.0
<b>7. Performance Materials and Chemicals</b>						
Total	46,751	9.1	36,769	8.9	34,112	10.4
<b>8. Services and Others</b>						
Total	1,910	0.4	1,997	0.5	1,961	0.6
<b>Net Total after deduction from connected transaction</b>	<b>518,655</b>	<b>100</b>	<b>412,810</b>	<b>100</b>	<b>329,291</b>	<b>100</b>



## GROUP PERFORMANCE CENTER – REFINERY AND SHARED FACILITIES

### NATURE OF PRODUCTS

As Thailand's leading refiner and distributor of petroleum products, GC owns and operates a modern complex refinery equipped with hydrocracker and visbreaker units, capable of converting low-value fuel oil to more valuable middle-distillate products. Our average refining capacity stands at 145,000 barrels per day of crude and 135,000 barrels per day of condensate. Additionally, our refining process is flexible, ready to be adjusted to accommodate customer demand and volatility in the market. Below is a summary of our refined products and their usage:

Petroleum Product		Usage
Light Distillate	Liquefied Petroleum Gas (LPG)	Fuel Petrochemical feedstock (Olefins plants)
	Light Naphtha	Gasoline blending component Petrochemical feedstock (Olefins plants)
	Reformate	Gasoline blending component Petrochemical feedstock (Aromatics plants)
Middle Distillate	Jet Fuel	Aviation fuel
	Diesel	Fuel for industrial and transport sectors
Heavy Distillate	Fuel Oil	Fuel for industrial sector and maritime transport

### FEEDSTOCK SOURCING

In 2020, GC distilled crude about 52 million barrels, equivalent to 97% of its capacity. The capacity was also adjusted to suit the demand during the COVID-19 pandemic. GC secured crude oil at market prices through a long-term feedstock supply agreement with PTT.

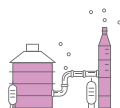
### POLICY AND MARKETING

GC's strategy is to enhance its refinery capability by keeping production costs at a global competitive level. Factors supporting GC's capability are as follows:

- GC's refinery is a modern complex refinery and has one of the highest levels of energy efficiency in Asia. It is equipped with production technology developed by leading experts, which increases the flexibility of the distillation process.

- GC regularly develops and improves its production to ensure stability and maximum energy efficiency.
- GC's middle-distillate products are mostly transported via pipeline, which is fast, convenient, and saves costs for GC's customers.

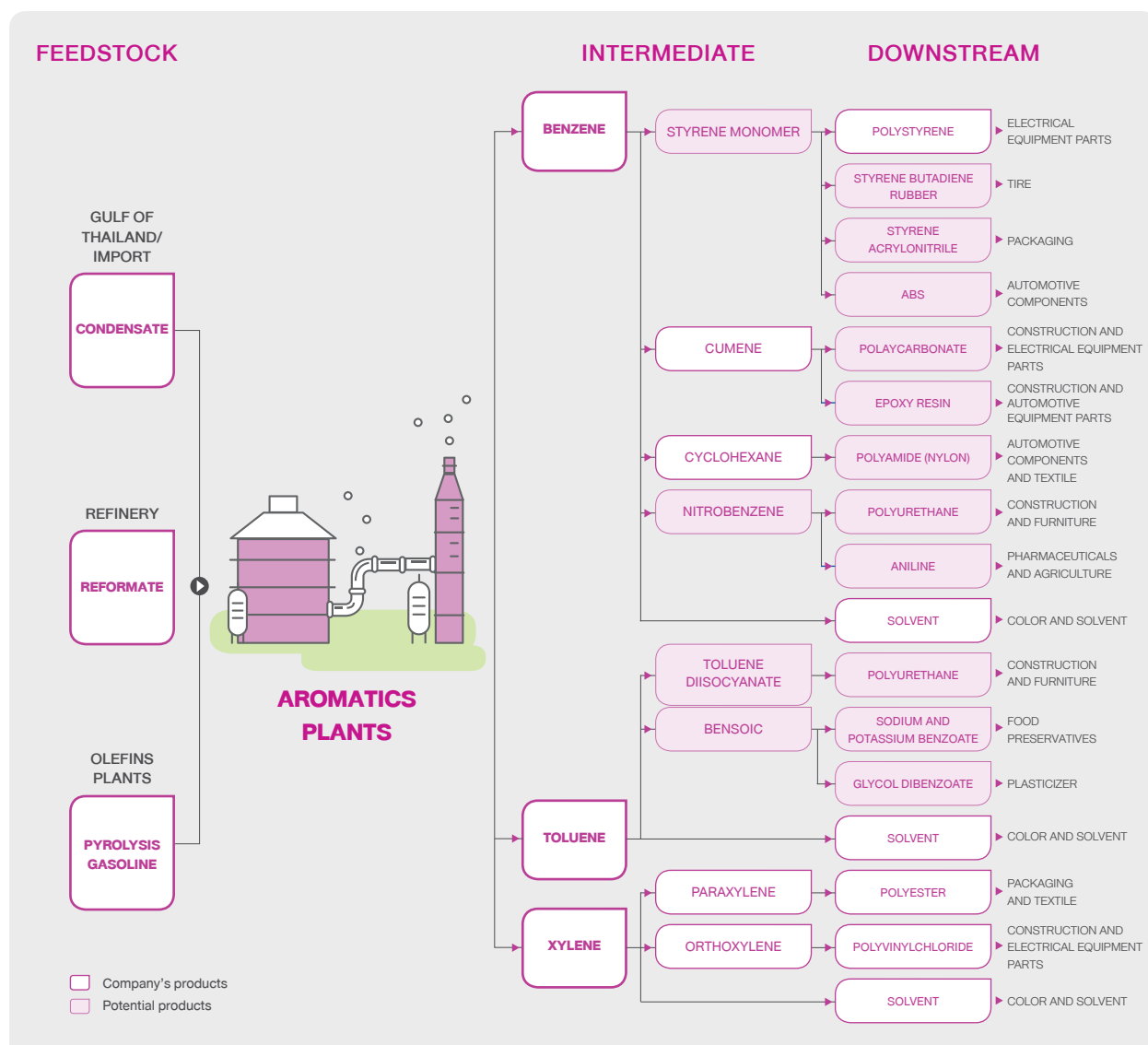
In 2020, GC sold a total of 56 million barrels of petroleum products from its refinery, with diesel and jet fuel as the primary products, 70% of which were sold domestically, accounting for a 19% market share of the domestic sales. In March 2020, demand for jet fuel plummeted globally as a result of COVID-19, and GC successfully reduced the production capacity of jet fuel to zero in May 2020. GC's main customer was PTT Oil and Retail Business Public Company Limited, which has long-term purchase agreements with the Company. GC has plan to increase domestic sales to accommodate a rise in demand and expand to CLMV to grow its marketing base continuously.



## GROUP PERFORMANCE CENTER – AROMATICS

### NATURE OF PRODUCTS

GC produces and distributes aromatics products, namely paraxylene, benzene, orthoxylene, mixed xylene, toluene, and cyclohexane. These products are used as feedstock in various industrial processes, detailed in the chart below:



Aside from these products, GC's aromatics plants yield multiple by-products, including Liquefied Petroleum Gas (LPG), light naphtha, heavy aromatics, and condensate residue. LPG and light naphtha are used as feedstock in our olefins plants, while heavy aromatics and condensate residue are used as feedstock in our refinery to produce jet fuel, diesel, and fuel oil.



GC currently operates two aromatics plants with a combined capacity of 2,419 thousand tons per year. The table below details the nameplate capacity of each product:

Company	Product	Nameplate Capacity (thousand tons per year)
GC	Benzene	697
	Toluene*	50
	Paraxylene	1,310
	Orthoxylene	86
	Mixed Xylene*	76
	Cyclohexane	200

\*Toluene and mixed xylene are currently used as feedstock at both aromatics plants

## FEEDSTOCK SOURCING

In 2020, GC used approximately 4.70 million tons of condensates as the primary feedstock for the production of aromatics and by-products, consisting of 3.10 million tons of domestically-sourced and 1.60 million tons of imported condensates. GC has also entered into a long-term condensate purchase agreement with PTT to procure feedstock for its aromatics plants at market prices.

## POLICY AND MARKETING

GC's strategy focuses on enhancing its aromatics production by consistently optimizing the manufacturing process to improve efficiency and increasing the capacity of its plants so as to take the fullest advantage of its assets, enabling GC to reduce costs per unit and maintain competitive in the global market. Factors supporting GC's capability are as follows:

1. GC selects production technology developed by leading experts and widely recognized for the ability to enhance production efficiency.
2. GC's reformer unit, which prepares feedstock for the aromatics unit, has flexibility in terms of feedstock mixtures and can support both condensates from domestic natural gas wells with a high proportion of aromatics and imported condensates with a higher level of sulfur.

3. GC's aromatics plants are located in Map Ta Phut Industrial Estate, as are major customers, and transport most products via pipeline, which is fast, convenient, and saves considerable costs for customers.
4. GC regularly develops and improves its production to ensure the production continuity of the aromatics unit and maximize both energy and production efficiency

Approximately 80% of GC's aromatic products are sold to domestic customers, most of whom are customers with long-term and short-term agreements. The remaining 20% aromatic products are exported primarily to customers in Asia and Europe.

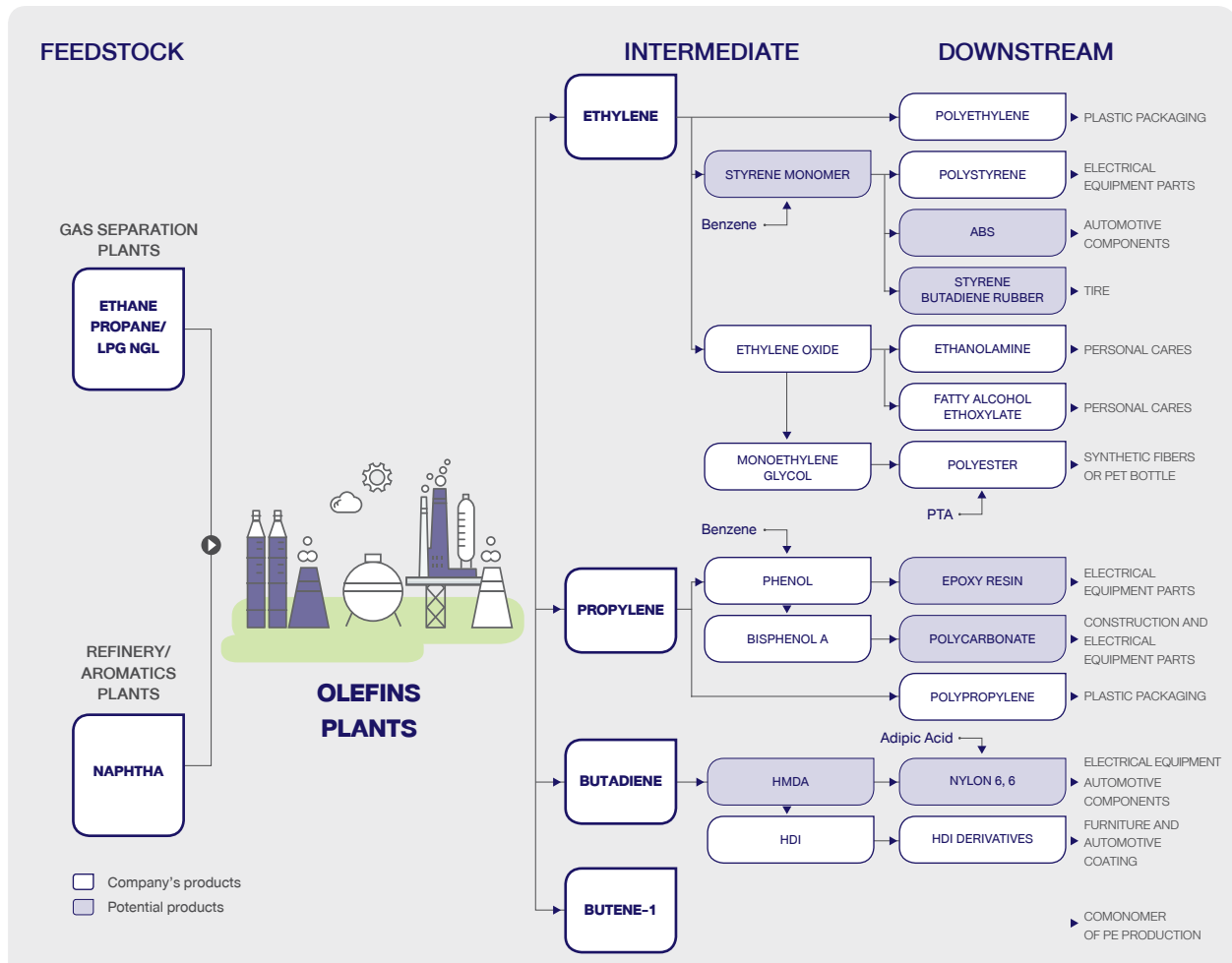
**IN 2020,  
GC HAD A DOMESTIC AROMATICS  
MARKET SHARE OF  
APPROXIMATELY 73%.**



## GROUP PERFORMANCE CENTER – OLEFINS

### NATURE OF PRODUCTS

Olefins products obtained from GC's olefins plants mainly consist of ethylene and propylene. The chart below shows the feedstock for the production and their sources, as well as intermediate and downstream products:



The olefins plants also yield various by-products, such as pyrolysis gasoline, mixed C4, tail gas, cracker bottom, and hydrogen. GC enriches the values of these by-products through synergy with the refinery and aromatics plants. For example, pyrolysis gasoline is turned into aromatics products; cracker bottom is mixed with fuel oil into higher valued products; hydrogen is used in the refinery as a substitute for hydrogen produced by the Hydrogen Manufacturing Unit (HMU), which otherwise requires a higher

production cost; and mixed C4 is turned into butadiene and butene-1 at the by-product value-added plant.

GC also produces utilities (electricity, steam, and industrial water) for our own use, which enhances its production capability and competitiveness. Surplus volumes of the utilities are sold to Electricity Generating Authority of Thailand (EGAT) and neighboring petrochemical plants.

GC has four olefins plants with a combined nameplate capacity of 2,988 thousand tons per year. The details are shown in the table below:

Company	Product	Nameplate Capacity (thousand tons per year)
GC	Ethylene	2,376
	Propylene	512
	Butadiene	75
	Butene-1	25

## FEEDSTOCK SOURCING

The primary feedstocks for GC's olefins production are ethane, propane, LPG, and NLG, which are natural gases. In 2020, GC secured 76% of these feedstocks from PTT and used more internally produced feedstocks. While GC relied heavily on PTT, PTT also has a high capacity to deliver these feedstocks as it operates five gas separation plants in Map Ta Phut, which are unlikely to halt production at the same time. PTT also has feedstock reserves, which enable PTT to deliver feedstocks to its customers. In addition, GC and PTT also work closely to ensure feedstocks are delivered as planned.

GC also entered into a new feedstock purchase agreement with PTT, effective as of January 1, 2020 to December 31, 2030. The price structure for ethane varies according to the prices of high-density polyethylene (HDPE), linear low-density polyethylene (LLDPE), and low-density polyethylene (LDPE) to reflect GC's polymer production structure. The price structure of propane is based on the contract price (CP Propane), while the price of LPG is based on the contract price for propane (CP Propane) and butane (CP Butane).

In addition to the aforementioned feedstocks, GC also uses light naphtha and LPG, which are by-products from GC's refinery and aromatics plants. GC's feedstock security derives from flexibility in feedstock choice, which allows GC to produce olefins products with consistently high stability and meet the needs of downstream industries. In 2020, GC's olefins plants use natural gases and naphtha approximately in a ratio of 82:18.

## POLICY AND MARKETING

GC's policy is to build its competitiveness on par with international standards by using diverse feedstocks, controlling costs to a competitive level, and increasing business opportunities from upstream to downstream businesses to give GC stability and management options. GC's domestic and international competitive capabilities have allowed for more agile marketing policies and increased options in selling its products, especially during times of high volatility. In addition, GC seeks opportunities to increase the capacity of its plants and has been able to maximize efficiency by taking advantage of existing basic equipment, the expertise of its personnel, and technical preparedness. Other cost reduction initiatives have also been consistently carried out. These include plant improvement, production efficiency enhancement, and the creation of synergy within PTT Group, such as by sourcing quality feedstock at competitive prices and exchanging knowledge to jointly develop best practices.

Olefin products are primarily used to produce downstream petrochemical products, while the rest is sold to domestic customers, such as GC Glycol Co., Ltd. (Glycol), HMC Polymers Co., Ltd. (HMC), and other companies in Map Ta Phut Industrial Estate. GC's domestic market shares for ethylene and propylene are 40% and 39% respectively. The remaining products are exported.



## POLYMERS BUSINESS UNIT

### NATURE OF PRODUCTS

Polymers are downstream petrochemicals primarily used as feedstock for everyday plastic products. They are commonly molded into multiple shapes and forms of plastic packaging, such as bags, bottles, containers for food and general goods, lubricant containers, buckets, and crates. Polymers are also used as feedstock for other downstream industries, such as construction, packaging, agriculture, automotive, and electrical appliances. Our key polymer products are as follows:

- High-density polyethylene (HDPE)
- Linear low-density polyethylene (LLDPE)
- Low-density polyethylene (LDPE)
- Polypropylene (PP)
- Purified terephthalic acid (PTA)
- Polyethylene terephthalate (PET)
- Polystyrene (PS)
- Rotomolding compound
- PP compound

Polyethylene (PE) are produced by GC and sold under the InnoPlus trademark. Polypropylene (PP)

are produced by HMC Polymers Co., Ltd., and sold under the Moplen, Purell, Clyrell, Adstif and Adsyl trademarks. Purified terephthalic acid (PTA) is produced by GC-M PTA Co., Ltd. (GC-M PTA), while polyethylene terephthalate (PET) are produced by Thai PET Resin Co., Ltd. (TPRC), and sold under the InnoPlus trademark. Polystyrene (PS), available as general-purpose polystyrene (GPPS) and High-Impact Polystyrene (HIPS), are produced by GC Styrenics Co., Ltd. (GCS) and sold under the DIAREX trademark. Rotomolding compound is produced by Revolve Group Limited (RGL) and sold under the Revolve trademark. PP compound is produced by DynaChisso Thai Co., Ltd. (DYCT) and sold under the Polypro trademark.

GC Group currently operates 19 commercial polymer plants in Map Ta Phut Industrial Estate and Pha Daeng Industrial Estate, Rayong. Rotomolding compound plants operate in the UK, Poland, Australia, New Zealand, and Malaysia. The PP compounding plant is located in the Amata Industrial Estate, Chonburi. The capacities of major polymer products are shown in the table below:

Company	Product	Nameplate Capacity (thousand tons per year)
GC	High-density polyethylene (HDPE)	850
	Linear low-density polyethylene (LLDPE)	800
	Low-density polyethylene (LDPE)	300
	Hexene-1*	34
HMC	Polypropylene (PP)	810
GC-M PTA	Purified terephthalic acid (PTA)	970
TPRC	Polyethylene terephthalate (PET)	147
GCS	Polystyrene (PS)	90
RGL	Rotomolding compound	61
DYCT	PP compound	30

**Remarks:** \*For internal use as feedstock for LLDPE (metallocene)



## FEEDSTOCK SOURCING

The PE plants primarily use ethylene produced by olefins plants in GC Group. The PP plant uses propylene from producers in Map Ta Phut and olefin plants in GC Group. The PTA plant uses paraxylene (PX) produced within GC Group as the primary feedstock. The PET plant relies on two main feedstocks, namely PTA obtained from PTA plants in GC Group and MEG obtained from MEG plants in GC Group. The PS plant uses styrene monomer (SM) as the primary feedstock, obtained both through purchase agreements with domestic producers and through imports from various regions to ensure supply stability and competitiveness. The rotomolding compound plants use LLDPE as the primary feedstock, especially in the production bases in Southeast Asia and Oceania. The PP compounding plant obtains PP partially from PP plants in GC Group.

## POLICY AND MARKETING

The Polymers Business Unit operates an integrated production and distribution business. GC has lower costs per unit due to production cost control and technology transfer from technology proprietors as well as develops products consistently to meet customer needs, thus ensuring GC's production efficiency. GC operates marketing and sale via GC Marketing Solutions Company Limited (GCM), a subsidiary in GC Group that plays a key role in marketing and distributing the majority of GC Group's polymer products and by-products. Currently, GCM has authorized dealers both in Thailand and every region across the world, with two dealership offices in the People's Republic of China, namely in Shanghai and Guangzhou. In addition, GCM has four subsidiaries in Ho Chi Minh City, the Socialist Republic of Vietnam; Dubai, the United Arab Emirates; Jakarta, Indonesia; and Yangon, the Republic of the Union of Myanmar, to adequately cater to demand for GC's products both domestically and internationally and maximize its trade opportunity. In terms of warehousing and transportation, GC has assigned GC Logistics Solutions Company Limited (GCL), a subsidiary of GC Group, to handle warehouse

and transportation management for all its polymer products to create agility in the integrated logistics management as well as to enable GC to manage distribution and transportation costs to competitive levels and efficiently distribute its products to over 1,000 plastic forming manufacturers nationwide and overseas customers in over 80 countries across the world.

GC is committed to enhancing its marketing by developing new grades of polymers to better meet customer needs. To this end, in mid-2018, GC established the Customer Solution Center (CSC) at Energy Complex, marking another step towards satisfying customer needs and elevating the competitiveness of Thailand's plastic industry to the global level.

In 2020, approximately 71% of PE products and 42% of PS products were exported. The focus was on developing markets in countries in the ASEAN Economic Community (AEC) with economic growth, especially the CLMV countries, which were particularly interesting as they consumed about 2.0 million tons of PE and PS combined and were expected to show 6-7% economic growth in 2020-2025 according to an estimate of the International Monetary Fund (IMF). As these countries are developing countries, they experienced a hike in demand for daily life commodity goods as well as the need to expand and develop domestic infrastructure, which would help push the production capacity of construction products. In addition, GC served as a supporter and facilitator for Thai plastic business operators interested in investing in the AEC and helped matched Thai entrepreneurs with Myanmar, Cambodia, and Vietnamese counterparts to create opportunities for business partnerships, add value to Thai products, and give Thai entrepreneurs the opportunity to make joint investments in these countries. These initiatives also enhanced Thailand's competitiveness against its neighboring countries and the international market as well as gradually increased GC's exports of PE and PS products to Southeast Asian countries.

The prices of PE, PP, PET, PS, and by-products are based on market prices. Domestic prices are based on the announced prices in Thailand as well as CFR Northeast Asia and CFR Southeast Asia prices, which vary according to capacities and regional polymer needs. On the other hand, foreign prices are based on market prices of each specific region or country. As for PTA, both domestic and foreign selling prices are primarily based on CFR China prices.

GC has also built upon and add value to its PE products through the UK's Revolve Group Limited (RGL), a rotomolding compound producer with production bases in the UK, Poland, Australia, New Zealand, and Malaysia. RGL works closely with rotomoulders and end users to develop products to meet specific requirements and is able to promptly troubleshoot technical problems for customers. As such, it is strategically well-suited to enhance GC's capacity for expansion in four major target industries: construction, packaging, agriculture, and automotive, especially through proactive marketing for the construction industry, which has shown high growth in Asia.

PP compounds are considered an expansion business that creates value-added to GC Group's PP products for penetrating into the automotive, electrical appliance, and electronic industries.

GC has always been committed to environmental consciousness, sustainable development, and giving back to communities and society. Since 2018, it has been driving its business with the concept of circular economy and planned to become a model of resource efficiency and sustainable waste management. An example of successful ongoing projects is the Upcycling the Oceans, Thailand, in which GC has successfully added value to over 13 tons of waste by upcycling into clothes and fashion bags, which are then sold through Sarn Palung Social Enterprise Company Limited. It has also continued Mahidol University's Think Cycle Bank Project, which educates students on how circular waste management can change the world. In the project, students deposit correctly sorted waste into waste banks at school and transform waste into savings. GC has introduced this model, adapted to suit the local context, to 22 schools in Rayong and Chonburi



## EO-BASED PERFORMANCE BUSINESS UNIT

### NATURE OF PRODUCTS

To supplement value to current olefins products and satisfy rising demand from the industrial sector and general consumers, GC recognizes the need for high-value products which has not manufactured in Thailand yet. This is not only for import substitution, but also to raise Thailand's petrochemical competitiveness. GC has expanded businesses into ethylene oxide and other downstream products. Our key EO-based performance products and their applications are described as follows:

#### A) *ETHYLENE OXIDE (EO)/ ETHYLENE GLYCOL (EG)*

As a downstream product of ethylene, EO used as feedstock for EG and other downstream products. EG-based products consist of mono ethylene glycol (MEG), diethylene glycol (DEG), triethylene glycol (TEG), and polyethylene glycol (PEG). Among these products, MEG is the main feedstock combined with PTA for the production of PET bottles and polyester textile.

#### B) *ETHANOLAMINE (EA)*

Derived from EO, EA primarily comes in either the monoethanolamine (MEA), diethanolamine (DEA), and triethanolamine (TEA) form. EA products are used as ingredients for the production of shampoos, hair conditioners, fabric softeners, and cosmetic products, as well as in pharmaceutical and cement industries, among others.

All of these EO-based products are produced by GC Glycol Co., Ltd. (Glycol).

In 2020, the EO-Based Performance Business Unit commercially operates two plants located in WHA Eastern Industrial Estate, Rayong. The breakdown of production capacities appears in the table below:

Company	Product	Nameplate Capacity (thousand tons per year)
Glycol	Mono Ethylene Glycol (MEG)	423
	Ethanolamine (EA)	50

## FEEDSTOCK SOURCING

The primary feedstock of MEG production is ethylene, which Glycol obtains from GC through long-term purchase agreements. GC's olefin plants produce sufficient ethylene for MEG production.

## POLICY AND MARKETING

It is policy of the EO-Based Performance Business Unit to sell its products to domestic business owners at prices and under trade conditions that are competitive with other manufacturers, focusing on creating maximum added value from EO products, which consist of the following.

EG Products: As Thailand's first and only EG producer, Glycol uses its strengths and business advantages in marketing, such as its position as a domestic producer of high-purity products, faster response and delivery time compared to other producers, and the ability to deliver products continuously from its storage tanks.

EA Products: Glycol's policy is to maximize the domestic market share by focusing on direct sale to major clients and through distributors for retail customers. The remaining volume from domestic sale is exported internationally to countries that yield maximum benefits. Glycol also seeks new regional markets, such as in Asia and Australia. In 2020, Glycol produced approximately 22,000 tons of EA products in total. Of this, about 8,000 tons, or 36%, was sold domestically, while the remaining 14,000 tons, or 64%, was sold in international markets.

**IN 2020, GLYCOL PRODUCED APPROXIMATELY 22,000 TONS OF EA PRODUCTS IN TOTAL. OF THIS, ABOUT 8,000 TONS, OR 36%, WAS SOLD DOMESTICALLY, WHILE THE REMAINING 14,000 TONS, OR 64%, WAS EXPORTED.**



## GREEN CHEMICALS BUSINESS UNIT

### NATURE OF PRODUCTS

Green chemicals are products manufactured from natural feedstocks such as palm oil, palm kernel oil, vegetable oil, animal fat, corn, sugar made from sugarcane, and cassava. These products can be used in various downstream industries, such as personal care, pharmaceuticals, food, biochemicals, and bioplastics industries. Our green chemical products are divided into two key categories as follows:

#### A) VALUE ADDED OLEOCHEMICALS (VAO)

##### **METHYL ESTER**

Methyl ester is a basic oleochemical. Also known as B100, it can be blended into diesel to make biodiesel that meets EN14214 European standards for diesel engines. Methyl ester helps augment the efficiency of diesel, for both lubrication and combustion. It also increases an engine's lifespan and, more importantly, minimizes environmental impacts of conventional diesel.

##### **FATTY ALCOHOL**

Fatty alcohol is a basic oleochemicals used as a feedstock in the personal care industry. Also used as an ingredient or a component of many other products, including surfactants, plasticisers, solvents, aroma compounds for perfumes, detergents, foam stabilizers, lubricants, cosmetics, plastic intermediates, shampoos, as well as paints and coating products. They are also found in leatherwear and ink.

##### **FATTY ALCOHOL ETHOXYLATE**

Derived from fatty alcohol and EO, fatty alcohol ethoxylate is used as feedstock for personal care and home care products. In textiles, it is used as a scouring agent, which is part of the preparation process, and as a softener, which is the last step in fibre preparation.

##### **GLYCERIN**

Glycerin, a by-product of methyl ester and fatty alcohol production, is used in pharmaceuticals, food, and personal care industries.

##### **FATTY ACID**

Fatty acid is a basic oleochemical product used for personal care production, such as soap and cosmetics, also used as a feedstock in specialty oleochemicals downstream production.

##### **SPECIALTY OLEOCHEMICALS**

Specialty oleochemicals are made from basic oleochemicals in a downstream process. These specialty products are used in multiple industries, including cleaning products, personal care products, plastic additives, construction, and oil well drilling. Examples of specialty oleochemicals are ozone acid, bio-lubricants, green polymer additives, agro-green solutions, and eco-friendly polyols.

**METHYL ESTER ENHANCES  
THE EFFICIENCY OF DIESEL COMBUSTION,  
INCREASES AN ENGINE'S LIFESPAN AND  
MINIMIZES ENVIRONMENTAL IMPACTS.**



## B) BIOPLASTICS AND BIOCHEMICALS

Bioplastics and bio-based chemicals are derived from natural feedstock, including sugar from sugarcane, cassava, and corn. The feedstock, depend on the type, is turned into chemicals, such as lactic and succinic acids. These two chemicals are used in the production of bioplastic such as polylactic acid (PLA) and polyesters such as polybutylene succinate (PBS), respectively.

The Company produces these value-added oleochemicals (VAO) through Global Green Chemical Public Company Limited (GGC) group, Emery Oleochemicals (M) Sdn. Bhd. (EOM), and Emery Specialty Chemicals Sdn. Bhd. (ESC) (EOM and ESC together called Emery), a joint venture between PTTGC International Private Limited and Sime Darby Plantation (M) Sdn. Bhd., headquartered in Malaysia. Emery is a

world-class producer and distributor of oleochemicals. Emery has plants in key regions across the globe, including Malaysia, Germany, and the U.S., and a worldwide network of subsidiaries to support trading and marketing. Its distribution agents are also present in all geographical regions.

GC operates the bioplastics and biochemicals business through NatureWorks LLC and PTTMCC Biochem Co., Ltd. (PTTMCC). NatureWorks, a joint venture with Cargill Inc. of the U.S., is the proprietor of a polylactic acid (PLA) technology with a commercial capacity of 150,000 tons per year. PTTMCC is a joint venture with Mitsubishi Chemical Corporation (MCC), established for the production and distribution of polybutylene succinate (PBS), an environment-friendly product composable in ambient temperature. PTTMCC is the world's sole producer of BioPBS, owning a plant in Rayong with a capacity of 20,000 tons per year.

The capacities of commercial plants in Thailand and abroad under the Green Chemicals Business Unit are shown in the table below:

Company	Product	Nameplate Capacity (thousand tons per year)
GGC	Methyl Ester	500
	Glycerin	51
	Fatty Alcohol	100
	Fatty Alcohol Ethoxylate	124
Emery	Basic Oleochemicals in US	291
	Basic Oleochemicals in Asia	260
	Specialty Oleochemicals in US	48
	Specialty Oleochemicals in Asia	53
	Specialty Oleochemicals in EU	46
NatureWorks	Polylactic Acid (PLA)	150
PTTMCC	Polybutylene Succinate (PBS)	20

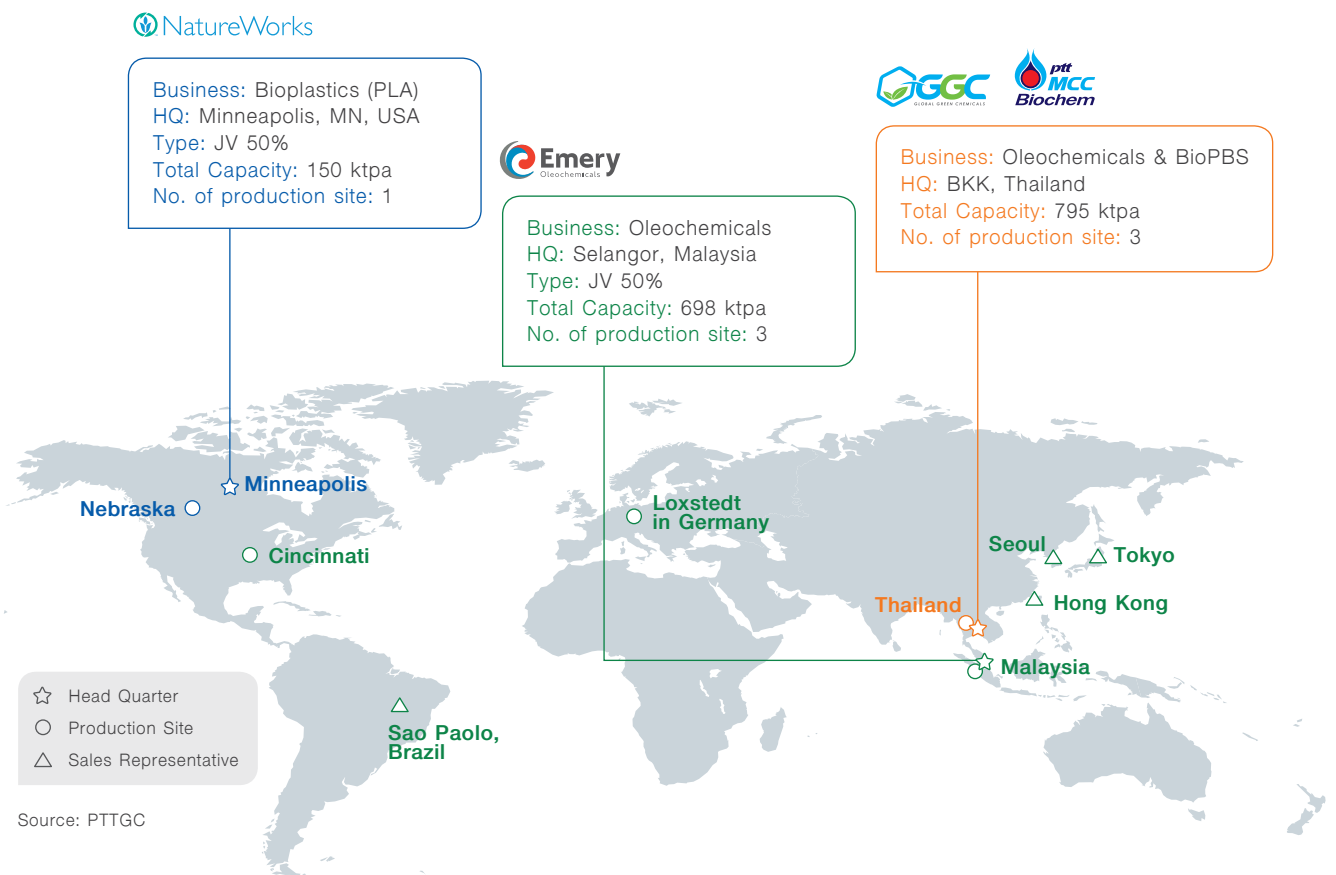
## FEEDSTOCK SOURCING

GGC's primary feedstocks for the production of methyl ester, fatty alcohol, and glycerin, are palm oil and palm kernel oil. These are generally sourced domestically to support Thailand's agriculture and related industries. However, as palm kernel oil prices can be high at times and the domestic volume might not be sufficient for GGC, it is imported from Malaysia and Indonesia occasionally. GGC's policy is to prioritize domestically produced feedstocks. PTTMCC's primary feedstocks for the production of BioPBS are Bio Succinic Acid (BSA) and 1,4 Butanediol (BDO), both of which must be imported as there is no domestic manufacturer yet.

## POLICY AND MARKETING

The demand for eco-friendly products has been rising due to greater awareness and campaigns on environmental conservation. In addition, it is expected that green technologies and chemicals will replace current ones in the sphere of health and personal

care products. As a result, many countries are actively seeking alternative energy, reducing the use of synthetic chemicals, and looking for substitutes that consist or made of natural ingredients, while customer demand across the world for commodity goods featuring or produced from renewable natural feedstock has shown an upward trend. GC recognizes the significance of value addition to agricultural products and the sustainable growth of the green chemical industry and strives to become a world-class green chemical operator that stands out in every market it operates in. As part of GC's policy to ensure the clarity of its green chemical business operations, Global Green Chemical Public Company Limited (GGC) has been assigned as GC Group's Green Flagship Company. In addition, GC has invested in green chemical businesses domestically via PTTMCC and internationally via Emery and NatureWorks, thus giving GC a comprehensive range of services and an ability to cater to market needs efficiently. GC's production bases and distributors can be found in almost every continent as shown in the chart below,



## VALUE ADDED OLEOCHEMICALS

GGC's main product is methyl ester, all which is sold to domestic high-speed diesel manufacturers and blenders, such as PTT Public Company Limited, Esso (Thailand) Public Company Limited, the Shell Company of Thailand Limited, IRPC Public Company Limited, and Thai Oil Public Company Limited. GGC directly sells methyl ester to customers in the form of purchase agreements with clearly specified terms. Glycerin is sold to manufacturers and distributors of health and personal care products both domestically and internationally via distributors and direct sale. Customers include multinational corporations (MNC) in the domestic medical supply and hygiene industry and large pharmaceutical companies in South Asia. Glycerin is also sold directly to producers of epichlorohydrin, of which glycerin is the primary feedstock.

Products manufactured by Emery, which has sales offices and production bases in various countries, are distributed by its sales offices both directly to customers and through dealerships.

## BIOPLASTICS

There has been a rise in global demand for compostable plastics as substitutes for single-use plastics. PLA can be used to produce food-contact products, such as cold drink cups, spoons, forks, drinking straws, coffee capsules, and tea bags. It is also used to manufacture products in the computer industry, such as 3D printing filaments. NatureWorks also co-develop products with major international manufacturers whose policy is to use bioplastics in their products to increase trade opportunities and consistently expand the sale of its bioplastic products to meet the rising global demand for bioplastics. PLA is sold by NatureWorks LLC and dealerships.

BioPBS markets have shown significant growth in every region of the world in line with the rise of environmental conservation and consumer awareness of plastic waste issues. PTTMCC sells this product both via distributors and directly to customers. Most products on the market feature BioPBS in the form that is blended with PLA and other bioplastics to achieve suitable properties for desired applications. These products include coffee capsules, bioplastic carry bags, and mulch films. BioPBS is also used to coat paper in food containers or cups for hot and cold drinks. The BioPBS market has expanded considerably as compostable plastics are also used as substitutes for regular plastics in single-use plastic products.

**BioPBS MARKETS HAVE SHOWN SIGNIFICANT GROWTH  
IN EVERY REGION OF THE WORLD, IN LINE WITH  
THE RISE OF ENVIRONMENTAL CONSERVATION  
AND CONSUMER AWARENESS OF PLASTIC WASTE ISSUES**



## PHENOL BUSINESS UNIT

### NATURE OF PRODUCTS

Phenol is used as feedstock for the production of downstream products, such as engineering plastics. These products are in high demand in high-growth industries, including automotive, electrical appliance and electronics, and construction. GC Group operates the phenol business through PTT Phenol Company Limited (PPCL) with key products listed below:

#### A) PHENOL

Phenol, an intermediate petrochemical derived from benzene and propylene, is a key feedstock for bisphenol A (BPA), phenolic resin, and various derivatives for the plastic, pharmaceuticals, and chemical industries.

#### B) ACETONE

Acetone, a by-product from phenol production, is a very common solvent in various industries, such as chemical, cosmetics, and medical industries. Acetone is also used as feedstock for bisphenol A and methyl methacrylate, used in plastics and coating industries, among others.

#### C) BISPHENOL A

Bisphenol A is an intermediate petrochemical and feedstock for polycarbonate (PC), an engineering plastic used in various industries, such as automotive industry, electrical appliance and electronics industry, and construction industry. BPA is also a key feedstock for epoxy resin, which is used in composite materials, coatings, and paint industry.

In 2020, PPCL operates three commercial plants located in WHA Eastern Industrial Estate, Rayong, as detailed in the following table:

Company	Product	Nameplate Capacity (thousand tons per year)
PPCL	Phenol	492
	Acetone	304
	Bisphenol A	158

### FEEDSTOCK SOURCING

The primary feedstocks for the production of phenol are benzene and propylene, which PPCL sources through long-term purchase agreements. GC Group's plants produce sufficient feedstock for phenol manufacturing.

### POLICY AND MARKETING

PPCL is a company in the Phenol Business Unit. Its policy is to sell products to manufacturers of derivative products and trade agents both in Thailand and overseas, focusing on boosting the sale of phenol, acetone, and bisphenol A in the domestic market while exporting the remaining volume to China, India,

and countries in East Asia and Southeast Asia. GC expects more intense competition in China, which is its main market. It is also GC's policy to support selling to other markets, such as Vietnam, Taiwan, and South Korea, taking into account suitable return on investment and risk management plans.

PPCL's Marketing Excellence centers on increasing and retaining domestic and international market shares as well as expanding into new markets, especially niche markets. To achieve this, PPCL employs its business strengths and advantages, including its high quality products, trade partners with marketing networks across the world, stable sources of feedstock, major domestic customers, and consistent customer relations activities.





## PERFORMANCE MATERIALS AND CHEMICALS BUSINESS UNIT

### NATURE OF PRODUCTS

Performance materials and chemicals are major components in burgeoning downstream industries, such as automotive, construction, and engineering plastic industries. Products under the business unit consist of:

**HEXAMETHYLENE DIISOCYANATE (HDI) AND HDI DERIVATIVES:** HDI is an intermediate petrochemical used in the production of PU coating, which plays a prominent role in construction and automotive industries. PU coating can also be applied to wood, metals, plastics, furniture, and vehicles to enhance their glossy and scratch-resistant properties. GC produces HDI and HDI derivatives through Vencorex Holding France (Vencorex) in France, the United States, and Thailand.

**ACRYLONITRILE (AN)** is an intermediate petrochemical widely used as primary feedstock for the production of the following acrylonitrile polymers. (1) Acrylonitrile-butadiene-styrene (ABS) is generally molded into exterior shells of electrical and electronics appliances due to its strength and resistance to scratch. (2) Acrylic fibers or other synthetic fibers are used as components in the production of garments, carpets, and other fibers. (3) Acrylamide is used in waste water treatment and petroleum drilling industries. (4) Nylon 6, 6 is widely used in the automotive industry to produce car parts due to its well-balanced hardness and toughness as well as good shape retention, which give the material superior resistance to impact, friction, heat, chemicals to regular plastics. (5) Nitrile Butadiene Latex (NBL) is synthetic rubber used in the manufacturing of medical gloves. (6) Carbon fiber compounds are lightweight high-strength material used in the aviation and sports industries and playing an increasingly significant role in the automotive industry.

**METHYL METHACRYLATE (MMA)** is an intermediate petrochemical and the main feedstock for polymethyl methacrylate (PMMA) and PMMA acrylic sheets, which are components of furniture, commercial light boxes,

smartphone screens, television screens, and computer screens. They are also an ingredient for emulsion and paint, commonly used in the construction industry as MMA helps improve adhesion and durability and prolong product life.

GC manufactures AN and MMA through PTT Asahi Chemical Company Limited, whose plant is located in WHA Eastern Industrial Estate, Rayong.

**PROPYLENE OXIDE (PO)** is an intermediate petrochemical used as feedstock primarily for polyols, followed by propylene glycol.

**POLYOLS** are downstream petrochemicals used as feedstock for the production of polyurethane (PU). They are sold both in the form of feedstock and as Premix Polyols – a mixture of various polyols and additives co-developed with customers to achieve desired properties, such as the softness of PU foam during molding.

**POLYURETHANE** is a product with various industrial applications and is mostly used to produce polyurethane foam (PU foam), which is found in automotive parts, bedding, furniture, shoes, buildings, electrical appliances, electronics, and packaging.

Currently, GC has entered PO production through GC Oxirane Co., Ltd. (GCO), which is 100% owned by GC. The Company also produces polyols/Premix Polyols through GC Polyols Co., Ltd. (GCP), a joint venture between GC, Sanyo Chemical Industries, and Toyota Tsusho Corporation. The central strategy is to become an integrated manufacturer of feedstock for polyurethane and cater to the rising demand in the market.

Vencorex operates production plants in industrial estates in France, the U.S., and Thailand. PTTAC, GCO, and GCP operate plants located in WHA Eastern Industrial Estate, Rayong. The nameplate capacities are detailed in the table below.

Company	Product	Nameplate Capacity (thousand tons per year)
Vencorex	HDI and HDI Derivatives	127
PTTAC	Acrylonitrile (AN)	200
	Methyl Methacrylate (MMA)	85
GCO	Propylene Oxide (PO)	200
GCP	Polyether Polyols (PPG)	130
	Polymer Polyols (POP)	30
	Premix Polyols (PM)	20

## FEEDSTOCK SOURCING

As an expert in production technology as well as research and development of new products, Vencorex strives to enhance its production capacity of HDI and HDI derivatives to accommodate market growth and meet customer needs.

The primary feedstock for HDI is hexamethylenediamine (HMDA), all of which is sourced from global leading producers through both short-term and long-term purchase agreements.

The AN plant uses propane, ammonia, and acetone as primary feedstocks. Propane is transported through the pipeline of the gas separation plants of PTT Public Company Limited. Ammonia is shipped from international producers to storage tanks and transported through a pipeline system to the company. Acetone is obtained from within GC Group.

The primary feedstocks for the MMA plant consists of acetone cyanohydrin (ACH), a by-product from the AN plant transferred via pipeline to the storage tanks of the plant, as well as methanol and sulfuric acid, which are shipped and transferred to storage tanks and subsequently transported to the company via pipeline or transport vehicles.

The PO plant uses propylene and cumene as the primary feedstocks. Propylene is transported via pipeline from GC, while cumene is obtained from within GC Group (PTT Phenol Company Limited) via pipeline.

The polyols plants relies on PO and EO as the main feedstocks. PO is transported via pipeline from GC Oxirane Company Limited, while EO is transported via pipeline from Glycol. Other feedstocks and chemicals are sourced both domestically and internationally.

## POLICY AND MARKETING

Vencorex is the world's second largest player in Aliphatic Isocyanates. Its policy is to sell HDI and HDI derivatives primarily to its key account customers and dealerships. Vencorex has three production plants in France, the U.S., and Thailand, and has customer bases in every region across the world. Its core marketing strategies is to leverage its strength of having production bases in three regions across the world to access customers and cater to their needs promptly. In addition, Vencorex places importance on customer relations and has a research and

**VENCOREX STRIVES TO INCREASE THE PRODUCTION CAPACITY OF HDI AND HDI DERIVATIVES, WHICH ARE ITS MAIN PRODUCTS, TO SUPPORT MARKET GROWTH.**

development unit that specializes in developing new products and applications. The company also strives to provide technical services that meet customer needs.

Historically, Vencorex's main customers have been in Europe, Middle East, Africa, and the U.S. However, after the commercial operation of its Thai plant, Vencorex has expanded to HDI and HDI derivative markets to Asia in response to the rapidly growing demand in Asia, especially in China, India, and South Korea.

PTTAC is the only AN producer in Southeast Asia and the world's first plant to use propane as feedstock instead of propylene. It is also a MMA producer and uses acetone cyanohydrin (ACH), which is a by-product of the AN plant, as feedstock.

AN and MMA are sold both domestically and internationally. PTTAC's main competitors for AN in the region are China, Taiwan, South Korea, and the

U.S. On the other hand, there are both domestic and international competitors for MMA; the latter include Singapore, South Korea, and Saudi Arabia.

GCO is a manufacturer of propylene oxide (PO) that uses PO production technology from Japan's Sumitomo Chemical. Targeting both domestic and international markets, GCO delivers the majority of its PO to GCP and exports a portion to China, India, South Korea, Taiwan, among others.

GCP is a polyols producer who has received production technology and formulation from Sanyo Chemical, a joint venture partner. It seeks to create customer bases both domestically and international through the sale of standard-grade products and high-grade R&D products. In the previous year, GCP began exporting its products to 14 countries worldwide, namely Thailand, India, Vietnam, Indonesia, Malaysia, China, Peru, Brazil, Bangladesh, Philippines, Turkey, Singapore, Sri Lanka, and Nepal.



## SERVICES AND OTHERS

In addition to the eight business units and performance centers, GC values businesses and activities that support business stability and comprehensiveness of the business chain. These various endeavors are listed below:

### 1) MARKETING AND SALES OF PRODUCTS AND PACKAGING MARKET DEVELOPMENT:

As GC's marketing arm, Solution Creation Co., Ltd. is in charge of selling GC products while seeking marketing opportunities in niche markets. It also works on product development to create added value and satisfy the diverse demand of various industries, including packaging, household chemicals, electronics, textile, food and dietary supplements. GC Marketing Solutions Co., Ltd. (GCM) is charged with marketing and sale of polymer-based products. Currently, GCM has authorized dealers both in Thailand and in all regions of the world. S.P. Petpack Inter Group Co., Ltd. and TBPI & Myanmar Star Company Limited (TPBIMS) support the development of plastic packaging markets to accommodate market growth in the Republic of the Union of Myanmar.

### 2) LOGISTICS, JETTY, UTILITIES, AND INFRASTRUCTURE

**2.1) LOGISTICS SERVICES:** GC Logistics Solutions Co., Ltd. (GCL) is charged with providing integrated logistics services for producers of polymers under GC Group.

**2.2) JETTY AND CHEMICAL TANK FARM:** Thai Tank Terminal Limited (TTT) provides terminals and liquid chemical storage for industrial customers in Map Ta Phut Industrial Estate.

**2.3) PIPELINE INFRASTRUCTURE SERVICES:** Eastern Fluid Transport Co., Ltd. (EFT) provides pipeline infrastructure services for petroleum and petrochemical operators in Map Ta Phut Industrial Estate and nearby areas.

**2.4) UTILITY BUSINESS:** GC makes investments in this business through its shareholding of Global Power Synergy Public Company Limited (GPSC). GPSC produces and supplies electricity, steam, and industrial water to companies under PTT Group and other industrial plants.

**2.5) LAND AND PROPERTY MANAGEMENT:** GC Estate Co., Ltd. (GCEC) manages land and property to support the Company's investment and/or strategic joint ventures.

**2.6) INFORMATION AND COMMUNICATION TECHNOLOGY SERVICES:** PTT Digital Solutions Co., Ltd. (PTT Digital) provides integrated ICT services, including the design, development, and maintenance of ICT systems as per corporate requirements.

### **3) TECHNICAL, ENGINEERING, PLANT MAINTENANCE, SAFETY, OCCUPATIONAL HEALTH, ENVIRONMENTAL, AND SECURITY BUSINESSES**

**3.1) PLANT MANAGEMENT AND ENGINEERING DESIGN SERVICES:** GC Maintenance and Engineering Co., Ltd. (GCME) provides multiple services, including plant maintenance, design and engineering, construction, pipework, procurement, material work, and production administration, to petroleum and petrochemical operators in Map Ta Phut Industrial Estate, as well as other industries both in Thailand and Asia. GC has also joined hands with companies under PTT Group to establish PTT Energy Solutions Co., Ltd. (PTTES) to provide technical engineering consultation services.

### **3.2) SAFETY, OCCUPATIONAL HEALTH, ENVIRONMENTAL, AND SECURITY SERVICES:**

NPC Safety and Environmental Service Co., Ltd. (NPC S&E), provides integrated services concerning safety, occupational health, and environmental training; design and installation of fire protection systems; and consultation on implementing international management systems standards for quality management and safety, occupational health, environment systems. NPC S&E Security Guard Co., Ltd. (NPCSG) provides security services as well as and safety consulting and training.

## **4) SOCIAL ENTERPRISES**

**4.1) MANAGEMENT CONSULTANCY:** Pracharath Rak Samakkee Rayong (Social Enterprise) Co., Ltd. (PRS RAYONG) offers consultation on business administration in various areas, such as agriculture and trading.

**4.2) SOCIAL ENTERPRISE:** Sarn Palang Social Enterprise Co., Ltd. (SPSE), produces, buys, and sells products and services that benefits communities, society, and the environment.

## **5) OTHERS**

**5.1) GC GROUP'S LIQUIDITY MANAGEMENT AND FINANCING VEHICLE SERVICES:** GC Treasury Center Co., Ltd. (GCTC) manages financial affairs and fund acquisition for companies under GC Group.

**5.2) CORPORATE VENTURE CAPITAL INVESTMENT (CVC):** GC Ventures Co., Ltd. (GCV) and GC Ventures America Corporation (GCVA) invest both directly and indirectly in the form of corporate venture capital.

**5.3) OUTSOURCING SERVICE:** Business Services Alliance Co., Ltd. (BSA) supplies manpower and contractors to PTT Group.



# Market and Competition

## ECONOMIC OVERVIEW

The global economy in 2020 was severely affected by COVID-19 pandemic, which forced many countries to impose lockdown and social distancing measures, effectively bringing virtually all economic activities, including manufacturing throughout value chains and investments, to a halt. This was further compounded by a plunge in income and purchasing power and eventually triggered a global economic crisis. As the pandemic began subsiding in the third quarter of 2020, many countries started easing its travel restrictions and issuing financial stimulus packages. As a result, economies around the world began showing signs of recovery in the second half of 2020, especially in China. However, the number of patients in certain countries continue to rise, such as the U.S., India, and Brazil, while Europe was ravaged by a second wave of outbreaks. Although vaccines that had been developed and proven effective (such as Pfizer-BioNTech and Moderna) were approved, but the vaccination to citizens was still limited in some countries, which dampened the recovery of the economic growth rate. It is estimated that the global economy in 2020 shrank by 4.4% against 2019 (IMF, October 2020).

While the global economy in 2021 is still shrouded in uncertainties as described above, there are positive factors on the situation include vaccine authorization, many companies' concentrated efforts on vaccine research and development, China's rapid economic recovery, and a series of financial stimulus packages in various countries. Consequently, the global economy is projected to recover and grow 5.2% compared to 2020 (IMF, October 2020).

The Thai economy in 2020 is expected to shrink by 6.6% in response to the government's stringent COVID-19 measures, which caused Thailand's vital sectors such as tourism and exports to contract severely. Nevertheless, after the easing of such measures, public investments and consumption in the

private sector began to rally, while exports exhibited gradual improvement. Tourism, however, showed signs of slow recovery as the limit on foreign tourist numbers was still in place, with further pressure from vulnerable household income and high household debt. The domestic growth for 2021 is projected at 3.2%. Exports are expected to rally on the back of the economic recovery of trading partner countries, while a new wave of outbreaks negatively affected domestic consumption. It is also projected that Thailand will see an economic rebound to the pre-pandemic level by the second half of 2022. (Bank of Thailand, December, 2020).

## MARKET OVERVIEW - PETROLEUM

The situation of the crude oil market in 2020 suffered pressure from COVID-19 measures, which adversely affected oil demand, especially for travels. In addition, in March 2020, OPEC and allies' fail to reach a production cut agreement led to a price war between Russia and OPEC countries, led by Saudi Arabia, which reduced selling prices and announced that it would increase production to reclaim market shares, effectively pressuring the U.S., which had higher costs, to lower production when the price dipped below the cost. This further reduced oil demand and plunge the crude oil price to the lowest level in 18 years in April 2020, with the Dubai crude oil spot price trading at US\$ 20.4 per barrel against the average US\$ 63.5 per barrel in 2019.

In response, OPEC and allies joined hands to cut production by 9.7 million barrels per day to reflect the dampened demand for crude between May and July 2020 and dialed back production by 7.7 million barrels per day from August to December 2020. As a result, the Dubai crude oil spot price began to rise and remain within the range of US\$ 40-43 per barrel in the third quarter. In the fourth quarter, with the coming of winter, there was a resurgence in COVID-19 in the U.S. and Europe, forcing European countries

to lockdown again. Furthermore, Libya began to increase its crude output again in October 2020 after an interruption in January 2020, causing oil prices to fall in late October 2020 after it had been stable at US\$ 40-43 per barrel from June to mid-October 2020. However, China still enjoyed healthy demand for crude oil due to its effective domestic COVID-19 control, which allowed its domestic economy to recover and enable China to import crude oil continuously. This was coupled with the positive progress in COVID-19 vaccine development during the last two months of the year, which buoyed up the crude oil price to US\$ 45-47 per barrel. The Dubai crude oil spot price in 2020 averaged US\$ 42.2 per barrel.

Petroleum prices and spreads in 2020 fell mainly as a result of the COVID-19 pandemic, which directly affected travel demand both by land and air, which is the primary demand for petroleum products. In addition, refineries were unable to cut production to meet the sliding demand in time, resulting in all-time high inventory, especially for gasoline, jet fuel, and diesel, all of which are main products of the petroleum business. All these factors contributed to the spread of each product as detailed below.

Gasoline (ULG 95) over Dubai crude oil spread in 2020 was US\$ 4.4 per barrel, a US\$ 4.5 per barrel decrease from 2019. This spread was pressured by changes in consumer behavior brought on by social distancing that affected demand for gasoline, including working from home, online teaching, and online food delivery services, all of which reduced car usage.

Jet/kerosene over Dubai crude oil spread in 2020 was US\$ 2.5 per barrel, falling by US\$ 11.2 per barrel compared to 2019. This spread was highly pressured by lockdown measures, which greatly reduced international air travels, but was positively influenced by La Niña, which plunged the temperature in the northern hemisphere lower than usual in the fourth quarter and boosted demand for kerosene for heating.

Diesel over Dubai crude oil spread in 2020 was US\$ 6.1 per barrel, a dip of US\$ 7.6 per barrel relative to 2019. This spread was affected by reduced car usage,

especially in Europe, which had the most diesel-engine cars in the world, as the COVID-19 pandemic could not yet be brought under control. Additionally, refineries across the world shifted from jet fuel to diesel, increasing diesel supply and inventories.

High-sulfur fuel oil over Dubai crude oil spread in 2020 was US\$ -3.0 per barrel, a US\$ 1.9 per barrel rise from 2019. This spread was pressured by the new regulations of International Marine Organization (IMO), which were enforced in January 2020 and required a reduction of sulfur level from 3.5% to 0.5%, which drove demand for high-sulfur fuel oil down. However, the spread was positively influenced by the production cut of simple refineries, producers of high-sulfur fuel oil, as production was no longer cost-effective due to COVID-19. In addition, most refineries had transitioned to the manufacturing of low-sulfur fuel oil, diminishing high-sulfur fuel oil supply.

Low-sulfur fuel oil over Dubai crude oil spread in 2020 was US\$ 11.2 per barrel, a decrease of US\$ 1.1 per barrel relative to 2019. The spread was adversely influenced by more production shift from high-sulfur to low-sulfur fuel oil among refineries. In addition, China introduced a policy to return taxes to refineries manufacturing low-sulfur fuel oil to ramp up production, enabling it to reduce imports from Singapore, the world's largest fuel oil trading hub.

## FORECAST FOR THE PETROLEUM MARKET IN 2021

According to the International Energy Agency (IEA) (based on data as of October 2020), global oil demand in 2021 is projected to be 97.2 million barrels per day, an increase of 5.5 million barrels per day from 2020 but a decrease from 100.1 million barrels per day in 2019, as the COVID-19 pandemic will continue to affect daily life until extensive vaccine roll-outs. Despite the rising oil demand, the crude inventory is still higher than the five-year average level and has adverse impacts on the price. The inventory is expected to return to the normal level between late 2021 and early 2022. OPEC and allies will still have large market shares and control over the market thanks

to low production costs, while a higher-cost producer like the U.S. will unlikely see growth, with the average production being in the range of 10-11 million barrels per day. Therefore, the Dubai crude oil spot price in 2021 is projected to be higher than that of 2020 but still lower than the pre-pandemic level.

The prices and spreads of petroleum products 2021 are expected to improve compared to 2020 as a result of economic recovery, the easing of lockdown measures, and rallying travel demand. However, there will be adversely affected by new large refineries in the Middle East that will begin commercial production in the first quarter, namely Saudi Arabia's Jazan Refinery, which has a capacity of 400,000 barrels per day, and Kuwait's Al-Zour Refinery, which has a capacity of 250,000 barrels per day, causing petroleum supply to trend upward.

## MARKET OVERVIEW – AROMATICS

### PARAXYLENE

The COVID-19 pandemic adversely affected the paraxylene market and dampened demand for paraxylene products, especially downstream products in the textile industry, which accounted for the largest portion. However, the market was positively influenced by rising demand for PET resin. This could be attributed to consumers' growing concern over hygiene, which prompted them to opt for single-use food and water packaging more and reuse used packaging less.

As for supply, the world's paraxylene capacity in 2020 was 64.5 million tons, an 8.1 million ton increase from 2019. This could be attributed primarily to China's policy to rely on domestic production and reduce imports, coupled with pressure from increased inventory as a result of failure to cut production in time to suit the dropping demand.

As a result of these factors, the paraxylene over naphtha spread in 2020 stood at US\$ 197 per ton, falling US\$ 180 per ton compared to 2019.

### BENZENE

The COVID-19 caused demand for benzene products to dip continuously. However, in the fourth quarter, the market was positively influenced by greater consumer concern over hygiene, which boosted demand for downstream products such as polystyrene (PS) and styrene monomer (SM) in food packaging as well as for phenol and acetone, used as solutions in hand sanitizers. In addition, financial stimulus packages in several countries also increased demand for benzene products among manufacturing industries seeking to accommodate the trend of working from home and greater use of personal cars instead of public transportation. These included industries that manufactured home appliances such as refrigerators, computer parts, and mobile phones, as well as construction and automotive industries. As a result, the benzene-naphtha spread trended upward in late 2020.

In terms of supply, the global benzene production capacity in 2020 was 69.5 million tons, which rose by 2.8 million tons from 2019. This could be attributed by increased production of paraxylene, which resulted in a high volume of benzene output, its by-product. As a result, the benzene-naphtha spread dipped to the lowest level at an average of US\$ 24 per ton in September 2020, prompting some higher-cost producers to halt or cut production during this all-time-low period. The healthy olefin market also boosted benzene output as it is produced from pyrolysis gasoline, a by-product of olefin production, thus pushing the benzene supply up to a high level.

As a result of these factors, the benzene over naphtha spread in 2020 stood at US\$ 106 per ton, falling US\$ 12 per ton compared to 2019.

### FORECAST FOR THE AROMATICS MARKET IN 2021

For the paraxylene market in 2021, demand is expected to improve from 2020 as the COVID-19 situation improves and the global economy starts to recover, coupled with increased capacity for the production of PTA derivatives in 2021. However, the

supply will be pressured by accumulated additional capacity from 2020, with a 2.1 million ton per year capacity added in 2021. Overall, the paraxylene market in 2021 shows signs of improving relative to 2020.

For the benzene market in 2021, benzene demand is expected to improve as the COVID-19 situation improves and the global economy starts to recover, coupled with added capacity for the production of downstream products from SM and phenol in 2021. While the supply will continue to be adversely influenced by the additional 2.1 million ton per year capacity, the overall benzene outlook is improved relative to 2020.

Overall, the aromatics market in 2021 will still be negatively affected by added capacity in 2021, despite a drop from 2020, while the improvement in the COVID-19 situation and global economic recovery will push aromatics demand and prices higher than those of 2020.

## MARKET OVERVIEW – OLEFINS

### ETHYLENE

The ethylene market in the first quarter of 2020 saw a drop in price due to the COVID-19 outbreak in China, which slowed down trading between regions. As the pandemic grew more widespread in the second quarter, the ethylene price fell significantly, causing plant turnarounds and capacity expansion in North Asia and Southeast Asia to be postponed from the second quarter to the third and fourth quarters.

In the second half of 2020, demand rallied as lockdown measures were eased and plant turnarounds reduced supply, coupled with a significant shrinkage in the U.S. supply exported to Asia due to a hurricane. As a result, the ethylene price rose. However in third and fourth quarter, manufacturers in Asia were able to increase new production capacity as planned, causing the ethylene price in Southeast Asia in 2020 to average at US\$ 713 per ton, a decrease of US\$ 110 per ton from 2019. The ethylene over naphtha spread was US\$ 333 per ton, growing from 2019 by US\$ 33 per ton. This was because the naphtha price declined at a greater rate.

### PROPYLENE

Under the same pressure as the ethylene market, the propylene market saw a significant drop in the propylene price in the first half of 2020 despite positive influence from the shutdowns of several olefins plants and FCC units of several refineries for emergency maintenance across Asia, such as in South Korea, Taiwan, and Malaysia.

In the third quarter, the propylene price increased primarily due to the turnarounds of various large plants in Southeast Asia, Japan, and South Korea, coupled with the fact that various FCC units in several Asian countries cut production as the gross refinery margin fell to the point that it was no longer cost-effective, resulting in a tight supply from refineries. In the fourth quarter, the propylene price rose steadily despite the capacity expansion of olefin plants and on-purpose propylene production units in North Asia and Southeast Asia. However, because some plants could not resume production after emergency maintenance and the demand from the automotive industry improved, the propylene price in Southeast Asia in 2020 averaged at US\$ 775 per ton, a decrease of US\$ 63 per ton compared to 2019. The propylene-naphtha spread grew by US\$ 81 per ton to an average of US\$ 396 per ton compared to 2019.

### FORECAST FOR THE OLEFIN MARKET IN 2021

Asia's ethylene production capacity is expected to grow 7.9 million tons per year in 2021, mostly attributable from China, which is seeking to keep pace with the growing domestic demand under a self-sufficiency policy, presenting significant pressure on the ethylene price. Nonetheless, as demand rallies in response to economic recovery and the demand for downstream products increases, the overall ethylene market appears to have a positive outlook.

Asia's propylene production capacity is expected to rise by 6.7 million tons per year in 2021, of which China accounts for 5.6 million tons per year. In addition, the capacity of FCC units in refineries will be higher than that of 2020 but remain lower than that of 2019. The demand is projected to grow only by 4 million tons

per year. As a result, the overall propylene market will likely remain at a similar level as in 2020.

The overall olefin price situation is expected to be positively influenced by greater demand in response to the global economy as well as plant turnarounds despite a steady increase in capacity. Therefore, overall olefin prices are projected to improve relative to 2020.

## MARKET OVERVIEW – POLYMERS

In 2020, the polyethylene (PE) market saw the production capacity rise by approximately 7.1 million tons, or 5.9%, from 119.8 million tons to 126.9 million tons, while demand fell by about 0.3 million tons per year, or 0.3%, from 104.6 million tons to 104.3 million tons. This was mainly due to the COVID-19 pandemic, which dampened global plastic demand. In addition, as oil is the primary feedstock of PE, the falling oil price caused the PE price to drop steadily and HDPE and LLDPE prices to fall under US\$ 800 per ton. In the third quarter, the economic situation began to improve, while the U.S. PE export to Asia fell as Hurricane Lora hit in August and dented its domestic supply. In the meantime, there was a rise in demand from plastic forming manufacturers in China seeking to accommodate the agricultural season, causing PE prices to rise. HDPE, LLDPE, and LDPE prices in Southeast Asia in 2020 were approximately US\$ 880, 867, and 1,010 per ton, respectively, dropping by US\$ 112, 85, and 10 per ton, respectively. The PE products over naphtha spread in 2020 were US\$ 500, 487, and 630 per ton, rising from US\$ 32, 59, and 134 per ton in 2019, respectively.

In 2020, the polypropylene (PP) market was similar to the PE market. The PP demand in Asia-Pacific grew at a slow rate than 2019, in line with the contracting regional economy, except in China and Vietnam, which successfully controlled COVID-19 outbreaks and were able to quickly resume economic activities. On the supply side, there was an additional production capacity of 3.8 million tons in China, resulting in price fluctuation and prompting some high-cost producers to cut or halt production temporarily. The price of PP film in Southeast Asia in 2020 stood at US\$ 992 per

ton, decreasing from 2019 by US\$ 109 per ton on average. The PP over naphtha spread in 2020 was US\$ 612 per ton, climbing by US\$ 34 per ton from 2019.

The purified terephthalic acid (PTA) market weakened relative to 2019. The regional demand in Asia dropped from 5-6% in 2019 to only 2-3% as a result of the COVID-19 pandemic, while the production capacity continued to be added, primarily from China, causing supply to grow by about 8 million tons or 13% compared to the previous year. Downstream manufacturers, such as producers of garments and clothing (polyester products), were cautious in procuring feedstock for production, thus pushing the average PTA price down to US\$ 469 per ton, a decrease of US\$ 268 per ton from 2019.

The polyethylene terephthalate (PET) market was volatile but less affected by the COVID-19 pandemic than other products as it was vital feedstock for everyday food and beverage packaging. It was also positively influenced by the growth of the online shopping and food delivery industry as well as hygiene products. Nonetheless, the demand failed to grow significantly due to a slowdown in other activities that would otherwise support PET demand, such as tourism and traveling. The global PET demand was 24.6 million tons, which was in the same range as the 24.8 million tons in 2019. On the supply side, the global production capacity increased by 1.1 million tons from 32.2 million tons to 33.3 million tons, primarily attributable from Chinese manufacturers. The PET price fell in line with the plummeting prices of its petrochemical feedstocks, namely PX, PTA, and MEG, averaging at US\$ 707 per ton, a decrease of US\$ 252 per ton. However, the PET over feedstock spread (P2F) stabilized at about US\$ 136 per ton in 2020, which was in the same range as the previous year.

The polystyrene (PS) market was fairly volatile. The global demand dropped by 0.2 million tons, or 2.5%, from 10.9 million tons in 2019 to 10.7 million tons. The decrease was mainly due to the COVID-19 pandemic, with electrical appliances and electronics suffering the most impact as customers slowed down orders. On the contrary, there was steady demand for packaging products. However, PS demand for the manufacturing



of electrical appliances showed a clear rebound from the third quarter onwards as a result of the Work from Home policy, causing the PS price to rise steadily. On the supply side, PS capacity dropped by 0.3 million tons, or 1.9%, from 15.2 million tons in 2019. The PS price in Southeast Asia in 2020 was approximately US\$ 1,106 per ton, a drop of about US\$ 135 per ton from 2019. The PS products over styrene monomers (SM) spread in 2020 stood at US\$ 342 per ton, increasing from that of 2019 by about US\$ 107 per ton.

## FORECAST FOR THE POLYMER MARKET IN 2021

The PE market is expected to be supported by an increase in demand of about 3.0 million tons, or 2.8%, from 106.3 million tons to 109.3 million tons as a result of active vaccine research and development, which also supported the global economic recovery. Nonetheless, the U.S.- China trade war will likely continue to exert pressure. On the supply side, an additional 7.9 million tons of capacity per year is expected from China and the Middle East after having been delayed in 2020. The U.S. supply will also start to return to the normal level after a slowdown due to a hurricane in late 2020. As a result of these factors, the PE is expected to improve relative to 2020.

The PP market is expected to suffer pressure from new additional capacity in China and Southeast Asia, while regional demand will likely stabilize. The spread between PP film and naphtha is projected to drop slightly compared to 2020.

The PTA market is expected to improve compared to the previous year as a result of economic recovery, which will help demand for polyester to rally. Nonetheless, the market will be pressured by a steady increase in production capacity from China. The PTA price is projected to improve compared to 2020.

The PET market is projected to recover compared to 2020. The global demand is expected to be 25.9 million tons, a 0.9 million tons or 4% increase from 2020. PET will still remain vital as everyday food and beverage packaging. The production capacity delayed from 2020 is set to increase the total capacity by 1.3

million tons to 34.6 million tons in 2021. The PET price is projected to rise compared to 2020.

The global PS market is expected to see slight recovery, with demand rising by 0.2 million tons to 10.9 million tons. The production capacity is likely to stabilize at 15.0 million tons. The PS price is expected to improve compared to the previous year on the back of the projected increase in demand. The SM price is also expected to rise according to changes in crude oil prices. The spread between PS and SM likely diminish slightly compared to 2020 as their prices do not jump significantly, partly due to the use of PS substitutes, such as ABS, which has higher production capacity in 2021. However, the average spread between PS and SM may remain higher than in the past (2016-2019).

## MARKET OVERVIEW – ETHYLENE OXIDE (EO)

In 2020, the demand for ethylene glycol products (MEG) was severely impacted by COVID-19 measures, which affected demand for commodity goods, including polyester products manufactured from MEG. In addition, MEG production units were consistently expanded, especially in China, which was a major market. As a result, the spot market price of MEG ASP China in 2020 was US\$ 467 per ton, declining by US\$ 107 per ton from 2019.

The ethanol amine (EA) market also saw a drop in demand and pressure from new production units in China. The spot market price of EA ASP China in 2020 was US\$ 884 per ton, declining by US\$ 118 per tons from 2019.

## FORECAST FOR THE EO MARKET IN 2021

The MEG market in 2021 is expected to see slight recovery, with MEG demand rising as a result of increased demand for polyester products, which rallied on the back of economy recovery. However, new production capacities that have been installed since 2020 may exert pressure on the market and must be closely observed. The MEG price (ASP) is thus expected to improve compared to 2020.

The EA market in 2021 is projected to perform better on the back of economic recovery, coupled with the absence of added production capacity in the near future. It is thus expected that the capacity of the existing production units will be able to meet the demand recovery and become a key factor that supports the price. Therefore, the EA price in 2021 is expected to improve from 2020.

## MARKET OVERVIEW – GREEN CHEMICALS

### VALUE ADDED OLEOCHEMICALS (VAO)

#### METHYL ESTER (ME)

The ME market performed better than 2019 as the domestic demand rose by 0.1 million tons, or 7%, to 1.6 million tons, primarily driven by the government's policy for the increase of biodiesel ratio in diesel (B10 policy). This was despite a drop in overall domestic diesel demand triggered by lockdown measures to control COVID-19 and flooding in Southern Thailand.

In 2020, the government introduced a policy to increase biodiesel blending percentage in the energy sector to help oil palm growers. The Ministry of Energy announced B10 diesel as Thailand's new primary diesel in place of B7 diesel as of January 1, 2020 and successfully brought the number of gas stations with B10 availability to 6,411. However, 65% of domestic diesel demand came from B7 (data as of September 30, 2020), while B10 accounted for only 30%, keeping overall ME demand at about 5 million liters per day, 29% lower than the government's projected 7 million liters per day.

In addition, the government required all ME producers to lower the level of monoglyceride in their product to under 0.4% in line with the B10 promotion policy, prompting many producers to cut their output in the first half of 2020 to adjust their production, causing the supply to tighten. However, the supply bounced back almost to the normal level in the second half of the year as producers were able to produce ME as per the government's requirements, causing the competition to intensify once again. It is projected that the average production capacity in 2020 rose to about 65%, consistent with the domestic ME price,

which rose on the back of the crude palm oil price. In 2020, the ME price increased Baht 9.4 per liter, or 42%, from the Baht 31.8 per liter of the previous year.

#### FATTY ALCOHOL (FA)

The global FA demand contracted relative to the previous year, mainly attributable to the lockdown measures in importing countries, including the U.S., Europe, China, and India, bringing trade to a standstill. While the COVID-19 pandemic appeared to improve in certain countries, the situation remained uncertain and must be closely observed.

The supply was relatively tight, especially for producers in Malaysia and Indonesia, both of which were affected by the pandemic. This was coupled by mild fluctuations in feedstock prices in the second half of 2020, which prompted many FA buyers to slow their large orders to reduce their inventory and instead wait to make a purchase when the harvest season came.

As a result of these factors, the FA price in 2020 rose US\$ 26 per ton, or 2%, from US\$ 1,250 per ton in 2019 to US\$ 1,276 per ton.

#### FATTY ALCOHOL ETHOXYLATE

In 2020, demand for fatty alcohol ethoxylate rose from the previous year due to the rise in demand for cleaning products and is expected to continue trending upward at the rate of 3-4% per year as demand for health, hygiene, personal care, and cleaning products is projected to grow. The production capacity of fatty alcohol ethoxylate appeared to stabilize as there was no added capacity. Overall, the fatty alcohol ethoxylate price swung within the range of US\$ 1,170-1,270 per ton, as a result of the volatility of the prices of fatty alcohol and ethylene oxide, its feedstocks.

The global basic oleochemicals market still saw intense competition as production outstripped demand. Therefore, Emery's strategy was to target niche markets and adjust its product portfolio, focusing on enhancing its capabilities to expand towards specialty oleochemicals and meet specific needs in niche markets.

## BIOPLASTICS

The demand for PLA products has risen in response to consumers' increased eco-consciousness and efforts to push policies that promote bioplastic consumption in various countries. Due to its outstanding properties, including being produced from natural feedstock and biodegradability under an appropriate condition, bioplastics have shown continuous growth both domestically and globally.

In 2020, the BioPBS market was affected in the short term by the COVID-19 pandemic and lockdown measures, which caused customers to suspend projects, thus reducing demand for BioPBS. However, PTTMCC was successful in its management and employed strategies to keep the prices of its BioPBS product consistent with higher production costs.

## FORECAST FOR THE GREEN CHEMICAL MARKET IN 2021

Demand for ME is expected to increase by 0.2 million tons to 1.9 million tons, or 14%, compared to 2020 as consumers are more familiar with B10. In addition, as the COVID-19 situation in Thailand is improving, the demand for diesel for traveling and transportation will grow accordingly. However, competition will likely remain intense as most producers will be able to resume production at full capacity. In addition, a new ME producer with a capacity of 150,000 tons per year is set to enter the market in 2021, which may cause surplus on the market. The ME price is likely to fall slightly compared to 2020.

Demand for FA is projected to improve as the COVID-19 situation improves and consumers grow are aware of personal hygiene. However, the overall supply of the industry is likely to rise from the previous year as well as most FA producers will be able to resume normal production. As a result, the FA price in 2021 is expected to dip slightly relative to 2020.

The overall fatty alcohol ethoxylate market is projected to grow by 3-4%, supported by the COVID-19 pandemic, which increases concerns about health

and hygiene as well as demand for personal care and cleaning products. However, there are still some concerning external factors, including possibilities of a global economic downturn and a fiercer price competition compared to 2020, while product costs will remain volatile. As the Company has strong overseas customer bases, it will do marketing to retain them and earn more market shares.

In 2021, the global bioplastic market is expected to grow steadily, supported by COVID-19 preventive measures and the consumption of green single-use plastics, both of which will bolster demand for PLA. Measures and campaigns promoting the use of bioplastics as substitutes for petroleum-based plastics will also be a contributing factor. Nevertheless, NatureWorks will maintain its leadership in the PLA market. The PBS market is expected to grow about 10%; most PBS is used in coffee capsules, packaging, and plastic coating for paper. In 2021, the COVID-19 situation is expected to show signs of improvement, positively affecting the global economy and BioPBS demand.

## MARKET OVERVIEW – PHENOL

In 2020, the phenol business performed better than in 2019 despite a decrease in demand brought on by the COVID-19 pandemic, especially the demand for caprolactam and nylon, and despite the weakening demand in the automotive industry. However, supply also shrank in the second and third quarters due to plant turnarounds and the production of a new plant in China getting delayed from mid-year to late 2020. As a result, the decrease in supply had more impact than the reduction in demand. However, the market grew more volatile in the fourth quarter as a new plant in China with a capacity of 720,000 tons per year started operating, depressing the price towards the end of the year. Overall, the phenol price in 2020 was US\$ 749 per ton, while the spread in 2020 was US\$ 448 per ton, an increase of US\$ 150 per ton from 2019.

In 2020, the acetone business performed significantly better than in 2019. This could be attributed to both the rising demand and the limited supply, especially

in the second and third quarters, similar to the phenol business. The demand was supported as acetone is used to produce isopropanol (IPA), a chemical used in the production of hand sanitizers. This led IPA plants in China to substantially increase its availability. In addition, during plant turnarounds, the IPA price climbed consistently, starting from May onwards. However, in the fourth quarter, the business started showing signs of weakening as a new plant in China started operating at the capacity of 443,520 tons per year. In 2020, the acetone price was US\$ 798 per ton, rising by US\$ 162 per ton compared to 2019.

The bisphenol A (BPA) business in 2020 showed signs of weakening in the first half of the year, consistent with the global economy and, in particular, a slowdown of the automotive industry. Nonetheless, late in the second quarter, the economic condition and the demand started to show good recovery, especially in China. This was further reinforced by China's support for wind turbine projects, which led to the demand for downstream products of epoxy resin to improve steadily. On the supply side, as plant operation was postponed from mid-year to late 2020 or to 2021, the supply tightened throughout the second half of the year, causing the price and spread to rise significantly, especially in the fourth quarter. Overall, the BPA price in 2020 was US\$ 1,389 per ton, while the spread was US\$ 532 per ton, an increase of US\$ 263 per ton from 2019.

## FORECAST FOR THE PHENOL MARKET IN 2021

In 2021, the phenol business is expected to weaken further from 2020 due to an additional 545,000 tons of supply per year derived from China's Zhejiang Petrochemical and Lihuayi and from the capacity expansion of Formosa Chemicals & Fibre Corporation (FCFC), all of which began operation in late 2020 (postponed from mid 2020). The demand is projected to grow 489,000 tons in 2021, or a 5.1% increase from 2020, as more cyclohexanone producers will be able to resume operation at full capacity after a temporary suspension in 2020 in response to COVID-19. The demand in the downstream market is likely to grow as the economy recovers. The spread is expected to shrink compared to 2020.

The acetone business in 2021 is projected to weaken slightly relative to 2020 as supply outstrips demand following a phenol plant expansion in China, which leads to a revised output of 335,720 tons per year. Demand for acetone is expected to improve by 319,353 tons or 4.9% as the economy recovers, coupled with China's great demand for imported acetone for its plants in downstream industries, including produced bisphenol A (BPA), methyl methacrylate (MMA), and isopropanol (IPA), which began operating in late 2020.

In 2021, the bisphenol A (BPA) business is expected to weaken from 2020 due to an additional 488,000 tons of output from Chinese companies, namely Zhejiang Petrochemical, Sinopec Sabic Tianjin, Hainan Huasheng, and Shenma. The demand is expected to grow by about 4.4%, improving with economic recovery, which is attributable to the financial stimulus packages issued by many countries as well as reduced impact of COVID-19. Export of BPA to China is likely to be affected by a new Chinese polycarbonate plant established to reduce imports. The spread is projected to shrink compared to 2020.

## MARKET OVERVIEW – PERFORMANCE MATERIALS AND CHEMICALS

Asia is the largest market for HDI and HDI derivatives. In Thailand, Vencorex is the first producer of HDI derivatives with a goal to support Vencorex global development and increase market shares in Asia.

In 2020, the aliphatic diisocyanate business, which includes HDI and HDI derivatives, was affected by the COVID-19 pandemic. As a result of a slowdown in the automotive and construction industries, the main markets of these products, the sales HDI and HDI derivatives slowed down accordingly. However, there appeared to be signs of gradual recovery, while the prices remained highly pressured.

In 2020, the acrylonitrile (AN) business saw a global demand of about 5.6 million tons, falling 7.8% from 2019, as a result of COVID-19. The demand is expected to rebound to the 2019 level by 2022. On the supply side, despite a combined capacity of 295,000 tons per year from China and South Korea,

the closure of a 280,000 tons per year plant in the UK helped cushioned the impact on the overall market. In 2020, the AN price averaged US\$ 1,171 per ton, dropping by US\$ 455 per ton from 2019.

In 2020, the methyl methacrylate (MMA) market saw a global demand of 3.2 million tons, a 11.8% decrease from 2019. Acrylic sheets and PMMA molding compounds used in the construction industry, as well as industrial goods and products for the automotive industry accounted for 64% of the total demand. On the supply side, China had an additional capacity of 340,000 tons per year. The MMA price in 2020 was US\$ 1,475 per ton, a drop of US\$ 343 per ton compared to 2019.

The propylene oxide (PO) business in 2020 saw a 1.5 million tons decrease in global demand relative to 2019 due to COVID-19. The demand is projected to rebound to the 2019 level by 2022. Nevertheless, in the second half of the year, the market started to perform better as the pandemic began to subside. In addition, China's effective COVID-19 measures helped the demand grow, leading to a rapid recovery of the market. Furthermore, many PO producers pushed back annual maintenance to late 2020 while some postponed the launch of their production to early 2021 instead, leading to a severe imbalance of PO products. However, in the fourth quarter, the PO price began to fall slightly as major manufacturers resumed normal operation and it was announced that the anti-dumping duty (ADD) investigation on mattresses exported to the U.S. would be pushed back to July 2021. The PO price in 2020 was US\$ 1,358 per ton, an US\$ 205 per ton increase from 2019.

The polyether polyols market in 2020 saw a global demand of about 8 million tons, a decrease of approximately 7% from 2019. On the supply side, the capacity grew by 280,000 tons per year due to China's Wanhua Chemical Group, which began commercial operation in the fourth quarter of 2020. The availability of the producers stood at about 59%. Nonetheless, the fourth quarter of 2020 saw the recovery of the target industries, including the automotive, bedding and furniture, electrical appliances and electronics,

and packaging industries. This, coupled with product scarcity and low inventory among target customers, bolstered the demand for polyether polyols. The polyether polyols price in 2020 was US\$ 1,669 per ton, an increase of US\$ 195 per ton compared to 2019.

## FORECAST FOR THE PERFORMANCE MATERIALS AND CHEMICALS MARKET IN 2021

The COVID-19 situation is expected to improve in 2021, thus positively influencing the global economy and helping the demand for HDI and HDI derivatives to recover. However, the recovery rate will depend on the recovery of the downstream industries in the automotive and construction categories and the supply and demand situation.

The prices of AN and MMA products in 2021 are projected to recover steadily due to rising demand and adjustments to the new normal, including the trend of Work from Home, which supports the demand for household electrical appliances, as well as awareness hygiene consciousness, which bolsters the demand for medical gloves and other hygiene products. This also includes downstream products manufactured with ABS resin, which will see a 97% increase in capacity in the second half of the year. The MMA demand in China is likely to rise as a result of demand for protective barriers and transparent ABS, which features MMA as an ingredient. On the supply side, there will likely be a limited number of new AN plants. Only China's Shandong Keluer, which has a capacity of 130,000 tons per year, is expected to began operation in 2021. Its capacity will still be lower than the expected increase in demand of approximately 400,000 tons. Two MMA plants projected to commence operation in 2021 were Zibo Qixiang Petrochemical and CNPC in China, which have a capacity of 100,000 and 50,000 tons respectively. The added capacity combined will likely be lower than the projected increase in demand of 300,000 tons. Therefore, the average prices of AN and MMA in 2021 are expected to increase from those of 2020.

The global demand for PO product in 2021 is expected to recover as the COVID-19 pandemic subsides



and the U.S.-China trade war grows less intense. Nevertheless, the price is expected to fall as new plants that pushed back production in 2020 will begin commercial operation, adding 900,000 tons of output, with 700,000 tons from China and the other 200,000 tons from Hungary. The PO over propylene spread is thus projected to widen compared to 2020.

The global demand for polyether polyols in 2021 is expected to recover steadily due to adjustments to the new normal, which bolstered the demand for bedding, furniture, electrical appliances, and electronic in late 2020, coupled with an increase in purchase of personal vehicles. The demand for polyether polyols is projected to grow by about 700,000 tons. However, three producers are expected to began commercial operations, with a combined additional capacity of approximately 760,000 tons, exerting further pressure on the product price. The three plants are namely GC Polyols, which has a capacity of 180,000 tons per year; CNOOC and Shell Petrochemicals (CSPC) (China), which has a capacity of 380,000 tons per year, and MOL Petrolkemia (Hungary), which has a capacity of 200,000 tons per year. Therefore, the average polyether polyols price in 2021 is projected to increase compared to that of 2020.



# Safety, Occupational Health, and Environmental Management

With its operations abiding by the quality, security, occupational health, environment, and business continuity policy (QSHEB policy) in accordance with international standards and based on good corporate governance principles and strict adherence to applicable standards, regulations and laws on safety, occupational health and environment, GC Group has won praise and honors. This is a testimony to our commitment to business practices that strive for excellence.

## **QUALITY, SECURITY, SAFETY, OCCUPATIONAL HEALTH, ENVIRONMENT, AND BUSINESS CONTINUITY POLICY**

PTT Global Chemical Public Company Limited aspires to be the Leading International Chemical Company that harnesses innovation and environmentally-friendly technology in striving towards becoming the role model organization that develops and sustainably grows with determined responsibility to the economy, society, and environment in which we are present. GC is committed to continually enhancing our effectiveness in the management of Quality, Security, Safety, Occupational Health, the Environment, and Business Continuity, by adhering to the following principles:

1. Observe and adhere to legal requirements in Quality, Security, Safety, Occupational Health, the Environment, and Business Continuity, as well as observing standards, rules, regulations, and other related international requirements.
2. Manage Quality throughout the entire organization by employing Quality, Knowledge, and Productivity Management tools, to satisfy our customers' requirements while advancing innovations that are environmentally-friendly.
3. Manage risks to prevent hazards, work-related illnesses, loss from accidents, injuries, property damages, and promoting a B-CAREs Safety Culture, as well as Process Safety Management (PSM), to assure and care for the Safety of all.
4. Exercise awareness and alertness for security threats and setting up emergency management guidelines to protect the lives of staff and company assets, information, and business continuity.
5. Exercise due care in occupational health and work-place environment and promoting a good health and work-life balance.
6. Assess and prevent detriment to the environment and ecosystem, preserving biodiversity via an integrated environment management system encompassing energy, air, water, and waste management, as well as efficient and sustainable resources utilization in accordance with Circular Economy principles, to optimize resources utilization throughout the supply chain, maintain efficiency in reduction of greenhouse gasses, and adaptability to climate change, with focus on fortifying an environmental culture, by communicating to and encouraging all employees and stakeholders to be conscientious of and contribute to GC's environmental culture.



**CEO TOWNHALL  
ZERO ACCIDENT ACHIEVEMENT**

Executives and employees at all levels must be accountable for achieving objectives and goals of GC, as well as being a role model in the development and perpetuation of the Quality, Security, Safety, Occupational Health, Environmental, and Business Continuity Management System, provide sufficient resources to enable all staff to be able to take part in and contribute to the adoption of policies and putting them into action as well as communicating these policies to all related parties to achieve internal and intra-organizational collaboration, for the sustainability of the organization henceforth.

The summary of GC's occupational health and environmental safety management in 2020 is as follows:

## 1. SAFETY MANAGEMENT

### 1.1) PERSONAL SAFETY

GC considers the safety and occupational health management one of the most vital issues in its business operations as improper safety management could result in production disruptions and impact the operation of stakeholders throughout the supply chain. To this end, GC has developed safety structure and best practices in line with GC Management System (GCMS), the Process Safety Management (PSM) Standard, and the ISO 45001 safety standard. The Company also fosters a safety culture among internal and external employees, covering all activities of employees, contractors, and suppliers, through B-CAREs culture and the Contractor Safety Coaching Program, with the goal of elevating GC's safety management and achieving the ultimate goal of becoming a zero-accident organization. Safety projects carried out in 2020 are as follows:

- **Safety Culture Promotion Program (B-CAREs strengthen)**

The Company promoted various safety activities under B-CAREs to develop skills and raise awareness among employees and contractors about the safety culture. The Management also demonstrated their commitment by paying a visit to production areas to foster a sense of safety responsibility through the Management Safety, Energy, and Reliability Walk activity, which

played a key role in creating a sustainable safety culture. This activity was organized every Thursday and circulated to all areas of the GC Group, demonstrating the Felt Leadership of the Management to employees and contractors.

- **Top Personal Risk Analysis and Identification**

GC applied the Loss Causation Model to analyze causes of accidents and losses among employees and contractors. The Company also sought to foster three components of personal operational discipline, namely knowledge of proper and safe working methods, awareness of factors contributing to accidents, and commitment to complying with operational rules and regulations, through projects such as Field Risk Assessment, Line Walk (Safety Walk), Understand Risk, and Stop Work Authority. The assessment results were used to establish robust and sustainable safety control measures.

- **Hand Injury Protective Tools Project**

The safety risk assessment results as well as accident and loss statistics revealed that hand and finger injuries were the most common injuries. To this end, GC started the Hand Injuries Awareness Program in 2019 to raise awareness of such accidents among employees and collaborate with contractors to develop suitable tools to reduce such injuries. In 2020, GC applied the principle of engineering control to develop equipment with greater hand-related injury prevention efficiency, such as wrenches with straps and slugging wrenches with spring-loaded handles, as well as compiled handbooks for workers on working methods and the selection of suitable equipment for each kind of work.

In addition, GC included the prevention of hand and finger-related accident as one of the criteria in supplier and contractor assessment and required suppliers and contractors to use risk-reducing equipment approved by the Company in their operations.

By carrying out the project continuously, the hand-related accident and injury rate in GC Group in 2020 reduced by 88% compared to 2019.

- **Driving Safety Project**

GC has elevated the driving safety standard for its employees, suppliers, and contractors by initiating the Driving Safety Project to reduce road accidents involving the use of GC's vehicles. Based on the framework of the BS39001:2012 industrial standards, GC established safety practices and guidelines, which included the following measures and requirements for GC's drivers:

- Verification of basic qualifications, such as driver's licenses, training, and experience
- Health check-up and readiness assessment
- Annual training
- Vehicle safety feature assessment
- Developing vehicle maintenance requirements
- Developing emergency procedures and requirements for reporting accidents in an emergency

As a result of this project, GC reported a 70% reduction in motor accidents.

Besides internal safety programs, GC values the safety of its employees and their families outside the operating areas and has thus begun projects to promote a safety culture outside of work to ensure employee safety both on- and off-site.

- **GC off the Job Safety**

In 2020, GC elevated its off-the-job road safety standards for its employees to reduce the loss of life or serious motor accidents among its employees and their families to zero. To this end, GC established driving safety measures and policies in line with the international ISO 39001 standard and requested through weekly newsletters that its employees wear helmets and safety belts, drive below speed limits, and refrain from using communication devices while driving. GC also compiled statistics to assess compliance with measures for drivers and passengers, such as wearing safety belts and helmets and respecting speed limits. The assessment results were reported to supervisors of each line of command, so that they could oversee and control compliance.

- **GC Group SEEK Day 2020 (Safety, Environmental, Energy and Knowledge Management Day): SEEK Day Plus**

The activity was held to raise safety, occupational health, and environmental awareness under GC's Process Safety Management (PSM) and B-CAREs. The President and CEO presented awards to employees with exemplary safety conduct and environmental responsibility. The event also featured exhibits from different business units to share knowledge as well as foster pride among employees in GC's successful safety, occupational health, and environmental performance.

In addition, GC Group's plants won the Outstanding Safety, Occupational Health and Work Environment Award: Gold Level for the 22<sup>nd</sup> consecutive year (1998-2020), testifying to GC's national outstanding safety performance.

Thanks to the extensive safety, occupational health, and environmental management, GC's 2020 safety performance was ranked in the first quartile internationally with the Total Recordable Injury Rate (TRIR) of 0.08 person per 200,000 working hours. In addition, GC also adjusted its operation management, stressed the importance of adherence to safety principles among employees and contractors through these projects, and encouraged its employees and contractors to participate in safety projects at all levels, with the ultimate goal of becoming a zero-accident organization.

## 1.2) PROCESS SAFETY

GC has been working with its consultant DuPont to elevate the Process Safety Management (PSM) standard towards world-class PSM and achieve high plant reliability. GC places emphasis on the identification of threats and risks in every step of the process across all activities in the operation of employees and contractors and, to this end, has developed and expanded various safety projects. Key projects in 2020 were as follows:

- **Field Risk Assessment (FRA)**

The Company has collaborated with DuPont experts to create an FRA project. This project was implemented to enhance the knowledge and capability of operation employees to increase their ability to detect and recognize risks and potential impacts of deviations from the standards or



- 1.
- 2.

1. FIELD RISK ASSESSMENT
2. HAND INJURY PROTECTIVE TOOL PROJECT



specified work procedures as well as to increase the Barrier of Protection and reduce accident risks in the production process, focusing on three areas: personnel, facilities, and technology. The goal of the FRA project was to reduce process accidents and workplace injuries resulting from process safety events. The Company collected all reported issues to create guidelines for improving safety standards and the safety in engineering design.

- **Operational Discipline**

GC focuses on the employee mindset and has applied its process safety management to the fostering of operational discipline in order to develop strengths and positive qualities in GC's Executives and employees at all levels, covering four major areas: Leadership, Process, Standard, and Culture:

- 1) **Leadership**

Developing leaders who are inspirational and set a good example of following safe work practices for employees across the organization.

- 2) **Process**

Using innovations and developing experts (SMEs) on proactive accident management and prevention to enable employees to analyze dangers or irregularity in the process as well as investigate the true cause of the incident to as to prevent process safety incidents and establish effective preventive measures.

- 3) **Standard**

Integrating the safety culture and safety systems into one by fostering operational discipline.

- 4) **Culture**

Strengthening the Process Safety Management (PSM) System and sharing knowledge to employees, suppliers, and contractors to enable them to monitor and oversee safety practices within the organization by themselves.

As a result of its commitment to the consistent development and elevation of its process safety, GC had excellent process safety performance.

### 1.3) FIREFIGHTING AND EMERGENCY CRISIS

- **Emergency Mutual Aid Group: EMAG**

GC is a founding member of the Emergency Mutual Aid Group (EMAG), established as a center for industries in Map Ta Phut municipality, to cooperate and support others in emergencies. GC actively participated in drafting an Emergency Plan for Rayong and an Emergency Action Plan for Map Ta Phut Industrial Estate Group. In collaboration with a group of industrial plants in Map Ta Phut, GC conducted emergency drills at the provincial level and carried out evacuation drills in nearby communities. In addition, the Company designated employees with expertise in emergency response and mitigation to support the Governor of Rayong, Rayong Province Disaster Prevention and Mitigation Office, Map Ta Phut Municipality, and a group of industrial plants in Map Ta Phut to help support the community in developing their emergency plans and conducting drills in case an accident arises in a plant and affects the community.

- **Security Drills for International Ships and Ports (NASMAX)**

GC organized drills for international ship and port security plans (NASMAX) in collaboration with government agencies, local administrative organizations, and ships and ports, as well as identified maritime threats and established measures for preventing potential risks to ships or ports so as to assess threats and continuously improve the security measures of GC/ports to achieve maximum efficiency, in line with the International Ship and Port Facility Security Code (ISPS Code).



- **Business Continuity Management System (BCM)**

The Company implemented the Business Continuity Management System (BCM) to ensure its readiness and ability to coordinate, respond to situations, and recover effectively after the incident so that business can continue operating smoothly. GC established a structure to define responsible parties in various fields in a form of the Business Continuity Plan (BCP), to be used as a business recovery standard for all GC Group's plants.

- **Proactive Fire Fighting Reliability Audit**

GC conducted a proactive inspection of firefighting equipment to improve its readiness for use to meet standards as well as put in place a contingency plan for critical equipment or systems. GC also established guidelines for inspecting and testing the firefighting system, along with appropriate handbooks that had been revised, categorized, and made ready for use.

- **Integration of Technology into Safety Management**

GC integrated technology and innovation into its safety management to improve the safety systems and enable a prompt risk analysis as well as quick, accurate monitoring, thus reducing the risk of production accident and workplace injuries.

## 2. OCCUPATIONAL HEALTH MANAGEMENT

GC considers employee health a top priority and strives to consistently develop its practices towards international standards. To this end, GC has adopted IPIECA-IOGP's Health Performance Index (HPI), an occupational health management standard assessment system, which is in line with the United Nations's Sustainable Development Goal No. 3: Good Health and Well-being. In addition, GC has developed its HPI system in accordance with IPIECA-IOGP's standards for both internal and external management and established an assessment team through an internal cross audit and an external audit by MASCI.

- **Promoting Employee Health and Wellbeing during the COVID-19 Pandemic**

GC has appointed the Coronavirus Disease 2019 (COVID-19) Control and Prevention Committee to analyze and closely monitor the situation as well as

formulate preventive policies and measures across GC Group's operations to reduce the risk of infection among its employees, contractors, and visitors.

GC has also introduced technology to prevent, monitor, and control risks of infection among its employees, contractors, and visitors. Through the GC COVID-19 Reporting System and risk report, GC can track each individual employee, categorize their risk level, and provide guidelines of conduct for that specific level, thus enabling the Company to promptly take care of them and prevent transmission.

- **Fitness For Work Assessment**

GC assessed the health readiness of employees in high-risk jobs, such as those working in confined spaces or high places, fit teams, drivers, and food workers in canteens, according to a health checkup list and criteria for each specific job position. Any employee found to have an irregular result was required to enforcement of treatment process and re-confirm fitness for work by doctor certificated. These measures ensured that employees were given better care and that all working employees were in good health.

In addition to this program, GC also introduced a digital technology system to protect the health of its employees amid the COVID-19 pandemic and used proactive safety approaches to ensure employee health and wellbeing. Related projects include the Ergonomics Project and the Stress Management Project.

- **Ergonomics Project**

GC cares for the health of its employees, especially those working from home or use computers at work for over 8 hours a day and are thus at risk of ergonomic issues. To this end, GC administered an online self-assessment for employees to rate their own risks as well as established an ergonomic standard for office equipment and allowed employees to borrow office equipment to use at home. GC also developed PR materials, such as video clips and newsletters, to raise awareness of proper ergonomics while working.

- **Stress Management Project**

In addition to projects focusing on physical health, GC also places importance on the mental health of its employees. To this end, it organized the Work-Life Balance Project and the GC Virtual Recreation & Challenge Club (VRCC) activity to foster relations among employees via Facebook Live. In addition, GC also launched a mental health hot line for employees and their families, through which they could consult experts on work and personal matters to cope with stress during the period of social distancing amid the COVID-19 pandemic.

Furthermore, GC put in place plans to monitor the health of high-risk employees and started the Teledoctor and GC Clinic Projects, expected to be completed in 2021, to provide consultation on health and ergonomics for employees.

GC has also developed software to enhance the efficiency of its occupational health management as follows.

- **Health Risk Assessment Software:** The software was created to assess health risks and review work-related illness prevention measures, especially for process operators. In addition, the assessment results could be used to proactively revise employees' health checkup programs and industrial hygiene measures for work areas. The data obtained could also be used to ensure a safer work environment.
- **E-Health Book:** This technology collects employees' health checkup results and make them electronically available to employees at

all times. The data could also be analyzed to inform the development of future health promotion projects that are suitable for employees.

- **Safety Data Sheet (SDS):** SDS is system where employees can quickly and conveniently search and access chemical safety information. It is also now accessible via mobile application.
- **Medical Clinic Service:** The system collects employees' medical history at a medical facility of the Company. The data obtained through this system could be analyzed to inform future healthcare planning.

GC also regularly organizes health promotional activities for employees and contractors to keep them healthy and enhance their efficiency at work. This is part of organizational development for sustainable business excellence. These health promotional activities include the following:

- **Plogging Project**

This project encourages employees to exercise by running and collecting trash on the beach and in communities. It enables employees and communities to develop good relations with each other.

- **Drive Thru Flu Vaccine Project**

This project is carried out annually to protect employees during the flu season. However, due to the COVID-19 pandemic, GC administered vaccines with a drive-thru vaccination service for the sake of convenience in this year. The service was free of charge and offered to all employees, direct contractors, and even employees' family members, who were all very satisfied with the service. The initiative demonstrates GC's care for its employees and their families.

- |    |    |    |
|----|----|----|
| 1. | 2. | 3. |
|----|----|----|
1. PLOGGING
  2. DRIVE THRU FLU VACCINE
  3. DRIVE THRU COVID-19 (REAL-TIME RT-PCR)



- **Drive Thru COVID-19 (Real Time RT-PCR) Project**

In response to the COVID-19 pandemic, GC carried out proactive measures to protect the health of its employees, conducted active case finding, and allocated a budget to offer COVID-19 tests to employees and direct contractors considered to be at risk as well as all employees who were critical to the production process. The testing was carried out as a drivethru service to ensure speed, reduce transmission risks, and offer convenience to employees.

### 3. ENVIRONMENTAL MANAGEMENT

GC strives to become a leader in the international chemical business that integrates green innovation and technology into its operations for sustainable development without impact on the environment, communities, and society throughout the value chain. GC also aims to become a leader in the management and development of green product design and operates its business in compliance with national and international environmental standards and requirements as well as the National Economic and Social Development Plan No.12 (2017-2021), the 20-year National Strategic Plan (2017-2036), and the Sustainable Development Goals (SDGs) set by the United Nations (UN) in the following ways.

#### 3.1) STRICT COMPLIANCE WITH ENVIRONMENTAL STANDARDS AND REQUIREMENTS

GC values the prevention of environmental impacts. To this end, it thus puts in place control and protection measures from the design stage before a project begins and carries out a comprehensive environmental impact study covering different aspects of the project to produce a detailed Environmental Impact Assessment report (EIA). GC also strictly complies with measures to prevent and reduce impacts as well as regularly reports the results of the implementation to regulatory agencies. Furthermore, the Company has adopted the ISO 14001: 2015 Environmental Management System as a baseline standard for its operations as well as applied several other international standards, guidelines, and best practices, such as the Guidance on Chemical Risk Assessment of the International Council of Chemicals Association (ICCA).

#### 3.2) PROACTIVE ENVIRONMENTAL MANAGEMENT (PEM) AND DEVELOPMENT OF KEY PERFORMANCE INDICATORS FOR SUSTAINABILITY

Since 2008, GC has systematically adopted the philosophy of resource management alongside sustainable business operations known as Eco-efficiency from the Manual of the United Nations Conference on Trade and Development (UNCTAD) as an indicator of its environmental performance. The intention is to improve resource efficiency and reduce environmental impacts caused by its activities and production processes in compliance with the BS 8001: 2017 framework of circular economy practices. In tandem, GC has also developed an Environmental Performance Database under the framework of Global Reporting Initiative (GRI) Standards, which is in line with UN SDG 12: Responsible Consumption and Production. GC is Thailand's first petrochemical and refinery organization to continuously conduct greenhouse gas (GHG) emissions accounting and report GHG production and reduction across all plants of its subsidiaries in accordance with the ISO 14064-1: 2006 standard.

In addition, GC has developed proactive environmental management plans in both plants and its surrounding areas by applying the circular economy concept as a basis for driving resource efficiency in the organization to keep the environmental quality above the standard and reduce impacts on the environment and communities. Examples of its activities in this regard are as follow:

- **Resource and Waste Management**

GC strives to manage resources and waste according to the concept of circular economy, which places emphasis on maximizing resource efficiency. This initiative begins with the product development stage, in which GC minimizes waste by exchanging leftover products, feedstock, and fuels from production between plants to create added value. GC also raises awareness among all concerned parties, both internal and external, by applying the concept of circular economy and expanding towards a green culture and green resource and waste management, employing the 5Rs to reduce waste and maximize resource efficiency across the value chain, and ultimately

achieve the goal of zero industrial waste to landfill. These initiatives have been carried out since 2015 and are still ongoing. Moreover, GC has continuously implemented the Green Turnaround Management Project, in which measures have been established to prevent and reduce environmental impacts resulting from the maintenance of machinery and equipment. As part of the project, a system has been put in place to manage waste both in the process areas and in administrative areas. For example, GC began treating wastewater generating from the cleaning of equipment and machinery during a turnaround in Olefin 2 Plant. This initiative successfully reduced the amount of water destined for incineration by as much as 4,935 cubic meters and save over Baht 9.1 million in waste disposal expenses.

- **Air Quality Control**

GC has carried out projects to control air pollution both process areas and fence line. It has also stopped using ozone-depleting substances and applied air pollution reduction innovation and technology through collaborations with the public sector and petrochemical operators to maximize efficiency.

#### Control and Reduction of Volatile Organic Compounds (VOCs)

GC controls and reduces Volatile Organic Compounds (VOCs) at the source, beginning with the annual inventory of VOC emission. In case TVOCs exceed GC's internal control limit, which is more stringent than the governmental limit, the Company immediately repairs equipment to reduce potential impacts and implements a maintenance program of equipment to minimize VOCs released to the atmosphere. GC has also installed a Vapor Recovery Unit (VRU) and a Vapor Return Line to transport the vapors of hydrocarbons which might potentially be released into the atmosphere, and bring them back into the storage tank for proper use or management. To further control and reduce VOCs, GC and five petrochemical industrial estates and one port in Map Ta Phut have initiated a pilot project to manage Benzene vapors and 1,3-Butadiene by introducing a Code of Practice (COP), to help solve the release of the chemicals from industrial plants. This effort demonstrates GC's

care for communities, society, and the environment. GC has also applied innovation and technology to the proactive air quality monitoring and control both inside and around GC's sites during business as usual and turnarounds as well as implemented green turnaround measures to ensure that GC's activities have no impact on the environments and the areas in the vicinity of its sites.

#### Proactive Air Pollution Management

The reduction of air pollution has promoted both internal and external by improving the production processes to produce cleaner fuels to meet the EURO 5 standard and limiting the content of sulfur, a component of diesel fuel, to a maximum of 0.5 percent by weight by 2020. GC also has a long-term plan to improve its product quality control to meet the EURO 5 standards in accordance with the fuel quality improvement measures required by the Department of Energy Business, Ministry of Energy by 2024. GC has also established plans to phase out ozone-depleting substances to reduce impact on climate change and transition towards non-CFC refrigerant, in line with the Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer by 2030.

### 3.3) LEADERSHIP IN SUSTAINABLE ENVIRONMENTAL MANagements

Operating on the basis of sustainability, GC actively prioritizes and drives solutions as well as mitigation of impacts of climate change and water management issues, which have grown increasingly severe, so as to achieve the goal of the Paris Agreement and the United Nations' Sustainable Development Goals (SDGs).

- **Climate Strategy**

GC strives to become a world-class leader in the management of greenhouse gas (GHG) emissions as well as support Thailand's GHG targets and the direction of the Paris Agreement under the United Nations Framework Convention on Climate Change. To this end, GC has established a target to reduce energy consumption through process efficiency improvement projects as well as set a carbon offset target for GC Group to keep a rise in global temperature under 2 degrees Celsius. In pursuit of these goals, GC has formulated energy management strategies and climate

strategies as well as taken part in affirming its commitment to GHG reduction to meet the United Nations' SDG 13: Climate Action. To this end, GC has established and included climate change action as part of its 5-year strategic plan, in line with the guidelines of the Task Force on Climate-related Financial Disclosures (TCFD). The GHG reduction targets that GC has established include: 1) a 52% reduction of greenhouse gas emissions per production unit (Scopes 1 and 2) according to a Science-Based Targets initiative by 2050 compared to the base year of 2012 and 2) a 20% reduction of greenhouse gas emissions in business as usual (Scopes 1 and 2) by 2030 compared to the base year of 2012. Thanks to its climate policy and continuous climate actions, GC received the highest rating of A in Leadership Level under the assessment framework of the Carbon Disclosure Project (CDP), one of the world's most reliable sustainability assessment institutions, in 2020 – a testament to GC's commitment to climate change management. Furthermore, GC has carried out a project to reduce GHG emissions according to Scope 3 across the value chain in collaboration with key suppliers in PTT Group. The project involves the development of a GHG emission database and establishing science-based GHG reduction target by 2021. GC has also embarked on collaboration with related organizations to initiate two projects of internal GHG emission management within 2021.

- **Water Management**

GC strives to contribute to the achievement of the United Nations' SDG 6: Clean Water and Sanitation and focuses on sustainable management of water and water crises, both internally and externally, through its One Water Strategy and governance under the supervision of the Water Management Taskforce and the Supply Chain Management Taskforce to achieve water stewardship, resilience, and maximum efficiency in production. GC also fosters the participation of stakeholders to minimize impacts of water scarcity and maintain an adequate reserve for consumption. As droughts are increasingly intensified by climate change and the demand for water among the industrial

sector, the agricultural sector, and communities has been rising continuously, GC's production may be faced with a water crisis, both in terms of amount and quality. To this end, GC assesses water risks to identify water stress areas, using the Aqueduct Water Risk Atlas, so as to reduce the need to draw freshwater from natural sources and decrease water consumption in the production process as well as monitor the water situation in reservoirs and promote water conservation in collaboration with the public and industrial sectors and communities to conserve water and preserve water quality. In addition, GC discloses its water management and impacts in a transparent manner, in line with the international requirements of the GRI Standards and CEO Water Mandate. As a result, GC was given the highest rating of A in Leadership Level under the assessment framework of the Carbon Disclosure Project (CDP), one of the world's most reliable sustainability assessment institutions, testifying to its commitment to water security initiatives.

- **Circular Economy**

Recognizing the importance of Thailand's transition towards the circular economy, GC has established strategies to adopt the concept of circular economy as a basis for driving its business, with emphasis on resource efficiency, recirculating resources within the organization, and minimizing waste throughout the process through the 5Rs (Reduce, Reuse, Recycle, Refuse, Renewable), in line with the United Nations' SDG 12: Responsible Consumption and Production. GC strives to become a leader in circular economy practices by integrating the BS 8001: 2017 circular economy framework into GC Management System (GCMS) and using it as circular economy implementation criteria to monitor and assess the implementation of GC's circular economy projects. The Upcycling the Oceans, Thailand (UTO) Project was assured for compliance with the BS 8001: 2017 standard according to the opinion of auditors of an world-class firm, making it Thailand's first project to be implemented in accordance with a circular economy guideline.



- **Product Stewardship**

GC seeks to operate a customer-centric business and create green products that are safe to consumers and in line with the concept of circular economy, while also taking into account social and environmental impacts throughout the product life cycle so as to meet consumer needs, elevate the quality of life, and foster sustainable growth for GC. As a result of climate change and the COVID-19 pandemic in the previous year, customer behaviors and needs shifted towards products that were safe for health and the environment. In response, GC developed products to cater to the needs of customers and consumers by adopting the Eco-design Guidelines and the Eco-design Criteria, based on the ISO14062 standard, along with the principle of product life cycle assessment to minimize social and environmental impact across the value chain. Furthermore, GC established the B-to-B Touch C Plan with the goal of creating value to products in accordance with the concept of circular economy and making such value accessible to consumers (C) through business-to-business collaborations (B-to-B) between converters and brand owners as well as partners across the value chain. In addition, GC developed a 5-year strategic plan for product stewardship to serve as guidelines for its product development. Under this plan, GC takes into account environmental impacts and increases the safety of its product through the life cycle by conducting a Life Cycle Assessment (LCA) for all products so as to better serve customer needs for environmentally friendly products in the future. In addition, all GC Group' products have been certified with the Carbon Footprint of Products (CFP) since 2014 and Carbon Footprint Reduction (CFR) label from the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) under the Ministry of Natural Resources

and Environment. GC also has also encouraged all companies under GC Group to have all their products certified with the Water Footprint (WF) label by the Water and Environment Institute for Sustainability, the Federation of Thai Industries.

### 3.4) EXPANDING SUSTAINABLE ENVIRONMENTAL MANAGEMENT TO GC'S NETWORKS

Thanks to its initiatives to expand its sustainable environmental management across its networks in all sectors, all of GC's plants have been certified Eco Factory by the Federation of Thai Industries since 2015 and obtained the Green Industry Level 5 certificates from the Ministry of Industry since 2016. The certification has also been expanded to all companies in GC Group. Furthermore, GC has also supported the Eco Industrial Town policy by helping Map Ta Phut Industrial Estate to obtain the Eco-World Class certification, which demonstrates its readiness to become an Eco Industrial Town. This highest level of certification demonstrates GC's commitment to becoming a green network leader.

As a result, in 2020, GC earned the top score for environmental management in the Dow Jones Sustainability Indices (DJSI) in the chemical business category for another consecutive year. It also received the highest rating of A in Leadership Level for its climate change and water security management based on the assessment framework of the Carbon Disclosure Project (CDP), one of the world's most reliable sustainability assessment institutions. These accolades not only testify to GC's success in incorporating into account quality, safety, occupational health, and environmental concerns into its business operations but also demonstrate its leadership in the chemical industry and its position as an innovative organization with social responsibility and the aspiration to elevate the quality of life as well as a model for cultivating awareness and promoting the adoption of relevant practices to achieve tangible results in a sustainable manner.

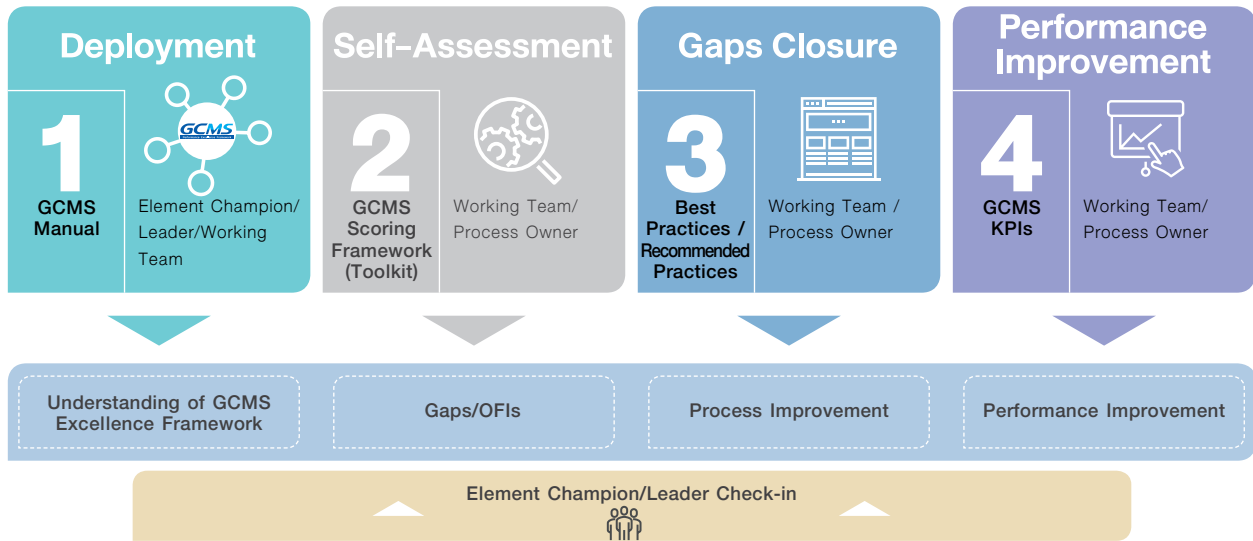


**GC RECEIVED AN AWARD FOR ITS SUPPORT FOR ECO INDUSTRIAL TOWNS AND THE WATER FOOTPRINT (WF) CERTIFICATION.**

## GC MANAGEMENT SYSTEM (GCMS)

In 2019, GC successfully developed GC Management System (GCMS), which integrates various applicable international management system standards under Baldrige Performance Excellence Framework. In 2020, GC has implemented GCMS as a pilot project in corporate functions and two Business Units, namely EO-Based Performance (EOB), and Group Performance Center-Utilities (UTY).

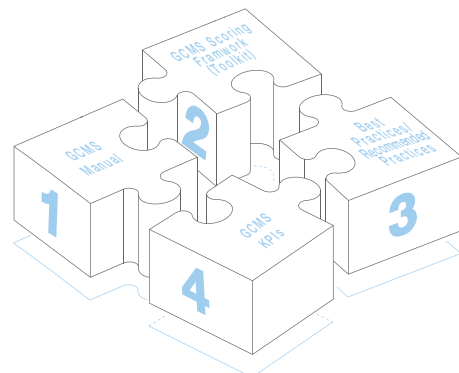
### GCMS DEPLOYMENT & IMPLEMENTATION APPROACH 2020-2021



### THE APPROACH TO GCMS PILOT IMPLEMENTATION IS AS FOLLOWS:

- 1. Deployment:** communicated and delivered training to build understanding of GCMS contents to relevant staff and managements.
- 2. Self-Assessment:** conducted self-assessment using GCMS Scoring Toolkit to analyze and establish gap closure plan to improve processes and performances according to GCMS requirements.
- 3. Gap Closure:** implemented Gap Closure Plan for process and performance improvement.
- 4. Performance Measures:** measured and monitored all required KPIs to ensure continuous improvement of their effectiveness.

The company-wide GCMS implementation to all Business Units is planned in 2022 and will be enhanced to GC's subsidiaries from 2023 onwards.



# GCMS Model



## TIER 1 : Leadership & Sustainability

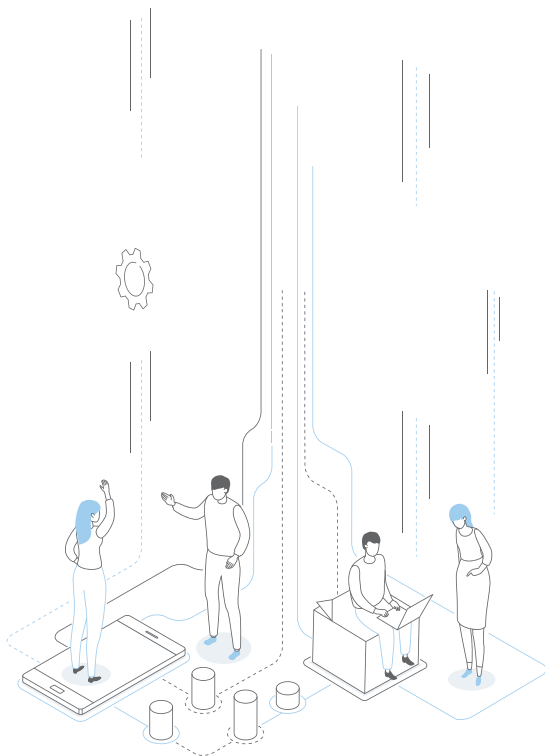
- Leadership (LDS)
- Sustainability Management (SM)

## TIER 2 : Business Excellence

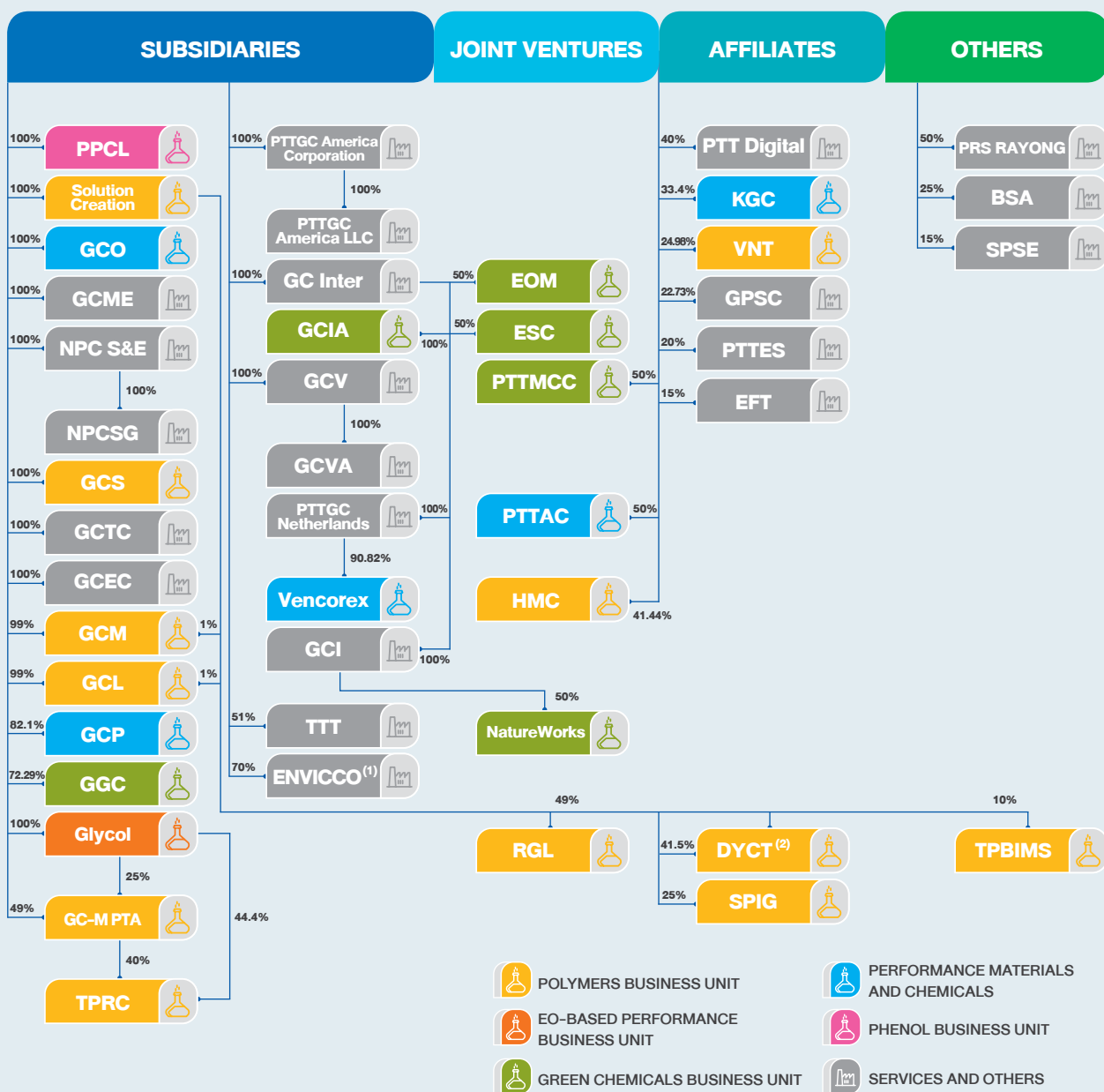
- Strategy & Enterprise Risk Management (SRM)
- Customer & Marketing (CM)
- Digital & Information Technology (DIT)
- Innovation Management (IM)
- Organization & Capabilities (O&C)

## TIER 3 : Operational Excellence

- Safety, Security, Health & Environment (SSHE)
- Operations Risk Management (ORM)
- Reliability & Asset Integrity (RAI)
- Operations (OPS)
- Value Chain Management (VCM)
- Management of Contractors & Suppliers (MCS)
- Performance Management (PM)
- Capital Project Management (CPM)
- Management of Change (MoC)



# Shareholding Structure in Subsidiaries and Affiliates



**Remarks:** Significant change in the shareholding structure in subsidiaries and affiliates from 1 January 2020 to 31 December 2020

(1) February 3<sup>rd</sup>, 2020: ENVICCO was established, as a result GC held 70% shares in ENVICCO.

(2) July 31<sup>st</sup>, 2020: The Company invested in DYCT through Solution Creation, as a result holding 41.5%.

## SUBSIDIARIES

GCO	GC Oxirane Company Limited
GCS	GC Styrenics Company Limited
Glycol	GC Glycol Company Limited
PPCL	PTT Phenol Company Limited
Solution Creation	Solution Creation Company Limited
GCL	GC Logistics Solutions Company Limited
GCM	GC Marketing Solutions Company Limited
GCP	GC Polyols Company Limited
GGC	Global Green Chemicals Public Company Limited
ENVICCO	ENVICCO Limited
GC-M PTA	GC-M PTA Company Limited
TPRC	Thai PET Resin Company Limited
Vencorex	Vencorex Holding
GCEC	GC Estate Company Limited
GCME	GC Maintenance and Engineering Company Limited
GCTC	GC Treasury Center Company Limited
NPC S&E	NPC Safety and Environmental Service Company Limited
NPCSG	NPC S&E Security Guard Company Limited
TTT	Thai Tank Terminal Limited
GCI	GC International Corporation
GCIA	PTTGC Innovation America Corporation
GC Inter	PTTGC International Private Limited
GCV	GC Ventures Company Limited
GCVA	GC Ventures America Corporation
PTTGC America Corporation	PTTGC America Corporation
PTTGC America LLC	PTTGC America LLC
PTTGC Netherlands	PTTGC International (Netherlands) B.V.

## JOINT VENTURES

EOM	Emery Oleochemicals (M) Sdn. Bhd.
ESC	Emery Specialty Chemicals Sdn. Bhd.
HMC	HMC Polymers Company Limited
NatureWorks	NatureWorks LLC
PTTAC	PTT Asahi Chemical Company Limited
PTTMCC	PTT MCC Biochem Company Limited
RGL	Revolve Group Limited

## AFFILIATES

DYCT	DynaChisso Thai Company Limited
EFT	Eastern Fluid Transport Company Limited
GPSC	Global Power Synergy Public Company Limited
KGC	Kuraray GC Advanced Materials Company Limited
PTT Digital	PTT Digital Solutions Company Limited
PTTES	PTT Energy Solutions Company Limited
SPIG	S. P. Petpack Inter Group Company Limited
VNT	Vinythai Public Company Limited

## OTHERS

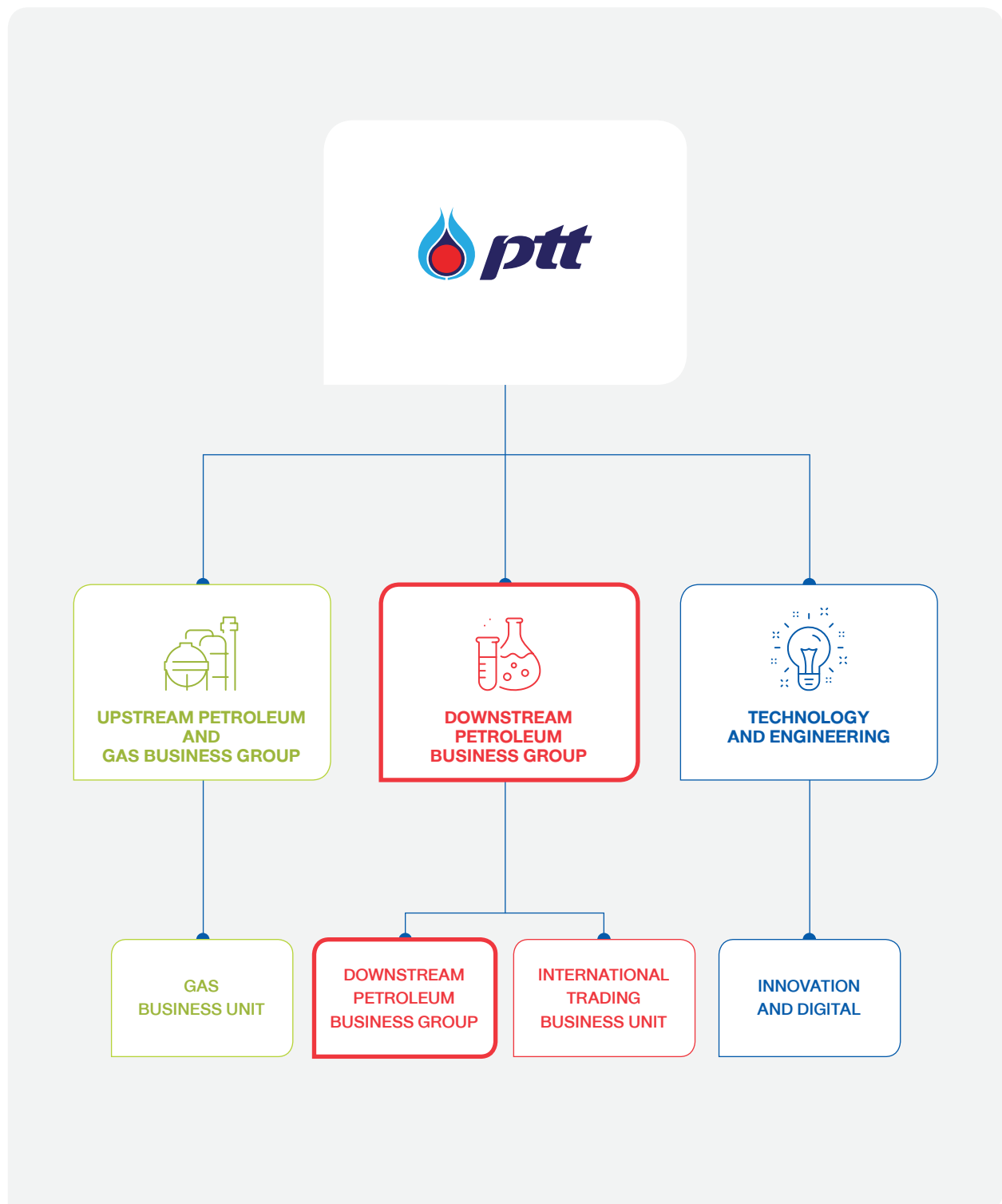
BSA	Business Services Alliance Company Limited
PRS RAYONG	Pracharath Rak Samakkee Rayong (Social Enterprise) Company Limited
SPSE	Sarn Palung Social Enterprise Company Limited
TPBIMS	TPBI & Myanmar Star Company Limited



## RELATIONS WITH THE MAJOR SHAREHOLDER'S BUSINESS GROUPS

GC is part of the Petrochemicals and Refining Business Group under the Downstream Petroleum Business Group of PTT Public Company Limited, as shown in the charts below, which show PTT's management structure, subsidiaries, and shareholding by business group respectively.

### PTT'S MANAGEMENT STRUCTURE



# PPT GROUP'S SUBSIDIARIES AND SHAREHOLDING BY BUSINESS UNIT

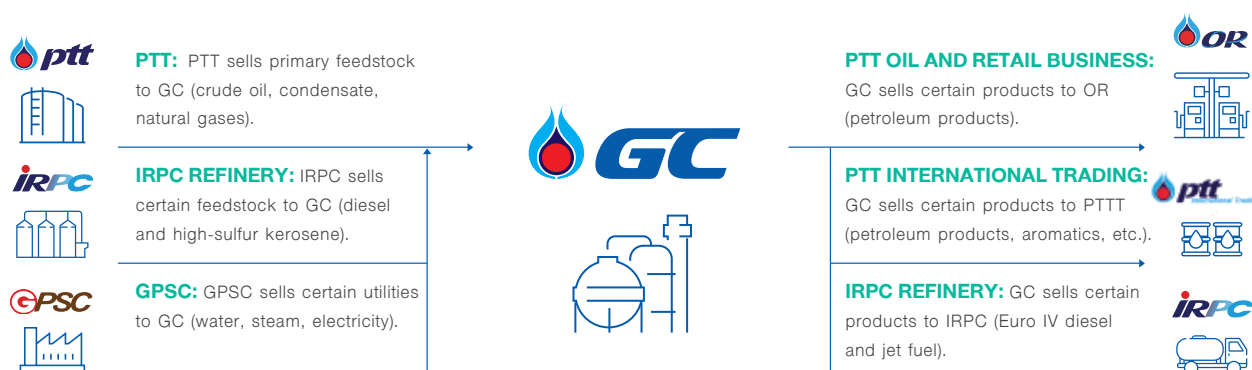
## PTT Group Accounting Structure

Data as of 31 Dec 2020

E&P and Gas Business Group			International Trading Business Group			Petrochemicals & Refining Business Group			
<b>Subsidiaries</b>		<b>Consolidate</b>	<b>Subsidiaries</b>		<b>Consolidate</b>	<b>Petrochemical Subsidiaries</b>		<b>Consolidate</b>	
PTT Exploration & Production Plc.	PTTEP	65.29%	PTT International Trading Pte.	PTTT	100.00%	PTT Global Chemical Plc.*	GC	45.41%	
PTT Natural Gas Distribution Co., Ltd.	PTTNGD	58.00%	PTT International Trading London Ltd	PTTT LDN	100.00%	PTT Tank Terminal Co. Ltd.	PTTTANK	100.00%	
PTT LNG Co., Ltd.	PTTLNG	100.00%	PTT International Trading USA Inc.	PTTT USA	100.00%	<b>Refining Subsidiaries</b>		<b>Consolidate</b>	
PTT Global LNG Co., Ltd	PITGL	50.00%				Thai Oil Plc.*	TOP	48.03%	
<b>Joint Ventures</b>		<b>Equity</b>	<b>Oil Business Group</b>						
Trans Thai-Malaysia (Thailand) Co., Ltd.	TTM (T)	50.00%	<b>Subsidiaries</b>		<b>Consolidate</b>				
Trans Thai-Malaysia (Malaysia) Sdn. Bhd.	TTM (M)	50.00%	PTT oil & Retail Business Co., Ltd.	OR	100.00%				
Map Ta Phut Air Products Company Limited	MAP	49.00%							
<b>Technology and Engineering Business Group</b>			<b>International Investment Business Group</b>						
<b>Subsidiaries</b>		<b>Consolidate</b>	<b>Subsidiaries</b>		<b>Consolidate</b>				
Global Power Synergy Co., Ltd *	GPSC	31.72%	PTT Energy Resources Co., Ltd.	PTTER	100.00%				
Thai Oil Power Co., Ltd.*	TP	26.00%	PTT Green Energy Pte. Ltd.	PTTGE	100.00%				
PTT Digital Solutions Co., Ltd.*	PTT DIGITAL	20.00%	PTT Global Management Co., Ltd.	PTTGM	100.00%				
PTT Energy Solutions Co., Ltd.*	PTTES	40.00%							
Energy Complex Co., Ltd.	EnCo	50.00%	<b>Others</b>						
<b>Joint Ventures</b>		<b>Equity</b>	<b>Subsidiaries</b>		<b>Consolidate</b>				
District Cooling System and Power Plant	DCAP	35.00%	Business Service Alliance Co., Ltd.*	BSA	25.00%				
<b>Others</b>		<b>Cost</b>	PTT Regional Treasury Center Pte. Ltd.	PTTRTC	100.00%				
Baania (Thailand) Company Ltd.	Baania	2.89%	PTT Treasury Center Co. Ltd.	PTT TCC	100.00%				
HG Robotics Plc.	HG Robotics	9.49%	<b>Joint Ventures</b>		<b>Equity</b>				
Innospace (Thailand)	Innospace	15.75%	Suez Environmental Services Co.,Ltd.	SES	40.00%				
Sunfolding, Inc.	Sunfolding	5.24%	<b>Others</b>		<b>Cost</b>				
			Sarn Palung Social Enterprise Company Ltd.SPSE		20.00%				
			Dhipaya Insurance Plc.		TIP	13.33%			

**Remark:** \*Subsidiaries that PTT holds less than 50% but being consolidated because PTT has the power to control the financial and operating policies.

The chart below shows major relations between GC and other companies under PTT Group with significant connection to GC's main businesses.



## SHAREHOLDERING STRUCTURE

(a) List of top 10 major shareholders according to registered book closing date on May 5, 2020;

No.	Shareholders	Number of shares	%
1.	PTT Public Company Limited <sup>(1)</sup>	2,149,920,915	47.68%
2.	Thai NVDR Company Limited <sup>(2)</sup>	278,841,070	6.18%
3.	Social Security Office	92,852,651	2.06%
4.	HMC Polymers Company Limited <sup>(3)</sup>	83,427,636	1.85%
5.	STATE STREET EUROPE LIMITED	80,595,941	1.79%
6.	SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	79,813,070	1.77%
7.	NORTRUST NOMINEES LIMITED-NT0 SEC LENDING THAILAND CL AC	62,504,178	1.39%
8.	THE BANK OF NEW YORK MELLON	61,678,441	1.37%
9.	Bangkok Synthetics Company Limited	43,420,625	0.96%
10.	GIC PRIVATE LIMITED	40,494,629	0.90%

### Remarks:

- (1) Majority shareholder of PTT Public Company Limited is Ministry of Finance.
- (2) Shareholders of Thai NVDR Company Limited holding Non-Voting Depository Receipt: NVDR, are ineligible for voting at shareholders' meeting except when exercising their voting right on delisting the shares from the Stock Exchange of Thailand.
- (3) GC holds 41.44% of shares of HMC Polymers Company Limited.

(b) As of December 30, 2020, the major shareholders with significant influence on the establishment of GC's policy and strategy are PTT Group, holding 48.42% of shares of GC.

(c) Foreign Shareholders

As of December 30, 2020, there are 20 foreign shareholders of GC, holding a combined of 578,378,553 shares of GC or 12.83% of GC's paid-up capital.

GC has foreign shareholding limitation as specified in Article 8 of Article of Association that "GC's shares can be transferred without any restriction, except in the case where the said transfer would result in more than thirty-seven (37) percent of the Company's total paid-up shares being held by foreigners".

## Securities

As of December 31, 2020, the Company's registered share capital was of Baht 45,088,491,170, comprising of 4,508,849,117 common shares at a par value of Baht 10 per share. Paid-up capital was Baht 45,088,491,170.

## Issuance of Other Securities

### BONDS

GC issued the following long-term bonds:

#### 1. US DOLLAR DEBENTURES

On November 19, 2012, GC issued unsecured, unsubordinated debentures with a maturity of 10 years in a total amount of US\$ 1,000 million, with a fixed annual coupon rate of 4.25%, paid every six months, with a maturity date of September 19, 2022. On June 28, 2018, GC repurchased the existing US dollar debenture in a total amount of US\$ 495.89 million, and GC Treasury Center Company Limited, its subsidiary, issued a new debenture with on-par terms and conditions of the existing debenture (par-for-par tender offer).

## 2. BAHT DEBENTURES

GC has 10 series of unsecured and unsubordinated Baht debentures, with the total issue amount of Baht 55,000 million, as detailed below.

Symbol	Outstanding Amount (Million Baht)	Annual Coupon Rate (%)	Maturity Date	Maturity (Year)	Credit Rating (Fitch Ratings)
PTTGC218A	10,000	4.50	August 8, 2021	7	AA+(tha)
PTTGC218B	10,000	3.05	August 31, 2021	4	AA+(tha)
PTTGC248A	10,000	2.90	August 22, 2024	5	AA+(tha)
PTTGC249A	1,500	2.20	September 5, 2024	5	AA+(tha)
PTTGC269A	7,000	2.43	September 5, 2026	7	AA+(tha)
PTTGC299A	1,500	2.75	September 5, 2029	10	AA+(tha)
PTTGC274A	1,530	2.60	April 8, 2027	7	AA+(tha)
PTTGC304A	3,310	2.99	April 8, 2030	10	AA+(tha)
PTTGC324A	4,360	3.29	April 8, 2032	12	AA+(tha)
PTTGC354A	5,800	3.50	April 8, 2035	15	AA+(tha)

The following are ratings from credit rating agencies.

Credit Rating Agency	MOODY'S	S&P Global	FitchRatings
Credit Rating	Baa2	BBB	AA+ (tha)
Lastest Date of Credit Rating Review	August 31, 2020	February 9, 2021	March 31, 2020

## Dividend Payment Policy

### PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

The Board of Directors Meeting No. 1/2011, held on October 19, 2011, resolved that the dividend payment policy of the Company is "to pay dividend at a rate of no less than 30% of net profit after tax and allocation to all reserve funds of the Company. Such dividend payment, however, is subject to the investment plan, other necessary and appropriate considerations in the future."

### SUBSIDIARIES' DIVIDEND PAYMENT POLICY

The dividend payment policy for GC's subsidiaries shall be considered and proposed by the Board of Directors of each subsidiary for approval at the Annual General Meeting of each subsidiary. The dividend payment of subsidiaries shall be calculated based on the investment plans and other requirements and considerations, such as the adequacy of cash flow of each subsidiary after deducting reserve funds in accordance with the law.

### DIVIDEND PAID

Year	Dividend Payout (Baht/Share)			Earning per Share (Baht/Share)	Dividend Payout Ratio (%)
	1 <sup>st</sup> Half	2 <sup>nd</sup> Half	Full year		
2020 <sup>(1)</sup>	-	1.00	1.00	0.04	>200%
2019	1.00	1.00	2.00	2.59	77%
2018	1.75	2.50	4.25	8.89	48%

#### Remarks:

- (1) The Board of Directors' Meeting No. 2/2021 held on February 15, 2021, agreed to propose the 2021 Annual General Meeting of Shareholders to consider and approve on the dividend payment for the year 2020 operating performance of Baht 1.00 per share, or dividend payout ratio of over 200% of the net profit of consolidated financial statements. No interim dividend was paid, and the final dividend payment of Baht 1.00 per share is to be proposed to the 2021 Annual General Meeting of Shareholders for approval.

# Risk Management

## **RISK MANAGEMENT AND RISK FACTORS**

### **RISK MANAGEMENT**

In 2020, GC faced with the enormous and unexpected crisis (Black Swan) from the coronavirus disease 2019 (COVID-19) pandemic that sent ripples across the world and caused immense impact on global economies as well as human life and health together with the impacts of the price volatility brought on by the ongoing U.S.-China trade war that has begun since 2019. Additionally, GC faced negative factors as a result of a crude oil price war and water shortages in Thailand. However, with the robust risk management system, GC appointed the specific committees to manage these new risks. One such committee was the COVID-19 infection Prevention and Control committee, which was responsible for monitoring the pandemic situation, establishing preventive measures, assigning the majority of employees to Work from Home, and formulating strict guidelines for preventing transmission among personnel as well as in sensitive processes and areas so as to ensure business continuity. Furthermore, GC promptly act to support all concerned parties, such as medical professionals and affected individuals, so that everyone could overcome the crisis together. As for drought-related risks, GC appointed the Water Management Taskforce and the "Supply Chain Management Taskforce for year 2020 Drought to prescribe internal and external management measures, conduct availability planning, and oversee the management of customers, suppliers, and stakeholders with maximum efficiency. Furthermore, in response to impacts from the slowdown of the global economy and industries as well as lockdown measures in countries that were part of GC's supply chain, the Company introduced measures to reduce expenses, review investment plans, revise production and sales plans, as well as adjust the product portfolio

to cope with the rapidly changing market. GC was able to handle these challenges effectively, maintain its liquidity, minimize impact on its business operations, and ultimately lead the Company through the crisis from good cooperation from all parties. This testifies to the standard of GC' risk management, which is systematically developed and integrated across the organization through the application of information technology. In addition, GC has implemented a risk management policy alongside strategic management to ensure that the Company will be able to handle current and future crises and uncertainties as well as turn risks into business opportunities so as to achieve sustainable growth in keeping with its business plans and major goals within the defined risk appetite.

In 2020, GC was ranked first in the Dow Jones Sustainability Indices (DJSI) for risk and crisis management for the second consecutive year, representing GC's internationally accepted risk management standards. GC's risk management adheres to the COSO ERM (2017) framework by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) and the ISO 31000:2018 standard by the International Organization for Standardization (ISO), as well as the Thai Corporate Governance Code for Listed Companies 2017. It also integrates GC's policies, rules, and standards related to governance, risk management and internal control, and compliance (known as GRC), to incorporate risk management into GC's internal management so as to protect and create sustainable value for the organization.

### **RISK MANAGEMENT STRUCTURE**

GC's risk management structure is organized into three levels: corporate, business units, and operations. At the corporate level, the Board-appointed Risk Management Committee (RMC) is responsible for



defining the direction of risk management guided by the risk appetite, risk policy, and five risk management frameworks: corporate, foreign exchange, price-and-spread, subsidiaries, and investment. It is also tasked with monitoring and providing recommendations on the management of risks towards the achievement of GC's strategic and business goals. Furthermore, The Enterprise Risk Management Committee (ERMC), which is comprised of executive officers from each function, is responsible for regularly monitoring risk management progress to ensure alignment with the policies, objectives, risk appetite, and risk management frameworks approved by the Risk Management Committee.

For specific business risks, GC has prescribed risk management at the business unit and function level or appointed specific committees to enhance flexibility and ensure that the risk management is consistent with the operational environment, as detailed below:

- **The Value Chain Management (VCM) Committee** is responsible for closely monitoring and managing pricing, foreign exchange, and supply chain risks on a weekly basis, using the risk management frameworks approved by the Risk Management Committee.
- **GC Group's Sustainable Development Committee (SDC)** is responsible for monitoring sustainable development performance and management to ensure appropriate sustainability risk management for its business operations both at present and in the future.
- **The Investment Committee (IC)** is responsible for overseeing and reviewing investment projects to ensure compatibility to GC's strategies as well as supervising risk assessment and risk management measures for such projects to ensure that their objectives are accomplished.
- **Other Committees include GC Operational Excellence Committee**, responsible for the management of risks related to production

reliability and compliance with plant-related laws, regulations, requirements, and standards; **the Safety, Health and Environment Governance Committee**, responsible for the management of safety, health, and environmental risks; the Digital and **Information Technology Governance Committee**, responsible for overseeing the management of digital and information technology as well as cybersecurity.

In 2020, GC faced with the challenges of the COVID-19 pandemic, droughts, and the enforcement of new laws and regulations related its business operations, GC appointed additional committees and ad hoc working teams to handle the management of such risks, as detailed below:

- **The Corona virus infection Prevention and Control committee** is responsible for closely monitoring the COVID-19 situation, defining preventive measures consistent with the rapidly changing situation, and prescribing guidelines and practices to ensure business continuity.
- **The Water Management Taskforce and the Supply Chain Management Taskforce** for year 2020 Drought are tasked with prescribing internal and external management measures to cope with droughts as well as establishing operational plans and overseeing the management of customers, suppliers, and stakeholders to maximize efficiency.
- **The Personal Data Protection Act Working Team** is responsible for ensuring that work plans, guidelines, and practices comply with the Personal Data Protection Act.

At the business unit/function level, the corporate risk direction is applied through the head of each business unit/function and integrated into the management of risks at the operation levels, which include both operation risks and process risks. At the corporate level, GC oversees risk management for subsidiaries in accordance with the guidelines set forth in GC Way of Conduct to ensure uniformity.

## RISK MANAGEMENT TOOLS

GC has adopted various risk management tools, including risk maps, mitigation plans, and key risk indicators (KRIs). The Monte Carlo Simulation is also used to model impact on operating results in the form of Value at Risk (VaR), while hedging is conducted to protect the Company from foreign exchange risks and price volatility. Operation risk management (ORM) are also employed as a tool for the management of production reliability, safety, occupational health, and environment. In addition, GC also utilizes control self-assessment (CSA) as a tool to evaluate the adequacy of internal control system. GC also keeps track of changes in key external factors and emerging risks through an Early Warning System (EWS), employs a sensitivity analysis tool, and conducts stress testing to assess impacts and establishing proactive risk mitigation measures.

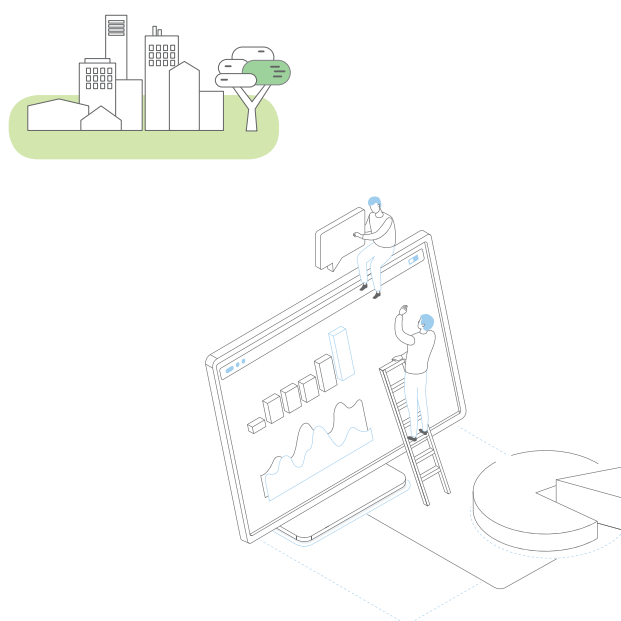
## RISK MANAGEMENT CULTURE

GC strives to foster an organization-wide culture of risk management to ensure its stable and sustainable advancement through six components: 1) Governance, 2) Leadership, 3) Risk management structure, 4) Risk management techniques, 5) Communication, and 6) Risk management knowledge and understanding building. GC oversees risk management by defining policy, objectives, risk appetite, and risk management frameworks and has a risk management structure that covers every level. It has also defined the roles, duties, and guidelines for the Board of Directors, Executives, and employees to raise their awareness. Risks are also considered for all activities and regular work procedures, using suitable risk management tools and techniques for the nature of such risks. Furthermore, risk management performance is closely monitored and reported to GC's Executives and Board of Directors on a regular basis. GC also communicates risk issues and foster an understanding of risk management through its Executives, newsletters, and training programs regularly.

In 2020, GC held training programs for Executives and employees, covering topics of governance, risk management and internal control, and Governance, Risk management, and Compliance (GRC). Training programs such as Fundamental of Enterprise Risk Management, Intermediate of Enterprise Risk Management, and Business Continuity Management were conducted. Sessions led by internal and external experts providing updates on business situations, future trends, and emerging risks were also held for all related parties to develop their ability to identify and assess risks as well as establishing risk management measures. Furthermore, the Company expanded its Integrated GC initiative to its subsidiaries, held executive workshops, and communicated with employees through newsletters and e-Learning.

## RISK FACTORS

In response to a series of crises in 2020, GC has analyzed the business environment based on both internal and external factors, along with relevant economic, social, political, technological, industrial, competition, and other trends to define corporate risk factors for the present and the future and identify emerging risks, which can be categorized into the three groups as summarized below.



## CURRENT BUSINESS-RELATED RISK FACTORS

Corporate Risk Factor	Important Mitigation Measures
<p><u>Operational and Safety Risk</u></p> <p>GC strives to maintain high operational standards. To this end, it places the utmost importance on managing its operation and safety risks to ensure that the production processes are both safe and reliable. GC has thus continuously applied the GC Management System (GCMS) and Process Safety Management (PSM) System, with the goal of achieving world-class PSM.</p>	<p>GC has continuously carried out the following measures to maintain the operational reliability and safety.</p> <ul style="list-style-type: none"> <li>• Collaborate with PTT Group experts to continuously assess Operational Excellence Management System (OEMS) to ensure its performance and effectiveness together with raising reliability by enhancing technical standards and maintenance to maintain operations stability within the first-quartile level.</li> <li>• Cooperate with external consultants to strengthen GC's Process Safety Management, raising it to an international standard within the 2017-2022 timeframe, while focusing on the development of all Executives levels as role model to inspire safety practices, enhance the capabilities of employees at the operations level, and raise their awareness.</li> <li>• Foster a positive safety mindset through the B-CAREs culture and elevate operational discipline.</li> <li>• Apply digital technology, such as sensors and advanced analytic tools, to data analysis. Enhance machinery efficiency through Equipment Foresight, which possesses a warning system for potential equipment malfunctions, and Asset Performance Management, which possesses a system that analyzes maintenance data to define suitable maintenance strategies.</li> <li>• Assign specialist employees to monitor irregularities via online systems, such as the Wireless Sensor for Online Condition Monitoring and the Online Corrosion Monitoring, and consult on-site maintenance units during operations through Remote Advisory to enhance efficiency and prevent unplanned downtime.</li> <li>• Assess the supplier operation management results including utility system to ensure efficient machinery maintenance as well as operational safety and continuity of supplier, which ultimately enhances operational reliability.</li> <li>• Build experts and develop internal personnel, using the knowledge jointly developed with consultants, and promote knowledge management between business units so as to transfer standards and knowledge to all business units and across GC Group.</li> <li>• Apply the ISO 45001/ OHSAS 18001 standard for management systems of occupational health and safety, ISO 22301 standard for business continuity management systems (BCMS), and the Incident Management System (IMS) to the management of emergencies and crises that may lead to business interruption so as to mitigate impacts from such incidents and/or minimize recovery time. GC also conducts crisis management drills and business continuity planning (BCP) on a regular basis.</li> <li>• GC Group has the necessary insurance to lessen impacts resulting from unforeseen incidents.</li> </ul>

Corporate Risk Factor	Important Mitigation Measures
<p><u>Price Volatility Risk</u></p> <p>The COVID-19 pandemic has brought on a global economic downturn and affected demand for petroleum and petrochemicals. Although OPEC+ joined hands to decrease production capacity to reduce crude supply surplus and stabilize the price, the demand slump caused the prices and spreads of both petroleum and petrochemicals to be highly volatile, significantly impacting GC's operating results.</p>	<p>The following are the measures that GC has put forth to mitigate its price volatility risks.</p> <ul style="list-style-type: none"> <li>• Closely monitor market situations, feedstock prices, and product prices to revise production and sales plans throughout the value chain to ensure compatibility with rapidly changing situations, including switching production modes and adjusting the product portfolio and sales proportion to serve the demand of the end-use market.</li> <li>• Review feedstock sourcing and agreement terms to ensure compatibility with the market situation. Hold meetings with related parties to closely monitor feedstock purchases, production volumes, and production plans.</li> <li>• Manage price and spread risks and carry out inventory hedging through derivative securities and/or advance purchase agreements according to the policy and frameworks defined by the Risk Management Committee, under the close supervision and monitoring of the Value Chain Management (VCM) Committee.</li> </ul>
<p><u>Sale &amp; Marketing Risk</u></p> <p>The ability to maintain steady revenue is an important factor that influences GC's operating results, especially during the time of market volatility as a result of various factors, such as demand-supply imbalance, trade wars, geopolitics, the COVID-19 pandemic, and the new normal trend, which has altered consumer behavior and led to the demand for greater product diversity and convenient sales models that respond to their lifestyle.</p>	<p>GC has continuously carried out the following sales and marketing measures.</p> <ul style="list-style-type: none"> <li>• Closely monitor the market situation and adjust sales and production plans accordingly.</li> <li>• Diversify the product portfolio and define appropriate a sales portfolio according to changes in the market situation.</li> <li>• Expand towards emerging markets, such as CLMV and Southeast Asia, to create long-term sale security, as well as shift sales volumes towards higher value products in keeping with the market to maximize profitability.</li> <li>• Foster collaboration in product development with partners, develop existing markets, and acquire new customers interested in developing products with technological and innovation differentiation for a better quality of life for customers in the end-use market through GC's Customer Solution Center.</li> <li>• Develop and improve an end-to-end sales and marketing process in keeping with the changing of business context, consumer behavior, and sales channels.</li> </ul>

Corporate Risk Factor	Important Mitigation Measures
<p><u>COVID-19 Pandemic Risk</u></p> <p>The COVID-19 pandemic, which began in early 2020, has not only triggered a global economic downturn but poses risks to employees and can lead to the suspension of various key activities, such as operation. GC has thus established stringent preventive measures as well as formulated and implemented business continuity management plans to ensure business continuity and minimize impacts on related parties, such as customers, suppliers, shareholders, and communities.</p>	<p>GC carries out the following measures to manage COVID-19 risks.</p> <p><u>Business continuity measures:</u></p> <ul style="list-style-type: none"> <li>• Announce an emergency response policy, appoint a working team to implement the business continuity plan (BCP), and establish the Corona virus infection Prevention and Control committee to ensure compliance with pertinent laws and notifications and establish effective COVID-19 preventive measures for GC Group.</li> <li>• Closely monitor pandemic-related developments and review measures in keeping with the situation.</li> <li>• Establish Lock Up measures for employees in the production process.</li> <li>• Assign some groups of employees to work at the headquarters and other to Work from Home, with GC providing information technology systems to support their work and heightening cybersecurity measures.</li> <li>• Establishing measures for buildings and production areas which is vital to GC's business operation, as well as measures for office buildings and shared facilities to effectively prevent COVID-19 transmission.</li> <li>• Establish a business continuity plan (BCP), carry out a BCP drill in business units and key processes, and improve the BCP based on the drill results to ensure proper implementation in an actual event.</li> </ul> <p><u>Employee care measures:</u></p> <ul style="list-style-type: none"> <li>• Provide necessary protective equipment to all employees in GC Group, such as face masks, thermometers, and alcohol spray.</li> <li>• Prioritize working from home and require strict compliance with preventive measures for employees having to enter operation areas, such as wearing face masks, getting a temperature check, disinfecting hands with sanitizers, and social distancing.</li> <li>• Introducing digital systems to report and track employee health and travel history so as to speed up COVID-19 screening, monitoring, and prevention.</li> <li>• Define employee monitoring and management measures categorized according to level and chance of contact the transmission and prepare personnel and equipment for prompt response to an emergency.</li> <li>• Communicate policies, regulations, and practices related to the prevention of COVID-19 to employees continuously.</li> <li>• Conduct screening, establish preventive measures for visitors, such as customers and contractors, and put in place measures for monitoring external parties who visit the Company.</li> </ul> <p><u>Social support measures:</u></p> <ul style="list-style-type: none"> <li>• GC Group collaborated with partners to turn the crisis into an opportunity to help society overcome this challenging time together by carrying out projects in association with related parties and contributing GC's chemicals and products to the development of medical equipment, in line with its philosophy "Chemistry for Better Living."</li> <li>• Visit sites to consult medical professionals and affected individuals so as to research and develop products that meet their needs and solve their problems effectively.</li> <li>• Develop opportunities for business expansion and collaborate with partners to drive various projects, such as the "Send Plastic Home" project to reduce plastic waste during the COVID-19 pandemic.</li> </ul>



Corporate Risk Factor	Important Mitigation Measures
<p><u>Water Crisis Risk</u></p> <p>In 2020, droughts grew in severity as a result of a low water amount, which was in turn a result of low rainfall in 2019. Consequently, there was a risk of water shortages across Rayong, which could interrupt the production or increase GC's production costs as a result of additional water procurement expenses. Therefore, GC had to manage its water resources to ensure that they would be sufficient to support its operations as well as future projects.</p>	<p>GC has implemented the following steps in preparation for droughts.</p> <p><u>Internal management measures:</u></p> <ul style="list-style-type: none"> <li>• Formulate the structure of working teams according to GC's business continuity plan; appoint the Water Management Taskforce to establish both internal and external water management measures and closely monitor the water situation: and appoint the Supply Chain Management Taskforce for year 2020 Drought to draw up the business continuity plan, manage the supply chain, including feedstock, electricity, steam, and utilities, as well as report outcomes to the Management on a regular basis.</li> <li>• Implement tangible water management initiatives for GC Group, such as drawing up water consumption plans for each plant, establishing water consumption reduction plans for each plant with 3Rs (Reduce, Reuse, Recycle), provide additional water from external sources, preparing a pipeline system to divert water from GC's reservoirs, and enhancing the capacity of the wastewater reverse osmosis (WWRO) system and the seawater reverse osmosis (SWRO) system.</li> <li>• Providing additional water supply from external sources.</li> </ul> <p>With these internal management measures, GC successfully reduced reliance on external water sources by over 30%.</p> <p><u>External management measures:</u></p> <ul style="list-style-type: none"> <li>• Monitor and analyze water levels in Rayong and neighboring provinces consistently to assess the situation and potential water shortage risks</li> <li>• Assign representatives to join meetings with agencies related to water management and Rayong War Room to monitor the water situation, exchange information, discuss collaboration, and keep track of the government's projects.</li> <li>• Monitor and keep the water level and quality within the defined criteria to prevent impact on the production in GC's plants.</li> <li>• Collaborate with the public and private sectors to drive drought prevent measures as well as water resource management and development projects through the working team of the water management of Eastern Thailand.</li> </ul> <p><u>Long-term water management measures:</u></p> <p>Besides the aforementioned internal and external water management measures, GC has also established long-term measures to ensure efficient and sustainable water management and drought preparedness.</p> <ul style="list-style-type: none"> <li>• Installing additional wastewater reverse osmosis systems (WWRO) in plants.</li> <li>• Study new technologies for future adoption, such as the zero liquid discharge (ZLD) system and the evaporative loss reduction system for cooling towers.</li> </ul>

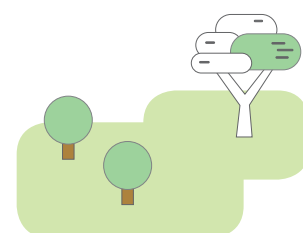
Corporate Risk Factor	Important Mitigation Measures
<p><u>Counterparty Risks</u></p> <p>The COVID-19 pandemic has triggered a global economic downturn, accompanied by signs of a financial crisis, such as rising non-performing loans (NPL) and announcements of bankruptcy and business reorganization by large domestic and international companies. If the situation persists, GC's customers, suppliers, and counterparties may experience a lack of financial liquidity, which may affect their ability to service debt and deliver products. GC has thus established counterparty risk management measures to protect its liquidity as well as manage its relations with customers, suppliers across the value chain, financial institutions, as well as suppliers and vendors.</p>	<p>GC has carried out the following measures to prevent and minimize counterparty risks.</p> <ul style="list-style-type: none"> <li>• Increase the frequency of checking the credit rating of suppliers through the annual ranking of Credit Rating Agency and the daily Credit Swap Default Index (CDS Index). Increase the frequency of analyzing and reviewing supplier risk assessment according to GC's policy and criteria, and review payment conditions for current suppliers upon request to ensure their liquidity.</li> <li>• Review the suitability of obtaining additional trade credit insurance and closely follow up on customer payment.</li> <li>• Consider unwinding a commodity hedging agreement at the appropriate time upon detecting that the counterparty has increased financial risks.</li> <li>• Review lead time in order to plan production, maintenance, equipment procurement, and pre-orders.</li> <li>• Closely follow up on supplier delivery.</li> <li>• Purchase from multiple suppliers or countries to diversify risk and maintain the number of suppliers of products that are essential to production, such as chemicals and catalysts.</li> </ul>



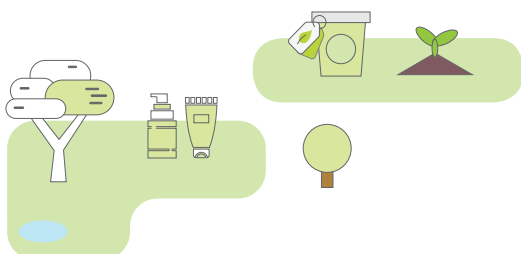
## FUTURE BUSINESS-RELATED RISK FACTORS

Successful execution of defined strategies plays a vital role in the achievement of long-term corporate goals. However, as the volatility and rapid changes of the business environment may affect the ability to successfully implement its strategies, GC has taken the following steps to manage risk factors related to its future business operations.

Corporate Risk Factor	Important Mitigation Measures
<p><b>Investment Risk</b></p> <p>GC makes investments to enhance its competitiveness and foster long-term growth and sustainability. To this end, it places great importance on the management of investment-related risks in terms of financing, technology selection, resource management, and other sustainability-related issues.</p> <p>The global economic slowdown brought about by COVID-19 has reduced demand for GC's products as well as decreased the prices and spreads. This, when coupled with falling oil prices triggered by an oil price war, has had significant impact on GC's 2020 operating results. In addition, the emergence of "new normal" trends will also make investment after 2020 more challenging in terms of prioritizing projects in keeping with GC's goals and strategic direction while also maintaining its credit rating.</p>	<p>GC has introduced the following risk management measures.</p> <ul style="list-style-type: none"> <li>• Prioritize projects and consider investment approaches that generate operating results that can be used as funding in the short term, in line GC's goals and strategic direction.</li> <li>• Consider approaches to increasing investment capacity while also maintaining GC's credit rating, liquidity, and financial discipline according to GC's financial policy.</li> <li>• Implement a stage-gate process to govern investment decisions from the opportunity-seeking stage to investment approval by the Investment Supervision Committee, according to GC's corporate investment management (CIM) process. For projects requiring high capital investment, the Risk Management Committee shall provide recommendations and review the adequacy of risk assessment and mitigation measures to supplement the decision to grant approval.</li> <li>• Systematically monitor investment projects to ensure they progress as planned.</li> <li>• Perform a lookback analysis to evaluate completed projects and use lessons learned to improve GC's investment management and increase the opportunities for the success on future investments.</li> <li>• Include and consider sustainability issues, such as eco-friendly technology and greenhouse gas emission reduction, into investment criteria.</li> <li>• Seek opportunities to invest in businesses with sustainable long-term growth and good return on investment, using investment models suitable for the situation and "new normal" trends.</li> </ul>



Corporate Risk Factor	Important Mitigation Measures
<p><b>Competitiveness Risk</b></p> <p>In response to the high volatile business environment, the entry of new players, intense market competition, shift of consumer behaviors, “new normal” trends, and unforeseen circumstances, such as the COVID-19 pandemic, GC must enhance its strength and resilience to maintain its competitive advantage and ability to operate its businesses sustainably in the face of challenges and uncertainties brought on by external factors.</p>	<p>GC has implemented the following competitiveness risk management measures.</p> <ul style="list-style-type: none"> <li>• Manage feedstock and improve production units to ensure feedstock flexibility in compatibility with the market situation and to gain maximum benefits.</li> <li>• Apply modern technology so as to enhance production and operational efficiency, reduce costs and losses, and create added value.</li> <li>• Add value through integrated management across the value chain including create synergy between plants under GC Group and within PTT Group to enhance capabilities and competitiveness.</li> <li>• Focus on creating an integrated chain connecting the downstream and upstream petrochemical businesses so as to maximize the value of feedstock and add diversity to GC’s product portfolio, enabling it to remain competitive in a high volatile market, accommodate the needs of the growing in downstream industry, and prepare for expansion towards high value products (HVPs).</li> <li>• Adjust the product portfolio and create added value by developing more high value products (HVPs), focusing on promptly creating products to meet the needs of customers and conducting marketing to better reach end users.</li> <li>• Enhance long-term competitiveness by seeking new business opportunities domestically and overseas, with emphasis on products with high growth rate and profitability or products with outstanding technology or new innovations so as to build up on or strengthen GC’s current businesses.</li> </ul>



Corporate Risk Factor	Important Mitigation Measures
<p><u>Climate Change Adaption</u></p> <p>Climate change is among the most pressing global issues. The measures to keep the average temperature increase to under two degrees Celsius compared to the pre-industrial era have not been successful. This has led to both direct and indirect risks of great severity. Direct risks include natural disasters and droughts. Indirect risks include the introduction of stricter regulations and new standards, a change in consumer behavior, and technological change. As such, GC has to establish climate change adaption guidelines to minimize impact on production costs, competitiveness, and sustainable of future business operations.</p>	<p>GC has continuously implemented measures to reduce greenhouse gas (GHG) emissions and expanded its practices for the value chain in the future, as described below.</p> <ul style="list-style-type: none"> <li>• Appoint GC Group’s Sustainable Development Committee (SDC) to monitor and drive operations to accomplish its GHG reduction target.</li> <li>• Establish policy and frameworks to support investments in low-carbon projects so as to elevate GC’s GHG reduction initiatives.</li> <li>• Carry out GHG reduction initiatives, such as production efficiency enhancement, energy management, and energy conservation, and consider the use of renewable energy and investing in low-carbon projects according to the established plan.</li> <li>• Promote the use of renewable energy and apply the concept of eco-design according to international standards to product development process.</li> <li>• Establish strategies to transition towards low-carbon businesses by investing in downstream products, performance products, and green products, which utilize advanced production technology and release low levels of GHG.</li> <li>• Consistently monitor progress, review GHG reduction strategies and targets, and improve operations to keep pace with policies, rules, and regulations. Adopt international climate change practices to maintain GC’s climate change leadership in the Carbon Disclosure Project (CDP).</li> <li>• Participate in a pilot Internal Carbon Pricing Program organized by the Thailand Greenhouse Gas Management Organization (Public Organization) in collaboration with World Bank to apply internal carbon pricing (ICP) to the organization and elevate its GHG reduction initiatives in the future.</li> <li>• GC is in the process of expanding its initiatives to include GHG Scope 3: Other Indirect Emissions, to elevate its climate change and GHG reduction actions and strive towards becoming a world-class leader.</li> </ul>





Corporate Risk Factor	Important Mitigation Measures
<p><u>People and Organization Risk</u></p> <p>Given the highly uncertain business environment, “New Normal” trends, and more intense competition, GC places importance on enhancing the adaptability and resilience of the organization and its people to accommodate changes in work models or business environments as well as new business opportunities. The Company thus strives to enhance their efficiency to improve GC’s competitiveness in current businesses and be able to meet future business needs efficiently and continuously.</p>	<p>GC places importance on people development and has continuously carried out the following initiatives to ensure GC’s preparedness.</p> <p><u>People</u></p> <ul style="list-style-type: none"> <li>• Prepare succession plans that are in time for retiring executives and adequate for GC’s growth plan.</li> <li>• Create a Learning and Development Platform that focuses on self-learning through technology.</li> <li>• Plan to Apply artificial intelligence (AI) to the long-term development of the L&amp;D Platform so as to improve learning efficiency through analysis and link the platform to other related systems.</li> <li>• Develop talents with knowledge and competency compatible with GC’s strategic plan through action-based activities and overseas exchange programs to support GC Group’s business expansion.</li> <li>• Establishing a people transformation plan to enhance their capabilities and strengthen a digital culture in support of a more technologically drive work model in the future.</li> </ul> <p><u>Organization</u></p> <ul style="list-style-type: none"> <li>• Conducted an end-to-end Lean &amp; Process Improvement to enhance resilience, adaptability, agility, and effectiveness (Fit, Fast, Flexible &amp; Effective) as part of the “FiT Project.”</li> <li>• Promote cross-functional collaborations to foster cooperation within the organization.</li> <li>• Introduce working from Home (WFH) as a new mode of working to ensure safety and meet the needs of younger generations.</li> <li>• Use technology to improve the workplace environment to enable people from to work anywhere under irregular circumstances as well as promote transparency and accountability and reduce costs.</li> </ul> <p><u>Culture</u></p> <ul style="list-style-type: none"> <li>• Continuously foster an organization culture through GC SPIRIT, expressed through 4 Core Behaviors, focusing on creating a sense of urgency in employees at all levels to ensure their preparedness for changes.</li> <li>• Foster employee engagement as part the organizational culture by prioritizing employee safety and by encouraging them to adopt new ways of working to achieve efficiency.</li> <li>• Communicate clearly to all groups of employees on a regular basis through multiple channels.</li> <li>• Monitor and conduct employee opinion surveys periodically, and use the results to enhance efficiency.</li> </ul>

## EMERGING RISK FACTORS

In response to changes in trends and business factors, both existing risk factors that have become more volatile and emerging risk factors that have changed more rapidly and grown more complex, GC has monitored emerging risk factors and trends to ensure that proactive mitigation measures are in place before they impact the business.

Corporate Risk Factor	Important Mitigation Measures
<p><u>Change of Business Structure from Upcoming Accelerated Trends</u></p> <p>The COVID-19 pandemic has accelerated several global trends previously believed to take many more years to be fully realized, allowing them to have impact on the structure of the chemical industry and old business models at a faster rate. This has made the establishment of GC's strategies and directions more complex as these trends involve a number of interconnected factors and cannot be predicted based on past data. The three global trends that will have significant impact on the world's chemical industry in the next 3-5 years are as follows.</p> <p><b>1) Sustainability:</b></p> <p>Society, consumers, and stakeholders have put more pressure on the chemical industry to address intensifying environmental issues, such as the increase of waste that accompanies the adjustment to the new normal and natural disasters that have grown increasingly severe due to unsuccessful attempts to manage climate change. This has led to the widespread adoption of the circular economy concept as well as more stringent enforcement of laws and regulations, both of which affect GC. Impacts include reduced demand for existing plastic and chemical products and higher product costs due to expenses required to ensure compliance with more stringent laws and regulation, not to mention impact on GC's corporate image as the world's leading chemical</p>	<p>GC regularly monitors and analyzes changes in global trends as well as establishes and reviews strategic measures to ensure timely adjustment.</p> <p><u>Measures for trends in sustainability:</u></p> <p>GC strives to elevate corporate sustainability and link to its corporate strategies to create a balance among three dimensions (economic, social, and environmental) and support the achievement of the Sustainable Development Goals (SDGs). To this end, it carries out the following:</p> <ul style="list-style-type: none"> <li>• Continuously integrate the circular economy concept into business operations under three frameworks: (1) Smart Operating, (2) Responsible Caring, and (3) Loop Connecting.</li> <li>• Expand its circular economy initiatives and become a circular economy leader that collaborates with public and private sectors across the supply chain.</li> <li>• Increase collaboration with customers to create business value and opportunities for expansion in related businesses, such as bioplastics, recycled plastics, and medical products.</li> <li>• Offer opinions, propose guidelines, or take part in establishing sustainability standards with agencies/institutes to ensure their alignment with sustainability practices of the private sector and Thailand's regulations so as to set an assessment guideline or benchmark for sustainability standards both nationally and globally.</li> <li>• Raise awareness among consumers to create an accurate understanding of plastic waste issues and create alliances with the public and private sectors to address solutions to solve the problems using the circular economy concept through various projects, such as Upcycling the Oceans, Thailand/ Upcycling Plastic Waste, ThinkCycle Bank, and Public Private Partnership (PPP Plastic). In 2020, GC launched Send Plastic Home, organized the Circular Living Symposium 2020: Tomorrow Together, and developed Digital Drop Points to promote proper plastic waste separation, recycling, and upcycling for maximum resource efficiency.</li> <li>• Establish climate change action management guidelines consistent with SDG 13 - Climate Action and set targets to reduce GHG emissions directly produced by GC's business operations and created by energy purchase from external parties, focusing on the use of renewable resources, production efficiency enhancement through the adoption of technologies and digital systems, energy management and energy conservation projects, and the use of alternative energy. GC is also in the process of expanding its initiatives to include the target of reduce indirect GHG emissions (GHG Scope 3: Other Indirect Emissions).</li> </ul>

Corporate Risk Factor	Important Mitigation Measures
<p>producer. However, this trend also presents an opportunity for GC to become a leader in sustainability, meet the environmental needs of consumers and society, elevate its competitiveness, and create added value for stakeholders in a sustainable manner.</p> <p><b>2) Demographics and Geopolitical Tensions:</b></p> <p>Demographics and geopolitical tensions are playing a greater role in the global economy. In addition, partly due to the COVID-19, many countries have reduced reliance on others and pulled supply chains back home, resulting in increased deglobalization and protectionism. More importantly, several countries have also introduced product standards and trade protection measures to gain an advantage both in international competition and competition between the eastern and western hemispheres. This is especially true with China, which has become the center of the chemical industry and economic prosperity, and India, which appears to be following in China's footsteps. As a result, the chemical industry will be faced with different standards and significantly more economic restrictions.</p> <p><b>3) Accelerated Digital Transformation:</b></p> <p>Accelerated digital advancement results in accelerated impacts on the chemical industry. For instance, as artificial intelligence (AI) is adopted to enhance capabilities and decision-making, reduce costs, gain a competitive advantage, and increase operational transparency, it will increase automation and ultimately change the old way of working or business model. Therefore, GC needs to remain alert and keep pace with these developments.</p>	<ul style="list-style-type: none"> <li>Establish an integrated water management strategy consistent with national and international standards to ensure efficient water management and water security for GC's business operations and minimize potential impact of shortage of water for ecosystem conservation and consumption in communities.</li> </ul> <p><u>Measures for trends in demographics and geopolitical tensions:</u></p> <p>GC focus on establish measures to ensure flexibility and optionality in terms of market and products as well as be able to adjust with agility amid uncertainties and foster sales and profit security. The measures introduced are as follows.</p> <ul style="list-style-type: none"> <li>Create long-term sales stability by expanding towards markets in Southeast Asia, China, and India, which are high-growth markets and net importers, as well as taking advantage of the advantageous location and GC's network, such as sales office and distribution networks in target countries.</li> <li>Build sales agility in strategic markets. GC has planned to add sales offices in China to cover key areas and gain prompt access to customer needs and market situations. In India, GC has compiled knowledge and fostered relations with government agencies, private organizations, and business partners.</li> <li>Plan product development to respond to the needs for high value products (HVPs) in end-use markets by co-developing products with B2B business partners across the value chain.</li> <li>Plan market development strategies, focusing on creating demand in home base and strategic countries by tapping into existing customer bases and generating demand to develop new customer bases.</li> <li>Keep abreast of product standards and trade protection measures of various countries to establish response guidelines with relevant government agencies or plan suitable allocation of sales to each country or end market.</li> </ul> <p><u>Measures for trends in accelerated digital transformation:</u></p> <p>GC strives to applies digital technology to organization transformation to ensure adaptability and survival amid uncertainties. To this end, GC takes the following actions.</p> <ul style="list-style-type: none"> <li>Apply digital technology to the operational efficiency enhancement of two areas: <ul style="list-style-type: none"> <li>Smart Operation: This area consists of Smart Plant and Smart Sales and Marketing. For the former, digital technology is applied to the integration of the management system of all plants. For the latter, digital technology is introduced to promptly access and respond to customer needs.</li> <li>Smart Office: This area consists of Smart Work Process and Smart Workplace. For the former, new technologies are introduced to enhance the effectiveness of support operations across the organization. For the latter, digital technology is introduced to enable employees to work anywhere under irregular circumstances, promote transparency and accountability, and reduce expenses.</li> </ul> </li> <li>Improve fundamental technology, such as infrastructure, data and data management systems, and cybersecurity systems.</li> <li>Continuously foster digital capabilities and a digital culture among GC's personnel.</li> </ul>

Corporate Risk Factor	Important Mitigation Measures
<p><u>Technology Disruption</u></p> <p>The rapid development of technology and digital technology, coupled with the advent of the new normal in the post-COVID era, has prompted leading companies to seek and adopt emerging technology to increase resilience, strengthen competitiveness, as well as create differentiation and new business opportunities. Technological advances may also create disruptions, altering or replacing old business models, productions, working methods, and products with new ones. Examples of technological advances impacting GC are as follows.</p> <ul style="list-style-type: none"> <li>• The Crude Oil-to-Chemicals (COTC) technology has given producers a significant cost advantage and will affect GC's cost competitiveness.</li> <li>• Due to advances in battery technology, electric vehicles will replace cars with internal combustion engines between 2027-2030, which will reduce fuel demand and can affect GC's revenue and existing businesses.</li> <li>• The Internet of Things (IoT), Artificial Intelligence (AI), robotics, 5G, blockchain, advanced data analysis, and the development of SMART Factory in the petrochemical industry have increased production and operational efficiency. This may affect GC's long-term competitiveness if it fails to adopt suitable technologies in a timely manner.</li> <li>• Innovation and production technology, such as the development of composite materials or high-performance materials and 3D printing, can meet customer needs and create a competitive advantage.</li> <li>• Mechanical recycling and chemical recycling technology will become increasingly important due to pressure from consumers and more stringent environmental regulations.</li> </ul>	<p>GC aims to take advantage of technology in preparation for changes in highly volatile businesses to enhance its competitiveness and seek new business opportunities. To this end, GC has taken the following actions.</p> <ul style="list-style-type: none"> <li>• Utilize corporate venture capital (CVC) as a tool to learn about emerging technologies and create an opportunity to enter new businesses, grow high value businesses (HVB), and promote access to new technology that helps maintain the competitiveness of GC's current businesses as well as technology that supports GC's sustainability goals.</li> <li>• Foster market intelligence regarding new technology and business models through companies that GC invests in and through collaborations for the study and trial of technology so as to improve GC's operational efficiency and reduce its costs.</li> <li>• Keep abreast of technological advances, study feasibility, and improve the technology adoption process to enhance the competitiveness of GC's existing businesses as well as businesses that are built on or add value to GC's current products so as to maintain competitiveness.</li> <li>• Apply digital technology to operational efficiency improvement in support of organization transformation. The objectives and outcomes are categorized into three levels: (1) Digitization, which focuses efficiency and productivity enhancement (2) Digital Transformation of Function (DTF), which focuses on changing working processes and methods and adopting advanced analytics; and (3) Digital Transformation of Business (DTB), which focuses on creating opportunities to expand into new businesses or alter existing businesses.</li> <li>• Joint invest with partners with readiness in terms of innovation and production technology so as to speed up entry into new HVB markets, such as collaborating with a partner with compound plastic expertise to enter the automotive part market and collaborating with a partner with technology and access to bioplastic and recycled plastic markets so as to expand towards green products and offer alternatives to consumers.</li> <li>• Seek opportunities to invest in high value businesses (HVB), focusing on products with high growth rate and profitability that meet consumer needs under megatrends.</li> </ul>

Corporate Risk Factor	Important Mitigation Measures
<p><u>Cyber Threats &amp; Data Security Risk</u></p> <p>GC aims to become a data-driven organization to elevate its competitiveness and foster resilience in a highly complex and uncertain business landscape. To this end, digital technology and the Internet of Things (IoT) have been increasingly utilized. This includes the use of online platforms for work and virtual conferences, the expansion of e-commerce channels, robotics, cloud computing and storage, and the use of AI to design and management supply chain systems. However, cyberattacks have grown increasingly advanced and diverse accordingly, with a rise in internet scams based on news of current events. This presents cyberthreats to GC's production system and operational networks connected to the internet and can lead to interruptions to its production or operation systems or confidentiality and personal data breaches.</p> <p>Therefore, GC places great importance on cybersecurity risk management and data security as well as oversees compliance with relevant laws and regulations, such as the Personal Data Protection Act and the Cybersecurity Act. GC's failure to manage these risks would not only affect its business continuity, credibility, and reputation, but could also lead to lawsuits seeking significant damages.</p>	<p>GC has continuously monitored cyberthreats and established measures to prevent and minimize them as follows.</p> <ul style="list-style-type: none"> <li>• Establish and announce regulations on GC's IT Security Policy to ensure efficient use of IT systems and networks and to provide guidelines for GC and its subsidiaries.</li> <li>• Develop IT security infrastructure, such as OT Security Operation.</li> <li>• Monitor and prepare for new threats to both GC's offices and plants and perform tests and assessments regularly to put in place a proactive preventive plan before an attack takes place.</li> <li>• Carry out cybersecurity drills and disaster recovery tests regularly to ensure prompt response and minimize impacts on GC's information systems.</li> <li>• Implement an information security management system and asset security practices in accordance with international cyber-related standards.</li> <li>• Implement multi-factor authentication for important work systems.</li> <li>• Continuously foster cybersecurity awareness to keep pace with the situation, new forms of cyberattacks that accompany, and the exponential increase in the use of digital technology. Educate employees on forms of cyberattacks, how to defend against them, as well as relevant IT laws.</li> <li>• Regularly perform phishing tests to encourage employees to exercise caution when using information systems.</li> <li>• Introduce cybersecurity measures for Working from Home (WFH).</li> <li>• Keep track of the government's laws and regulations related to IT security to prepare for their enactment.</li> <li>• Appoint the Personal Data Protection Act Working Team and hire consultants to establish plans, practices, and guidelines related to the personal data of GC's related parties to ensure alignment with the Personal Data Protection Act.</li> <li>• Establish and announce a personal data protection policy to oversee personal data management to ensure security, effectiveness, and compliance with laws related to personal data protection.</li> <li>• Define GC's personal data management structure, assign responsible officers, and make preparations for the acquisition of a technology system to support the management of personal data held by GC as required by laws.</li> <li>• Use communication and training programs to foster an understanding among employees and representatives of GC's subsidiaries about the significance of personal data protection and make preparations in accordance with the established handbook, practices, and plans in anticipation of the upcoming enactment of the Personal Data Protection Act.</li> <li>• Establish data governance plans to ensure data accuracy, integrity, safety, and accessibility in order for GC to become a data-driven organization.</li> </ul>

GC believes that these mitigation measures can help GC minimize risks, increase opportunities for sustainable growth, and achieve business goals according to its established direction and strategic plans.



# Driving Business towards Sustainability

GC strives to continuously drive our business towards sustainability based on the “Step Up” strategy, which focuses on creating balance in three aspects, namely economy, society, and environment, covering all activities throughout the value chain. GC remains committed to this endeavor despite having been challenged by economic recession and national priority, such as COVID-19 pandemic, which affect overall business model and operation.

## **SUSTAINABILITY MANAGEMENT POLICY AND GOALS**

GC continues to pursue our aspiration to become the leader in “Chemistry for Better Living” by implementing sustainable development in tandem with creating business value according to the three key strategies:

### **STRATEGY 1 CLIMATE & WATER LEADER:**

GC places emphasis on optimizing resource utilization throughout the production process to reduce impact on both society and environment. In this effort, GC starts from the top with the implementation of renewable resources, the introduction of new technologies in the production process for energy efficiency enhancement, and down to the reduction of waste from business operations. This endeavor corresponds with our Climate strategy and reflects our continued efforts in tackling climate change, which is a global concern. GC has carried out projects relating to energy efficiency enhancement and renewable energy, such as, the installation of Solar Rooftop on the roof of plants. As a result, GC was able to achieve our greenhouse gas emissions reduction target of 6.82 million ton CO<sub>2</sub> equivalent, or 347.37 kg CO<sub>2</sub> equivalent per ton production. This is in line with the long-term target to reduce greenhouse gas emissions by 20 percent within 2030 and the target to reduce greenhouse gas intensity by 52 percent within 2050 according to science-based targets initiative of the chemicals sector. Furthermore, GC targets to reduce freshwater consumption intensity by 10 percent, based on BAUs, within 2023 compared to base year (2013). The company gives priority

to sustainable water management based on our integrated Internal Water Management Plan (Water Saving, Water innovation and Water Stewardship) and External Water Management Plan (Water Related and Water Conservation) in order to ensure sufficient water supply for business operations and the consumption of all relevant sectors.

### **STRATEGY 2 CIRCULAR ECONOMY ENHANCEMENT:**

GC focuses on developing essential products for living and improving the quality of life to create better living for the people and respond to consumer needs. We also attach importance to reducing social and environmental impacts caused by the production and utilization of such products. GC has implemented the Life Cycle Assessment (LCA) to assess the environmental impact of each product and has applied for eco-friendly product certifications, such as Carbon Footprint of Product (CFP), Carbon Footprint Reduction (CFR), and Water Footprint of Product (WFP), etc. This is to ensure our stakeholders and consumers that GC products are environmentally friendly and socially conscious. GC has operated according to our goals by having all GC products been certified with the Carbon Footprint of Product (CFP) from the Thailand Greenhouse Gas Management Organization (Public Organization). We have also implemented technology and innovation in the development of eco-friendly products to offer an alternative for consumers. This includes high performance products, which are durable and able to substantially reduce resource consumption. GC has set the target to increase the proportion of eco-friendly and high performance products to 30 percent of the overall product portfolio by 2030.

Sustainability can be achieved by building an Eco-Design system. The Circular economy acts as a key sustainable mechanism that connects partnership networks to drive the circular economy system, which requires cooperation from the public, private, and community sectors. GC believes that the key achievement is to create sustainability linkage with relevant key partners, namely public sector,

customers/suppliers, thought leaders, civil sector, investors, and leading organizations in sustainability, in order to create an integrated circular economy ecosystem, ranging from waste management to the development of prototype models in creating value-added products from plastic waste that can be further used in our future businesses.

### **STRATEGY 3 CSR TRANSFORMATION TO SOCIAL ENTERPRISE MODEL:**

GC places great emphasis on participating in support, assistance and improvement of communities surrounding especially in Rayong, which is GC's priority area as a production base. In order to uplift the quality of life and drive resource efficiency in society, our CSR priority focused on creating shared values, conducting business as a Social Enterprise (SE), as well as building cooperation network in Circular Economy with public and private sectors. In addition, GC regularly monitors its performance and listens to community opinions through the community satisfaction survey. These activities allow GC to truly respond to the current needs of communities, improve its future projects, and drive sustainable growth in society alongside with the company.

2020 is another year of GC achievement that represented our continued commitment to sustainability based on our strategies. Consequently, GC has been rated No.1 in the world for sustainability in the 2020 Dow Jones Sustainability Indices (DJSI) chemicals sector for the second consecutive year. Furthermore, GC was also the first and the only Thai company to achieve a top place and have scored an "A" (Leadership Level), which is the highest ranking in Climate Change Management and Water Security from the Carbon Disclosure Project (CDP), an internationally recognized sustainability assessment institution. At the national level, GC has been listed on the Thailand Sustainability Investment (THSI) for the sixth consecutive year and has earned an "Excellence Score" in the Low Carbon and Sustainable Business Index (LCSI) for the second consecutive year. These awards and recognitions are a reflection of our sustainable growth based on a balance of all three dimensions, namely economic growth, value creation for the society, and excellent environmental management, which are carried out under the Corporate Governance principle.

## **IMPACT MANAGEMENT FOR STAKEHOLDERS**

GC values our stakeholders' opinions and recognizes that their feedbacks are significant for GC to enhance our performance and efficiency. Therefore, GC reviews our stakeholder engagement activities and channels on an annual basis in order to ensure that stakeholders are able to fully engage in our business and express their opinions. GC stakeholders are categorized into four groups:

### **1) SHAREHOLDER**

#### Expectation

- Enhancement of competitiveness
- Short-term and long-term enterprise risk management
- Transparent Corporate Governance and information disclosure

#### Actions and Responses

- Analyze, examine and monitor current and future (3-5 years) enterprise risks
- Prepare risk management and mitigation measures
- Disclose information with transparency
- Provide whistleblower channels for shareholders to directly submit complaints and suggestions

### **2) BUSINESS PARTNER (INCLUDING CUSTOMERS AND INVESTORS)**

#### Expectation

- Conducting business with transparency and fairness
- Obtaining high-quality products and services at a fair price
- Enhancing competitiveness and future business direction

#### Actions and Responses

- Establish the Supplier Code of Conduct for business partners and feedstock suppliers of products, raw materials and services
- Conduct capacity development programs for suppliers
- Collaborate with suppliers to enhance production efficiency for new products and services

### 3) COMMUNITY, SOCIETY AND THE ENVIRONMENT (INCLUDING PUBLIC SECTOR, NON-PROFIT ORGANIZATIONS AND PRESS)

#### Expectation

- Taking into account the impact on society and environment from the company's operations
- Collaboration with public and private sectors as well as non-profit organizations
- Accurate and timely disclosure of the company's information and performance
- Transparent and auditable operations

#### Actions and Responses

- Conduct business with due care and comply strictly with the law while taking part in resolving and mitigating impact from climate change according to global and national goals
- Communicate and fully disclose information on the company's operations
- Establish and appoint responsible departments to appropriately liaise with the public sector
- Monitor the news from the public press to plan for the company's direction

### 4) EMPLOYEE

#### Expectation

- Benefits, compensation and fair workplace conditions
- Occupational health and safety

#### Actions and Responses

- Provide channels for employees to submit their feedback
- Develop employee performance and utilize performance indicators that are consistent with global standards
- Encourage occupational health and safety
- Provide adequate compensation and benefits for employees

## SUSTAINABILITY MANAGEMENT IN THE ENVIRONMENTAL DIMENSION



### ENERGY MANAGEMENT AND CLIMATE STRATEGY

GC strives to reduce greenhouse gas emissions based on the United Nations' Sustainable Development Goal 13 Climate Action by establishing goals to reduce accumulative energy consumption, position energy efficiency performance of all plants under GC Group at the Top Quartile Performance in Benchmarking, and reduce greenhouse gas (scopes 1, 2 and 3). The company has also assessed risks and opportunities

associated with climate change in accordance with the National Determined Contributions (NDCs), the 2 Degree Scenario (2DS), which targets to maintain global temperature rise well below 2°C, and the Task Force on Climate-related Financial Disclosures (TCFD). Results from the risk and opportunity assessment have been used to establish appropriate strategies, define and execute the climate change roadmap. In addition, GC has also transparently disclosed the information on climate-related risk management to investors and stakeholders.

In 2020, GC has conducted various projects to reduce greenhouse gas emissions and enhance energy efficiency, such as Internal Carbon Price project, Greenhouse Gas Emission Reduction projects, and Energy Conservation projects. Our strong commitment to strengthening energy management and climate strategy projects have led us to achieve our 2020 goals with the continuous reduction in accumulative energy consumption and greenhouse gas emission (scopes 1 and 2). GC also plans to further expand the scope of integrated climate operations into the supply chain (scope 3).



### WATER STRATEGY

GC is committed to partake in accomplishing the United Nations Sustainable Development Goal 6 Clean Water and Sanitation. Therefore, GC has formulated strategies and plans, such as One Water Strategy, Internal Water Management Plan (Water Saving, Water Innovation, and Water Stewardship) and External Water Management Plan (Water Related, and Water Conservation) in order to increase water consumption efficiency in the production process, monitor water situation at the source, and promote water conservation collectively with the public, large industrial water users and community sectors, in order to lessen any impacts that may arise due to water shortage while maintaining sufficient water supply for the consumption of all sectors.



### WASTE MANAGEMENT

GC strives to achieve zero waste to landfill disposal by integrating circular economy and establishing waste management policy while also applying the 5Rs principle (Reduce, Recycle, Reuse, Refuse and Renewable) to optimize resource management and reduce waste.

In 2020, GC has carried out several waste management projects which have contributed to reducing waste intensity per ton production as well as waste disposal costs. At the same time, we also focused on waste upcycling and have achieved our Zero Waste to Landfill goal for the sixth consecutive year.

## SUSTAINABILITY MANAGEMENT IN THE SOCIAL DIMENSION

### ORGANIZATION TRANSFORMATION

GC strives to attract and retain high performance employees in tandem with developing their skills and capabilities to support our business growth and prepare the company to tackle business transformations in a timely manner. GC emphasizes on three areas of resource management:



#### 1) PEOPLE

GC targets to develop employee performance and retain talents which contribute towards the organization's success according to current and future business directions. The company has held training to enhance employee capability and provided career advancement opportunities, focusing on Re-Skilling and Up-Skilling to prepare employees for changes that may occur in any situations. This effort has helped transform our human resource into an important mechanism in conducting business according to our goals while saving costs on investment and expenses in comparison with Training Return on Investment of employee skill development and enhancement programs.



#### 2) ORGANIZATION

GC focuses on a more flexible working and type that can handle rapidly changing business environment. The challenges of the COVID-19 pandemic, in particular, has prompted us to modify how we operate by allowing employees to Work from Home and offering flexibility on working hours. At the same time, we have strengthened our IT infrastructures with the implementation of digital technology to increase communication efficiency both internally and externally.



#### 3) CULTURE

GC fosters a corporate culture that is in line with the GC SPIRIT and the 4 Core Behaviors by focusing on acquiring new knowledge, working as a team in a creative manner, and acknowledging the company's directions and goals. As a result, employee engagement score has continued on an upward trend.

### HEALTH AND SAFETY IN HUMAN RIGHTS CONDITIONS

GC has reviewed our human rights policy in accordance with international principles. GC has also examined all aspects of human rights risk, which includes setting the assessment scope, identifying relevant human rights issues, analyzing the severity of potential impacts and opportunities, formulating mitigation measures, monitoring and reviewing human rights performance, and providing rehabilitation for those affected by GC's activities.

GC has assessed human rights risks in all activities along the supply chain, covering all six aspects of human rights namely labor rights, community rights, supply chain, safety, environment and consumer rights. The preparation of impact control and mitigation measures as well as the assessment of residual risks put GC at a low to moderate risk level in six issues, with four out of six being safety-related issues, namely work-related accidents, product and services acquisition, chemical usage, pollution control, waste management, and oil leakage. GC has established control and mitigation measures associated with these risks to which relevant parties are obligated to comply strictly.

## CONTRIBUTE TO SOCIETY

GC has supported and developed neighbouring society and community by building relationship and engagement with various sectors. The company has also integrated innovation and expertise to conduct our CSR projects, which are based on principles such as Social Enterprise (SE) and Circular Economy (CE). Our CSR efforts comprise of three essential elements:



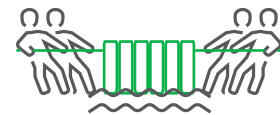
### 1) BETTER LIVING

A highlight project in the “Better Living” context is “Our Khung BangKachao”, which is a collaboration of GC, local authorities in Khung BangKaChao area of Samut Prakan province, and the civil sector. The project is initiated to create awareness in waste management, develop an integrated learning center about organic and recycled waste management based on circular economy, and create income from plastic waste separation, conversion and upcycling, for example upcycled monk robes and face masks. “Our Khung BangKaChao” has succeeded in sorting 79 tons of waste into the appropriate management system and generated a revenue of 2,038,040 baht from sales of upcycled monk robes, face masks and other upcycled products.



### 2) SHARING

GC has collaborated with Patom Organic Living, Luffala Community Enterprise, and Hom Mahad Organic Farming Network to initiate Rayong Organic Living Project to develop organic products, such as shampoo, liquid soap, skincare cream and liquid hand soap, from local organic materials in Khao Huai Mahat. GC has donated these products through the Rayong Provincial Red Cross to distribute to COVID-19 victims in all provinces nationwide. The project has generated a revenue of over 2.5 million baht per year for the community and community enterprises of Rayong province.



### 3) ECOLOGY

GC has initiated the “GC Collaborative Community-based Water Management” project to conserve water sources, alleviate floods and droughts and increase accessibility to clean water supply for community consumption. GC has plans to construct 1,000 check dams and restore 693 rais (1.1 km<sup>2</sup>) of forest areas. In 2020, GC has implemented projects to improve the ecosystem, such as the construction and improvement of 409 check dams and reforestation of 287 rais (0.45 km<sup>2</sup>) of forest areas to ensure the community sufficient water supply for consumption and agriculture as well the construction of a check dam to trap sediment in order to lower canal dredging frequency and expense. GC has also initiated the “Groundwater Bank” project, covering an area of 121 rai (0.19 km<sup>2</sup>), to resolve problems from droughts, floods and seawater overflowing into farmlands while providing remedy to victims of these incidents.

GC has established a long-term target to integrate circular economy with waste management principles in four communities by 2021. The company also aims to focus 70% of our efforts on social development in creating business value and 30% on donation to society in 2023. We also target to move towards being the Partner of Choice by 2025.



## SUSTAINABILITY MANAGEMENT IN THE ECONOMIC DIMENSION

### CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

GC values the opinions, suggestions and expectations of our customers and suppliers. Therefore, the company has initiated various communication channels such as Voice of Customer (VoC), CRM Mobile Application and Customer Solution Center (CSC). GC realizes that listening to and exchanging experiences with customers and suppliers are benefits for the company to further our product development endeavour in response to the demands of the market and new business groups. Moreover, the company uses information and suggestions from customers to follow up on our operations as well as improve and develop a more efficient customer relationship management process. A survey of customer satisfaction in 2020 showed a continued increasing trend that is higher than the average of other companies in the same industrial group.


### INNOVATION MANAGEMENT AND SUSTAINABLE PRODUCT AND SERVICES

GC has applied the Eco-design Guideline and the Eco-design Criteria, which are in line with ISO 14062, Life Cycle Assessment (LCA), and Circular Economy, to develop sustainable products and services. The company also aims to create a customer-centric innovation network. The objective is to utilize digital technology and new innovations to develop and

improve the properties of our products and services as well as the company's production process to become outstanding and truly meet the demands of customers and consumers both economically and ecologically. In this regard, it resulted in variety of products, for example, high performance products that are durable and energy-saving, bio & green chemical products that reduce greenhouse gas emissions, and recycling & upcycling products, etc.

In 2020, GC has increased investment in research and development of innovation and technology to enhance competitiveness by expanding the scope of innovation development to generate income as well as reducing environmental impact in six product groups, namely Packaging, Construction, Agriculture, Automotive, Electric & Electronic (E&E), and Health Personal Care (HPC). Additionally, GC has also established the "B-to-B Touch C" plan to develop products which rely on customers' needs (C) through business collaboration (B-to-B) with plastic converters, brand owners, and partners throughout the value chain. As a consequent, these allow GC to generate revenue from eco-friendly fashion products under the trademark "Upcycling by GC".

Additional information is available in the Integrated Sustainability Report 2020 on the GC website:

 [www.pttgcgroup.com](http://www.pttgcgroup.com) Sustainability > Reporting Center > ISR Report



# Management Discussion and Analysis

## EXECUTIVE SUMMARY

For 2020 performance, PTT Global Chemical Public Company Limited (“the Company”) had total sales revenue at Baht 326,270 million, declined by 20% from the previous year, mainly due to the decrease in average product prices impacted by COVID-19 on global economic condition and lower demand for ended-products. The Company had Operating Profit (excluding Stock Loss Net Reversal of NRV, Foreign Exchange gain, and Gain from commodity hedging, and Extraordinary items) of Baht 7,356 million, decreased by 11% from the previous year. Although

petrochemical and refinery Businesses continued to be under pressure from the COVID-19, the Company has implemented various efforts including cost saving program, production cost reduction, and enhancement of production efficiency which resulted to the Company’s Adjusted EBITDA of Baht 28,579 million, decreased by 1% from the previous year. The Company had Stock Loss Net Reversal of NRV of Baht 8,288 million, Gain from commodity hedging of Baht 476 million, and Foreign Exchange gain of Baht 343 million, which led to the Company recorded Net Profit of Baht 200 million (Baht 0.04/share), declined from the previous year.

## PERFORMANCE SUMMARY

(Unit: Million Baht)	2019	2020	YoY % +/-
Sales Revenue	409,688	326,270	-20%
EBITDA	27,802	20,291	-27%
EBITDA Margin (%)	7%	6%	-1%
Share of profit of investments in JV and Associates	4,570	3,340	-27%
Net Profit	11,682	200	-98%
EPS (Baht/Share)	2.59	0.04	-98%
Adjusted EBITDA*	28,900	28,579	-1%
Adjusted EBITDA Margin (%)	7%	9%	2%

**Note:** \* Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss), NRV and Extra item.

In 2020, for Olefins and Derivatives Business Unit, there were planned maintenance shutdown of Olefin plant 2/1 and Olefin plant 2/2 for 39 days and 35 days, respectively. In term of the price situation, overall products prices declined from the impact of COVID-19 pandemic. However, the Company adjusted production and marketing plans while there was limited impact on Polyethylene market since it is necessary products in daily life in packaging sector and with supporting demand for hygiene-product. These resulted to slight

drop in sales volume comparing with the previous year and led to EBITDA Margin of Olefins and Derivatives at 16%, increased from the previous year. For Refinery Business Unit, even the performance was dropped due to much lower demand, the Company has continued to adjust production by reducing Jet Fuel production and producing more Diesel which helped to mitigate the impact, resulted to Market GRM at 2.24 USD per barrel. For Aromatics Business Unit, Market P2F per ton BTX was steady at 130 USD per barrel

due to existing pressure from low products spread, however, sales volume increased due to less planned maintenance shutdown than the previous year. The Company had Share of profit of investment in JV and

Associates of Baht 3,340 million, decreased by 27%, mainly due to the declining in overall products spread from mentioned factors.

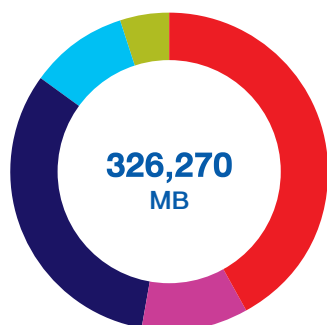
### ADJUSTED EBITDA MARGIN

% Adj. EBITDA Margin	2019	2020
Business Unit:		
Refinery and Shared Facilities	2	2
Aromatics	3	11
Olefins and Derivatives*	15	16
Green Chemicals	5	7
Performance Materials and Chemicals	10	18
<b>Average</b>	<b>7</b>	<b>9</b>

Note: \*If included PTA, PET %Adj. EBITDA in 2019 and 2020 are 14%, and 14% respectively.

### FY 2020

#### SALES REVENUE



**42%**

Refinery and Shared Facilities

**11%**

Aromatics

**32%**

Olefins and Derivatives

**5%**

Green Chemicals

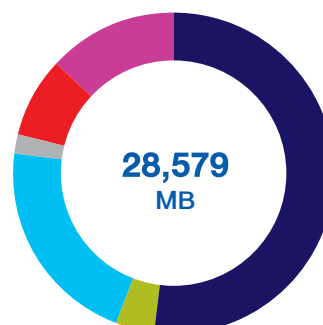
**10%**

Performance Materials and Chemicals

**0%**

Services and Others

#### ADJUSTED EBITDA



**8%**

Refinery and Shared Facilities

**13%**

Aromatics

**52%**

Olefins and Derivatives

**4%**

Green Chemicals

**21%**

Performance Materials and Chemicals

**2%**

Services and Others

## PERFORMANCE ANALYSIS BY BUSINESS UNIT

### REFINERY & SHARED FACILITIES BUSINESS UNIT

#### CRUDE PRICE & PETROLEUM PRODUCT SPREADS

(Unit: USD per barrel)	2019	2020	YoY % +/-
Dubai Crude Oil	63.53	42.21	-34%
Gasoline-Dubai	8.96	4.43	-51%
Jet-Dubai	13.71	2.52	-82%
Diesel-Dubai	13.70	6.14	-55%
HSFO-Dubai	-4.91	-3.04	38%
LSFO-Dubai	12.28	11.21	-9%

Since the beginning of 2020, Crude oil market has been under pressure from the measurements to control COVID-19 spread which impacted to crude oil demand according to Lockdown measurement in many countries. In addition, the tensions between Saudi Arabia and Russia arose since both parties could not reach an agreement for crude oil production cut which led to a sharp declining of crude oil price to the lowest level in April 2020 at approximately 20 USD per barrel. However, after OPEC alliances had reached an agreement for crude oil production cut in line with lower crude oil demand and the Lockdown easing in many countries, Crude oil price gradually recovered and moved within the level of 40-43 USD per barrel in Q3/2020. In Q4/2020 which was winter in the US and Europe, a resurgence of COVID-19 has arrived and led to the re-Lockdown in Europe, together with increasing crude oil supply from Libya in October 2020, crude oil market was under pressure again. However, crude oil demand in China was exist since COVID-19 situation has been well-controlled by the Chinese government and Chinese economy was recovered which led to increasing crude oil import.

In addition, the progress of COVID-19 vaccines development in the last two months of 2020 helped to support crude oil price increasing to the level of 45-47 USD per barrel, with average crude oil price in 2020 at 42.21 USD per barrel.

In 2020, the Petroleum products price and product spread over crude oil price had been declined mainly due to direct impact of the COVID-on travelling demand which considered as major demand for petroleum products. Average Diesel over Dubai crude oil spread was 6.14 USD per barrel, decreased from previous year, due to Lockdown restriction which limit the travelling and transportation while Diesel supply increased since refiners adjusted their production mode to produce Diesel instead of Jet Fuel which led to higher inventory level. Average Jet Fuel over Dubai crude oil spread was 2.52 USD per barrel, decreased from previous year, due to Lockdown restriction which resulted to declining of international travelling. Average Low Sulfur Fuel oil (LSFO) over Dubai crude oil spread was 11.21 USD per barrel which supported by healthy shipping activities and the IMO implementation.

## GROSS REFINERY MARGIN

(Unit: USD per barrel)	2019	2020	YoY % +/-
Market GRM	3.86	2.24	-42%
CDU GRM	3.61	1.58	-56%
CRS GRM	5.00	5.54	11%
Hedging Gain/(Loss)	0.26	0.17	-34%
Stock Gain/(Loss) net NRV	0.34	-3.20	<-200%
<b>Accounting GRM</b>	<b>4.46</b>	<b>-0.80</b>	<b>-118%</b>
<b>Adjusted EBITDA (MB)</b>	<b>3,843</b>	<b>2,184</b>	<b>-43%</b>
<b>Adjusted EBITDA (%)</b>	<b>2%</b>	<b>2%</b>	<b>0%</b>
<b>Utilization Rate</b>	<b>87%</b>	<b>97%</b>	<b>10%</b>

**Note:** \*Adjusted EBITDA refers EBITDA excluding Stock gain/(loss), NRV and Extra item.

For Refinery Business Unit in 2020, Market GRM was 2.24 USD per barrel with CDU utilization rate at 97%, increased by 10% from the previous year due to there was planned maintenance shutdown in Q4/2019. The Company realized Stock Loss net Reversal of NRV at 3.20 USD per barrel due to the declining in crude oil price while recorded gain from Commodity Hedging

of 0.17 USD per barrel. These resulted to the loss of Refinery Business Unit's accounting GRM at 0.80 USD per barrel, declined from 2019. The Adjusted EBITDA of Refinery Business Unit in 2020 was Baht 2,184 million, 43% decreased from 2019 while Adjusted EBITDA Margin was at 2%.

## AROMATICS BUSINESS UNIT

### AROMATICS PRODUCT PRICES AND SPREADS OVER CONDENSATE

(Unit: USD per ton)	2019	2020	YoY % +/-
Condensate	544	350	-36%
Paraxylene (TW)	901	577	-36%
Paraxylene (TW)-Condensate	357	227	-36%
Paraxylene (FECF)	895	578	-35%
Paraxylene (FECF)-Condensate	351	229	-35%
Benzene (Spot Korea)	641	485	-24%
Benzene-Condensate	97	136	40%
Naphtha-Condensate	-21	30	>200%



## PARAXYLENE

In 2020, Paraxylene market was under pressure from the impact of COVID-19 which led to weaker Paraxylene demand from downstream products Purified Terephthalic Acid (PTA) and Polyester market. However, Paraxylene market was supported by strong demand from PET Resin consumer behavior has turned to focus more on hygiene which led to higher demand for PET Resin for food packaging and single-used bottle. In term of supply, global Paraxylene capacity was at 64.5 million tons, increased by 8.1 million tons from the previous year, which mainly come from China according to its self-sufficient economy policy to decrease import volume, while the pressure from increasing inventory still exists. These resulted to Paraxylene (FECP) over Condensate spread slightly decreased was 229 USD per ton, declined from 351 USD per ton in 2019.

## BENZENE

In 2020, the demand for Benzene is heavily affected by COVID-19 situation. However, at late of 2020, Benzene market was supported by stimulus package in China together with the demand for necessary products during Work from Home and the change in behavior to use personal vehicle, resulted to increasing demand in home appliances sector, construction sector, and automotive sector which led to improvement in Benzene over Condensate spread in late of the year. In term of supply, global Benzene supply in 2020 was 69.5 million tons, increased by 2.8 million tons from 2019, and this led to a slowdown in production of high-cost Benzene producers which resulted to Average Benzene over Condensate spread in 2020 at 136 USD per ton, increased by 39 USD per ton from the previous year.

## AROMATICS MARKET P2F

(Unit: USD per ton)	2019	2020	YoY % +/-
Market P2F	130	130	0%
Hedging Gain/(Loss)	10.5	2.5	-76%
Stock Gain/(Loss) net NRV	-8.0	-28.6	<-200%
<b>Accounting P2F</b>	<b>132</b>	<b>104</b>	<b>-22%</b>
<b>Adjusted EBITDA* (MB)</b>	<b>1,721</b>	<b>3,635</b>	<b>111%</b>
<b>Adjusted EBITDA (%)</b>	<b>3%</b>	<b>11%</b>	<b>8%</b>
<b>Utilization Rate (%)</b>	<b>88%</b>	<b>96%</b>	<b>7%</b>

**Note:** \*Adjusted EBITDA refers EBITDA excluding Stock gain/(loss), NRV and Extra item.

In 2020, Aromatics Business Unit had BTX utilization rate at 96%, increased from the previous year as planned maintenance shutdown of Aromatics plant 1 for 53 days took place in the period, while there were planned maintenance shutdown of Aromatics plant 2 for 19 days in this period. Market P2F per ton BTX steady at 130 USD per ton mainly due to Benzene over Condensate spread and by-products spread increased.

Adjusted EBITDA for 2020 was Baht 3,635 million with Adjusted EBITDA Margin at 11%, improving from the previous year. In this period, the Company had Stock Loss Net Reversal of NRV at 28.6 USD per ton and Gain from commodity hedging at 2.5 USD per ton, resulted to Accounting P2F of 104 USD per ton, decreased by 22% from the previous year.

## OLEFINS AND DERIVATIVES BUSINESS UNIT

### PRICES AND SPREADS OF OLEFINS AND DERIVATIVES

(Unit: USD per ton)	2019	2020	YoY % +/-
Naphtha (MOPJ)	523	380	-27%
Ethylene (SEA)	823	713	-13%
Propylene (SEA)	838	775	-7%
Avg. PE	987	919	-7%
HDPE	991	880	-11%
HDPE-Naphtha	468	500	7%
LLDPE	952	867	-9%
LLDPE-Naphtha	429	487	14%
LDPE	1,019	1,010	-1%
LLDPE- Naphtha	496	630	27%
PP	1,101	992	-10%
PP-Naphtha	578	612	6%
MEG (ACP)	754	627	-17%
MEG-0.65 Ethylene	219	164	-25%

In 2020, the average Ethylene (SEA) price was 713 USD per ton, decreased from 823 USD per ton in the previous year, due to weakening Ethylene price during Q2/2020 from a sharp drop in demand caused by the COVID-19, the Lockdown restriction in many countries, and the slowdown in production in downstream producers. As a result, the market has been oversupplied.

The average PE price was 919 USD per ton, decreased by 7% from the previous year, due to the

consequences of the COVID-19 which impacted to the demand throughout the year, although, in 2019, overall products prices were under pressure from an uncertainty of U.S.-China trade tension and the new supply in the market.

MEG (ACP) price was 627 USD per ton, decreased by 17% from 754 USD per ton in 2019, mainly due to weaker demand in downstream industries especially Filament yarn, while MEG inventory in China remained high.

### ADJUSTED EBITDA OF OLEFINS AND DERIVATIVES

(Unit: Million Baht)	2019	2020	YoY % +/-
Adjusted EBITDA	17,800	14,795	-17%
Adjusted EBITDA* (%)	15%	16%	1%
Utilization Rate Olefins (%)	102%	97%	-5%
Utilization Rate Polymer (%)	102%	101%	-1%

**Note:** \*If included PTA, PET %Adj. EBITDA in 2019, and 2020 are 14%, and 14% respectively.

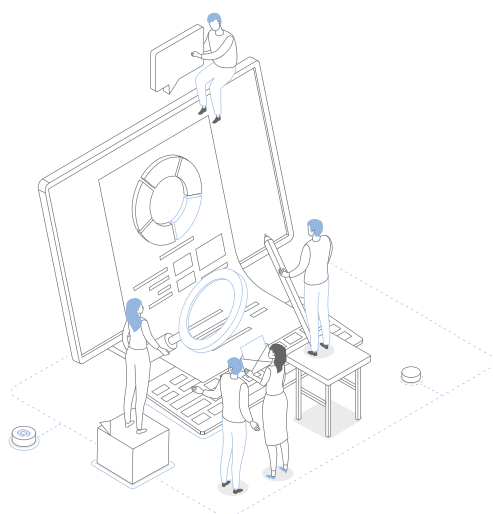
In 2020, Olefins plants had average utilization rate of 97%, declined from 102% in 2019. Polymer plant utilization rate was slightly decreased in line with a declined of Olefins plants utilization rate. For Olefins plants, there were planned maintenance shutdown of Olefin plant 2/1 and Olefin plant 2/2 for 39 days and 35 days respectively. In term of the price situation, overall products prices were under pressure impact of COVID-19. However, since the Company adjusted

production and sales strategies matching with the customer's needs, as a result, there was just a slightly drop in sales volume compared with the previous year. The Adjusted EBITDA of Olefins and Derivatives Business Unit was Baht 14,795 million, or Adjusted EBITDA Margin of 16%. In term of feedstock, the portion of feedstock used of Gas and Naphtha were 82% and 18% respectively.

### ADJUSTED EBITDA BY BUSINESS UNIT

Adjusted EBITDA (MB)	2019	2020	YoY % +/-
Business Unit :			
Refinery and Shared Facilities	3,843	2,184	-43%
Aromatics	1,721	3,635	111%
Olefins and Derivatives	17,800	14,795	-17%
Green Chemicals	632	1,228	94%
Performance Materials and Chemicals	3,554	6,020	69%
Services and Others	1,351	717	-47%
<b>*Adjusted EBITDA (MB)</b>	<b>28,900</b>	<b>28,579</b>	<b>-1%</b>

**Note:** \* Adjusted EBITDA refers to EBITDA excluding Stock gain/(loss), NRV and Extra item.



## OPERATING PERFORMANCE

(Unit: Million Baht)		2019	2020	YoY % + /(-)
1	Sales Revenue	409,688	326,270	-20%
2	Feedstock cost	(325,677)	(248,737)	-24%
	<b>Product to Feed Margin</b>	<b>84,011</b>	<b>77,533</b>	<b>-8%</b>
3	Variable Cost	(29,224)	(26,395)	-10%
4	Fixed OH	(17,479)	(14,866)	-15%
5	Stock Gain/(Loss) and NRV	(114)	(8,288)	<-200%
6	Gain/(Loss) on Commodity Hedging	1,248	476	-62%
7	Other Revenue	4,431	4,942	12%
8	SG&A Expenses	(15,071)	(13,111)	-13%
	<b>EBITDA</b>	<b>27,802</b>	<b>20,291</b>	<b>-27%</b>
9	Depreciation & Amortization	(19,513)	(20,578)	5%
10	Reversal of Loss from impairment of assets	-	313	100%
11	Reversal (Loss) of GGC's inventory	232	-	-100%
12	Gain on bargain purchase	31	-	-100%
	<b>EBIT</b>	<b>8,552</b>	<b>26</b>	<b>-100%</b>
13	Net financial expense	(2,131)	(3,166)	49%
14	FX Gain (Loss)	2,007	343	-83%
15	Share of gain/(loss) from investment	4,570	3,340	-27%
16	Corporate Income Tax	(649)	109	117%
17	<b>Net Profit after Tax</b>	<b>12,349</b>	<b>652</b>	<b>-95%</b>
	<b>Profit/(loss) attributable to:</b>			
18	Non-controlling interests	667	452	-32%
19	<b>Owners of the Company</b>	<b>11,682</b>	<b>200</b>	<b>-98%</b>
20	<b>Adjusted EBITDA*</b>	<b>28,900</b>	<b>28,579</b>	<b>-1%</b>

**Note:** \*Adjusted EBITDA refers EBITDA excluding Stock gain/loss, net NRV and Extra item.

In 2020, the Company had lower Sales Revenue compared with the previous year mainly due to drop in the product selling price and demand of all business units resulted from COVID-19 outbreak and the planned maintenance shutdown of the Aromatics plant 2, the Olefins plant 2, Polymers plants, Phenol plant 2 and BPA plant as a result of lower in sales volume. Whilst Fixed overhead and SG&A expenses decreased from 2019 due to cost control policy

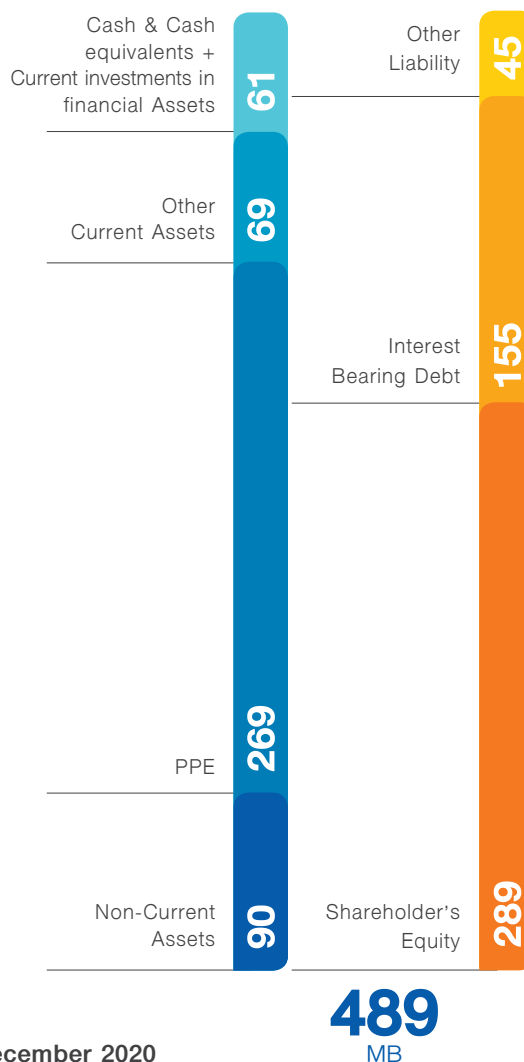
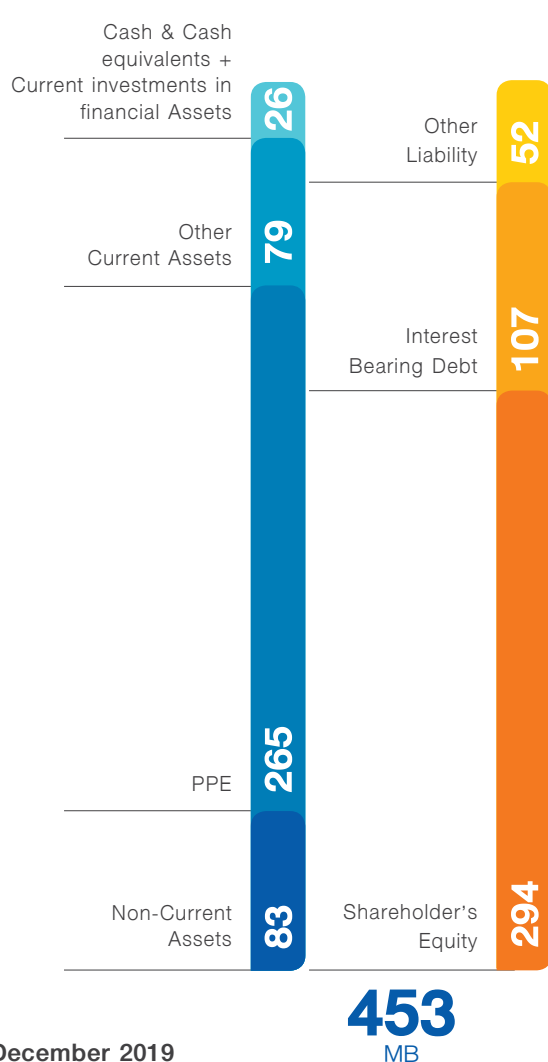
and higher employee benefit accrual as the law that increase compensation day after retirement in 2019, but increased in Depreciation and Amortization.

Financial Expenses increased from the last year due to additional debt financing to enhance the Company's liquidity, higher interest expense, and TFRS 16 implemented on January 1, 2020, as a result of increased in Right-of-Use assets.

# STATEMENT OF FINANCIAL POSITION

## BALANCE SHEET

Unit: Billion Baht



### ASSETS

As of December 31, 2020, the Company had Total asset of Baht 489,383 million, increased by 8% at Baht 36,868 million from December 31, 2019 and movements of assets, were as follows:

- Total Current asset increased by Baht 25,417 million mainly due to increasing of Cash and Cash Equivalents and Current Investment in financial asset by Baht 35,098 million as Bond Issuance and Long-term borrowings from financial institutions. Whilst the Company had Account Receivable decreased Baht 4,880 million as lower product price from world petroleum and petrochemical prices. Also, Inventories was declined by Baht 2,807 million as lower in raw material price.
- Non-current asset increased by Baht 11,452 million which derived from increasing in Property, plant and equipment led by purchasing and construction of assets within the period net amount of Baht 4,613 million. In addition, the Company had higher Right-of-Use assets by Baht 7,039 million as a result of TFRS 16 implemented on January 1, 2020.
- The Company has Credit management policy which prescribes criteria and processes for trade credit review and management for the purpose of standardization and determine appropriated payment terms and conditions and collection periods for each business units comparable with those of peers in the industry to ensure the Company's liquidity for business operation.

## LIABILITIES

As of December 31, 2020, the Company had Total liabilities of Baht 200,389 million, increased by 26% at Baht 41,470 million from December 31, 2019 and movements of liabilities, were as follows:

- Interest-bearing debt increased by Baht 41,209 million due to Bond issuing by Baht 15,000 million and Long-term borrowings of Baht 30,000 million.
- The Company had higher Right-of-Use assets by Baht 6,386 million as a result of TFRS 16 implemented on January 1, 2020 that mainly due to land lease and tank rental.

- Account payable decreased by Baht 5,365 million due to lower in raw material price, while other current liabilities declined by Baht 1,363 million.

## SHAREHOLDER'S EQUITY

As of December 31, 2020, the Company had Total Shareholder's Equity of Baht 288,994 million, decreased by Baht 4,601 million from December 31, 2019 as a result from Dividends paid at Baht 4,486 million.

## CASHFLOW STATEMENT

Cashflow (Unit: Million Baht)	For the year Ended 31 Dec 2020
Net cash flows provided by operating activities	22,146
Net cash flows used in investing activities	(28,274)
Net cash flows provided by financing activities	31,794
<b>Net increase (decrease) in cash and cash equivalents, before effect from foreign exchange rate</b>	<b>25,665</b>
Effects of exchange rates on cash and cash equivalents	(192)
<b>Net decrease in cash and cash equivalents during the period</b>	<b>25,473</b>
Cash and cash equivalents at the beginning of the period	18,840
<b>Cash and cash equivalents at the end of the period</b>	<b>44,313</b>
Current investments in financial assets at the end of the period	16,345
Non-current investments in financial assets in private fund and in-house	418
<b>Net cash and cash equivalent and investment at the end of the period</b>	<b>61,076</b>

As of December 31, 2020, Cash and Cash Equivalents and Current Investments in financial assets increased by Baht 35,098 million from the end of last year. The Company had cash flow from operations of Baht 22,146 million while cash flow used in investment activities of Baht 28,274 million which mainly invested in the purchasing of property, plant and equipment and intangible assets on the projects such as Olefins Reconfiguration Project, Propylene Oxide by GC Oxirane Co., Ltd. and Polyols & PU System by GC Polyols Co., Ltd. Besides, the company had capital distribution of subsidiaries by Baht 1,549 million including Kuraray GC Advanced Materials Co. Ltd. and Dynachisso Thai Co., Ltd. However, there was cash received from the repayment of short-term borrowing from GPSC of Baht 1,123 million for supporting the acquisition of Glow Energy Public Company Limited, and dividend and interest income of Baht 3,108 million.

The Company's cash flow received from financing activities of Baht 31,794 million mainly received from Bond issuing by Baht 15,000 million and net Short-term and Long-term borrowings of Baht 36,119 million. Nevertheless, the Company had the Dividend payment of Baht 5,024 million and interest payment to financial institutions and hire-purchase contracts of Baht 3,365 million. As a result, as of December 31, 2020 the Company had total Cash and Cash Equivalents of Baht 44,313 million, including Current investments in financial assets of Baht 16,345 million and Non-current investments in financial assets, the Company had total cash and cash equivalent and investment of Baht 61,076 million, increased by Baht 33,179 million from the end of last year. The Company had net interest-bearing debt to equity at 0.33 times and Net interest-bearing debt to EBITDA at 4.65 times.



## KEY FINANCIAL RATIOS

Financial Ratios		2018	2019	2020
<b>Liquidity Ratios:</b>				
Current Ratio	(Times)	1.95	1.97	2.20
Quick Ratio	(Times)	1.29	1.13	1.52
Operating Cash Flow Ratio	(Times)	0.80	0.48	0.40
Account Receivables Turnover	(Times)	12.31	10.75	10.36
Account Receivable Days	(Days)	29.74	33.96	35.31
Inventory Turnover	(Times)	11.93	10.33	9.10
Days Sales in Inventory	(Days)	30.69	35.33	40.22
Account Payables Turnover	(Times)	14.01	13.02	13.91
Account Payables Days	(Days)	26.05	28.03	26.31
Cash Cycle	(Days)	34.37	41.26	49.22
<b>Profitability Ratios:</b>				
Gross Margin Ratio	(%)	10.78	4.65	3.70
EBIT/Sales Revenue	(%)	9.09	3.93	1.23
Cashflow from Operation/EBIT	(%)	114.47	187.21	546.31
Net Profits to Sales Revenue	(%)	7.77	2.85	0.06
Return on Equity	(%)	14.04	4.02	0.07
<b>Efficiency Ratios:</b>				
Return on Total Assets	(%)	10.36	3.50	0.86
Return on Fixed Assets	(%)	25.54	12.12	7.79
Total Asset Turnover	(Times)	1.14	0.89	0.70
<b>Leverage Ratios:</b>				
Interest Bearing Debt to Equity	(Times)	0.32	0.36	0.54
Interest Coverage Ratio	(Times)	16.39	10.17	6.43
Dividend Payout Ratio	(%)	48	77	>200

## PROJECTS PROGRESS

### OLEFINS RECONFIGURATION PROJECT

The Company had approved an investment for the new Olefins plant (Olefins Reconfiguration Project) with the use of Naphtha and Liquefied Petroleum Gas (LPG) as major feedstocks. The plant will consist of Ethylene capacity of 500,000 ton per year and Propylene capacity of 250,000 ton per year. This project will increase the Company's total Ethylene capacity from 2,988,000 to 3,738,000 ton per year. The plant is expected to start commercial operation within Q1/2021.

### PROPYLENE OXIDE (PO) AND POLYOLS PROJECT

The purpose of PO/Polyols Project is to expand toward downstream business of Polyurethane; a high value product. The Company has set up a wholly-owned, GC Oxirane Company Limited, to produce PO with the capacity of 200,000 ton per year. The Company had also set up a joint venture, GC Polyols Company Limited, with shareholdings of GC 82.1%, with Polyether Polyols (PPG) capacity of 130,000 ton per year Polymer Polyols (POP) with the capacity of 30,000 ton per year and Premix Polyols (PM) with the capacity of 20,000 ton per year. The plant started commercial operation in December 2020.



### HIGH-QUALITY RECYCLED PLASTICS PROJECT

The Company and ALPLA, a world-class manufacturer of high-quality recycled plastic resins, have signed a cooperation agreement to establish a joint venture company to be called ENVICCO Limited at Asia Industrial Estate in Rayong province, with shareholdings of GC 70%. The joint venture company was established with the objectives to be Thailand's first manufacturer of high-quality recycled plastic resins, with rPET and rHDPE capacity of 45,000 ton per year including rPET 30,000 ton per year and rHDPE 15,000 ton per year, which will be able to create value added to used plastics. The plant is expected to start commercial operation within Q4/2021.

### HIGH HEAT RESISTANT POLYAMIDE-9T (PA9T) AND HYDROGENATED STYRENIC BLOCK COPOLYMER (HSBC) PROJECT

The Company and Kuraray Co. Ltd (KRR) set up a joint venture company, Kuraray GC Advanced Materials Co. Ltd, with shareholdings of GC 33.4%, KRR 53.3%, and Sumitomo Corporation (SC) 13.3% through an affiliated company, with High Heat Resistant Polyamide-9T (PA9T) capacity of 13,000 ton per year and Hydrogenated Styrenic Block Copolymer (HSBC) capacity of 16,000 ton per year. The plant is expected to start commercial operation within 2022.

### OLEFINS 2 MODIFICATION PROJECT

The Company had approved an investment for the Olefins 2 Modification Project which will allow the Company to increase Propane usage as feedstock and align with the Company's strategy to enhance feedstock flexibility and long-term competitiveness. The plant is expected to start commercial operation within Q1/2023.

## ESTIMATED ANNUAL CAPEX OF PTTGC GROUP FOR THE NEXT 5 YEARS

Projects	Total 2021- 2025	Estimated Annual CAPEX (M.USD)				
		2021	2022	2023	2024	2025
1) Key Project						
Recycle Plant	25	25				
Super Engineering Plastic (KGC)	30	28	2			
Olefin 2 Modification	158	48	91	19		
2) Other projects	429	204	110	89	24	2
<b>Total</b>	<b>642</b>	<b>305</b>	<b>203</b>	<b>107</b>	<b>24</b>	<b>2</b>

### Notes:

1. Group annual maintenance ~ 250-300 M.USD.
2. Other projects such as IT & digital, new office facility, and etc.

## MARKET AND BUSINESS OUTLOOK IN 2021

The outbreak of COVID-19 is continuing its spread across the world since the last months of 2019, which simultaneously impacts the global economy. Also, the recent US-China trade conflict has caused substantial uncertainty. However, the Company expects the global economy will gradually recover this year due to the new U.S. president's energy policies, COVID-19 vaccine approvals, the racing to develop COVID-19 vaccines of many global companies, an impressive of China economy recovery, and stimulus packages to respond to the economic distress due to the COVID-19 pandemic in many countries.

The Company anticipates that the average price of Dubai crude oil will be within the range of 54-56 USD per barrel. The International Energy Agency (IEA) had estimated the crude oil demand (as of January 2021) in 2021 at 96.6 Million barrels per day, increased by 5.5 million barrels per day from the last year demand. Even there is a signal that the global oil demand recovery continues to increase steadily, however, the oil inventories are remained high, resulting in downward pressure on the crude oil price.

For Petroleum products, the Company anticipates that products price and products spread will be recovered

from last year as the recovery in global economy and unlocking the lockdown with the ease in travelling. As a result, Diesel over Dubai crude oil spread is expected to be 7-9 USD per barrel while Low Sulfur Fuel Oil (LSFO) over Dubai crude oil spread to be 11-13 USD per barrel. Amid lower demand for High Sulfur Fuel Oil (HSFO), the HSFO over Dubai crude oil spread is expected to be -5 to -3 USD per barrel. The expected Gasoline over Dubai crude oil spread is 6-8 USD per barrel. The Company expects that the Refinery utilization rate of 2021, it will be operated at around 102%.

For Petrochemical products, the Company has been impacted by the spread of COVID-19 only in term of pricing, our production is still on plan. For Aromatics products, are expected to continue to recover following the positive signal of the COVID-19 pandemic and recovery in global economy. However, the aromatic spreads remain under pressure from oversupply situation. Paraxylene over Naphtha spread, in 2021, is expected to be 200-250 USD per ton. The expected demand from downstream business such as Fiber and Filaments industries, Purified Terephthalic Acid (PTA), and PET Bottle Resin are expected to gradually recover as new PTA plants started up in this year. Benzene over Naphtha spread is expected to be 100-130 USD per ton while the demand for downstream products such as Styrene Monomer is

expected to recover from new production, as well as Phenol. The Company expects that the Aromatics utilization rate of 2021 will be 102%.

The outlook for Olefins and Derivatives product is expected to recover from last year, due to crude oil prices are forecast to recover steadily. Also, Olefins and Polymer supply continue to increase by new productions and the recovery in demand. The average HDPE price is expected to be 960-1,000 USD per ton. The HDPE over Naphtha spread is expected to be 500-510 USD per ton. For MEG market, MEG price is expected to increase slightly. Despite, MEG supply increases due to new capacity. MEG will be supported by downstream demand especially Packaging industry which has the potential to grow. The Company expects that the average MEG (ASP) will be 510-570 USD per ton. The Company expects Olefins plants utilization rate to be around 94% since there are planned maintenance shutdown of Olefins plant 3 for 39 days commencing from late Q3/2020 while Polymers plants utilization rate will be around 105%.

## GC JOINS HANDS WITH ALL SECTORS TO DRIVE INTEGRATED SUSTAINABILITY PRACTICES

GC adheres to sustainable business practices by balancing of the economic, social, and environmental. The Company is also one of Thailand's first organizations to have implement the circular economy principles

to maximize resource utilization, from the adoption of technology to enhance energy management efficiency and reduce waste in production process in line with climate change action guidelines, greenhouse gas (GHG) emission reduction and efficient water management that respond to Sustainable Development Goals , and focus on innovation to deliver environmentally friendly product. This also includes the creation of collaborative networks for integrated waste management, which encompasses the following: 1) Recycling/upcycling marine plastic waste into new value-added products, such as fashionable products, and establishing Thailand's first recycling plant that manufacture high-quality plastic pellets with advanced technology; 2) Offering bioplastics as an environmentally friendly alternatives, while supporting and leveraging Thai agricultural resources; 3) Creating an collaborative eco-system with all sectors to foster sustainable waste management expansion to the wider areas of society; and 4) Ensuring inclusiveness and assisting customers with solution in accordance with the new consumer behaviors.

The next step of GC is to become a role model in sustainability with our mission to expand the concept of circular economy to create greater impacts. The four key success factors are 1) thought leader engagement, 2) innovation development, 3) practicable business models, and 4) collaborative eco-system with all sectors that will help co-creating sustainable economic, social, and environmental in the future.



# Company Information and Other Important Information

## COMPANY INFORMATION

### REFERENCES

#### SECURITIES REGISTRAR

Thailand Securities Depository Company Limited  
93, 14<sup>th</sup> Floor, Rachadapisek Road, Dindaeng  
Sub-District, Dindaeng District, Bangkok 10400  
Tel: 66 (0) 2009-9999, Fax: 66 (0) 2009-9991  
Website: [www.set.or.th/tsd](http://www.set.or.th/tsd)

#### REGISTRAR AND DEBENTURE HOLDERS REPRESENTATIVE

Bank of Ayudhya Public Company Limited\*  
1222 Rama III Road, Bang Phongphang Sub-District,  
Yan Nawa District, Bangkok 10120  
Tel: 66 (0) 2296-2030, 4808, 5557  
Fax: 66 (0) 2683-1298  
Website: [www.krungsri.com](http://www.krungsri.com)

#### US\$ BOND REGISTRAR

Citibank, N.A.  
39<sup>th</sup> Floor, Citibank Tower,  
Citibank Plaza, 3 Garden Road, Central, Hong Kong  
Tel: +852 2868 7961, Fax: +852 2323 0279

#### AUDITOR

1. Mr. Suphamit Techamontrikul, CPA No. 3356 or
2. Mr. Chavala Tienpasertkij, CPA No. 4301 or
3. Mr. Suwatchai Meakhaamnouychai, CPA No. 6638 or
4. Mr. Mongkol Somphol, CPA No. 8444

#### Deloitte Touche Tohmatsu Jaiyos Audit Company Limited

AIA Sathorn Tower, 23<sup>rd</sup>-27<sup>th</sup> Floor,  
11/1 South Sathorn Road, Yannawa  
Sub-District, Sathorn District, Bangkok 10120  
Tel: 66 (0) 2034-0000, Fax: 66 (0) 2034-0100  
Website: [www.deloitte.com](http://www.deloitte.com)

#### LEGAL ADVISOR

##### Weerawong, Chinnavat & Partners Ltd.

540 Mercury Tower, 22<sup>nd</sup> Floor,  
Ploenchit Road, Lumpini, Pathumwan, Bangkok 10330  
Tel. 66 (0) 2264-8000 FAX66 (0) 2657-2222  
Website: [www.weerawongcp.com](http://www.weerawongcp.com)

##### Domnern Songiat & Boonma Law Office Limited

719 Si Phya Road, Bangrak Sub-District,  
Bangrak District Bangkok 10500  
Tel. 66 (0) 2639-1955, Fax: 66 (0) 2639-1956-8  
Website: [www.dsb.co.th](http://www.dsb.co.th)

**Remarks:** \* Bank of Ayudhya Public Company Limited acts as the debenture holders' representative for the Company's debentures, namely PTTGC218A, PTTGC218B, PTTGC248A, PTTGC249A, PTTGC269A, PTTGC299A, PTTGC274A, PTTGC304A, PTTGC324A and PTTGC354A. Bank of Ayudhya Public Company Limited acts as the registrar and paying agent for the Company's debentures, namely PTTGC218A, PTTGC218B, PTTGC248A, PTTGC249A, PTTGC269A, PTTGC299A, PTTGC274A, PTTGC304A, PTTGC324A and PTTGC354A

## LEGAL PROCEEDINGS

### 1. PURCHASE AND SALES OF RAW MATERIALS AGREEMENT LEGAL CASE

On December 3, 2009, a company filed for arbitration against PTT Plc. ("PTT") and the Company as a producer to perform according to purchase and sales of raw materials agreement, of which the said company has been committed by PTT, or to compensate for damages of approximately Baht 13,805 million. On March 8, 2010, the dispute was struck out of the case-list by the arbitration ruling that the Company was not a party to the contract.

On August 27, 2010, the said company filed a civil suit to the Civil Court against PTT and the Company as a producer to perform according to purchase and sales of raw materials agreement, of which the said company has been committed by PTT, or to compensate for

damages of approximately Baht 9,380 million. In this regards, the Company filed an objection against the indictment with the Civil Court on the basis that the Company was not a party to the contract.

On May 21, 2013, the Civil Court considered that the arbitration process between such company and PTT has not yet finalised; therefore, the Court has temporarily struck the case out of the case-list until the final decision has been reached under arbitration process. Then, both parties or either party can resubmit the case to the Civil Court for the further trial.

Subsequently, on March 25, 2016, the arbitration has reached a conclusion for PTT to compensate the damages in some amount. On June 30, 2016, PTT submitted a motion for setting aside the arbitral award to the Civil Court. Thereafter, on September 19, 2019, the Civil Court rendered the judgement for enforcement of the arbitral award. PTT has appealed

against the Civil Court's judgement to the Supreme Court and the case is currently under the consideration of the Supreme Court. The Company believes that the outcome of the consideration will not result in any liability to the Company, because the arbitral award and the judgement shall not be enforced on the Company due to the fact that the Company was not the party in the case. Therefore, the Company has not recorded any provisions against any losses that may result from this matter in the financial statements.

## 2. OIL SPILL INCIDENT LEGAL CASE

During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and the Rayong Provincial Court against the Company to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgement by the Civil Court on August 25, 2016 by ordered the Company to compensate for damages including interest and rehabilitation of approximately Baht 11.26 million. The Company has appealed on February 17, 2017. Subsequently, on May 11, 2018, the Company made compromise agreements with majority plaintiffs at the Civil Court. On December 20, 2018, the Court of Appeal has passed the judgement according to the compromise agreements which the Company has already paid compensation in full amount. For the remaining plaintiffs, the Court of Appeal ordered the Company to pay compensation with its interest

according to the judgement of the Court of First Instance and reduced the amount of interest. The Company has paid the compensation to all plaintiffs completely and no petition is submitted to Supreme Court by any plaintiffs. This case has become final.

For the case at Rayong Provincial Court, on September 28, 2018, the Court has made the judgement ordering the Company to pay damage cost with its interest of approximately Bath 38 million by deducting the remedy payment paid to the plaintiffs of Baht 24 million. The Company deposited the remaining damage cost with its interest to the Rayong Provincial Court on February 25, 2019. Some plaintiffs filed an appeal with the Rayong Provincial Court and the Company has filed an answer to the appeal with the Rayong Provincial Court on October 2, 2019. Subsequently, on January 22, 2020, the Rayong Provincial Court sent an appointment to hear the judgment of the Court of Appeal Region 2 on March 19, 2020 and the Court of Appeal Region 2 has postponed the date of hearing the judgment. On September 1, 2020, the Court of Appeal Region 2 has made the judgement ordering the Company to pay damage cost with its interest to the plaintiffs. The Company deposited the amount of Baht 25 million to the Rayong Provincial Court on September 30, 2020. Afterwards, on October 14, 2020, the Rayong Provincial Court sent an appointment to hear the judgement or the order of the Court of Appeal Region 2 on November 26, 2020. However, the plaintiffs have applied a motion to extend the Dika appeal period to March 1, 2021.

## FREQUENTLY CONTACTED FINANCIAL INSTITUTIONS

### BANGKOK BANK PUBLIC COMPANY LIMITED

Address : 333 Silom Rd., Bangrak, Bangkok, Bangkok 10500  
Tel : 0-2230-2328, 0-2230-2295, 0-2626-3646, and 0-2353-5421

Address : 1 Soi Rat Burana 27/1, Rat Burana Rd., Rat Burana, Bangkok 10140  
Contact location: 400/22 Phahonyothin Rd., Samsen Nai, Phaya Thai, Bangkok 10400  
Tel : 0-2470-3074

### KRUNGTHAI BANK PUBLIC COMPANY LIMITED

Address : 35 Sukhumvit Rd., Klong Toey Nua, Wattana, Bangkok 10110  
Tel : 0-2208-4845 - 47

### SIAM COMMERCIAL BANK PUBLIC COMPANY LIMITED

Address : 9 Ratchadapisek Rd., Chatuchak, Chatuchak Bangkok 10900  
Tel : 0-2544-5740

### BANK OF AYUDHYA PUBLIC COMPANY LIMITED

Address : 1222 Rama III Rd., Bang Phongphang, Yan Nawa, Bangkok 10120  
Contact location: 550 Phloenchit Rd., Lumpini, Pathumwan, Bangkok 10330  
Tel : 0-2296-3999 and 0-2296-4776

### STANDARD CHARTERED BANK (THAI) PUBLIC COMPANY LIMITED

Address : 100 North Sathorn Rd., Silom Bangrak, Bangkok 10500  
Tel : 0-2724-8989 and 0-2724-8842





GOOD  
CORPORATE  
GOVERNANCE

To build sustainable growth, GC fosters a strong corporate governance (CG) foundation by cultivating CG awareness among its employees and stakeholders, thus enabling them to elevate their CG standards towards the new normal alongside GC.

### Corporate Governance Awards and Honors



ASEAN  
Asset Class Award



The **3<sup>rd</sup>**  
consecutive  
CAC  
Recertification



“Excellent” CG  
Score for  
the **9<sup>th</sup>**  
consecutive year



AGM Checklist:  
Excellent score of  
100 points for  
the **9<sup>th</sup>**  
consecutive year



Thai Chamber of  
Commerce Business  
Ethics Standard Awards

**CORPORATE**  
**GOVERNANCE**

# Corporate Governance Policy

GC, under the supervision of the Board of Directors, is committed to maintaining its corporate governance standard in conformity with international standards since its establishment in 2011. To this end, Corporate Governance Policy has been established as part of the Business Operations Policy. The Corporate Governance Committee has been assigned to oversee relevant matters and ensure that GC's corporate governance practices meet international standards, align with the Company's business strategies and directions, and comply with any other requirements, laws and guidelines.

The Board of Directors is responsible for monitoring and assessing corporate governance performance on a yearly basis through meetings of each sub-committee. The assessment results are regularly reported to the board and disclosed to regulatory agencies, shareholders, and the general public in the Form 56-1 One Report. The details of the corporate governance policy are shown in Appendix under "GC Policy and Practices of Corporate Governance and Business Code of Conduct".

## **OVERVIEW OF CORPORATE GOVERNANCE POLICY AND PRACTICES**

### **POLICY AND PRACTICES FOR THE BOARD OF DIRECTORS**

#### **(1) BOARD OF DIRECTORS**

The Board of Directors shall be appointed by the Annual General Meeting of Shareholders. All Directors shall be qualified and possess no prohibited characteristics stipulated by relevant laws and regulations. A board diversity policy has also been established as part of the Director nomination and selection process to ensure a suitable and diverse board composition in line with the Corporate Governance and Business Code of Conduct Handbook. Under this policy, the nomination takes into consideration the range of knowledge, competency, and expertise in various fields beneficial to the Company according to the Board Skills Matrix, such as engineering, industry,

economics and finance, business administration, accounting, law, national security, sustainability, and information technology, and take into account gender diversity without discrimination on the grounds of ethnicity, nationality, skin color, race, or religion, in order to achieve a diverse range of expertise and perspectives necessary for GC's business strategies.

The Board of Directors comprises 15 members, consisting of one Executive Director and 14 non-Executive Directors. Of these, eight are Independent Directors, which is considered suitable for the size and type of business and allows for the effective discharge of duties. The duties and responsibilities of Directors are clearly defined based on laws, requirements, GC's Articles of Association, resolutions of shareholder meetings, and good corporate governance principles. The Chairman is responsible for overseeing the operation of the Board of Directors to ensure effectiveness and independence from the Management. Further details appear under "Key Information on the Board of Directors".

#### **(2) SUB-COMMITTEES**

The Board of Directors has appointed four Sub-committees, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee, each consisting of members with the expertise and knowledge required to oversee specific issues that each is tasked with according to the GC articles of association. The charter of each sub-committee prescribes its members' desired qualifications, terms of office, and scope of duties and responsibilities. The names of sub-committee members, their duties and responsibilities, the number of meetings convened, and their meeting attendance are detailed under Key Information on "the Sub-committees".

Each sub-committee regularly reports its performance to the Board of Directors at Board meetings and disclose its annual performance in the past year to regulatory agencies, shareholders, the general public in the Form 56-1 One Report on a yearly basis.

### (3) NOMINATION AND APPOINTMENT OF DIRECTORS, INDEPENDENT DIRECTORS, AND CHIEF EXECUTIVE OFFICER

The Board of Directors, through the Nomination and Remuneration Committee, considers and nominates candidates for directorship to replace resigning Directors or Directors due to retire by rotation. Such candidates shall be qualified, possess no prohibited characteristics stipulated by relevant laws and regulations, exhibit independence, and have no conflicts of interest. The Board shall also take into account the board diversity, which includes the ratio of female Directors and Independent Directors as well as the range of knowledge, skills, expertise, experiences and specialization that would benefit the Company and correspond with the Board Skills Matrix, without any discrimination based on gender, ethnicity, nationality, skin color, race, or religion, in order to achieve a suitable and diverse board composition consistent with GC's board diversity policy. The Board is also responsible for nominating the Chief Executive Officer and establishing principled and transparent criteria or procedures to be presented to board meetings for approval. Activities related to the nomination, development, and assessment of Directors and Subcommittee Members in the previous year are detailed under "Nomination, Development, and Performance Assessment of the Board of Directors".

### (4) BOARD MEETING

The Board of Directors schedules the dates and times of Board meetings for the entire year in advance and clearly sets each regular meeting's agenda. The Board will call the meeting on every Monday of fourth week of each month. The Board may also call special meetings as appropriate or necessary. At least seven days before each meeting, Directors will receive a Board meeting invitation, draft minutes of the previous meeting, and supporting information for the consideration of the meeting agenda. The aforementioned documents are sent via the secure D-Join system (Digital Join Application) to ensure convenience and speed as well as reduce paper use. In 2020, the Board convened a total of 15 Board meetings, consisting of 13 scheduled meetings and two special meetings.

The Chairman of the Board of Directors presides over Board meetings and gives Directors a chance to participate and express their opinions freely. At least two-thirds of all Directors on the Board must be present to constitute a quorum, which must be

maintained until voting is completed. Each Director has one vote, and a resolution is passed based on majority votes. In case of a tie vote, the Chairman is to exercise the casting vote. The Board values the management of conflicts of interest of related parties in a prudent, impartial, and transparent manner, with all information regarding such conflicts is fully disclosed. If a Director has a personal interest in an agenda item, he or she is required to refrain from taking part in the decision-making process of that particular item.

After each meeting, the Company Secretary is responsible for preparing the minutes of the meeting, which will be presented for the Board's approval in the next meeting and signed by the Chairman for verification. The approved minutes and supporting documents for each agenda item will be systematically filed in an electronic format by their level of confidentiality for easy retrieval and reference purposes.

Moreover, in compliance with good corporate governance principles, The Board of Directors mandates that meetings be held for Non-Executive Directors, so that they could offer their opinions and propose guidelines for the Company's business management and operations. The Board also mandates Independent Directors meetings to exchange ideas and review their roles and performance every year. In 2020, the Non-Executive Directors held one meeting (July 20, 2020), and the Independent Directors held one meeting (September 21, 2020). The summaries of these meetings were presented to the Board for their acknowledgement.

### (5) REMUNERATION FOR THE BOARD AND EXECUTIVES

#### • BOARD OF DIRECTORS

The Board of Directors has set up a fair and reasonable remuneration policy for its Directors

GC HAS DEVELOPED D-JOIN  
(DIGITAL JOIN APPLICATION)  
FOR EASY, CONVENIENT,  
AND SECURE DELIVERY OF INFORMATION  
AND MEETING DOCUMENTS  
TO ALL DIRECTORS.

in accordance with good corporate governance principles. The Nomination and Remuneration Committee determines suitable remuneration for Directors based on the Company's financial standing, the practices of other SET-listed companies of similar sizes in the same industry, as well as each Director's responsibilities. Directors appointed to Sub-Committees are entitled to additional remuneration due to their additional responsibilities. Remuneration for Directors, divided into monthly remuneration and meeting allowance, is subject to approval at shareholder meetings.

In a year where dividends are paid to shareholders, the Board of Directors as a whole is award a bonus for the year at the rate of 0.30% of the year's net profit but not exceeding Baht 60 million. Each Director's bonus is calculated based on the time served in the corresponding year, and the Chairman of the Board of Directors is entitled to a 25% higher bonus than that of the other Directors.

- **EXECUTIVES**

The Company evaluates the performance of its Executives annually against the pre-determined Key Performance Indicators (KPIs). These include financial performance, implementation of long-term strategic goals, personal performance, the Company's performance, and practices of other listed companies of similar sizes in the same industry. The evaluation also takes into account their responsibilities, management development, and overall economic conditions.

The remuneration for the Chief Executive Officer is appropriately determined according to transparent, fair and reasonable criteria, taking into account the duties and responsibilities in conjunction with personal performance. The Nomination and Remuneration Committee is charged with reviewing and proposing the remuneration of the Chief Executive Officer to the Board of Directors for approval. It should be noted that, as the highest-ranking officer of the Company's management hierarchy, the Chief Executive Officer is awarded compensation and other benefits in addition to those received as a Director on the Board of Directors.

Further details can be found in this report under key information on "the Executives".

## **(6) DEVELOPMENT OF DIRECTORS AND EXECUTIVES**

The Board of Directors places great importance on seminar attendance as a way to enhance Directors' knowledge and competence and enable them to discharge their duties more effectively as well as to prepare executives for internal rotations and for succession to the CEO position and a role in the top management. The Board of Directors also encourages their participation in pertinent training courses and has prescribed the potential assessment of top executives to enhance their preparedness for executive-level duties.

Key development initiatives can be summarized under "Development of Directors, Executives, and Company Secretary".

## **(7) ASSESSMENT OF DIRECTORS' PERFORMANCE**

The Board of Directors has prescribed annual Board performance assessments to enable Directors to review their performance and review problems and obstacles during the year. There are three types of performance assessment, namely group assessment, self-assessment, and cross-assessment (assessing another Director). Furthermore, new Board KPIs have also established according to the Thai Corporate Governance Code for Listed Companies 2017 (CG Code) and the international criteria of the Dow Jones Sustainability Indices (DJSI), comprising four aspects, which are the Company's performance, the Board's group assessment results, Directors' meeting attendance, and Directors' engagement during Board meetings. Additionally, group assessment and self-assessment have been prescribed for the Company's sub-committees, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee, and the Risk Management Committee. The assessment results and suggestions are subsequently presented to the Board of Directors and used to develop guidelines for optimizing the Board's performance in a tangible way. The assessment results are also disclosed in the Form 56-1 One Report and used by the Nomination and Remuneration Committee as a factor in the determination of Directors' annual remuneration in addition to the Company's performance. The details are provided under "Nomination, Development, and Performance Assessment of the Board of Directors."



## (8) GOVERNANCE OF GC AND GC GROUP

The Company grows in the petrochemical and chemical industry and engages in investment and joint venture expansion in various countries both by itself and through its subsidiaries, joint ventures, affiliates and others, as detailed under “Business Operation and Performance”. The Board of Directors has approved the implementation of governance guidelines for the management of GC Group which are in line with GC Business Principle, as described in details under “Governance of Subsidiaries and Affiliates”.

### POLICY AND PRACTICES FOR COMPLIANCE WITH CORPORATE GOVERNANCE PRINCIPLES

The Board of Directors has established a fair management structure that governs the relations among the Board of Directors, Executives, and shareholders and plays a vital role in formulating visions, strategies, policies and essential action plans and putting in place effective monitoring/assessment systems and risk management. The Board must also exhibit independence and accountability for the results of its performance of duties in accordance with corporate governance principles. The objectives are as follows.

- Fostering a management system that is transparent, equitable to all stakeholders, in compliance with laws, rules, regulations, and requirements of government agencies, and has a clearly defined standard consistent with those accepted internationally, which will enhance the Company’s competitiveness and enable it to prevent and eliminate potential conflicts of interest that may arise.

- Fostering confidence among investors and the general public both in Thailand and overseas and contributing to the increase in the value of the Company’s shares to protect GC’s interest while also taking into consideration the benefits, rights, and equitability of shareholders and stakeholders.
- Serving as a tool for assessing and examining the Company’s operations so as to be able to improve the efficiency.
- Defining the scope of responsibilities of the Board of Directors and Executives towards all groups of stakeholders and creating obligations to ensure that the management exercises its authority within the defined scope.

The Board of Directors has thus prescribed Corporate Governance Policy to serve as operational guidelines for the Board of Directors, Executives, and all employees of GC Group. The policy adheres to both domestic and international practices, such as guidelines of the Stock Exchange of Thailand (SET), the CG Code of the Securities and Exchange Commission (SEC), ASEAN CG Scorecard, and the Dow Jones Sustainability Indices (DJSI). The Board also strives to consistently elevate Company’s corporate governance standards to comply with more stringent international principles, such as respect for shareholder rights, equitable treatment of shareholders, prioritizing roles of stakeholders, disclosure and transparency, and the Board’s accountability.

**CORPORATE GOVERNANCE PRINCIPLES ACCORDING TO INTERNATIONAL STANDARDS CONSIST OF FIVE AREAS:**  
**AREA 1: SHAREHOLDER RIGHTS**  
**AREA 2: EQUITABLE TREATMENT OF SHAREHOLDERS**  
**AREA 3: ROLE OF STAKEHOLDERS**  
**AREA 4: DISCLOSURE OF INFORMATION AND TRANSPARENCY**  
**AREA 5: RESPONSIBILITIES OF THE BOARD OF DIRECTORS**

**GC’S KEY CORPORATE GOVERNANCE PRINCIPLES:**

**CREATION OF LONG-TERM VALUE**  
**RESPONSIBILITY**  
**EQUITABLE TREATMENT**  
**ACCOUNTABILITY**  
**TRANSPARENCY**  
**ETHICS**

**(“CREATE”)**



GC is adopted as guidance for the Company's operations to ensure compliance with relevant laws and regulations in every country where GC holds investment, with the Board of Directors and Executives serving as role models for ethics and compliance with the Company's Corporate Governance Policy and Business Code of Conduct. They are also tasked with cultivating governance in the corporate culture, taking care of stakeholders, promoting business practices and conduct that take into account human rights, consumer rights, fair labor, and putting in place auditing, monitoring, assessment, and review systems so as to ensure full and sustainable compliance with the Corporate Governance Policy. The corporate governance performance is detailed under "Ensuring Compliance with Corporate Governance Policy and Practices".

#### Prevention of Internal Information Use

The Company's Internal Information Use Policy has been included in the Corporate Governance and Business Code of Conduct Handbook and published on the Company's website for shareholders' ready access. Directors, Executives and employees are constantly reminded to comply with the policy, under which they are prohibited from using material insider information not yet publicly disclosed for personal gain or the benefit of others, including for trading GC's securities. The essence of the policy is summarized below:

- (1) Directors and Executives under SEC's definition must report to SEC changes in their holding of the Company's shares within three business days as required by SEC. Moreover, the Company has established a policy requiring Directors and Executives to notify the Company Secretary of their intention to trade the Company's shares at least one business day before the transaction is made.
- (2) The Board of Directors monitors each individual's compliance with GC's Business Code of Conduct on internal information every month. The Company Secretary, who receives information from SEC via email on changes to Directors and Executives' shareholding when their shares are traded or transferred, will report such changes to the Board. Their shareholding at the beginning and the end of each fiscal year and any changes during the year are disclosed.
- (3) GC notifies Directors and Executives in writing that they are prohibited from trading the Company's

shares 30 days ahead of the disclosure of the quarterly and annual financial statements or that of other information that may affect the prices of the Company's shares. They are also prohibited from trading the Company's shares within 24 hours after the said disclosure.

- (4) All Executives and employees are required to comply with the Company's guidelines on Confidentiality of Information and safeguard its information, business partners' information and personal information of related parties. They are also required to adhere to the Company's measures on the safeguarding of confidential information or information that is not yet publicly disclosed.
- (5) GC's Directors, Executives and employees are regularly kept up to date on regulations and policies regarding insider information to ensure their acknowledgement and compliance. The Company has clearly implemented disciplinary sanctions in case of violation of inside trading policy.

#### Prevention of Conflicts of Interest

The Board of Directors has included a policy and guidelines for considering transactions that involve or may involve a conflict of interest in the Corporate Governance and Business Code of Conduct Handbook, to which all Directors, Executives and employees must adhere. They must also carefully follow the guidelines for connected transactions and refrain from violating the regulations of SEC and SET. Directors and Executives under SEC's definition must report to the Company their interests and those of their related parties. In addition, a connected transactions manual has been issued, and principles concerning connected transactions have been communicated to relevant units under GC and GC Group. Information on these transactions has been compiled in a database retrievable by relevant departments for reference so as to prevent errors.

GC has also put in place measures to prevent conflicts of interest, under which Directors, Executives, and all employees are required to annually report potential conflicts of interest. When a conflict of interest arises, the person with vested interests must immediately report GC of such a conflict, using the Conflict of Interest Form (for the Directors) or the form via the intranet (for executives and employees), to their immediate supervisors for acknowledgement and further action.

### Anti-Corruption

GC has established an Anti-Corruption Policy, which has been approved by the Board, as well as written guidelines precluding all requests, offers, payments, and transactions with individuals or juristic persons involved in corruption, with disciplinary sanctions clearly defined. In addition, the Company is a member of Thai Private Sector Collective Action against Corruption (CAC). Further details can be found under “Ensuring Compliance with Corporate Governance Policy and Practices.”

## **BUSINESS CODE OF CONDUCT**

### Corporate Governance and Business Code of Conduct Handbook

The Board of Directors approved the compilation of “Corporate Governance and Business Code of Conduct Handbook,” comprising of two parts. The first part is the corporate governance management structure and principles according to corporate governance policy; and the second part is the business code of conduct, consisting of principles and best practices for ethical business operations, such as observance of laws, rules and regulations; anti-fraud and anti-corruption measures; responsibility towards stakeholders; human rights; consumer rights; and fair labor. The handbook was distributed to Directors, Executives and all employees, who signed in acknowledgment of the handbook and their obligations to use it as guidance when carrying out their duties. The Business Code of Conduct Handbook has also been distributed to GC’s joint ventures and business partners and published on the Company’s website ([www.pttgcgroup.com](http://www.pttgcgroup.com)) under “Corporate Governance” for ready access for shareholders, investors, regulatory agencies, stakeholders, and those interested. The details of the Business Code of Conduct are shown in Appendix under “GC Policy and Practices of Corporate Governance and Business Code of Conduct”.

Additionally, the Board of Directors has implemented an annual review of the Corporate Governance and Business Code of Conduct Handbook to ensure its consistency with criteria and practices issued by regulators and assessment agencies, both domestic and international. In 2020, GC updated the handbook to ensure its currency and compliance with various standards, namely the Dow Jones Sustainability Indices (DJSI); the Personal Data Protection Act B.E. 2562; GC’s Personal Data Protection Policy, announced on May 29, 2020; SET’s Investor Relations Code of Conduct, and Notification of the Capital Market Supervisory Board No. Tor Jor 39/2559 by SEC.

Serving a crucial role in fostering and driving an ethical organizational culture, the Board of Directors and Executives have also cultivated “GC SPIRIT”, an organizational value that places importance on integrity and ethics, as well as established a behavioral assessment accordingly to encourage its adoption. GC SPIRIT 4 Core behaviors has been communicated to all employees across the organization through CEO Townhall and Functional Townhalls and integrated into the working process in order to cultivate it into GC’s corporate culture.

### Corporate Compliance

Acknowledging that compliance with laws or even more stringent standards promotes sustainable development, GC places importance on operating its businesses in full compliance with relevant regulatory and legal requirements at home and overseas. The Company has adopted the ISO 19600 (Compliance Management Systems-Guidelines: 2014 (E)) international standard as its operational framework in order to ensure an organization culture of integrity and compliance.

#### **THE CULTURE OF INTEGRITY AND COMPLIANCE CONSISTS OF SIX STEPS:**

- |               |              |
|---------------|--------------|
| (1) ESTABLISH | (4) EVALUATE |
| (2) DEVELOP   | (5) MAINTAIN |
| (3) IMPLEMENT | (6) IMPROVE  |



At the operational level, the first line of defense has prepared and disseminated information on the corporate compliance comprising of three processes, namely (1) Assessment - to identify major

non-compliance risks; (2) Prevention - to define measures for compliance control and minimize Non-Compliance risk; and (3) Correction and Improvement - to appropriately respond to or manage matters that deviate from the standard and to regularly review and improve compliance control measures.

Furthermore, GC has appointed a function to strengthen the integration of Governance, Risk Management & Internal Control and Compliance in accordance with the GRC Approach to create an integrated organization-wide management system regarding policies, compliance, and information sharing and improves the company’s overall connectivity and efficiency.

For compliance monitoring, GC has applied a compliance assessment checklist to GC and its subsidiaries, requesting them to identify non-conformance or non-compliance issues in order that GC can create appropriate compliance control measures.

In addition, Management Committee is tasked with organization-wide Compliance Oversight and reporting the progress to the Corporate Governance Committee for their acknowledgement and comments. This is to ensure that GC’s corporate compliance process is more efficient and consistent with international standards.

Dissemination of Good Corporate Governance Principles

GC communicates its key corporate governance principle entitled “C R E A T E,” comprising six elements: the Creation of Long-Term Value for the organization; Responsibility; Equitable Treatment of all stakeholders; Accountability for decisions made and being able to offer justification for such decisions; Transparency, which entails full, accurate, equitable

and timely disclosure through appropriate channels; and Ethics in business conduct, to its employees for their acknowledgement from the first day of work. GC also continuously underlines and instills the corporate governance principle into its employees through training programs, seminars, and other activities. For example, GC offers a mandatory e-Learning program on its “Hook e-Learning” system, through which Executives and employees can sign to acknowledge the Corporate Governance and Business Code of Conduct Handbook and take an assessment test. An event entitled “PTT Group CG Day 2020: CG’s World in the New Era ... Step to the Future” was also organized to help employees understand how CG was driving the organization forwards in the new normal era. Additionally, GC’s corporate governance practices are assessed by domestic regulatory authorities and against international standards, such as the Thai Institute of Directors Association (IOD), the Thai Investors Association (TIA), and the Dow Jones Sustainability Indices (DJSI) in order to gauge the GC’s corporate governance performance and keep its corporate governance practices in line with international standards.

Furthermore, Executives are responsible for communicating the principles of corporate governance and corporate compliance to employees through internal meetings of each business unit (“Hook Talk”) to encourage them to behave ethically and perform their duties in strict compliance with good corporate governance principles, the Company’s regulations, laws and rules. GC also regularly improves its best practices. In 2020, guidance involving frequently-asked questions on corporate governance, corporate compliance, and business code of conduct was compiled and published on GC’s intranet and the Hook e-Learning system as reference for Executives and employees in their discharge of duties.

**GC’S SIX CORPORATE GOVERNANCE PRINCIPLES (C R E A T E):**

VISION TO CREATE LONG-TERM VALUE FOR THE ORGANIZATION (CREATION OF LONG-TERM VALUE)	RESPONSIBLE DISCHARGE OF DUTIES (RESPONSIBILITY)	EQUITABLE TREATMENT OF STAKEHOLDERS (EQUITABLE TREATMENT)	ACCOUNTABILITY FOR DECISION MAKING (ACCOUNTABILITY)	TRANSPARENT, ACCOUNTABLE, ACCURATE, EQUITABLE, AND TIMELY DISCLOSURE OF INFORMATION (TRANSPARENCY)	ETHICAL BUSINESS CONDUCT (ETHICS)
---	--	---	---	--	-----------------------------------

## MAJOR CHANGES AND DEVELOPMENTS IN CORPORATE GOVERNANCE POLICY, PRACTICES, AND SYSTEMS IN 2020

The Board of Directors recognizes the role of leadership as a governing body of the Company. To this end, the Board has prescribed a review of the application of the Corporate Governance Code for Listed Company 2017 (CG Code) to GC's business context at least once a year as well as an assessment of compliance with each item in CG Code to ensure that the outcome is appropriate and that development plans suitable for the business are consistently formulated. For any item of the CG Code that GC is unable to or has yet to apply to its business, explanations have been recorded as part of the Board's resolution.

Major changes and developments connected to the use of CG Code to inform the review of the Company's corporate governance policy, practices, and systems and to the application of CG Code to the Company's business context and the COVID-19 situation in 2020 can be summarized as follows.

- Creation of sustainable business value through the STEP UP strategy
  - Establishing goals for the expansion of the Company's sustainability initiatives to the entire value chain in addition to its existing internal activities to contribute to the overall sustainability of the country and the world. The two main goals of the Company in 2020 were namely SDG 12: Circular Economy and SDG 13: Reduction of Greenhouse Gas Emissions, with a circular economy strategy consisting of three components: Smart Operating, Responsible Caring, and Loop Connecting.
- Fostering an effective Board of Directors
  - Reviewing the appropriateness of the sub-committee charters and the independent director charter. In 2020, the charter of the Nomination and Remuneration Committee was revised to ensure consistency with standards of regulatory agencies, best practices stipulated in the Company's Corporate Governance and Business Code of Conduct Handbook, and the duties assigned by the Board of the Company.
  - Revising the Board Skills Matrix to ensure the Board possesses a diverse range of knowledge and expertise according to the Dow Jones Sustainability Indices (DJSI) and ESG (Environmental, Social and Governance) criteria.
  - Reviewing the appropriateness of the annual assessment forms for the Board of Directors (self-assessment/group assessment/cross-assessment) and for the sub-committees (self-assessment/ group assessment). In 2020, the performance assessment forms for the Nomination and Remuneration Committees and the Corporate Governance Committees were revised to better align with the duties assigned by the Board of Directors.
- Improvement of GC's policies, regulations, and practices
  - Revising the Quality, Security, Safety, Occupational Health, Environment, and Business Continuity Policy and the Energy Management Policy to better align with GC's circular economy operations.
  - Revising GC's regulations regarding the IT Security Policy to include current cyber threats.
  - Revising GC's regulations regarding levels of confidentiality and the safeguarding of important company documents to better align with the Company's current management structure.
  - Revising the charter of internal audit units to correspond with the Charter of the Audit Committee, in which the duty of the Audit Committee has been extended to the management of resources and budgets and the hiring of external auditors.
- Governance of Subsidiaries and Affiliates
  - Revising GC Way of Conduct 2020 to better align with PTT Group Way of Conduct 2020 guided by multi-level governance and based on the principle of "Apply & Explain" and ultimately establish operational uniformity across the group.
  - Driving the adoption of multi-level governance in four target subsidiaries, namely Global Green Chemicals PLC (GGC), GC Marketing Solutions Co. Ltd. (GCM), GC Logistics Solutions Co. Ltd. (GCL), and NPC Safety and Environmental Service (NPC S&E), encouraging them to develop their own Way of Conduct.

- Employee management and development
  - Revising the assessment of employees' core behaviors from an assessment with only a supervisory perspective into one with a 360-degree perspective to reflect employee behavior with greater accuracy.
  - Introducing a learning management system to the organization to add new learning channels, allowing employees to learn anytime, anywhere, through any device.
  - Ensuring that employees have savings and investment plans in anticipation of retirement by reporting the investment performance of the provident fund to employees every month and educating them on SET's investment to foster financial literacy.

- Responsibility towards stakeholders

- Customers/Suppliers

- Improving the Customer Relation Management (CRM) to cover the operations of all units, enhance the capability to support sales and services, and collect the voice of the customer.
    - Improving the Approved Customers/Suppliers System, which is used to select customers and suppliers to procure raw material from or sell products to, so as to bring it up to standard and ensure verifiability.
    - Amending purchase contracts for certain groups of spare parts into servitization contracts in order to obtain a comprehensive range of products and care, which encourages suppliers to enhance their services, enhances the factory's reliability and performance, and helps reduce costs.
    - Organizing monthly seminars to share market and product directions with suppliers.

- Communities

- Providing support and relief to communities at all levels to diminish impact of COVID-19.

- Investors

- Using online platforms to organize meetings with analysts as well as national and international roadshows to maintain the level and quality of communication with investors without interruption.

## COMPLIANCE WITH THE PRINCIPLES OF CORPORATE GOVERNANCE IN OTHER AREAS

GC consistently complies with corporate governance standards. Relevant activities in 2020 are summarized below.

- (1) The Board of Directors reviewed the Board KPIs to be implemented in 2021 to ensure their alignment with the best practices stipulated in CG Code and the Dow Jones Sustainability Indices (DJSI).
- (2) With regard to IT compliance and management, GC adopted GCMS, which is its integrated management system, as well as COBIT 5 (IT Framework), TQA (Thailand Quality Award) and GC Way of Conduct as frameworks for establishing its IT standards, which place emphasis on various aspects of IT systems, namely the quality, security, and availability of data and information, the specifications of hardware and software, cybersecurity, and availability in case of emergency. The management is divided into three levels as follows:

1. Governance Level

- GC Group's Digital and IT Steering Committee (DISC) is responsible for defining the group's digital and IT direction, policies, and goals to ensure uniformity and the level of standard comparable to that of leading international companies in the same industry, with the Chief Executive Officer serving as the chairman of DISC.
- The Digital & IT Investment Management Committee (DIM) consists of DIM1, responsible for reviewing investments worth over Baht 10 million but not exceeding Baht 300 million, and DIM2, responsible for reviewing investments worth under Baht 10 million.
- The Information Safety and Security Committee (ISMS Committee) is charged with ensuring that GC's information security, cybersecurity, and cloud security are consistent with international standards.
- The Enterprise Architecture Committee (EA Committee) is charged with the management of the Company's IT structure to ensure its alignment with usage requirements and currency as well as maximum benefits in use.

## 2. Management Level

- Establishing data and information management policies, such as information security (IS), cybersecurity policy, cloud security policy, and service level agreement (SLA).
- Adopting the ISO Series (ISO 27001 and ISO 22301) as compliance framework and control for users to ensure the accuracy and availability of data and information; and introducing internal and external audit systems to the audit and review of its processes so as to ensure the accuracy, reliability, and integrity of the data and information.

## 3. Operation Level

- Establishing systems, procedures, and services for users; publishing and storing them on the internet as reference for users; and sending out IT updates via email every two weeks, except emergencies, for which users will be given an immediate notification.
- Tracking progress and using the results to further improve the Company's IT management and services; overseeing and keeping IT security up to date; and reporting progress to Executives and responsible Sub-committees regularly.
- Assessing IT resource risk every year to ensure the resources are sufficient to protect the accuracy, integrity, reliability, and currency of data and information.

Additionally, GC has carried out the following activities in relation to IT management :

- **Data and Information Security** GC has implemented a data and information security system that uses ISO 27001 as framework. A real-time monitoring system is also employed to review risks related to IT threats on a monthly basis.
- **Data and Information Availability** GC has established data and information usage plans in line with its corporate strategic plans and surveyed the needs of all business groups to formulate IT strategic plans. In addition, a data recovery site (DR Site) has been set up for 24-hour backup of important information,

which can be readily retrieved. The Company has also formulated disaster recovery plans for the main data system in accordance with business continuity management standards (ISO 22301), along with recovery procedures for handling an emergency that impacts the main data system. IT disaster recovery drills are conducted every year.

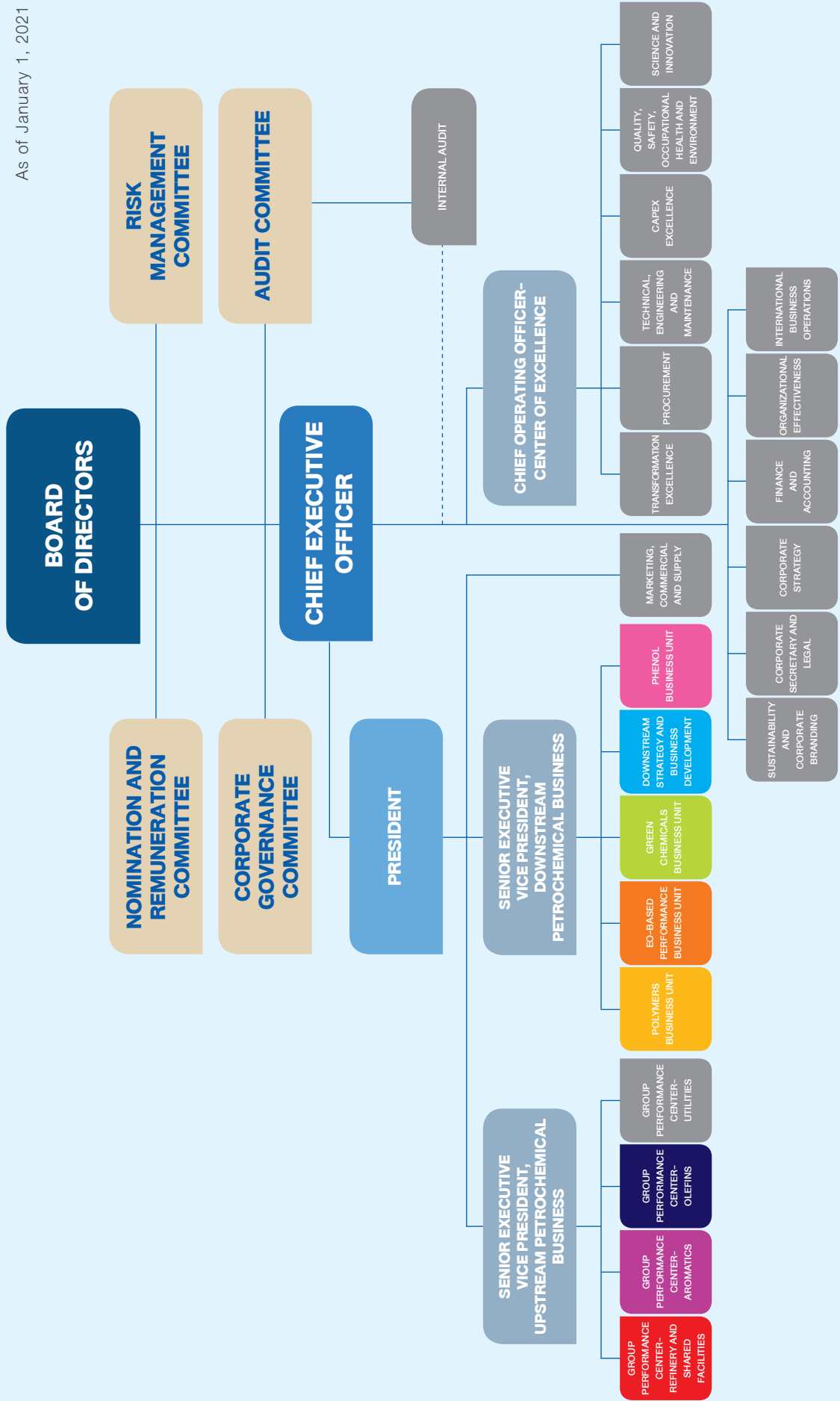
- **Standard Control and Specifications of Hardware and Software** GC has introduced policies to control hardware and software standards, which require, for instance, the replacement of IT equipment every three years; quarterly preventive maintenance; the installation of a server monitoring system that notifies administrators via SMS and email upon detecting irregularities for prompt troubleshooting; annual vulnerability assessment and remediation; the installation and regular updating of antivirus software in server and client computers; as well as daily, weekly, and monthly data backup.
- **Information Security and Safety** GC has implemented various measures, including the identification of key information assets according to ISO 27001 and ISO 22301 and risk assessment for safety planning. The Company has also established relevant policies, compiled handbooks, installed defense systems, and appointed a cyber response team to cope with cyber attacks, examine damage, and initiate recovery according to the cyber security incident procedure, as well as fostered a cybersecurity culture and cultivated cybersecurity awareness in all employees.

**GC OVERSEES  
CORPORATE GOVERNANCE  
AND MANAGES ITS INFORMATION  
TECHNOLOGY SYSTEM,  
USING GCMS, GC'S INTEGRATED  
MANAGEMENT SYSTEM.**



# Organization Structure

As of January 1, 2021



# Board of Directors

**THE BOARD OF DIRECTORS** as of January 31, 2021, comprises the following members:

Name	Position	Date of Appointment
1. Mr. Piyasvasti Amranand	Chairman/Chairman of the Independent Director	April 9, 2018
2. Mr. Apisak Tantivorawong	Independent Director/Chairman of the Audit Committee	January 24, 2020
3. Professor Somkit Lertpaithoon	Independent Director/Chairman of the Corporate Governance Committee	April 9, 2018
4. Mr. Don Wasantapruek	Independent Director/Chairman of the Nomination and Remuneration Committee	November 1, 2015
5. Mr. Grisada Boonrach <sup>(1)</sup>	Independent Director/Chairman of the Risk Management Committee	June 2, 2020
6. Mr. Pakorn Nilprapunt	Independent Director/Director to the Audit Committee	April 9, 2018
7. Mrs. Watanan Petersik	Independent Director/Director to the Audit Committee/Director to the Corporate Governance Committee	September 22, 2014
8. Major General Nithi Chungcharoen	Independent Director/Director to the Nomination and Remuneration Committee/Director to the Corporate Governance Committee	September 22, 2014
9. Mr. Prapas Kong-ied	Director/Director to the Corporate Governance Committee	November 1, 2019
10. Mr. Wittawat Svasti-xuto	Director/Director to the Nomination and Remuneration Committee	February 19, 2018
11. Mr. Sarawut Kaewtathip <sup>(2)</sup>	Director/Director to the Risk Management Committee	July 20, 2020
12. Mr. Disathat Panyarachun	Director/Director to the Risk Management Committee	October 22, 2018
13. Mrs. Arawadee Photisaro	Director/Director to the Risk Management Committee	October 22, 2018
14. Mr. Chansin Treenuchagron <sup>(3)</sup>	Director/Director to the Corporate Governance Committee	September 21, 2020
15. Mr. Kongkrapan Intarajang	Director and Secretary to the Board of Directors/Director to the Risk Management Committee/Chief Executive Officer	October 1, 2019

#### Remarks

- (1) Mr. Grisada Boonrach, Independent Director, replaced Mr. Prasert Bunsumpun, effective June 2, 2020.  
 (2) Mr. Sarawut Kaewtathip, Director, replaced Mrs. Premrutai Vinaiphath, effective July 20, 2020.  
 (3) Mr. Chansin Treenuchagron, Director, replaced Mr. Supattanapong Punmeechaow, effective September 21, 2020.

A director who retired by rotation in 2020 is as follows:

Name	Position	Term of appointment
1. Mr. Prasert Bunsumpun	Independent Director/Chairman of the Risk Management Committee	October 19, 2011- June 2, 2020

Directors who resigned in 2020 are as follows:

Name	Position	Term of appointment
1. Mrs. Premrutai Vinaiphath	Director/Director to the Risk Management Committee	February 18, 2019- July 16, 2020
2. Mr. Supattanapong Punmeechaow	Director/Director to the Risk Management Committee/Director to the Corporate Governance Committee	September 25, 2014- July 23, 2020

## SHARES HELD BY THE BOARD OF DIRECTORS UNDER SEC'S DEFINITION, THEIR SPOUSES, AND THEIR MINORS AS OF DECEMBER 31, 2020

Name	Number of Shares		
	As of January 1, 2020	As of December 31, 2020	Increase / (Decrease) of Shares during the Year (Shares)
1. Mr. Piyasvasti Amranand	-None-	-None-	-No Change-
2. Mr. Apisak Tantivorawong	N/A	-None-	-No Change-
3. Professor Somkit Lertpaithoon	-None-	-None-	-No Change-
4. Mr. Don Wasantapruek	-None-	-None-	-No Change-
5. Mr. Grisada Boonrach	N/A	-None-	-No Change-
6. Mr. Pakorn Nilrapunt	-None-	-None-	-No Change-
7. Mrs. Watanan Petersik	-None-	-None-	-No Change-
8. Major General Nithi Chungcharoen	-None-	-None-	-No Change-
9. Mr. Prapas Kong-ied	N/A	-None-	-No Change-
10. Mr. Wittawat Svasti-xuto	3,415	3,415	-No Change-
11. Mr. Sarawut Kaewtathip	N/A	-None-	-No Change-
12. Mr. Disathat Panyarachun	-None-	-None-	-No Change-
Spouse	80	80	-No Change-
13. Mrs. Arawadee Photisaro	153	153	-No Change-
14. Mr. Chansin Treenuchagron	N/A	-None-	-No Change-
15. Mr. Kongkrapan Intarajang	-None-	-None-	-No Change-

### COMPOSITION OF THE BOARD OF DIRECTORS

GC's Articles of Association mandate that the Board of Directors be composed of no fewer than five but no more than 15 Directors. Each Director is to serve a three-year term. At least one-third and no fewer than three Directors on the entire Board must be Independent Directors. According to good corporate governance principles, more than half of the Board of Directors must be Independent Directors. Furthermore, GC's good corporate governance principles prescribe that at least half of the Board of Directors must be residents of the Kingdom of Thailand. These Directors must also have the legally required qualifications, not possess any attributes prohibited by law and not be over the age of 70.

The composition of the Board of Directors and its members' qualifications comply with its Articles of Association, good corporate governance principles, and legal regulations. In addition, the Company's policy protects Directors from any form of gender discrimination. The Board of Directors comprises individuals from diverse fields of knowledge, expertise

and professional experience which are beneficial to the Company's business operations. Furthermore, each Director may hold a directorship at no more than five companies listed with the Stock Exchange of Thailand (SET) and at no more than three state enterprises or juristic persons whose shares are held by state enterprises, according to a resolution passed by the cabinet. The Company's Board of Directors comprises a total of 15 Directors, which is a number appropriate for its business size and type. These Directors are divided into the following categories

- (1) Fourteen Non-Executive Directors
- (2) One Executive Director, namely the Chief Executive Officer
- (3) Eight Independent Directors (more than half of the Board)
- (4) Two female Directors

### AUTHORITY AND RESPONSIBILITIES OF THE BOARD OF DIRECTORS

The Board of Directors governs the Company's operations and ensures strict compliance with applicable laws, GC's objectives and Articles of

Association, and shareholder resolutions, as well as good corporate governance principles and the Code of Best Practices of Directors of Listed Companies set forth by SET. All Directors possess the knowledge and capability needed to perform their duties for the benefit of the Company and its shareholders. The Board's authority and responsibilities are summarized below:

- 1) Discharge its duties and oversee the Company's operations to ensure strict compliance with applicable laws, GC's objectives and Articles of Association, and shareholder resolutions, as well as good corporate governance principles and the Code of Best Practices of Directors of Listed Companies set forth by SET.
- 2) Dedicate its time and attention to establishing the Company's vision, mission, directions, and strategies as well as freely express opinions and seek useful information to determine the direction of the Company.
- 3) Review and approve key strategies and policies as well as objectives, financial goals, and corporate plans, as well as supervise and monitor the management's implementation of the Company's strategic plans in compliance with the defined directions and strategies to ensure that the management is able to achieve the Company's vision, directions and strategies with efficiency.
- 4) Establish Corporate Governance Policy and Business Code of Conduct, which appropriately outline principles and good practices for the Board, the management, and staff members, and cultivate responsibility awareness in all employees to promote an understanding of and strict compliance with these principles and guidelines, in addition to the Company's rules and regulations, to assure all stakeholders of fairness.
- 5) Exercise approval authority on various matters beyond the authority granted to the Chief Executive Officer in the Company's provision, namely GC Group's budget, investment, project implementation, as well as key contract entry, the appointment of Directors to replace those resigning during the year or to Sub-committee, naming of authorized Directors, and the appointment of the dates for the annual general meeting of shareholders and interim dividend payment.
- 6) Ensure that the corporate accounting system, financial reporting and auditing are credible, supervise the assessment of internal control's adequacy, and ensure that internal audits are performed efficiently and effectively.
- 7) Consider all relevant risk factors and devise comprehensive risk management guidelines, ensure that the Company's Executives are equipped with an efficient risk management

system or process to mitigate risks as well as to explore business opportunities that may arise from these risks, and ensure that adequate and effective internal control is in place.

- 8) Monitor and manage all conflicts of interest as well as all connected transactions that may arise and value key transactions to maximize the benefit of shareholders and other stakeholders.
- 9) Provide appropriate channels of communication to each group of shareholders and ensure that the disclosure of information is accurate, clear, transparent, reliable, and of the highest standard.
- 10) Regularly conduct assessments and reviews of its own performance and the Chief Executive Officer.
- 11) Provide a suitable compensation system or mechanism for the Company's Executives relative to the performance of the Company to induce short-term and long-term motivation.
- 12) Act as leaders and ethical role models in line with the Company's Corporate Governance Policy.
- 13) Assess performance adherence to the Company's Corporate Governance Policy and Business Code of Conduct at least once a year.
- 14) Provide an appropriate, transparent, and fair nomination system for all key managerial positions. Top executives, from Executive Vice Presidents to the Chief Executive Officer, are appointed by the Board's majority votes.
- 15) Report to the Company any conflict of interest that its members or their affiliates may have with the management of the Company or its subsidiaries.
- 16) Attend every Board meeting, as well as every shareholders' meeting. If, under any circumstance, attendance is impossible, the Chairman of the Board must be notified in writing.
- 17) Value corporate social and environmental responsibility and promote a better quality of life for Thai people sustainably, starting with improving the standard of living of communities around the Company's plants to foster an environment where its plants and these communities co-exist in a sustainable manner.
- 18) Provide support to all anti-fraud initiatives for the purpose of progress and sustainable growth.

Moreover, the Board of Directors must obtain permission from the shareholders' meeting before acting on the following issues:

- Acquisition or disposition of an important asset or any connected transaction as prescribed by laws and the Capital Market Supervisory Board.
- Sale or transfer of the Company's entire enterprise or its essential components to other entities.
- Acquisition or transfer of an enterprise to the Company.

- Initiation, modification, or termination of all or some key lease contracts of the Company, including the assignment of lease contracts to other individuals or entry into a partnership with another entity to share profits or losses.
- Making addenda or amendments to the Company's Memorandum or Articles of Association.
- Increasing or decreasing the registered capital.
- Issuance of debentures for sale to the public.
- Dissolution of the Company or merging it with another company.
- Announcing annual dividends.
- Other activities that require approval from the shareholders' meeting as mandated by law or the Company's Articles of Association.

## APPOINTMENT TO AND TERMINATION FROM THE BOARD OF DIRECTORS

GC's Articles of Association provide the following guidelines for the appointment to and termination from the Board of Directors:

### APPOINTMENT

- Shareholders at a shareholders' meeting shall vote to appoint Director(s) according to the following guidelines:
  - (1) Each shareholder shall have one vote per share held.
  - (2) In the event that the number of nominees for the election does not exceed the number of vacant positions, shareholders shall vote on these eligible nominees. Shareholders shall allocate all of their votes per (1) to one nominee without dividing their votes.
  - (3) In the event that the number of nominees exceeds the number of vacant positions, shareholders shall still allocate all of their votes per (1) to one individual nominee without dividing their votes. Nominees receiving the majority of the votes shall be appointed to the Board until there are no vacancies left. Additionally, in the event that the number of nominees with equal votes exceed the number of available positions, The Chairman of the meeting shall cast the deciding vote.
- The Board of Directors shall nominate one Director as Chairman of the Board of Directors. Decisions made during a Board meeting are based on majority votes. In the event of a tie, the Chairman of the meeting shall cast an additional vote as a casting vote. In the event that a Director's position becomes vacant for any reason other than retirement by rotation, the Board may appoint an individual who is qualified and does not possess any attributes prohibited by law as Director to attend the next

Board meeting, unless the remaining term is less than two months. The new Director shall serve only the remaining term of his or her predecessor. This decision shall be made only with the agreement of at least three quarters of the remaining Directors.

- In the event that vacancies cause the number of Directors to fall below the quorum, the remaining Directors shall have the only authority to call for a shareholders' meeting in which shareholders shall vote to appoint new Directors to fill these vacancies only. This process must be completed within one month from the date on which the number of Directors no longer constitutes the quorum. These newly appointed Directors shall serve only the remaining terms of their predecessors.

### TERMINATION

- At each Annual General Meeting of Shareholders, one-third of the serving Directors shall retire by rotation. In the event that the number of serving Directors is not equality divisible by three, the number of Directors retiring shall be as close to one-third as possible. Directors to retire in the first and second years after Company registration shall be randomly selected; however, in later years, Directors serving the longest terms shall retire. Directors who retire by rotation may be re-elected to the Board.
- In addition to retirement by rotation, other causes for directorship termination include death, resignation, disqualification, and prohibition by law. Additionally, Directors can be terminated by a shareholders' meeting resolution or a court order.
- Resigning Directors must submit their resignation notice to the Company. Resignation is effective from the day the Company receives such notice. In addition, Directors may submit their resignation notice through the registrar. At a shareholders' meeting, shareholders may pass a resolution to force the termination of a Director before his or her term ends with three quarters of the attending and eligible shareholders' votes. Additionally, these majority votes must constitute at least half of the shares held by attending and eligible shareholders.

## INDEPENDENT DIRECTORS

According to the Company's corporate governance principles, more than half of the Board of Directors must be Independent Directors. They shall not serve in the office for over nine consecutive years from the first date of appointment as Independent Directors. They

must also be experienced and independent as per the Capital Market Supervisory Board's requirements. Additionally, they must hold no more than 0.5% of the Company's shares (a stricter regulation than the Securities and Exchange Commission's limit of 1%). The definition of Independent Directors is disclosed in the Company's Corporate Governance Handbook and on the Company website.

Independent Directors must attend meetings regularly. They are allowed to freely express their opinions during these meetings and, to this end, are entitled to adequate access to company financial and business information. They are also tasked with protecting stakeholders' interests and preventing conflicts of interest among the Company, its executives, Board of Directors and major shareholders.

Currently, the Company has a total of eight Independent Directors, constituting more than one-third of the Board and exceeding the legal requirement. In addition, this number is in line with the Company's corporate governance principles, which stipulate that more than half of Board members must be Independent Directors. Moreover, the Charter of Independent Directors has been established to clearly outline their duties. Under the Charter recently amended to suit the current situation, the duties and responsibilities of Independent Directors are as follows:

- Advise and provide recommendations to the Board of Directors on key issues that the Company should act upon or issues that could be beneficial to the Company, its shareholders, and other relevant stakeholders.
- Ensure the Company's full compliance with its Anti-Corruption Policy and measures.
- Value corporate social and environmental responsibility.
- Seek consultation from external, independent consultants if necessary. The expenses incurred will be borne by the Company.
- Ensure that the Company operates according to the regulations and requirements relevant to Independent Directors issued by regulatory bodies for listed companies and review the definition of an Independent Director to make sure that it is appropriate and complete according to legal requirements.
- Review the adequacy of their charter annually and propose recommended amendments, if any, to the Board of Directors for approval.
- Perform other duties as assigned by the Board of Directors, provided that these duties do not interfere with the independent nature required of Independent Directors.

## AUTHORIZED DIRECTORS

According to GC's Articles of Association and Certification of Incorporation from the Department of Business Development of the Ministry of Commerce, as of October 5, 2020, the authorized signatory Directors of GC were as follows: "(1) Mr. Kongkrapan Intarajang, Chief Executive Officer, can sign and affix the Company's seal on behalf of GC; or (2) two of the following three Directors can jointly sign and affix the Company's seal on behalf of GC, namely Mr. Disathat Panyarachun, Mrs. Arawadee Photisarou, and Mr. Wittawat Svasti-xuto.

## ROLES OF THE CHAIRMAN AND THE CHIEF EXECUTIVE OFFICER

The Chairman of the Board of Directors and the Chief Executive Officer (CEO) are not the same person. Their duties and responsibilities are distinct and separate, as described below:

The Chairman of the Board of Directors is an Independent Director whose main role is to ensure that the Board of Directors efficiently performs its duties and in compliance with the Company's good corporate governance principles and the business code of conduct, being independent from the management. In addition, the Chairman works with CEO to determine meeting agenda but refrains from participate in day-to-day business management. The Chairman of the Board of Directors will be the chairman of both Board meetings and shareholders' meetings and is prohibited from serving on any Sub-committee as explicitly prescribed in the scope of responsibilities of the Board of Directors and Sub-committees to ensure a clear and suitable separation of duties as well as independent judgment.

The Chief Executive Officer is the highest-ranking executive officer whom the Board of Directors chooses and appoints from one of the Directors under the GC's Articles of Association to oversee the Company under Board-assigned policies and directions in accordance with the scope of authority set forth in GC's Articles of Association and regulations. The CEO also serves as Secretary to the Board of Directors. Furthermore, GC's Articles of Association states that the CEO is entitled to compensation and benefits for his role as the highest-ranking executive officer in addition to what he receives as a Director. The CEO's roles, duties, and responsibilities, as well as compensation, are published on the Company website in Thai and English.



# Sub-Committees

The Board of Directors at Meeting No. 1/2011, held on October 19, 2011, appointed four Sub-committees, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee. Directors serving on these sub-committees possess the expertise and knowledge required to oversee specific issues that each is tasked with according to GC's Articles of Association. The charter of each Sub-committee prescribes its members' desired qualifications, terms in office, and scope of duties and responsibilities.

Serving a three-year term, Directors appointed to these Sub-committees are to perform their specific tasks with diligence and efficiency. All Sub-committees report their performance to the Board of Directors at Board meetings regularly as well as disclose their annual performances to shareholders in Form 56-1 One Report. The names and duties of each Sub-committee as of January 31, 2021, are listed below.

## AUDIT COMMITTEE

Name	Position	Date of Appointment
1. Mr. Apisak Tantivorawong <sup>(1)</sup>	Chairman of the Audit Committee (Independent Director)	January 24, 2020
2. Mr. Pakorn Nilprapunt	Director to the Audit Committee (Independent Director)	April 23, 2018
3. Mrs. Watanan Petersik <sup>(2)</sup>	Director to the Audit Committee (Independent Director)	January 25, 2021

Mr. Amorn Putiphrawan, Senior Vice President of Internal Audit, serves as Secretary to the Audit Committee.

### Remarks:

- (1) Mr. Apisak Tantivorawong possesses an education background and work experiences in accounting and finance with regard to reviewing the credibility of financial statements. He was appointed the Chairman of the Audit Committee, replacing Mr. Prasan Chuaphanich, on January 24, 2020
- (2) Mrs. Watanan Petersik was appointed Director to the Audit Committee, replacing Mr. Prapas Kong-ied, on January 25, 2021.

The Audit Committee comprises at least three Independent Directors. Each term lasts three years or until the end of directorship or resignation or dismissal. Member of the Audit Committee who retire by rotation may be re-appointed by the Board of Directors. Independent Directors may serve no more than nine consecutive years in office from the date of first appointment. They shall also have qualifications and perform all duties in accordance with the announcement of the Securities and Exchange Commission and the scope of work prescribed by the announcement of the Capital Market Supervisory Board.

The Board of Directors has approved the Charter of the Audit Committee, which stipulates the composition, qualifications, terms of office, and scopes of duties according to good corporate governance principles. Details of the charter are disclosed in the Company's Corporate Governance Handbook and on the Company website.

GC's Audit Committee consists solely of Independent Directors, at least one of whom shall be a recognized expert with experience in finance and accounting. The Board believes that the Directors can carry out their duties independently and have continuously

undergone training to enhance their expertise for the benefit of ensuring the credibility of the Company's financial and auditing reports, including their adherence to accounting standards, applicable laws, and other relevant standard practices. Furthermore, the Audit Committee ensures adequate and efficient internal control and risk management systems while also overseeing internal processes regarding whistleblowers and complaint submissions. The Audit Committee nominates financial auditors and submits dismissal recommendations to the Board in the event that a financial auditor cannot or neglect to or wrongfully performs his or her duties. It also reviews the suitability and efficacy of the Company's internal audit system and oversees the functions of Internal Audit to ensure compliance with International Standards for the Professional Practice of Internal Auditing. The Audit Committee reviews the Company's compliance with securities and exchange laws,

regulations of the Stock Exchange of Thailand (SET), and other applicable laws. It also reviews connected transactions and conflicts of interest to achieve compliance with applicable laws and the requirements of the Stock Exchange of Thailand (SET) and Securities and Exchange Commission (SEC) and ensure their sensibility, the utmost benefit of the Company, and full disclosure.

In 2020, the Audit Committee convened a total of seven meetings and one additional meeting with the external auditor, fulfilling its role according to the scope of authority and responsibilities stipulated by the Charter of the Audit Committee and as assigned by the Board of Directors. The Committee also reported its performance outcomes to the Board on a quarterly basis and subsequently disclosed its performance summary to shareholders in Form 56-1 One Report.

## NOMINATION AND REMUNERATION COMMITTEE

Name	Position	Date of Appointment
1. Mr. Don Wasantapruerk	Chairman of the Nomination and Remuneration Committee (Independent Director)	April 23, 2018
2. Major General Nithi Chungcharoen	Director to the Nomination and Remuneration Committee (Independent Director)	November 1, 2019
3. Mr. Wittawat Svasti-xuto	Director to the Nomination and Remuneration Committee	October 22, 2018

Mrs. Pilasphan Udomjarumanee, Senior Vice President, Corporate Secretary and Legal, serves as Secretary to the Nomination and Remuneration Committee.

The Nomination and Remuneration Committee is composed of at least three Directors of the Board, more than half of whom shall be Independent Directors. The Chairman shall also be an Independent Director. These Directors serve a three-year term unless their terms on the Board end or they resign or are removed from positions.

The Nomination and Remuneration Committee nominates candidates for appointment to the Board or Sub-committees as well as nominates candidates to be appointed as the Chief Executive Officer (CEO) according to a well-structured and transparent process. The Committee is also charged with establishing remuneration guidelines for the Directors,

Directors to Sub-committees, and CEO. Nomination criteria for Directors include experiences, profession, skills, expertise diversity, and specific qualifications required for the Company's businesses defined in the Board Skills Matrix. These criteria strike a balance among all business fields and yield the utmost benefit to the Company. In addition, the Committee considers candidates from the Director's Pool developed by credible organizations and present candidates to the Board and/or at the shareholders' meeting for appointment. The Committee also establishes criteria for the annual performance assessment of the Board of Directors and CEO as well as assessed the performance of CEO to ensure alignment with good corporate governance principles.

The Board of Directors has approved the Charter of the Nomination and Remuneration Committee, which stipulates the composition, qualifications, terms of office, and scopes of duties according to good corporate governance principles. Details of the charter are disclosed in the Company's Corporate Governance Handbook and on the Company website.

In 2020, the Nomination and Remuneration Committee convened a total of nine meetings to fulfill its role according to the scope of authority and responsibilities stipulated by the Charter of the Nomination and Remuneration Committee and as assigned by the Board of Directors. The Committee also reported its performance outcomes to the Board and subsequently disclosed its performance summary to shareholders in Form 56-1 One Report.

## CORPORATE GOVERNANCE COMMITTEE

Name	Position	Date of Appointment
1. Professor Somkit Lertpaithoon	Chairman of the Corporate Governance Committee (Independent Director)	April 23, 2018
2. Major General Nithi Chungcharoen	Director to the Corporate Governance Committee (Independent Director)	September 22, 2014
3. Mrs. Watanan Petersik	Director to the Corporate Governance Committee (Independent Director)	April 23, 2018
4. Mr. Chansin Treenuchagron <sup>(1)</sup>	Director to the Corporate Governance Committee	September 21, 2020
5. Mr. Prapas Kong-ied <sup>(2)</sup>	Director to the Corporate Governance Committee	January 25, 2021

Mrs. Pilasphan Udomjarumane, Senior Vice President, Corporate Secretary and Legal, serves as Secretary to the Corporate Governance Committee.

### Remarks:

- (1) Mr. Chansin Treenuchagron was appointed Director to the Corporate Governance Committee on September 21, 2020, replacing Mr. Supattanapong Punmeechaow, who was appointed to replace Mr. Disathat Panyarachun on June 22, 2020.
- (2) Mr. Prapas Kong-ied was additionally appointed Director to the Corporate Governance Committee on January 25, 2021.

The Corporate Governance Committee is composed of at least three Directors of the Board, more than half of whom shall be Independent Directors. Its Chairman shall also be an Independent Director. These Directors serve a three-year term unless their terms on the Board end or they resign or are removed from their positions.

social and environmental responsibility to the Board. Moreover, the Committee supervises and provides guidance for the Company's sustainable development as well as monitors its progress and assesses the effectiveness of its implementation. This is in order to standardize the Company's practices.

The responsibilities of the Committee include establishing guidelines and policies related to the business code of conduct and ethics as well as anti-corruption measures and policies in compliance with good corporate governance principles. These guidelines and policies are presented to the Board of Directors to be approved and introduced as company regulations. The Corporate Governance Committee also proposes guidelines and policies on corporate

In 2020, the Corporate Governance Committee convened a total of six meetings to fulfill its role according to the scope of authority and responsibilities stipulated by the Charter of the Corporate Governance Committee and as assigned by the Board of Directors. The Committee also reported its performance outcomes to the Board and subsequently disclosed its performance summary to shareholders in Form 56-1 One Report.

## RISK MANAGEMENT COMMITTEE

Name	Position	Date of Appointment
1. Mr. Grisada Boonrach <sup>(1)</sup>	Chairman of the Risk Management Committee (Independent Director)	June 22, 2020
2. Mr. Disathat Panyarachun <sup>(2)</sup>	Director to the Risk Management Committee	June 22, 2020
3. Mr. Sarawut Kaewtathip <sup>(3)</sup>	Director to the Risk Management Committee	July 20, 2020
4. Mrs. Arawadee Photisaro	Director to the Risk Management Committee	October 22, 2018
5. Mr. Kongkrapan Intarajang	Director to the Risk Management Committee	October 1, 2019

Miss Kanoknun Buranapunsri, Acting Vice President of Corporate Risk Management and Internal Control System, serves as Secretary to the Risk Management Committee, replacing Mr. Chusak Wittayakajohnsad on September 16, 2020.

**Remarks:**

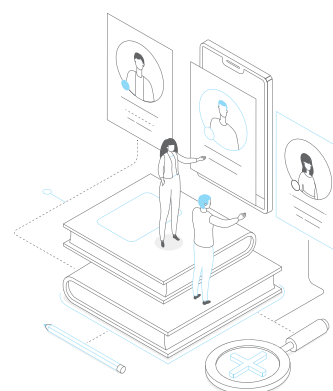
- (1) Mr. Grisada Boonrach was appointed Chairman of the Risk Management Committee, replacing Mr. Prasert Bunsumpun on June 22, 2020.
- (2) Mr. Disathat Panyarachun was appointed Director to the Risk Management Committee, replacing Mr. Supattanapong Punmeechaow on June 22, 2020.
- (3) Mr. Sarawut Kaewtathip was appointed Director to the Risk Management Committee, replacing Mrs. Premrutai Vinaiphath on July 20, 2020

The Risk Management Committee is composed of at least three Directors of the Board, at least one of whom shall be an Independent Director. These Directors serve a three-year term unless their terms on the Board end or they resign or are removed from positions.

The Risk Management Committee's role is to establish policies related to the Company's risk appetite and risk tolerance as well as risk management guidelines that serve as a framework within which the entire GC Group operates. With a particular focus on early warning signs, the Committee oversees that risks are identified and ranked by impact and likelihood. In extension, the Committee establishes appropriate risk mitigation measures and monitors and assesses the effectiveness

of the Company's risk management. Furthermore, the Committee offers its opinions and recommendations on possible risk issues of an investment project or a legally binding agenda item that is complex in nature or will impact the Company's reputation in a significant manner. It also ensures that the Company's business operations comply with relevant laws and standards.

In 2020, the Risk Management Committee convened a total of six meetings to fulfill its role according to the scope of authority and responsibilities stipulated by the Charter of the Risk Management Committee and as assigned by the Board of Directors. The Committee also reported its quarterly performance outcomes to the Board and subsequently disclosed its performance summary to shareholders in Form 56-1 One Report.



# Profile of GC Board of Directors



## Mr. Piyasvasti Amranand

Chairman and Chairman of the Independent Director

Age : 67

Appointed : April 9<sup>th</sup>, 2018

### Education/Training

- Doctor of Philosophy (Ph.D.) in Economics, London School of Economics and Political Science, U.K.
- Master of Science (Economics), London School of Economics and Political Science, University of London, U.K.
- Bachelor of Arts (Mathematics), (First-class Honors), University of Oxford, U.K.
- The Executive Program in Energy Literacy for a Sustainable Future Class 6, Thailand Energy Academy (TEA)

### Director Training

- Director Accreditation Program (DAP) Class 35/2005, Thai Institute of Directors Association (IOD)

### Board member/Management in Listed Company – The Stock Exchange of Thailand : 4

- Independent Director and Planner, Thai Airways International Public Company Limited
- Chairman and Chairman of the Independent Director, PTT Global Chemical Public Company Limited
- Independent Director and Chairperson of the Risk Oversight Committee, Kasikornbank Public Company Limited
- Independent Director and Chairman of the Audit Committee, Pruksa Holding Public Company Limited

### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 1

- Director, Kiroro Resort Holdings Company Limited

### Position in Other Organization/Institutions : 3

- Member of the National Energy Reform Committee
- Chairman, Energy for Environment Foundation
- Council Member of the Heart Foundation of Thailand under the Royal Patronage

### Work Experiences (5-years Past Experiences)

2015 - 2020	Chairman of the Audit Committee, Kasikornbank Public Company Limited
1 Jul 2014 - 11 Jul 2018	Independent Director and Chairman, PTT Public Company Limited
2014 - 2016	Independent Director and Chairman of the Audit Committee, Pruksa Real Estate Public Company Limited

Shareholding : None

Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries : None

**Mr. Apisak Tantivorawong**

Independent Director  
and Chairman of  
the Audit Committee

Age : 67

Appointed : January 24<sup>th</sup>, 2020

**Professor Somkit Lertpaithoon**

Independent Director and  
Chairman of the Corporate  
Governance Committee

Age : 61

Appointed : April 9<sup>th</sup>, 2018

**Education/Training**

- Master of Business Administration (M.B.A.) (Industrial Management), University of Tennessee, U.S.A.
- Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
- Diploma, National Defence College, The Joint State-Private Sector Course Class 16, National Defence College of Thailand (NDC)

**Director Training**

- Director Certification Program (DCP) Class 18/2020, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 1**

- Independent Director  
and Chairman of the Audit Committee,  
PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : None****Position in Other Organization/Institutions : 1**

- Director, The Rehabilitation Committee,  
Thai Airways International Public Company Limited

**Work Experiences (5-years Past Experiences)**

19 Aug 2015 - 16 Jul 2019	Minister, Ministry of Finance
2014 - 2015	Director and Member of the Nomination, Compensation, and Corporate Governance Committee, The Siam Commercial Bank Public Company Limited
2014 - 2015	Vice Chairman of Financial Management Committee, Charoen Pokphand Group
2013 - 2015	Independent Director (Non-Executive) and Chairman of the Risk Management Committee, Thai Oil Public Company Limited
2013 - 2015	Independent Director, Member of the Audit Committee, and Chairman of the Risk Management Committee, Bangkok Glass Public Company Limited
2013 - 2015	Independent Director, Synnex (Thailand) Public Company Limited
2013 - 2015	Independent Director, Indorama Ventures Public Company Limited
2013 - 2015	Chairman and Independent Director, Quality House Public Company Limited

**Shareholding :** None

**Relation among Family with other Directors,  
Management, Major Shareholders**

**of the Company or Subsidiaries :** None

**Education/Training**

- Doctorate, (Droit Public Interne),  
The University Paris II, France
- Degree of Profound Studies, (Droit Public Interne),  
The University Paris II, France
- Bachelor of Law, Thammasat University
- Barrister-at-Law, Institute of Legal Education Thai Bar  
Association
- Certification in Local Government, Institut International d'  
Administration Publique (IIAP), France
- The Executive Program in Energy Literacy  
for a Sustainable Future, Class 10, Thailand Energy  
Academy (TEA)

**Director Training :** None

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 2**

- Independent Director and Chairman  
of the Corporate Governance Committee,  
PTT Global Chemical Public Company Limited
- Director, Sky ICT Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : None****Position in Other Organizations/Institutions : 6**

- Member of the National Law Reform Committee
- Member of the B.E. 2550 Constitution Drafting Council  
and Member and Secretary of the Steering Committee  
of the B.E. 2550 Constitution Drafting Council
- Honorary Board Member, King Prajadhipok's Institute
- Reform Commission of Thailand on Process  
of Judgement (Police)
- Member of the National Legislative Assembly (NLA)
- Professor of Faculty of Law, Thammasat University

**Work Experiences (5-years Past Experiences)**

Feb 2017 - Apr 2018	Independent Director and Member of the Enterprise Risk Management Committee, PTT Public Company Limited
2017	Director, the Government Pharmaceutical Organization
2010 - 2017	Rector, Thammasat University

**Shareholding :** None

**Relation among Family with other Directors,  
Management, Major Shareholders**

**of the Company or Subsidiaries :** None



### Mr. Don Wasantapruerk

Independent Director  
and Chairman of the Nomination  
and Remuneration Committee

Age : 62

Appointed : November 1<sup>st</sup>, 2015, April 5<sup>th</sup>,  
2016 (1<sup>st</sup> re-elected), April 5<sup>th</sup>, 2019 (2<sup>nd</sup> re-elected)



### Mr. Grisada Boonrach

Independent Director and  
Chairman of the Risk  
Management Committee

Age : 63

Appointed : June 2<sup>nd</sup>, 2020



#### Education/Training

- Master of Engineering (Industrial Engineering), University of New South Wales, Sydney, Australia
- Bachelor of Engineering (Industrial Engineering), University of New South Wales, Sydney, Australia
- Seminar "Incorporation of State Investment Corporation" (July 13, 2015)
- The Executive Program in Energy Literacy for a Sustainable Future, Class 6/2015, Thailand Energy Academy (TEA)
- Thailand's 5<sup>th</sup> National Conference on Collective Action Against Corruption Tackling Corruption through Public-Private Collaboration (October 16<sup>th</sup>, 2014)

#### Director Training

- Briefing on International Anti-Corruption... International Cases and Practices/ Seminar "Anti-Corruption : Leadership Role of the Board in Driven the Organization toward the Draft of the Development of Corporate Governance and Enterprise Management Act .... And Good Corporate Governance/ Director Accreditation Program (DAP) Class 117/2015 and Role of the Nomination and Governance Committee (RNG) Class 7/2015, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 2

- Independent Director and Chairman of the Nomination Committee, PTT Public Company Limited
- Independent Director and Chairman of the Nomination and Remuneration Committee, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : None

#### Position in Other Organizations/Institutions : None

#### Work Experiences (5-years Past Experiences)

2009 - Present	Self-employed
Apr 2018 - Nov 2019	Director to the Nomination and Remuneration Committee, PTT Global Chemical Public Company Limited
4 Feb 2014 - 23 Dec 2018	Member of the Corporate Governance Committee, PTT Public Company Limited
2015 - April 2018	Director to the Corporate Governance Committee, PTT Global Chemical Public Company Limited

Shareholding : None

Relation among Family with other Directors,  
Management, Major Shareholders  
of the Company or Subsidiaries : None

#### Education/Training

- Master of Science (Political Science) Thammasat University
- Bachelor of Arts (Political Science) Ramkhamhaeng University
- Bachelor of Laws, Chiang Mai University
- Diploma, National Defence College, The National Defence Course Class 53, National Defence College of Thailand (NDC)
- Certificate, Intensive English Program, English Language Center, Georgetown University, 2019
- Certificate, the Management Development Participation, University Of Birmingham, 2001 (Scholarships offered by British Embassy)
- Certificate, Senior Executives in State and Local Government, Kennedy School of Government Harvard University, U.S.A., 2009 (Scholarships offered by Office of the Civil Service Commission)
- Certificate, Stability Security Transition and Reconstruction, Asia Pacific Center for Security Studies (APCSS) Hawaii, 2007 (Scholarships offered by US Embassy)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 1

- Independent Director and Chairman of the Risk Management Committee, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : None

#### Position in Other Organization/Institutions : 1

- Committee Member, Sai Jai Thai Foundation Under Royal Patronage

#### Work Experiences (5-years Past Experiences)

2017 - 2019	Minister, Ministry of Agriculture and Cooperative
2017 - 2019	Chairman of National Reform Committee for Public Administration, Office of the National Economic and Social Development Council
2015 - 2017	Permanent Secretary for Interior, Ministry of Interior
2014 - 2015	Director-General of Department of Provincial Administration, Ministry of Interior

Shareholding : None

Relation among Family with other Directors,  
Management, Major Shareholders  
of the Company or Subsidiaries : None

**Mr. Pakorn Nilprapunt**  
Independent Director and  
Director to the Audit Committee  
Age : 52  
Appointed : April 9<sup>th</sup>, 2018



**Mrs. Watanan Petersik**  
Independent Director / Director to  
the Corporate Governance Committee  
and Director to the Audit Committee  
Age : 60  
Appointed : September 22<sup>nd</sup>, 2014, April 5<sup>th</sup>,  
2016 (1<sup>st</sup> re-elected), April 5<sup>th</sup>, 2019 (2<sup>nd</sup> re-elected)



#### Education/Training

- Master of Laws (Trade Practices Law), The University of Sydney, Australia
- Public Sector Management and Organization Change, The University of Sydney, Australia
- Bachelor of Laws, Thammasat University
- High-Level Budget Management 1<sup>st</sup> Edition, Bureau of the Budget
- Program for Chief Executive Training Course, Class 2, The Royal Thai Police
- Train the Trainers Program in Information Communication and Technology Law for the Justice Executive, Class 1, Office of the Secretary of the Electronic Transaction Commission
- Chief Executive Training Program : Leadership with Vision and Morality (AMP 64), The Office of the Civil Service Commission (List of Qualified Candidates for Training)
- East Asian Public Sector Leadership Challenges, National Graduate Institute for Policy Study, Tokyo, Japan

#### Director Training

- Director Accreditation Program (DAP) Class 153/2018 Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company - The Stock Exchange of Thailand : 1

- Independent Director and Director to the Audit Committee, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company - The Stock Exchange of Thailand : None

#### Position in Other Organizations/Institutions : 6

- Member of the National Law Reform Committee
- Secretary-General, Office of the Council of State, The Prime Minister's Office
- Distinguished Member, Educational Innovation Area Policy, Ministry of Education
- Director, The Rehabilitation Committee, Thai Airways International Public Company Limited
- Committee Member, Office of the Public Sector Development Commission (OPDC)
- Committee Member, Bank of Thailand

#### Work Experiences (5-years Past Experiences)

Jun 2018 - Jan 2019	Secretary-General, Office of the Public Sector Development Commission (OPDC) and Director of the Strategic Reform Office on the Promotion of the National Reform, Strategy and Cohesion
2017 - 2018	Deputy Director, Prime Minister's Delivery Unit (PMDU)
2015 - 2018	Deputy Secretary-General, Office of the Council of State

**Shareholding** : None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries** : None

#### Education/Training

- AB Bryn Mawr College, Pennsylvania, U.S.A.

#### Director Training

- Director Accreditation Program (DAP) English Program Class 83/2010, Thai Institute of Directors Association (IOD)
- Bursatra Sdn. Bhd. : Mandatory Accreditation Programme (MAP) for Directors of Public Listed Companies (March 2010)
- Certificate : Role of Director, Singapore Institute of Directors Course

#### Board member/Management in Listed Company - The Stock Exchange of Thailand : 1

- Independent Director/ Director to the Corporate Governance Committee and Director to the Audit Committee, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company - The Stock Exchange of Thailand : 1

- Non-Executive Director, Jetanin Institute for Assisted Reproduction, Jetanin Company Limited

#### Position in Other Organizations/Institutions : 6

- Standards Advisory Council, BCorp, U.S.A.
- Advisory Board, Nanyang Business School, Singapore
- Senior Moderator, Aspen Institute, U.S.A.
- Advisory Committee, Lien Centre for Social Innovation Singapore Management University
- Senior Advisor, TPG Capital Asia
- Advisor, TaejaiDotCom (taejai.com)

#### Work Experiences (5-years Past Experiences)

Apr 2007 - Jun 2020	Independent Director and Chairperson of Nomination and Corporate Governance Committee, CIMB Thai Bank Public Company Limited
Jan 2010 - 2019	Independent Director and Non-Executive Director, CIMB Group Sdn. Bhd.
Jan 2010 - 2019	Independent Director and Non-Executive Director, CIMB Group Holdings Berhad, Malaysia
2008 - 2019	Director, Asia Capital Advisory Pte Ltd.
Jan 2016 - Nov 2017	Director, TPG Star SF Pte Ltd.
Jan 2016 - Nov 2017	Director, TPG Growth SF Pte Ltd.
Jan 2016 - Nov 2017	Director, TPG Growth III Asia Internet Holdings Pte Ltd.
Feb 2015 - Nov 2017	Director, TE Asia Healthcare Advisory Pte Ltd.
Sep 2014 - Nov 2017	Director, TE Asia Healthcare Partners Pte Ltd.
2010 - 2016	Member of Audit Committee, CIMB Thai Bank Public Company Limited

**Shareholding** : None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries** : None

### Mr. Prapas Kong-ied

Director and Director to the Corporate Governance Committee

Age : 59

Appointed : November 1<sup>st</sup>, 2019/  
June 2<sup>nd</sup>, 2020 (1<sup>st</sup> re-elected)



### Major General Niithi Chungcharoen

Independent Director/Director to the Nomination & Remuneration Committee and Director to the Corporate Governance Committee

Age : 50

Appointed : September 22<sup>nd</sup>, 2014/  
April 1<sup>st</sup>, 2015 (1<sup>st</sup> re-elected) April 9<sup>th</sup>, 2018 (2<sup>nd</sup> re-elected)



#### Education/Training

- Barrister-at-Law, Institute of Legal Education of the Thai Bar
- International Tax Program Certificate and Master of Laws (ITP/LL.M.), Harvard Law School, Harvard University, Massachusetts, U.S.A.
- Bachelor of Laws (Second-class Honors), Ramkhamhaeng University
- The Executive Program in Energy Literacy for a Sustainable Future, Class 6, Thailand Energy Academy (TEA)
- Capital Market Academy Leadership Program, Class 21, Capital Market Academy
- Diploma, National Defence College, The National Defence Course Class 56, National Defence College of Thailand (NDC)
- Senior Executive Certificate in Anti-Corruption Strategic Management Class 9, Sanya Dharmasakti National Anti-Corruption Institute (SDI), The National Anti-Corruption Commission Institute
- National Academy Justice, Class 21, Judicial Training Institute
- Advanced Master of Management, Graduate School of Public Administration, National Institute of Development Administration
- Finance and Fiscal Management Program for Senior Executive (FME), Class 3, The Comptroller General's Department
- Senior Executive Program for Nation-Building, Class 3, The Nation-Building Institute

#### Director Training

- Anti Corruption : The Practical Guide (ACPG) Class 32/2016/  
Risk Management Program for Corporate Leaders (RCL) Class 5/2016/  
Corporate Governance for Executives (CGE) Class 4/2015/  
Director Certification Program (DCP) Class 172/2013/  
Audit Committee Program (ACP) Class 44/2013/  
Financial Institutions Governance Program (FGP) Class 6/2013/  
Financial Statements for Directors (FSD) Class 21/2013/  
Role of the Nomination and Governance Committee (RNG) Class 4/2013 and Role of the Compensation Committee (RCC) Class 16/2013, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 3

- Independent Director, Chairman of Corporate Governance Committee, and Director of Audit Committee, Dhipaya Insurance Public Company Limited
- Director and Member of the Risk Oversight Committee, Siam Commercial Bank Public Company Limited
- Director and Director to the Corporate Governance Committee, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : None

#### Position in Other Organizations/Institutions : 5

- Member of the National Law Reform Committee
- Member of the National Reform Steering Assembly
- Director, Siam Commercial Foundation
- Director and Secretary, The Rehabilitation Committee, Thai Airways International Public Company Limited
- Director General, The Comptroller General's Department, Ministry of Finance

#### Work Experiences (5-years Past Experiences)

- May 2018 - Director-General, The State Enterprise Policy Office,  
Feb 2021 - Minister of Finance
- Nov 2019 - Independent Director and Director to  
Jan 2021 - the Audit Committee,  
PTT Global Chemical Public Company Limited
- 2018 - 2020 - Member of the Corporate Social Responsibility  
Committee, Siam Commercial Bank Public  
Company Limited
- 2018 - 2019 - Chairman, National Credit Bureau Company Limited
- 2017 - 2018 - Managing Director, Public Debt Management Office
- 2015 - 2018 - Director, Don Muang Tollway Public Company Limited
- 2012 - 2018 - Director, Government Savings Bank
- 2015 - 2017 - Deputy Permanent Secretary, Ministry of Finance
- 2015 - Inspector General, Ministry of Finance
- 2013 - 2015 - Director, KTB LAW Company Limited
- 2013 - 2015 - Chairman, The Erawan Group Public Company Limited
- 2012 - 2015 - Legal Advisory, Ministry of Finance

#### Shareholding : None

#### Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

#### Education/Training

- Master of Engineering (Mechanical), Stevens Institute of Technology, New Jersey, U.S.A.
- Bachelor of Science, Chulachomklao Royal Military Academy
- Peace Mediation Course
- Command and General Staff College, Class 80
- Peace Keeping Operation Course

#### Director Training

- Board that Make a Difference (BMD) Class 9/2019/  
IOD Talk 2/2017 "Cyber Security: Risks, Liabilities,  
and Best Practices"/ Driving Company Success with  
IT Governance (ITG) Class 5/2017/ Role of  
the Nomination and Governance Committee (RNG)  
Class 8/2016 and Director Certification Program (DCP)  
Class 200/2015, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 1

- Independent Director/ Director to the Nomination & Remuneration Committee and Director to the Corporate Governance Committee, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : None

#### Position in Other Organizations/Institutions : 1

- Staff Officer to Minister of Defence

#### Work Experiences (5-years Past Experiences)

- Apr 2019 - Sep 2020 - Expert, Royal Thai Army
- Oct 4, 2018 - Assistant General Director, 2<sup>nd</sup>
- Mar 31, 2019 - Coordination Centre, Office of  
Internal Security Coordination,  
Royal Thai Army
- 2016 - 2018 - Deputy Defence Attach, Canberra,  
Australia
- 2014 - 2015 - Attached to Directorate of Intelligence

#### Shareholding : None

#### Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



**Mr. Wittawat Svasti-xuto**  
Director and Director to the Nomination  
and Remuneration Committee

Age : 59

Appointed : February 19<sup>th</sup>, 2018/  
June 2<sup>nd</sup>, 2020 (1<sup>st</sup> re-elected)



**Mr. Sarawut Kaewtathip**  
Director and Director to  
the Risk management Committee

Age : 46

Appointed : July 20<sup>th</sup>, 2020



**Education/Training**

- Master of Science (Industrial Engineering), The University of Rhode Island, U.S.A.
- Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
- Capital Market Academy Leadership Program, Class 27/2018, Capital Market Academy
- The Executive Program in Energy Literacy for a Sustainable Future, Class 8, Thailand Energy Academy (TEA)
- Strategy and Innovation for Business in Asia (SIBA), Class 5/2016

**Director Training**

- Director Certification Program (DCP) Class 146/2011 and Financial Statements for Director (FSD) Class 12/2011, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company - The Stock Exchange of Thailand : 3**

- Chief Technology and Engineering Officer, PTT Public Company Limited
- Director and Director to the Nomination and Remuneration Committee, PTT Global Chemical Public Company Limited
- Director, Member of the Nomination and Remuneration Committee and Member of the Risk Management Committee, Global Power Synergy Public Company Limited

**Board member/Management in Non-Listed Company - The Stock Exchange of Thailand : 1**

- Chairman, PTT Energy Solutions Company Limited

**Position in Other Organization/Institutions : None**

**Work Experiences (5-years Past Experiences)**

2017 - 2019	Chairman, PTT Digital Solutions Company Limited
2 Apr 2017 - 31 Aug 2018	Director, District Cooling System and Power Plant Company Limited
2017 - 2018	Senior Executive Vice President, Innovation and Digital, PTT Public Company Limited
2018	Director, Energy Complex Company Limited
2018	Director, Business Services Alliance Company Limited
1 Jan 2017 - 31 Dec 2017	Senior Executive Vice President, Sustainability Management and Project Engineering, PTT Public Company Limited
1 Oct 2016 - 31 Dec 2016	Senior Executive Vice President, Sustainability Management, PTT Public Company Limited
1 Jan 2016 - 30 Sep 2016	Executive Vice President, Downstream Business Group Alignment, PTT Public Company Limited
1 Aug 2014 - Dec 2015	Executive Vice President, Strategy Management, Downstream Business Unit, PTT Public Company Limited

**Shareholding :** 3,415 shares (0.000076%)  
as of December 31<sup>st</sup>, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Education/Training**

- Doctor of Philosophy (PhD) in Chemical Engineering, University of Southern California, U.S.A.
- Master of Science (Chemical Engineering), University of Southern California, U.S.A.
- Bachelor of Science (Chemical Engineering), California State Polytechnic University, U.S.A.
- The Executive Program in Energy Literacy for a Sustainable Future (Class 11), Thailand Energy Academy (TEA)
- Strategist Course, Strategic Studies Center, National Defence Studies Institute
- The Civil Service Executive Development Program (Class 83), Civil Service Training Institute, Office of the Civil Service Commission (OCSC)
- Top Level Energy Administration (Class 7), Ministry of Energy
- LPG - Supply, Economics, Markets and International Trading, Mennta Energy Solutions (formerly The Oxford Princeton Programme), Oxford, U.K.
- International Program for Development Evaluation Training by the World Bank and Carleton University, Ottawa, Canada
- International Training Program on Utility Regulation and Strategy by the World Bank and University of Florida, Florida, U.S.A
- International Energy Forum, Doha, Qatar

**Director Training**

- Director Certification Program (DCP) Class 267/2018 Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company - The Stock Exchange of Thailand : 1**

- Director and Director to the Risk Management Committee, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company - The Stock Exchange of Thailand : None**

**Position in Other Organization/Institutions : 1**

- Director General, Department of Mineral Fuels, Ministry of Energy

**Work Experiences (5-years Past Experiences)**

Dec 16, 2019 - Jul 3, 2020	Director, PTT Public Company Limited
Mar 9, 2018 - Dec 16, 2019	Director and Member of the Enterprise Risk Management Committee, PTT Oil and Retail Business Public Company Limited
April 6, 2019 - Nov 8, 2019	Deputy Permanent Secretary, Office of the Permanent Secretary Ministry of Energy
Dec 7, 2016 - April 5, 2019	Deputy Director-General, Department of Mineral Fuels
Feb 11, 2014 - Dec 6, 2016	Strategy Planning Division, Bureau of policy and strategy, Office of the Permanent Secretary Ministry of Energy

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mr. Disathat Panyarachun**

Director and Director to the Risk Management Committee

Age : 56

Appointed : October 22<sup>nd</sup>, 2018**Mrs. Arawadee Photisar**

Director and Director to the Risk Management Committee

Age : 59

Appointed : October 22<sup>nd</sup>, 2018/  
June 2<sup>nd</sup>, 2020 (1<sup>st</sup> re-elected)**Education/Training**

- Master of Political Science (M.P.A.), National University, San Diego, U.S.A.
- B.A. in Ed. (Social Science), Silpakorn University
- Capital Market Leader Program (Class 30), Capital Market Academy
- The Executive Program in Energy Literacy for a Sustainable Future, Class 14, Thailand Energy Academy (TEA)
- Leadership Development Program for Sustainability (LDP 3), PTT Leadership and Learning Institute
- Certification of Oil Futures Program, The Oxford Princeton, U.K.

**Director Training**

- Ethical Leadership Program (ELP) Class 19/2020 and Director Certification Program (DCP) Class 206/2015, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 2**

- Senior Executive Vice President, International Trading Business Unit, PTT Public Company Limited
- Director and Director to the Risk Management Committee, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 2**

- Chairman, PTT International Trading London Ltd.
- Chairman, PTT International Trading Pte Ltd

**Position in Other Organization/Institutions : None****Work Experiences (5-years Past Experiences)**

Oct 2018 - Jun 2020	Director to the Corporate Governance Committee, PTT Global Chemical Public Company Limited
1 Nov 2011 - 19 Oct 2018	Chairman, PTT International Trading DMCC
1 Feb 2016 - 30 Sep 2018	Executive Vice President, International Trading, PTT Public Company Limited
1 Aug 2015 - 31 Jan 2016	Vice President acting as Executive Vice President, International Trading, PTT Public Company Limited
2012 - 2015	Vice President, PTT Public Company Limited working on a Secondment as Managing Director, PTT International Trading Pte Ltd

**Shareholding :** Spouse 80 shares (0.000002%) as of December 31<sup>st</sup>, 2020**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None**Education/Training**

- Master of Business Administration (Management Information System), The University of Dallas, U.S.A.
- Bachelor of Accounting, Thammasat University
- The Executive Program in Energy Literacy for a Sustainable Future, Class 13, Thailand Energy Academy (TEA)
- Leadership Development Program (LDP 3) Class 3, PTT Leadership and Learning Institute
- Breakthrough Program for Senior Executives, International Leading Business School (IMD), Switzerland
- Mitsui-HBS Global Management Academy, Harvard Business School, U.S.A.

**Director Training**

- Director Certification Program (DCP) Class 253/2018, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 2**

- Senior Executive Vice President, Corporate Strategy, PTT Public Company Limited
- Director and Director to the Risk Management Committee, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 3**

- Chairman, Sakari Resources Limited
- Chairman, Alpha Com Company Limited
- Director, Tiger Energy Trading Pte. Limited

**Position in Other Organization/Institutions : None****Work Experiences (5-years Past Experiences)**

2017 - 2019	Director, PTT Digital Solutions Company Limited
2017 - 30 Sep 2018	Executive Vice President, PTT Public Company Limited working on a Secondment as Managing Director, PTT Digital Solutions Company Limited
2016 - 2017	Executive Vice President, Strategy & Portfolio Management and Director of ExpresSo Project, PTT Public Company Limited
2013 - 2016	Executive Vice President, Strategy & Portfolio Management, PTT Public Company Limited

**Shareholding :** 153 shares (0.000003%) as of December 31<sup>st</sup>, 2020**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

## Mr. Chansin Treenuchagron

Director and Director to the Corporate Governance Committee

Age : 60

Appointed : September 21<sup>st</sup>, 2020



## Mr. Kongkrapan Intarajang

Director and Secretary to the Board of Directors and Director to the Risk Management Committee/ Chief Executive Officer

Age : 53

Appointed : October 1<sup>st</sup>, 2019



### Education/Training

- Honorary Doctorate of Science (Technology Management), Thammasat University
- Master of Economics, Chulalongkorn University
- Bachelor of Economics, Thammasat University
- Executive Development Relation Class 1, Directorate of Civil Affairs
- The Executive Program in Energy Literacy for a Sustainable Future Class 7/2015, Thailand Energy Academy (TEA7)
- Diploma, National Defence College, The National Defence Course, Class 57/2014, Thailand National Defence College
- Leadership Development Program III (LDP III) Class 1/2014, PTT Leadership and Learning Institute (PLLI), PTT Public Company Limited
- Advance Senior Executive Program (ASEP-5) Class 5/2010, KELLOGG & SASIN, Chicago, USA
- Air War College Class 35/2006
- Senior Executive Program (SEP) Class 20, Sasin Graduate Institute of Business Administration of Chulalongkorn University
- PTT Executive Leadership, General Electric, GE, New York, USA
- Advanced Certificate Course in Public Economics Management for Executives Class 10, King Prajadhipok's Institute
- Leadership Excellence through Awareness and Practice (LEAP), INSEAD, Singapore & France

### Director Training

- The Role of the Board in IT Governance of 2020/ Briefing on International Anti-Corruption... International Cases and Practices (October 14, 2015)/ Chartered Director Class (CDC) Class 11/2015/ Director Accreditation Program (DAP) Class 93/2011, Financial Statements for Directors (FSD) Class 12/2011 and Director Certification Program (DCP) Class 85/2007, Thai Institute of Directors Association (IOD)

### Board member/Management in Listed Company -

#### The Stock Exchange of Thailand : 2

- Director and Director to the Corporate Governance Committee, PTT Global Chemical Public Company Limited
- Director and Acting President, Thai Airways International Public Company Limited

### Board member/Management in Non-Listed Company -

#### The Stock Exchange of Thailand : 1

- Chairman, Y.S.S. (THAILAND) Company Limited

### Position in Other Organization/Institutions : 1

- President, Thammasat Association

### Work Experiences (5-years Past Experiences)

Aug 2018 - Dec 2020	Chairman, IRPC Public Company Limited
Aug 2018 - May 2020	President and Chief Executive Officer/ Director/Secretary to the Board, PTT Public Company Limited
Sep 2018 - Aug 2020	Director, PTT Exploration and Production Public Company Limited
Jan 2018 - Aug 2018	Chief Technology and Engineering Officer, PTT Public Company Limited
Dec 2017 - Aug 2018	Chairman, PTT Digital Solutions Company Limited
Oct 2017 - Aug 2018	Director/Member of Risk Management Committee/ Member of Nomination and Remuneration Committee, Global Power Synergy Public Company Limited
Apr 2016 - Aug 2018	Member of the Risk Management Committee, IRPC Public Company Limited
Oct 2015 - Aug 2018	Director, IRPC Public Company Limited
Oct 2017 - Dec 2017	Chief Operating Officer, Infrastructure and Sustainability Management Business Group, PTT Public Company Limited
Apr 2017 - Dec 2017	Chairman, PTT Asahi Chemical Company Limited
Jan 2016 - Sep 2017	Senior Executive Vice President, Downstream Business Group Alignment, PTT Public Company Limited
Nov 2015 - Dec 2017	Chairman, PTT Polymer Marketing Company Limited
Nov 2015 - Mar 2017	Chairman, PTT Polymer Logistics Company Limited
Oct 2015 - Dec 2015	Senior Executive Vice President, Petrochemicals & Refining Business Unit, PTT Public Company Limited
Oct 2014 - Dec 2015	Chairman, PTT Green Energy (Thailand) Company Limited
Apr 2015 - Oct 2015	Director, Thai Oil Public Company Limited
Oct 2014 - Sep 2015	Senior Executive Vice President, Corporate Strategy, PTT Public Company Limited
Apr 2012 - Jul 2015	Director, PTT Polymer Logistics Company Limited

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

### Education/Training

- Doctor of Philosophy (Ph.D.) in Chemical Engineering, University of Houston, U.S.A.
- Bachelor of Engineering (Chemical Engineering) (Second-class Honors), Chulalongkorn University
- Executive Development Training Program, The Royal Thai Police
- Capital Market Leader Program (Class 30), Capital Market Academy
- Leadership Development Program (LDP 3) Class 4, PTT Leadership and Learning Institute
- The Executive Program in Energy Literacy for a Sustainable Future, Class 14, Thailand Energy Academy (TEA)
- Diploma, National Defence College, The National Defence Course Class 60, National Defence College of Thailand (NDC)
- Breakthrough Program for Senior Executives, IMD Business School

### Director Training

- Role of the Chairman Program (RCP) Class 21/2009 and Director Certification Program (DCP) Class 119/2009, Thai Institute of Directors Association (IOD)

### Board member/Management in Listed Company -

#### The Stock Exchange of Thailand : 4

- Chairman, Global Green Chemicals Public Company Limited
- Senior Executive Vice President reporting to Chief Operating Officer, Downstream Petroleum Business Group, PTT Public Company Limited
- Director and Secretary to the Board of Directors/ Director to the Risk Management Committee and Chief Executive Officer, PTT Global Chemical Public Company Limited
- Director and Member of the Risk Management Committee, Global Power Synergy Public Company Limited

### Board member/Management in Non-Listed Company -

#### The Stock Exchange of Thailand : 4

- Chairman, PTTGC International Private Limited
- Chairman, GC International Corporation
- Chairman, PTTGC America Corporation
- Chairman, PTTGC America LLC

### Position in Other Organizations/Institutions : 11

- Director, Association of Capital Market Academy Alumni
- Advisor of the Member Relations, the Federation of Thai Industries
- Director, the Federation of Thai Industries
- Committee Member of Sustainable Energy Foundation
- Vice President, Thailand Swimming Association
- Honorary Member of Vidyasirimedhi Institute Council
- Member of Trustee, The Petroleum Institute of Thailand (PTIT)
- Council of Trustee, Thailand Business Council of Sustainable Development (TBCSD)
- Executive Director, Thailand Energy Academy
- Director, Kamnoetvidya Science Academy (KVIS)
- Co-Chairman, France-Thailand Business Forum

### Work Experiences (5-years Past Experiences)

31 Oct 2019 - 31 Aug 2020	Director, GC International Corporation
9 Sep 2008 - 31 Aug 2020	Director, PTTGC International Private Limited
6 Nov 2019- 20 Oct 2020	Director, Global Green Chemicals Public Company Limited
May 2017 - Jan 2020	Director, Thai Tank Terminal Limited
Apr 2017 - Sep 2019	Chief Operating Officer - Upstream Petrochemical Business, PTT Global Chemical Public Company Limited
Jul 2015 - Sep 2019	Director and President & CEO, PTTGC America Corporation
Apr 2015 - Sep 2019	Director, PTTGC Innovation America Corporation
Feb 2015 - Sep 2019	Director, PTTGC International (Netherlands) B.V.
Jan 2015 - Sep 2019	Director, Vencorex Holding
Nov 2008 - Sep 2019	Director, Emery Oleochemicals (M) Sdn. Bhd.
Nov 2008 - Sep 2019	Director, Emery Specialty Chemicals Sdn. Bhd.
Sep 2014 - Dec 2018	Director, NatureWorks LLC
Sep 2014 - Dec 2018	Director, GC International Corporation (Formerly, PTTGC International (USA) Inc.)
Oct 2014 - Mar 2017	Executive Vice President - International Business Operations, PTT Global Chemical Public Company Limited

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



# Executives

To ensure efficient organizational management and operations that adhere to the policies and directions established by the Board of Directors, the Chief Executive Officer (CEO), exercising the power vested in him by GC's Articles of Association, has formed the Management Committee (MC) and the Group Management Committee (GMC). Both committees are composed of top management from Senior Vice President upwards, under the CEO's direct supervision. The CEO, as head of the Company's employees, has the authority and duties to ensure that the Company operates according to the policies, plans, and budgets approved by the Board.

The MC is responsible for devising and aligning operational directions and guidelines with the Board's established policies. It reviews and offers suggestions on the Company's policies and operational guidelines in relation to marketing, commercial and supply; risk management, capital allocation and management; human resources management and development; quality, safety, occupational health and environmental management; and social responsibility as well as matters that may cause significant changes to its Business Units and Group Performance Centers. The MC also reviews and offers suggestions on Board meeting agenda prior to presenting them to the Board at the meeting. Additionally, the MC oversees the Company's compliance with the law and regulations of external regulatory authorities as well as its own rules and regulations and the Company's relevant legal

actions to ensure that the conduct of GC's business is in compliance with good corporate governance principles and in conformity to international standards. The MC also follows up on and implements the Board's resolutions, suggestions, and opinions given at Board meetings as well as oversees and monitors diverse aspects of GC's progress as a whole and internationally.

Meanwhile, the GMC is tasked with reviewing and offering opinions and recommendations on the alignment of Company policies with those of its Group Performance Centers in relation to the operational guidelines for Group Performance Centers' production management, marketing, commercial and supply, and risk management, including human resource management and development; quality, safety, occupational health and environmental management; and social responsibility. It also monitors the performance of Group Performance Centers and progress on innovation and technology initiatives as well as projects that contribute to the efficiency of their operations.

The MC holds at least three meetings monthly, while the GMC holds at least one monthly meeting. In 2020, the MC convened a total of 44 meetings, and GMC convened a total of 12 meetings. The Senior Vice President of Corporate Secretary and Legal serves as Secretary to both committees.

## EXECUTIVES UNDER THE ORGANIZATIONAL STRUCTURE AS OF JANUARY 31, 2021

Name	Position
1. Mr. Kongkrapan Intarajang	Chief Executive Officer
2. Mr. Patiparn Sukorndhaman	President
3. Mr. Varit Namwong	Chief Operating Officer – Center of Excellence
4. Mr. Toasaporn Boonyapipat	Senior Executive Vice President – Upstream Petrochemical Business
5. Mr. Wiboon Chuchepchukamon	Senior Executive Vice President – Downstream Petrochemical Business Acting Senior Vice President – Green Chemicals Business Unit
6. Miss Pattaralada Sa-Ngasang	Executive Vice President – Finance and Accounting
7. Mr. Narongsak Jivakanun	Executive Vice President – International Business Operations
8. Mrs. Warawan Tippawanich	Executive Vice President – Corporate Strategy
9. Mr. Saroj Putthammawong	Executive Vice President – Marketing, Commercial and Supply
10. Mr. Pirun Krimwongrut	Executive Vice President – Organizational Effectiveness
11. Mr. Pornsak Mongkoltrirat	Executive Vice President – Polymers Business Unit
12. Mr. Pukpong Wungrattanasopon	Executive Vice President – Group Performance Center – Olefins
13. Mr. Amorn Putiphrawan	Senior Vice President – Internal Audit
14. Mr. Chaya Chandavasu	Senior Vice President – Sustainability and Corporate Branding
15. Mrs. Pilasphan Udomjarumane	Senior Vice President – Corporate Secretary and Legal
16. Mr. Ratchada Sawasdirak	Senior Vice President – Group Performance Center – Refinery and Shared Facilities
17. Mr. Anutin Chuaypen	Senior Vice President – Group Performance Center – Aromatics
18. Mr. Supasit Tongsupachok	Senior Vice President – Group Performance Center – Utilities
19. Mr. Vitaya Pinmuangngarm	Senior Vice President – EO-Based Performance Business Unit
20. Mr. Paisarn Sarapee	Senior Vice President – Phenol Business Unit
21. Mrs. Chananchida Wiboonkanarak	Senior Vice President – Downstream Strategy and Business Development
22. Mrs. Jeeranee Pimthanothai	Senior Vice President – Technical, Engineering and Maintenance
23. Mr. Khomson Piyawattanaviroj	Senior Vice President – CAPEX Excellence
24. Mr. Wirat Boonbumrungchai	Senior Vice President – Quality, Safety & Occupational Health and Environment
25. Mrs. Chatsuda Kanjanarat	Senior Vice President – Transformation Excellence
26. Mrs. Wilawan Songjaroen	Senior Vice President – Procurement
27. Mr. Kevin Thomas Corby	Senior Vice President – Science and Innovation

Executives in numbers 1-6 are executives as per SEC's announcement Re: Determination of Definitions in announcement relating to Issuance and Offer for Sale of Securities.

## CHANGES IN EXECUTIVES FROM JANUARY 1, 2020 – FEBRUARY 28, 2021

- 1) Mr. Pornsak Mongkoltrirat was appointed Executive Vice President – Polymers Business Unit on April 1, 2020.
- 2) Mr. Pukpong Wungrattanasopon was appointed Executive Vice President – Group Performance Center – Olefins on April 1, 2020.
- 3) Miss Duangkamol Settanung was transferred back to PTT Public Company Limited on September 30, 2020.
- 4) Mr. Thitipong Jurapornsiridee was appointed Acting Executive Vice President – Finance and Accounting on October 1, 2020 and resigned on December 31, 2020.
- 5) Miss Pattaralada Sa-Ngasang was appointed Executive Vice President – Finance and Accounting on January 1, 2021.
- 6) Mr. Boonchai Chunhawiksit was appointed Senior Executive Vice President – Upstream Petrochemical Business on October 1, 2020 and retired on December 31, 2020.
- 7) Mr. Toasaporn Boonyapipat was appointed Senior Executive Vice President – Upstream Petrochemical Business on January 1, 2021.
- 8) Mr. Wiboon Chuchepchankamon was appointed Senior Executive Vice President – Downstream Petrochemical Business and Acting Senior Vice President – Green Chemicals Business Unit on October 1, 2020.
- 9) Mr. Pirun Krimwongrut was appointed Executive Vice President – Organizational Effectiveness on October 1, 2020.
- 10) Mr. Kumpol Chaikitkosi retired on December 31, 2020.
- 11) Mr. Vitaya Pinmuangngarm was appointed Senior Vice President – EO-Based Performance Business Unit on January 1, 2021.
- 12) Mrs. Wilawan Songjaroen was transferred to the position of Senior Vice President – Center of Excellence on February 16, 2021.
- 13) Mr. Paranai Waitayasewee was appointed Senior Vice President – Procurement on February 16, 2021.

## REMUNERATION POLICY FOR EXECUTIVE DIRECTORS AND EXECUTIVES

The Company evaluates the performance of its Executives annually against the pre-determined Key Performance Indicators (KPIs). These include financial performance, implementation of long-term strategic goals, personal performance, the Company's performance and practices of other listed companies of a similar size in the same industry. The evaluation also takes into account their responsibilities, management development and overall economic conditions.

## TOTAL REMUNERATION FOR EXECUTIVE DIRECTORS AND EXECUTIVES FROM THE COMPANY AND ITS SUBSIDIARIES

The remuneration for the Chief Executive Officer is appropriately determined using transparent, fair, and reasonable criteria. The position's duties and responsibilities are also taken into account in conjunction with personal performance. The Nomination and Remuneration Committee is charged with reviewing and proposing the remuneration of the Chief Executive Officer to the Board of Directors for approval. It should be noted that, at the highest level of the Company's management hierarchy, the Chief Executive Officer is awarded compensation and other benefits in addition to those received as a Director on the Board of Directors.

**TOTAL REMUNERATION OF GC AND GC'S SUBSIDIARIES PAID TO THE EXECUTIVES UNDER SEC'S DEFINITION SERVING IN 2020 (INCLUDING THOSE WHO RETIRED AND RESIGNED IN 2020)**

Type of Remuneration	Number of Executives	Total (Million Baht)		
		GC	GC's Subsidiaries	Total
Total Combined Salaries	7	55	19	74
Total Combined Special Bonuses	7	14	-	14
Provident Fund Contributions	7	7	-	7
<b>Total</b>		<b>76</b>	<b>19</b>	<b>95</b>

**SHARES HELD BY THE EXECUTIVES UNDER SEC'S DEFINITION, THEIR SPOUSES, AND THEIR MINORS AS OF DECEMBER 31, 2020**

Name	Number of Shares		
	As of January 1, 2020	As of December 31, 2020	Increase / (Decrease) of Shares during the Year (Shares)
1. Mr. Kongkrapan Intarajang	-None-	-None-	-No change-
2. Mr. Patiparn Sukorndhaman	-None-	-None-	-No change-
3. Mr. Varit Namwong	108,939	108,939	-No change-
4. Mr. Boonchai Chunhawiksit <sup>(1)</sup>	40,000	40,000	-No change-
5. Mr. Wiboon Chuchepchukamon	-None-	-None-	-No change-
Spouse	198	198	-No change-
6. Miss Duangkamol Settanung <sup>(2)</sup>	-None-	N/A	N/A
7. Mr. Thitipong Jurapornsiridee <sup>(3)</sup>	N/A	20,000	-No change-
8. Mr. Toasaporn Boonyapipat <sup>(4)</sup>	N/A	N/A	N/A
9. Miss Pattaralada Sa-Ngasang <sup>(5)</sup>	N/A	N/A	N/A

**Remarks:**

- (1) Mr. Boonchai Chunhawiksit retired on December 31, 2020.
- (2) Miss Duangkamol Settanung was transferred back to PTT Public Company Limited on September 30, 2020.
- (3) Mr. Thitipong Jurapornsiridee was appointed Acting Executive Vice President – Finance and Accounting, replacing Miss Duangkamol Settanung on October 1, 2020.
- (4) Mr. Toasaporn Boonyapipat was appointed Senior Executive Vice President – Upstream Petrochemical Business on January 1, 2021.
- (5) Miss Pattaralada Sa-Ngasang was appointed Executive Vice President – Finance and Accounting on January 1, 2021.

# GC Executives



**1. Mr. Kongkrapan Intarajang**  
Chief Executive Officer



**2. Mr. Patiparn Sukorndhaman**  
President



**3. Mr. Varit Namwong**  
Chief Operating Officer – Center of Excellence



**4. Mr. Toasaporn Boonyapipat**

Senior Executive Vice President,  
Upstream Petrochemical Business



**5. Mr. Wiboon Chuhepchunkamon**

Senior Executive Vice President,  
Downstream Petrochemical Business  
and Acting Senior Vice President,  
Green Chemicals Business Unit



**6. Miss Pattaralada Sa-NGasang**

Executive Vice President,  
Finance and Accounting



**7. Mr. Narongsak Jivakanun**

Executive Vice President,  
International Business Operations



**8. Mrs. Warawan Tippawanich**

Executive Vice President,  
Corporate Strategy



**9. Mr. Saroj Putthammawong**

Executive Vice President ,  
Marketing, Commercial  
and Supply



**10. Mr. Pirun Krimwongrut**

Executive Vice President,  
Organizational Effectiveness



**11. Mr. Pornsak Mongkoltrirat**

Executive Vice President,  
Polymers Business Unit



**12. Mr. Pukpong Wungrattanasopon**

Executive Vice President,  
Group Performance Center –  
Olefins



# GC Executives



**13. Mr. Amorn Putiphawan**

Senior Vice President,  
Internal Audit



**14. Mr. Chaya Chandavasv**

Senior Vice President,  
Sustainability and  
Corporate Branding



**15. Mrs. Pilasphan Udomjarumane**

Senior Vice President,  
Corporate Secretary  
and Legal and Company Secretary



**16. Mr. Ratchada Sawasdirak**

Senior Vice President,  
Group Performance Center -  
Refinery and Shared Facilities



**17. Mr. Anutin Chuaypen**

Senior Vice President,  
Group Performance Center -  
Aromatics



**18. Mr. Supasit Tongsupachok**

Senior Vice President,  
Group Performance Center-  
Utilities



**19. Mr. Vitaya Pinmuangngarm**

Senior Vice President,  
EO-Based Performance  
Business Unit



**20. Mr. Paisarn Sarapee**

Senior Vice President,  
Phenol Business Unit



**21. Mrs. Chananchida Wiboonkanarak**

Senior Vice President,  
Downstream Strategy  
and Business Development



**22. Mrs. Jeeranee Pimthanothai**  
Senior Vice President –  
Technical, Engineering  
and Maintenance



**23. Mr. Khomson Piyawattanaviroj**  
Senior Vice President,  
CAPEX Excellence



**24. Mr. Wirat Boonbumrungchai**  
Senior Vice President,  
Quality, Safety, Occupational  
Health and Environment



**25. Mrs. Chatsuda Kanjanarat**  
Senior Vice President,  
Transformation Excellence



**26. Mrs. Wilawan Songjaroen**  
Senior Vice President,  
Procurement



**27. Mr. Kevin Thomas Corby**  
Senior Vice President,  
Science and Innovation

# Profile of GC Executives

## Mr. Kongkrapan Intarajang Chief Executive Officer

Age : 53

Appointed : October 1<sup>st</sup>, 2019

### Education/Training

- Doctor of Philosophy (Ph.D.) in Chemical Engineering, University of Houston, U.S.A.
- Bachelor of Engineering (Chemical Engineering) (Second-class Honors), Chulalongkorn University
- Executive Development Training Program, The Royal Thai Police
- Capital Market Leader Program (Class 30), Capital Market Academy
- Leadership Development Program (LDP 3) Class 4, PTT Leadership and Learning Institute
- The Executive Program in Energy Literacy for a Sustainable Future, Class 14, Thailand Energy Academy (TEA)
- Diploma, National Defence College, The National Defence Course Class 60, National Defence College of Thailand (NDC)
- Breakthrough Program for Senior Executives, IMD Business School

### Director Training

- Role of the Chairman Program (RCP) Class 21/2009 and Director Certification Program (DCP) Class 119/2009, Thai Institute of Directors Association (IOD)

### Board member/Management in Listed Company –

#### The Stock Exchange of Thailand : 4

- Chairman, Global Green Chemicals Public Company Limited
- Senior Executive Vice President reporting to Chief Operating Officer, Downstream Petroleum Business Group, PTT Public Company Limited
- Director and Secretary to the Board of Directors / Director to the Risk Management Committee and Chief Executive Officer, PTT Global Chemical Public Company Limited
- Director and Member of the Risk Management Committee, Global Power Synergy Public Company Limited

### Board member/Management in Non-Listed Company –

#### The Stock Exchange of Thailand : 4

- Chairman, PTTGC International Private Limited
- Chairman, GC International Corporation
- Chairman, PTTGC America Corporation
- Chairman, PTTGC America LLC

### Position in Other Organizations/Institutions : 11

- Director, Association of Capital Market Academy Alumni
- Advisor of the Member Relations, the Federation of Thai Industries
- Director, the Federation of Thai Industries
- Committee Member of Sustainable Energy Foundation
- Vice President, Thailand Swimming Association
- Honorary Member of Vidyasirimedhi Institute Council
- Member of Trustee, The Petroleum Institute of Thailand (PTIT)
- Council of Trustee, Thailand Business Council of Sustainable Development (TBCSD)
- Executive Director, Thailand Energy Academy
- Director, Kamnoetvidya Science Academy (KVIS)
- Co-Chairman, France-Thailand Business Forum

### Work Experiences (5–years Past Experiences)

31 Oct 2019 - 31 Aug 2020	Director, GC International Corporation
9 Sep 2008 - 31 Aug 2020	Director, PTTGC International Private Limited
6 Nov 2019 - 20 Oct 2020	Director, Global Green Chemicals Public Company Limited
May 2017 - Jan 2020	Director, Thai Tank Terminal Limited
Apr 2017 - Sep 2019	Chief Operating Officer - Upstream Petrochemical Business, PTT Global Chemical Public Company Limited
Jul 2015 - Sep 2019	Director and President & CEO, PTTGC America Corporation
Apr 2015 - Sep 2019	Director, PTTGC Innovation America Corporation
Feb 2015 - Sep 2019	Director, PTTGC International (Netherlands) B.V.
Jan 2015 - Sep 2019	Director, Vencorex Holding
Nov 2008 - Sep 2019	Director, Emery Oleochemicals (M) Sdn. Bhd.
Nov 2008 - Sep 2019	Director, Emery Specialty Chemicals Sdn. Bhd.
Sep 2014 - Dec 2018	Director, NatureWorks LLC
Sep 2014 - Dec 2018	Director, GC International Corporation (Formerly, PTTGC International (USA) Inc.)
Oct 2014 - Mar 2017	Executive Vice President - International Business Operations, PTT Global Chemical Public Company Limited

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

## Mr. Patiparn Sukorndhaman President

Age : 59

Appointed : October 1<sup>st</sup>, 2019

### Education/Training

- Master of Business Administration (Finance), The American University, U.S.A.
- Bachelor of Arts in Political Science (Public Administration - Public Finance), (Second-Class Honors), Chulalongkorn University
- Diploma, National Defence College, The National Defence Course Class 59 -2016, National Defence College of Thailand (NDC)
- The Executive Program in Energy Literacy for a Sustainable Future, Class 7-2015, Thailand Energy Academy (TEA)
- Leadership Development Program (LDP 3) Class 3 - 2014, PTT Leadership and Learning Institute
- Breakthrough Program for Senior Executives, International Leading Business School (IMD) 2014, Switzerland
- PTT Executive Leadership Program, General Electric 2012, GE, U.S.A.
- Certification Program for Senior Management 5 (Ex-PSM 5 - 2009), Fiscal Policy Research Institute Foundation
- Graduate Diploma in Public Law and Management (PLM 8), King Prajadhipok's Institute
- Director Certification Program (DCP) Class 73/2006, Thai Institute of Directors Association (IOD)

### Board member/Management in Listed Company –

#### The Stock Exchange of Thailand : 2

- President, PTT Global Chemical Public Company Limited
- Director, Director to the Nomination and Remuneration Committee and Director to the Risk Management Committee, Global Green Chemicals Public Company Limited

### Board member/Management in Non-Listed Company –

#### The Stock Exchange of Thailand : 7

- Chairman, Solution Creation Company Limited
- Chairman, GC Marketing Solutions Company Limited
- Chairman, GC Polyols Company Limited
- Chairman, GC-M PTA Company Limited
- Chairman, Thai PET Resin Company Limited
- Chairman, HMC Polymers Company Limited
- Chairman, PTT Asahi Chemical Company Limited

### Work Experiences (5–years past experiences)

Jun 2017 - Nov 2019	Chairman, GC Oxirane Company Limited
Jan 2016 - Sep 2019	Chairman, GC Glycol Company Limited
Jan 2012 - Sep 2019	Director, PTT Phenol Company Limited
Feb 2016 - May 2019	Chairman, GC Styrenics Company Limited
Jan 2016 - 30 Sep 2019	Chief Operating Officer - Downstream Petrochemical Business, PTT Global Chemical Public Company Limited
2015 - Jul 2017	Director and Director to the Nomination and Remuneration Committee, Global Power Synergy Public Company Limited
Oct 2009 - Jan 2016	Director, Thai Fatty Alcohols Company Limited
Sep 2012 - 2015	Director, PTTGC International Private Limited
19 Oct 2011 - 31 Dec 2015	Executive Vice President - Finance and Accounting, PTT Global Chemical Public Company Limited

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

**Mr. Varit Namwong**

Chief Operating Officer – Center of Excellence

Age : 57

Appointed : October 1<sup>st</sup>, 2016**Education/Training**

- Master of Business Administration (International Program), Ramkhamhaeng University
- Bachelor of Business Administration, Assumption Business Administration College
- Diploma, National Defence College, The National Defence Course Class 61-2018, National Defence College of Thailand (NDC)
- The Executive Program in Energy Literacy for a Sustainable Future, Class 10-2017, Thailand Energy Academy (TEA)
- Advanced Human Resource Executive Program 2014, The Stephen M. Ross School of Business, University of Michigan
- Leadership Development Program (LDP 3-2014), PTT Leadership and Learning Institute
- Senior Executive Program (SEP), Sasin Graduate Institute of Business Administration of Chulalongkorn University
- Director Certification Program (DCP) Class 160/2012 and Director Accreditation Program (DAP) Class 91/2011, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Chief Operating Officer - Center of Excellence, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 6**

- Chairman, GC Maintenance and Engineering Company Limited
- Chairman, NPC Safety and Environmental Service Company Limited
- Director, HMC Polymers Company Limited
- Director, GC Marketing Solutions Company Limited
- Director, PTTGC America Corporation
- Director, PTTGC America LLC

**Work Experiences (5-years past experiences)**

Dec 2016 - 30 Sep 2019	Director, PTT Energy Solutions Company Limited
Apr 2012 - Jan 2019	Director, Sport Services Alliance Limited
19 Oct 2011 - Aug 2016	Executive Vice President - Organizational Effectiveness, PTT Global Chemical Public Company Limited
2014 - 2016	Director, Vencorex Holding
2011 - 2016	Director, Eastern Fluid Transport Company Limited
2011 - 2016	Director, PTT Digital Solutions Company Limited
2011 - 2016	Director, Solution Creation Company Limited
2016	Director, GC Glycol Company Limited

**Shareholding :** 108,939 Shares (0.002416%) as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mr. Toasaporn Boonyapipat**Senior Executive Vice President  
Upstream Petrochemical Business

Age : 55

Appointed : January 1<sup>st</sup>, 2021**Education/Training**

- Master of Business Administration, Burapha University
- Bachelor of Engineering (Mechanical) (Second-Class Honors), Chiang Mai University
- ASEAN Executive Program (AEP), General Electric, Crotonville, U.S.A
- Director Certification Program (DCP) Class 197/2014, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 2**

- Senior Executive Vice President - Upstream Petrochemical Business, PTT Global Chemical Public Company Limited
- Director, Global Power Synergy Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 3**

- Chairman, GC Estate Company Limited
- Director, GC Maintenance and Engineering Company Limited
- Director, Thai Tank Terminal Limited

**Work Experiences (5-years past experiences)**

2019 - 2020	Executive Vice President reporting to Chief Executive Officer, PTT Global Chemical Public Company Limited appointed as Secondment to PTTGC America LLC
2017 - 2020	Director, PTTGC America LLC
2016 - 2020	Director, Emery Specialty Chemicals Sdn. Bhd.
2016 - 2020	Director, Emery Oleochemicals (M) Sdn. Bhd.
2016 - 2020	President and CEO, PTTGC America LLC
2017 - 2020	Director, PTTGC International (Netherlands) B.V.
2014 - 2020	Director, Vencorex Holding
2018 - 2019	Director, GC Ventures Company Limited
2017 - 2019	Director and Chief Executive Office, PTTGC International Private Limited
2017 - 2019	Executive Vice President-International Business Operations, PTT Global Chemical Public Company Limited appointed as Secondment to PTTGC America LLC
2014 - 2017	Senior Vice President reporting to Executive Vice President - International Business Operations, PTT Global Chemical Public Company Limited appointed as Secondment to PTTGC America LLC

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None



### Mr. Wiboon Chuhepchunkamon

Senior Executive Vice President – Downstream Petrochemical Business  
and Acting Senior Vice President – Green Chemicals Business Unit

Age : 58

Appointed : October 1<sup>st</sup>, 2020

#### Education/Training

- Master of Management, Sasin Graduate Institute of Business Administration of Chulalongkorn University
- Master of Science (Petroleum and Petrochemical), Petroleum and Petrochemical College, Chulalongkorn University
- Bachelor of Engineering (Electrical Engineering), Chulalongkorn University
- The Executive Program in Energy Literacy for a Sustainable Future, Class 13, 2019, Thailand Energy Academy (TEA)
- Stanford - NUS Executive Program in International Management, The Republic of Singapore
- Harvard - Leadership Development, Shanghai, The People's Republic of China
- Role of the Chairman Program (RCP) Class 47/2019 and Director Certification Program (DCP) Class 219/2016, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 2

- Senior Executive Vice President - Downstream Petrochemical Business and Acting Senior Vice President- Green Chemicals Business Unit, PTT Global Chemical Public Company Limited
- Director, Vice Chairman of the Board of Directors and Member of the Nomination and Remuneration Committee, Vinythai Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 10

- Chairman, GC Glycol Company Limited
- Chairman, GC Oxirane Company Limited
- Chairman, Revolve Group Limited
- Director, PTT Phenol Company Limited
- Director, GC-M PTA Company Limited
- Director, Solution Creation Company Limited
- Director, GC Marketing Solutions Company Limited
- Director, HMC Polymers Company Limited
- Director, Kuraray GC Advanced Materials Company Limited
- Director, Thai PET Resin Company Limited

#### Work Experiences (5–years past experiences)

1 Oct 2019 - 30 Sep 2020	Senior Executive Vice President- Downstream Petrochemical Business, PTT Global Chemical Public Company Limited
May 2019 - Nov 2019	Chairman, GC Styrenics Company Limited
Jan 2018 - Oct 2019	Chairman, GC Logistics Solutions Company Limited
Jan 2018 - Oct 2019	Chairman, PL Global Transport Company Limited
Jan 2018 - Sep 2019	Senior Vice President Polymers Business Unit, PTT Global Chemical Public Company Limited
Jan 2018 - May 2019	Director, GC Styrenics Company Limited
Jul 2017 - Dec 2017	Senior Vice President - Downstream Petrochemical Business, PTT Global Chemical Public Company Limited
Jan 2016 - Jul 2017	Director and Managing Director, GC Glycol Company Limited
Jan 2016 - Jun 2017	Senior Vice President - EO-Based Performance Business Unit, PTT Global Chemical Public Company Limited

**Shareholding :** Spouse 198 Shares (0.000004%) as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

### Miss Pattaralada Sa-Ngasang

Executive Vice President –  
Finance and Accounting

Age : 54

Appointed : January 1<sup>st</sup>, 2021

#### Education/Training

- Master of Business Administration, Thammasat University
- Mini Master of Business Administration, National Institute of Development Administration
- Bachelor of Accounting, Thammasat University
- Diploma, National Defence College, The National Defence Course Class 61, National Defence College of Thailand (NDC)
- Capital Market Leader Program (Class 22), Capital Market Academy
- PTT - HBS Leadership Development Program, Class 2, Harvard Business School, U.S.A.
- IMD - TLCA Leadership Development Program (LDP) Class 1, organized by Thai Listed Companies Association (TLCA) and IMD Business School, Switzerland
- Treasury Management Program, Class 2, Fiscal Policy Research Institute Foundation, Ministry of Finance
- Executive Development Program (EDP) Class 5, Thai Listed Companies Association (TLCA)
- Global Leadership Business, Class 2, Cornell University, U.S.A
- Leadership Succession Program, Class 11, Institute of Research and Development for Public Enterprises (IRDP)
- Strategic Board Master Class (SBM) Class 1/2017 Role of the Chairman Program (RCP) Class 38/2016 and Director Certification Program (DCP) Class 151/2011, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 2

- Executive Vice President reporting to Chief Financial Officer, PTT Public Company Limited
- Executive Vice President – Finance and Accounting PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 11

- Chairman, GC Treasury Center Company Limited
- Director, GC Polyols Company Limited
- Director, GC Oxirane Company Limited
- Director, PTTGC Innovation America Corporation
- Director, GC International Corporation
- Director, PTTGC International Private Limited
- Director, PTTGC America Corporation
- Director, PTTGC America LLC
- Director, Emery Oleochemicals (M) Sdn. Bhd.
- Director, Emery Specialty Chemicals Sdn. Bhd.
- Director, Vencorex Holding

#### Work Experiences (5–years past experiences)

Oct 2015 - Dec 2020	Executive Vice President- Finance and Accounting, Thai Oil Public Company Limited
May 2017 - Dec 2020	Chairperson, Thaioil Treasury Center Company Limited
Jan 2010 - Dec 2020	Director, Ubon Bio Ethanol Public Company Limited
Mar 2017 - Dec 2020	Director, Thaioil Energy Services Company Limited
Apr 2016 - Dec 2020	Director, Thaioil Ethanol Company Limited
Dec 2015 - Dec 2020	Director, Sapthip Company Limited
Feb 2015 - Sep 2015	Senior Vice President-Financial Planning, Thai Oil Public Company Limited

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mr. Narongsak Jivakanun**  
Executive Vice President -  
International Business Operations

Age : 52

Appointed : October 1<sup>st</sup>, 2019

**Education/Training**

- Master of Science (Chemical Engineering), Oregon State University, Oregon, U.S.A.
- Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
- IMD - TLCA Leadership Development Program (LDP) Class 1, 2013 organized by Thai Listed Companies Association (TLCA) and IMD Business School, Switzerland)
- The Executive Program in Energy Literacy for a Sustainable Future, Class 8, Thailand Energy Academy (TEA)
- Director Certification Program (DCP) Class 165/2012, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –  
The Stock Exchange of Thailand : 1**

- Executive Vice President - International Business Operations, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –  
The Stock Exchange of Thailand : 12**

- Chairman, GC Ventures Company Limited
- Chairman, GC Ventures America Corporation
- Chairman, PTTGC International (Netherlands) B.V.
- Chairman, Vencorex Holding
- Chairman, NatureWorks LLC
- Chairman, PTTGC Innovation America Corporation
- Director and Managing Director, PTTGC International Private Limited
- Director and Managing Director, PTTGC America Corporation
- Director and President & CEO, PTTGC America LLC
- Director and Managing Director, GC International Corporation
- Director and Executive Committee, Emery Oleochemicals (M) Sdn. Bhd.
- Director and Executive Committee, Emery Specialty Chemicals Sdn. Bhd.

**Work Experiences (5-years past experiences)**

21 Sep 2017 - 21 Nov 2019	Director, Vice Chairman and Director to the Nomination and Remuneration Committee, Vinythai Public Company Limited
2 Jun 2017 - 9 Nov 2019	Director, GC Polyols Company Limited
23 Jan 2018 - 14 Oct 2019	Chairman, GC Estate Company Limited
18 Feb 2016 - 14 Oct 2019	Director and Director to the Risk Management Committee, Global Green Chemicals Public Company Limited
11 Apr 2016 - 30 Sep 2019	Director, PTT Phenol Company Limited
1 Jan 2017 - 30 Sep 2019	Executive Vice President - Corporate Strategy, PTT Global Chemical Public Company Limited
3 Sep 2017 - 31 Jan 2018	Chairman, PTT MCC Biochem Company Limited
25 Nov 2016 - 26 Jul 2017	Director, PTT Digital Solutions Company Limited
13 Jan 2011 - 14 Jul 2017	Director, Myriant Corporation
1 Feb 2016 - 28 Feb 2017	Director, PTTGC International Private Limited
1 Oct 2014 - 31 Jan 2016	Senior Vice President - International Strategy and Business Development reporting to Executive Vice President-International Business Operations, PTT Global Chemical Public Company Limited

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mrs. Warawan Tippawanich**  
Executive Vice President-  
Corporate Strategy

Age : 57

Appointed : October 1<sup>st</sup>, 2019

**Education/Training**

- Master of Business Administration, Chulalongkorn University
- Bachelor of Science (Chemical Engineering), Chulalongkorn University
- Leadership Development Program (LDP 2) and (LDP 3), PTT Leadership and Learning Institute
- Board Matters and Trends (BMT) Class 2/2017  
Company Secretary Program (CSP) Class 57/2014  
Board Reporting Program (BRP) Class 15/2014  
Company Reporting Program (CRP) Class 10/2014  
Director Certification Program (DCP) Class 190/2014, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –  
The Stock Exchange of Thailand : 2**

- Executive Vice President – Corporate Strategy, PTT Global Chemical Public Company Limited
- Director, Vinythai Public Company Limited

**Board member/Management in Non-Listed Company –  
The Stock Exchange of Thailand : 8**

- Director, Solution Creation Company Limited
- Director, GC Polyols Company Limited
- Director, GC Ventures Company Limited
- Director, GC Ventures America Corporation
- Director, PTTGC America Corporation
- Director, PTTGC America LLC
- Director, PTTGC International Private Limited
- Director, GC International Corporation

**Work Experiences (5-years past experiences)**

Dec 2019 - Nov 2020	Director, GC-M PTA Company Limited
Dec 2019 - Nov 2020	Director, Thai PET Resin Company Limited
Jan 2015 - 11 Nov 2019	Director, GC Glycol Company Limited
Sep 2017 - 14 Sep 2019	Director, Sarn Palung Social Enterprise Company Limited
1 Jan 2015 - 30 Sep 2019	Senior Vice President - Corporate Affairs and Corporate Secretary, PTT Global Chemical Public Company Limited
Jan 2015 - Mar 2017	Director, PTTGC International Private Limited

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None



**Mr. Saroj Putthammawong**  
Executive Vice President –  
Marketing, Commercial and Supply  
Age : 52  
Appointed : October 1<sup>st</sup>, 2019

**Education/Training**

- Master of Business Administration, Thammasat University
- Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
- The Executive Program in Energy Literacy for a Sustainable Future, Class 11/2018, Thailand Energy Academy (TEA)
- Director Certification Program (DCP) Class 220/2016, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Executive Vice President - Marketing, Commercial and Supply, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 5**

- Director, GC Treasury Center Company Limited
- Director, GC Oxirane Company Limited
- Director, GC Glycol Company Limited
- Director, GC Marketing Solutions Company Limited
- Director and Executive Committee Member, HMC Polymers Company Limited

**Position in Other Organizations/Institutions : 1**

- Committee of Industry Standards (ISC), The Federation of Thai Industries

**Work Experiences (5-years past experiences)**

Oct 2015 - Sep 2019 Senior Vice President - Marketing, Commercial and Supply, PTT Global Chemical Public Company Limited

2017 - 2019 Director, GC Logistics Solutions Company Limited

18 Nov 2015 - 8 Apr 2018 Director, Solution Creation Company Limited

21 Dec 2015 - 2 Mar 2018 Director, Thai Tank Terminal Limited

Jul 2015 - Sep 2015 Vice President - Marketing Strategy, PTT Global Chemical Public Company Limited

**Shareholding :** 4,900 Shares (0.000109%) as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mr. Pirun Krimwongrut**  
Executive Vice President –  
Organizational Effectiveness  
Age : 52  
Appointed : October 1<sup>st</sup>, 2020

**Education/Training**

- Master of Engineering Science (Electrical Engineering), University of New South Wales, Australia
- Bachelor of Engineering (Electrical Engineering), (Second-Class Honors), Khon Kaen University
- Leadership Development Program (LDP 1), PTT Leadership and Learning Institute
- Director Certification Program (DCP) Class 257/2018, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Executive Vice President - Organizational Effectiveness, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 4**

- Director, GC Estate Company Limited
- Director, PTT Digital Solutions Company Limited
- Director, Sport Services Alliance Company Limited
- Director, PTT Asahi Chemical Company Limited

**Work Experiences (5-years past experiences)**

1 Oct 2019 - 30 Sep 2020 Acting Executive Vice President - Organizational Effectiveness, PTT Global Chemical Public Company Limited

Nov 2019 - Nov 2020 Director, GC Styrenics Company Limited

Mar 2018 - Dec 2019 Director, Thai Tank Terminal Limited

Mar 2018 - Oct 2019 Director, Eastern Fluid Transport Company Limited

Apr 2018 - Sep 2019 Senior Vice President - Group Performance Center - Utilities, PTT Global Chemical Public Company Limited

Sep 2017 - Mar 2018 Acting Senior Vice President - Group Performance Center - Utilities, PTT Global Chemical Public Company Limited

2015 - 2017 Vice President - GPC Strategy & Business Development, Upstream Petrochemical Business, PTT Global Chemical Public Company Limited

**Shareholding :** 27,033 Shares (0.0006%) as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mr. Pornsak Mongkoltrirat**Executive Vice President –  
Polymers Business Unit

Age : 54

Appointed : April 1<sup>st</sup>, 2020**Education/Training**

- Master of Business Administration (Management), Kasetsart University
- Bachelor of Engineering (Mechanical Engineering), Kasetsart University
- Director Certification Program (DCP) Class 263/2017, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Executive Vice President - Polymers Business Unit, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : 10**

- Chairman, GC Styrenics Company Limited
- Chairman, GC Logistics Solutions Company Limited
- Chairman, ENVICCO Limited
- Chairman, PL Global Transport Company Limited
- Director, GC Marketing Solutions Company Limited
- Director, GC Maintenance and Engineering Company Limited
- Director, Dynachisso Thai Co. Ltd
- Director, Revolve Group Limited
- Executive Committee Member, HMC Polymers Company Limited
- Executive Committee Member, PTT Asahi Chemical Company Limited

**Work Experiences (5-years past experiences)**

1 Oct 2019 - 30 Mar 2020	Acting Executive Vice President - Polymers Business Unit, PTT Global Chemical Public Company Limited
27 Dec 2018 - 12 Nov 2019	Director, GC-M PTA Company Limited
27 Dec 2018 - 12 Nov 2019	Director, Thai PET Resin Company Limited
16 Jul 2017 - 1 Oct 2019	Director and Managing Director, GC Glycol Company Limited
Jan 2018 - Sep 2019	Senior Vice President - EO-Based Performance Business Unit, PTT Global Chemical Public Company Limited
Jul 2017 - Dec 2017	Acting Senior Vice President - EO-Based Performance Business Unit, PTT Global Chemical Public Company Limited
Nov 2014 - Jun 2017	Acting Vice President - Strategy and Business Development, Polymers Business Unit, PTT Global Chemical Public Company Limited
Feb 2013 - Jun 2017	Vice President - LDPE Plant 1, Polymers Business Unit, PTT Global Chemical Public Company Limited

**Shareholding :** 9,258 Shares (0.000205%)  
as of December 31, 2020**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None**Mr. Pukpong Wungrattanasopon**Executive Vice President –  
Group Performance Center – Olefins

Age : 50

Appointed : April 1<sup>st</sup>, 2020**Education/Training**

- Master of Science (Petrochemical Technology), The Petroleum and Petrochemical College, Chulalongkorn University
- Bachelor of Science (Chemical Technology), Chulalongkorn University
- Director Certification Program (DCP) Class 236/2017, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Executive Vice President – Group Performance Center – Olefins, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 3**

- Director, PTT Phenol Company Limited
- Director and Executive Committee Member, Thai Tank Terminal Limited
- Director, GC Glycol Company Limited

**Work Experiences (5-years past experiences)**

1 Oct 2019 - 30 Mar 2020	Acting Executive Vice President – Group Performance Center – Olefins, PTT Global Chemical Public Company Limited
1 Aug 2016 - 30 Sep 2019	Senior Vice President - Group Performance Center - Aromatics, PTT Global Chemical Public Company Limited
19 Oct 2011 - 31 Jul 2016	Vice President – Technology, PTT Global Chemical Public Company Limited

**Shareholding :** None**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None**Mr. Amorn Putiphawan**

Senior Vice President – Internal Audit

Age : 57

Appointed : January 1<sup>st</sup>, 2018**Education/Training**

- Master of Engineering (Chemical Engineering), Chulalongkorn University
- Bachelor of Science (Fuel Technology), Chulalongkorn University
- Leadership Development Program (LDP 1) and (LDP 2), PTT Leadership and Learning Institute

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Senior Vice President - Internal Audit, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : None****Work Experiences (5-years past experiences)**

1 Oct 2017 - 31 Dec 2017	Vice President reporting to Chief Executive Officer and President, PTT Global Chemical Public Company Limited
16 Jun 2014 - 30 Sep 2017	Vice President - Corporate Risk Management and Internal Control System, PTT Global Chemical Public Company Limited

**Shareholding :** None**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

**Mr. Chaya Chandavas**Senior Vice President –  
Sustainability and Corporate Branding

Age : 47

Appointed : October 1<sup>st</sup>, 2019**Education/Training**

- Doctor of Chemical Engineering, New Jersey Institute of Technology, U.S.A
- Master of Chemical Engineering, New Jersey Institute of Technology, U.S.A.
- Bachelor of Science (Chemistry), (First-class Honors), Mahidol University
- Advanced Senior Executive Program, Sasin & Kellogg School of Management, 2008
- Director Certification Program (DCP) Class 152/2011, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 1**

- Senior Vice President - Sustainability and Corporate Branding, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : 5**

- Director, GC Ventures Company Limited
- Director, GC Ventures America Corporation
- Director, Sarn Palung Social Enterprise Company Limited
- Director, Emery Oleochemicals (M) Sdn. Bhd.
- Director, Emery Specialty Chemicals Sdn. Bhd.

**Work Experiences (5-years past experiences)**

23 May 2018 - 30 Oct 2019	Managing Director, GC Ventures Company Limited
27 Jan 2016 - 30 Sep 2019	Director, Solution Creation Company Limited
1 Nov 2015 - 30 Sep 2019	Senior Vice President - Science and Innovation, PTT Global Chemical Public Company Limited
2013 - 2019	Chairman, Auria BioChemicals Company Limited
2016 - 2019	Director, PTTGC Innovation America Corporation

**Shareholding :** None**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None**Mrs. Pilasphan Udomjarumane**Senior Vice President – Corporate Secretary  
and Legal and Company Secretary

Age : 55

Appointed : October 1<sup>st</sup>, 2019**Education/Training**

- Master Degree of Business Administration (Finance), Royal Melbourne Institute of Technology, Melbourne, Australia
- Post Graduate Diploma Degree in Business Administration, Victoria University, Melbourne, Australia
- Bachelor of Arts (English), Silpakorn University
- Leadership Development Program (LDP) 2 PLLI, INSEAD
- Supply Chain and Supply Sourcing, McKinsey
- Strategy Management Program - 2018, Fiscal Policy Research Institute Foundation, Ministry of Finance
- M&A Training for Senior Leadership - 2018, Institute for Merger, Acquisition & Alliance
- Leadership Development Program (LDP) 2 - 2015, Sasin Graduate Institute of Business Administration of Chulalongkorn University
- Board Reporting Program (BRP) Class 35/2020  
Company Reporting Program (CRP) Class 26/2020  
Company Secretary Program (CSP) Class 109/2020  
Effective Minutes Taking (EMT) Class 48/2020  
Corporate Governance for Executives (CGE) Class 18/2020 and  
Director Certification Program (DCP) Class 287/2019,  
Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 1**

- Senior Vice President – Corporate Secretary and Legal and Company Secretary  
PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : None****Position in Other Organizations/Institutions : 1**

- Committee Member of Thai Company Secretary Club,  
Thai Listed Companies Association

**Work Experiences (5-years past experiences)**

1 Sep 2016 - 30 Sep 2019	Vice President - Strategy and Planning Department, PTT Global Chemical Public Company Limited
1 Sep 2014 - 31 Aug 2016	Vice President - Portfolio and Subsidiary Department, PTT Global Chemical Public Company Limited

**Shareholding :** 18,400 Shares (0.000408%)  
as of 31 December 2020**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None

**Mr. Ratchada Sawasdirak**

Senior Vice President – Group Performance Center – Refinery and Shared Facilities

Age : 51

Appointed : October 1<sup>st</sup>, 2019**Education/Training**

- Master of Public Administration, Chulalongkorn University
- Bachelor of Engineering (Mechanical Engineering), Mahanakorn University of Technology
- Ethical Leadership 2020 : Ethical Challenges in New Normal PTT Global Chemical Public Company Limited
- Director Certification Program (DCP) Class 287/2019, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 1**

- Senior Vice President - Group Performance Center – Refinery and Shared Facilities, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : 1**

- Director, Thai Tank Terminal Limited

**Work Experiences (5-years past experiences)**

2008 - Sep 2019 Vice President - Refinery, PTT Global Chemical Public Company Limited

**Shareholding : 30,000 Shares (0.000665%)**

as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None****Mr. Anutin Chuaypen**

Senior Vice President, Group Performance Center – Aromatics

Age : 55

Appointed : October 1<sup>st</sup>, 2019**Education/Training**

- Master of Science (Computer & Engineering Management), Assumption University
- Bachelor of Science (Chemical Engineering), Chulalongkorn University
- Leadership Development Program (LDP 2), PTT Leadership and Learning Institute
- Director Certification Program (DCP) Class 200/2015, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 1**

- Senior Vice President - Group Performance Center - Aromatics, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : 2**

- Director, GC Styrenics Company Limited
- Director, NPC Safety and Environmental Service Company Limited

**Work Experiences (5-years past experiences)**

27 Apr 2015 - 1 Jan 2020 Director, Thai Tank Terminal Limited

10 Jul 2014 - 30 Oct 2019 Director, GC Maintenance and Engineering Company Limited

1 Jan 2014 - 30 Sep 2019 Senior Vice President - Group Performance Center - Refinery and Shared Facilities, PTT Global Chemical Public Company Limited

16 Nov 2016 - 15 Mar 2018 Director, Eastern Fluid Transport Company Limited

**Shareholding : 36,591 Shares (0.000812%)**

as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None****Mr. Supasit Tongsupachok**

Senior Vice President, Group Performance Center – Utilities

Age : 58

Appointed : October 1<sup>st</sup>, 2019**Education/Training**

- Master of Business Administration, Burapha University
- Bachelor of Engineering (Electronic Engineering), Rajmongkol Institute of Technology
- Executive Development Program, Class 11/2015, Fiscal Policy Research Institute Foundation
- Director Certification Program (DCP) Class 287/2019, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –****The Stock Exchange of Thailand : 1**

- Senior Vice President - Group Performance Center - Utilities, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –****The Stock Exchange of Thailand : 6**

- Director, GC Estate Company Limited
- Director, Thai Tank Terminal Limited
- Director, Eastern Fluid Transport Company Limited
- Director, GC Logistics Solutions Company Limited
- Director, PL Global Transport Company Limited
- Director, ISA Machining Service Company Limited

**Work Experiences (5-years past experiences)**

23 Nov 2011 - 30 Sep 2019 Vice President – Aromatics Plant 1, PTT Global Chemical Public Company Limited

**Shareholding : 27,620 Shares (0.000613%)**

as of 31 December, 2020

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None**

**Mr. Vitaya Pinmuangngarm**  
Senior Vice President,  
EO-Based Performance Business Unit

Age : 58

Appointed : January 1<sup>st</sup>, 2021

#### Education/Training

- Master of Business Administration (M.B.A.) (Finance and International Business), Sasin Graduate Institution of Business Administration of Chulalongkorn University
- Bachelor of Accounting, Thammasat University
- Director Certification Program (DCP) Class 109/2008, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 1

- Senior Vice President - EO-Based Performance Business Unit, PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 3

- Director, GC Styrenics Company Limited
- Director, GC Oxirane Company Limited
- Director and Managing Director, GC Glycol Company Limited

#### Work Experiences (5-years past experiences)

Jan 2018 - Dec 2020 Director and President,  
PTT Asahi Chemical Company Limited

Sep 2016 - Dec 2017 Director and Managing Director,  
Thai Tank Terminal Limited

Feb 2008 - Aug 2016 Director and Managing Director,  
Thai Ethoxylate Company Limited

**Shareholding :** 8,755 Shares (0.000194%)  
as of December 31, 2020

**Relation among Family with other Directors, Management,  
Major Shareholders of the Company or Subsidiaries :** None

**Mr. Paisarn Sarapee**  
Senior Vice President - Phenol Business Unit

Age : 56

Appointed : October 1<sup>st</sup>, 2019

#### Education/Training

- Master of Business Administration, Graduate School of Commerce, Burapha University
- Bachelor of Science (Industrial Chemistry), Chiang Mai University
- Head of Company Program, INSEAD University
- Senior Executive Program (SEP) 2019, Sasin Graduate Institute of Business Administration of Chulalongkorn University
- Financial Statements for Directors (FSD) Class 41/2020 and Director Certification Program (DCP) Class 286/2019, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 1

- Senior Vice President - Phenol Business Unit,  
PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 1

- Director and Managing Director,  
PTT Phenol Company Limited

#### Work Experiences (5-years past experiences)

Jan 2015 - Sep 2019 Vice President - Phenol Operation  
Department, PTT Phenol Company  
Limited

**Shareholding :** 47,334 Shares (0.001050%)  
as of 31 December, 2020

**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None

**Mrs. Chananchida Wiboonkanarak**  
Senior Vice President - Downstream Strategy  
and Business Development

Age : 47

Appointed : April 1<sup>st</sup>, 2018

#### Education/Training

- Master of Engineering (Chemical Engineering), Chulalongkorn University
- Bachelor of Science (Chemical Engineering), Chulalongkorn University
- Leadership Development Program 2, 2015, Sasin Graduate Institute of Business Administration of Chulalongkorn University
- Leadership Development Program (LDP 2), General Electric, GE, U.S.A.
- PTT-HBS Leadership Development Program (LDP) 1, Harvard Business School Campus, Shanghai, China
- Director Certification Program (DCP) Class 267/2018, Thai Institute of Directors Association (IOD)

#### Board member/Management in Listed Company – The Stock Exchange of Thailand : 1

- Senior Vice President - Downstream Strategy and Business Development,  
PTT Global Chemical Public Company Limited

#### Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 10

- Director and Chairperson of Executive Committee, PTT MCC Biochem Company Limited
- Director, PTT Phenol Company Limited
- Director, GC Glycol Company Limited
- Director, Kuraray GC Advanced Materials Company Limited
- Director, Solution Creation Company Limited

- Director, PTT Asahi Chemical Company Limited
- Director, NatureWorks LLC
- Director, Vencorex Holding
- Director, PTTGC International (Netherlands) B.V.
- Executive Committee Member,  
HMC Polymers Company Limited

#### Work Experiences (5-years past experiences)

27 Dec 2018 - 22 Dec 2019 Director, GC-M PTA  
Company Limited

27 Dec 2018 - 22 Dec 2019 Director, Thai PET Resin  
Company Limited

26 Feb 2016 - 5 Nov 2018 Director, Thai Fatty Alcohols  
Company Limited

1 Oct 2017 - 31 Mar 2018 Acting Senior Vice President -  
Downstream Strategy and  
Business Development,  
PTT Global Chemical Public  
Company Limited

1 Apr 2014 - 30 Sep 2017 Vice President - Strategy  
and Business Development,  
High-Volume Specialties  
Business Unit, PTT Global  
Chemical Public Company  
Limited

**Shareholding :** None

**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None



**Mrs. Jeeranee Pimthanothai**  
Senior Vice President -  
Technical, Engineering and Maintenance

Age : 56

Appointed : September 1<sup>st</sup>, 2015

**Education/Training**

- Master of Engineering (Petrochemical Technology), Chulalongkorn University
- Bachelor of Science (Chemical Technology), Chulalongkorn University
- Leadership Innovation & Strategy, GE Crotonville, U.S.A.
- Leadership Development Program (LDP 1), PTT Leadership and Learning Institute
- NIDA-Wharton Executive Leadership Program, U.S.A.
- The Columbia Senior Executive Program, U.S.A.
- Director Certification Program (DCP) Class 249/2017, and Certificate of Corporate Governance: The Role of Manager in Supporting Directors, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –  
The Stock Exchange of Thailand : 1**

- Senior Vice President - Technical, Engineering and Maintenance, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –  
The Stock Exchange of Thailand : 2**

- Director, GC Maintenance and Engineering Company Limited
- Director, PTT Energy Solutions Company Limited

**Work Experiences (5-years past experiences)**

2017 - 2019 Director, PTT Asahi Chemical Company Limited  
Jan 2015 - Aug 2015 Vice President - Petrochemicals Subsidiary Planning & Management Department, PTT Public Company Limited

**Shareholding :** 15,543 Shares (0.000345%)  
as of 31 December, 2020

**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None

**Mr. Khomson Piyawattanaviroj**  
Senior Vice President - CAPEX Excellence

Age : 58

Appointed : January 1<sup>st</sup>, 2018

**Education/Training**

- Bachelor of Engineering (Mechanical Engineering), Chulalongkorn University
- Director Certification Program (DCP) Class 259/2018, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –  
The Stock Exchange of Thailand : 1**

- Senior Vice President - CAPEX Excellence, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –  
The Stock Exchange of Thailand : 3**

- Director, NPC Safety and Environmental Service Company Limited
- Director, GC-M PTA Company Limited
- Director, Thai PET Resin Company Limited

**Work Experiences (5-years past experiences)**

Jan 2017 - Dec 2017 Vice President - Center of Excellence, PTT Global Chemical Public Company Limited  
Jul 2013 - Dec 2016 Project Director, PTT Phenol Company Limited

**Shareholding :** None

**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None

**Mr. Wirat Boonbumrungchai**  
Senior Vice President - Quality, Safety,  
Occupational Health and Environment

Age : 59

Appointed : January 1<sup>st</sup>, 2017

**Education/Training**

- Master of Engineering (Mechanical Engineering), Chulalongkorn University
- Bachelor of Engineering (Mechanical Engineering), Chulalongkorn University,
- NIDA-Wharton Executive Leadership Program
- Director Certification Program (DCP) Class 177/2013, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company –  
The Stock Exchange of Thailand : 1**

- Senior Vice President - Quality, Safety, Occupational Health and Environment, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company –  
The Stock Exchange of Thailand : 1**

- Director, NPC Safety and Environmental Service Company Limited

**Work Experiences (5-years past experiences)**

2013 - 2016 Senior Vice President, PTT Global Chemical Public Company Limited, Secondment as Managing Director, GC Maintenance and Engineering Company Limited

**Shareholding :** 237 Shares (0.000005%)

as of 31 December, 2020

**Relation among Family with other Directors, Management,  
Major Shareholders of the Company or Subsidiaries :** None



**Mrs. Chatsuda Kanjanarat**  
Senior Vice President - Transformation Excellence

Age : 52  
Appointed : July 1<sup>st</sup>, 2017

**Education/Training**

- Bachelor of Engineering (Electrical-Electronics) (Second-class Honors), King Mongkut's Institute of Technology Ladkrabang
- PTT-HBS Leadership Development Program (LPP1), PTT Leadership and Learning Institute
- Director Certification Program (DCP) Class 249/2017, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Senior Vice President - Transformation Excellence, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 1**

- Director, PTT Digital Solutions Company Limited

**Work Experiences (5-years past experiences)**

13 Jun 2016 - 30 Jun 2017	Vice President - PTTGC Business Performance Improvement - Project MAX, PTT Global Chemical Public Company Limited
1 Jan 2014 - 12 Jun 2016	Vice President - Strategy and Planning, PTT Global Chemical Public Company Limited

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company**

**or Subsidiaries :** None

**Mrs. Wilawan Songjaroen**  
Senior Vice President - Procurement

Age : 57  
Appointed : September 1<sup>st</sup>, 2019

**Education/Training**

- Master of Engineering (Chemical Engineering), Chulalongkorn University
- Bachelor of Science (Chemistry), Silpakorn University
- Stanford Executive Program (SEP), Stanford Graduate School of Business, Stanford University, U.S.A.
- Certificate in Procurement and Supply Operations, Purchasing & Supply Chain Management Association of Thailand, The Chartered Institute of Purchasing and Supply (CIPS), August - October 2007
- International Business Management Program, Graduate School of Business, Georgetown University, Washington DC, U.S.A.
- Director Certification Program (DCP) Class 120/2009, Thai Institute of Directors Association (IOD) and Australian Institute of Company Directors

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Senior Vice President - Procurement, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 2**

- Director, GC Logistics Solutions Company Limited
- Director, PL Global Transport Company Limited

**Work Experiences (5-years past experiences)**

Jan 2018 - Oct 2019	Director, GC Marketing Solutions Company Limited
1 Jan 2017 - 1 Sep 2019	Managing Director, GC Logistics Solutions Company Limited
20 Nov 2017 - 1 Sep 2019	Managing Director, PL Global Transport Company Limited
16 Oct 2015 - 2016	Vice President - Production Planning, Sales & Marketing, Polymers Business Unit, PTT Global Chemical Public Company Limited
1 Oct 2014 - 2015	Vice President - Marketing, High Volume Specialty Business Unit, PTT Global Chemical Public Company Limited

**Shareholding :** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company**

**or Subsidiaries :** None

**Mr. Kevin Thomas Corby**

Senior Vice President – Science and Innovation

Age : 65

Appointed : October 1<sup>st</sup>, 2019**Education/Training**

- Doctor of Philosophy in Chemistry, The Pennsylvania State University, U.S.A.
- Bachelor of Science (Chemistry), King's College, Pennsylvania, U.S.A.
- Business Executive Program: University of Michigan, Ross School of Business, U.S.A

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Senior Vice President - Science and Innovation, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 4**

- Director, GC Ventures Company Limited
- Director, GC Ventures America Corporation
- Director, PTTGC Innovation America Corporation
- Director, Vencorex Holding

**Work Experiences (5-years past experiences)**

2008 - 2017      Global Technology Director,  
DuPont Protection Technologies,  
E.I. Dupont Co.

**Shareholding :** None**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None**Mr. Thitipong Jurapornsiridee**

Acting Executive Vice President – Finance and Accounting

Age : 51 Years

Appointed : October 1<sup>st</sup>-December 31<sup>st</sup>, 2020**Education/Training**

- Master of Business Administration (Finance), Thammasat University
- Master of Arts (Economics, English Program), Thammasat University
- Bachelor of Engineering (Electrical Engineering), Chulalongkorn University
- Director Certification Program (DCP) Class 267/2018, Thai Institute of Directors Association (IOD)

**Board member/Management in Listed Company – The Stock Exchange of Thailand : 1**

- Acting Executive Vice President - Finance and Accounting, PTT Global Chemical Public Company Limited

**Board member/Management in Non-Listed Company – The Stock Exchange of Thailand : 12**

- Chairman, GC Treasury Center Company Limited
- Director, GC Polyols Company Limited
- Director, GC Oxirane Company Limited
- Director, PTTGC Innovation America Corporation
- Director, GC International Corporation
- Director, PTTGC International Private Limited
- Director, PTTGC America Corporation
- Director, PTTGC America LLC
- Director, Emery Oleochemicals (M) Sdn. Bhd.
- Director, Emery Specialty Chemicals Sdn. Bhd.
- Director, Vencorex Holding
- Director, PTT Asahi Chemical Company Limited

**Work Experiences (5-years past experiences)**

Jul 2019 - Sep 2020      Senior Vice President - Corporate Finance and Strategy, PTT Global Chemical Public Company Limited

Oct 2011 - Jun 2019      Vice President - Corporate Finance & Investor Relations, PTT Global Chemical Public Company Limited

Jan 2011 - Sep 2019      Director, PTTGC Innovation America Corporation

**Shareholding :** None**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries :** None

## EXECUTIVE VICE PRESIDENT/SENIOR VICE PRESIDENT APPOINTED AS EXECUTIVE OF GC'S SUBSIDIARIES/PROJECT LEADER (AS OF JANUARY 31, 2021)

<p><b>1. Mr. Siridech Kumvongdee</b> Executive Vice President Reporting to Downstream Petrochemical Business, Secondment as President, HMC Polymers Company Limited</p>	<p><b>5. Miss Kornkamol Korpaisarn</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as Managing Director, GC Polyols Company Limited</p>	<p><b>9. Mr. Kridsada Prasertsuko</b> Senior Vice President Reporting to Center of Excellence, Secondment as Managing Director, NPC Safety and Environmental Service Company Limited</p>
<p><b>2. Mr. Somnuk Suwanpradit</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as Managing Director, GC Oxirane Company Limited</p>	<p><b>6. Mr. Suwat Kamolpanus</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as Managing Director, Global Green Chemicals Public Company Limited</p>	<p><b>10. Mr. Theerapol Muenpakdee</b> Senior Vice President Reporting to Upstream Petrochemical Business, Secondment as Managing Director, Thai Tank Terminal Limited</p>
<p><b>3. Mr. Annuai Phrom-Anant</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as Managing Director, GC Logistics Solutions Company Limited</p>	<p><b>7. Mr. Narongchai Pisutpunya</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as President, GC-M PTA Company Limited and Thai PET Resin Company Limited</p>	<p><b>11. Miss Somsri Phanichrungruang</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as President, PTT MCC Biochem Company Limited</p>
<p><b>4. Mr. Thitipol Artsanchorn</b> Senior Vice President Reporting to Downstream Petrochemical Business, Secondment as Managing Director, GC Marketing Solutions Company Limited</p>	<p><b>8. Mr. Piroj Samutthananont</b> Senior Vice President Reporting to Center of Excellence, Secondment as Managing Director, GC Maintenance and Engineering Company Limited (January 1, 2020–March 16, 2021)</p>	<p><b>12. Mrs. Panida Chinayone</b> Senior Vice President Reporting to Chief Executive Officer, Business Process Redesign Project Leader</p>

## PROFILE OF THE PERSON SUPERVISING CORPORATE COMPLIANCE OF PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

**Ms. Rattana Nakasiri**  
Vice President - Corporate Governance

Age: 57

Date of Appointment: October 1, 2019

### Education/Training

- Master of Business Administration, National Institute of Development Administration
- Bachelor of Economics, Ramkhamhaeng University
- PTTGC Group VP: Leadership Development Program (LDP2) 2015
- Business Simulation for VP: CELEMI Decision Base, KNOWLEDGE CO., LTD.
- Corporate Compliance Overview - Executive, Hunton & Williams
- Director Certification Program (DCP), Class 290/2020 / Ethical Leadership Program (ELP), Class 15/2019 / Risk Management Program for Corporate Leaders (RCL), Class 11/2018 / IT Governance and Cyber Resilience Program (ITG), Class 8/2018 / Company Reporting Program (CRP), Class 17/2017 / Roles of Company Secretaries in Corporate Governance Promotion Seminar, IOD Open House 1/2017 / Company Secretary Program (CSP), Class 69/2016 / Board Reporting Program (BRP), Class 20/2016 / Effective Minute Taking (EMT), Class 35/2016 / Anti-Corruption: The Practical Guide (ACPG), Class 29/2016, and Corporate Governance for Executive (CGE), Class 7/2016, Thai Institute of Directors (IOD)

### Board Member/Management in Listed Company - The Stock Exchange of Thailand: 1

- Vice President - Corporate Governance, PTT Global Chemical Public Company Limited

### Board Member/Management in Non-Listed Company - The Stock Exchange of Thailand: 1

- Director, GC Estate Company Limited

### Work Experiences (5-Year Past Experiences)

- October 15, 2015 - Vice President - Corporate Governance and Company Secretary PTT Global Chemical Public Company Limited
- September 30, 2019
- October 1, 2014 - Vice President Production Planning and Sales & Marketing - Polymers PTT Global Chemical Public Company Limited
- October 14, 2015
- January 1, 2011 - Vice President - Corporate Planning and Technology [AA1]Secondment, PTT Global Chemical Public Company Limited
- September 30, 2014 PTT Polymer Marketing Company Limited

**Shareholding:** None

**Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries:** None

## PROFILE OF THE PERSON SUPERVISING ACCOUNTING (CHIEF ACCOUNTANT) OF PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

### Ms. Sutha Suwanrath

Vice President – Financial Accounting 1

Age: 58

Date of Appointment: August 1, 2020

#### Education/Training

- Master of Business Administration, Burapha University
- Thai Financial Reporting Standards Workshop, 2020
- Inventory Accounting, 2020
- Process Business Overview, 2019
- Career Plan #3, 2019
- Roles of Executives and Internal Control #4, 2019
- Corporate Income Tax Planning, 2019
- IFRS15-16, 2019

#### Board Member/Management in Listed Company – The Stock Exchange of Thailand : 1

- Vice President, Financial Accounting 1,  
Finance and Accounting,  
PTT Global Chemical Public Company Limited

#### Board Member/Management in Non-Listed Company – The Stock Exchange of Thailand : None

#### Work Experiences (5-Year Past Experiences)

September 1, 2018 - Vice President - Financial Accounting,  
July 31, 2020 PTT Global Chemical Public  
Company Limited

January 1, 2017 - Vice President -  
August 31, 2018 Finance and Accounting,  
PTT Global Chemical Public  
Company Limited

September 1, 2014 - Vice President -  
December 31, 2016 Financial Accounting 2,  
Finance and Accounting,  
PTT Global Chemical Public  
Company Limited

**Shareholding :** None

**Relation among Family with other Directors,  
Management, Major Shareholders of the Company  
or Subsidiaries :** None

### Ms. Varanee Ubonphulphol

Vice President – Financial Accounting 1

Age : 60

Term of Office : May 1, 2019 – July 31, 2020

#### Education/Training

- Master of Business Administration, Chulalongkorn  
University
- Thai Financial Reporting Standards Workshop, 2020
- Accountants in the Digital 4.0 Era and Financial  
Information Technology, 2019
- Financial Reporting Standards Workshop for PTT  
Global Chemical Public Company Limited, 2019
- Taxes on Payments Made to Foreign Countries and  
Double Taxation Agreement, 2019
- Accounting Standard-Business Combination, 2019
- Fintech: Disruptive & Innovation, 2019

#### Board Member/Management in Listed Company – The Stock Exchange of Thailand : None

#### Board Member/Management in Non-Listed Company – The Stock Exchange of Thailand : None

#### Work Experiences (5-Year Past Experiences)

August 1, 2020 - Vice President - Financial Accounting,  
December 31, 2020 PTT Global Chemical  
Public Company Limited

May 1, 2019 - Vice President - Financial Accounting 1,  
July 31, 2020 Finance and Accounting,  
PTT Global Chemical  
Public Company Limited

January 1, 2018 - Vice President - Accounting and  
April 30, 2019 Tax Policy, Finance and Accounting,  
PTT Global Chemical  
Public Company Limited

January 1, 2017 - Vice President - Financial and Accounting,  
December 31, 2017 Policy and System Development,  
Finance and Accounting,  
PTT Global Chemical Public  
Company Limited

September 1, 2014 - Vice President - Financial Accounting 1,  
December 31, 2016 Finance and Accounting,  
PTT Global Chemical Public  
Company Limited

**Shareholding :** 3,185 shares and 1 share held by  
spouse; 3,186 shares in total (0.000085%)

**Relation among Family with other Directors, Management,  
Major Shareholders of the Company or Subsidiaries :** None

# Employees

## PEOPLE MANAGEMENT AND DEVELOPMENT POLICY

A management approach that strengthens both the organization and its people is a key mechanism for enhancing GC's competitiveness as well as its ability to operate its business effectively and accommodate domestic and international investment expansion, enabling the company to grow sustainably and attain its aspiration "To be a Leading Global Chemical Company for Better Living."

GC strives to foster the organization's and its people's readiness to meet future business needs and achieve outcomes as planned. To this end, GC has developed people strategies to keep its human resource management consistent with GC Group's strategic directions and business goals so as to ensure effectiveness and efficiency. The three core focuses are: organization, people, and culture, and the actions taken are as follows:

### 1. ORGANIZATION

- Consistently reorganizing functional structures to support business operations, meet the need for agility in sales and marketing, enhance GC's competitiveness, support GC's businesses, connect with international businesses, and accommodate businesses that are more varied in size and diversity.
- Executing management of change to ensure smooth restructuring, reduce potential risks and impacts from restructuring, and foster preparedness to make sure that GC's Executives and employees can fulfill new duties assigned to them smoothly.
- Conducting manpower planning to support business growth according to GC's strategic plan and ensure optimal manpower for GC's business operations.

- Driving organizational agility through Cross-Functional Initiative that allow employees to propose and execute new ideas, focusing on enhancing the speed and operational efficiency according to business needs.
- Announcing Work from Home (WFH) as a new regular mode of working for office workers in order to create work flexibility that suits the current situation and meet the needs of new generations of employees, as well as conducting employee opinion surveys on various matters to consistently improve the guidelines and enhance employee efficiency.
- Ensuring that GC's employee remuneration and benefits are comparable to those of other companies in PTT Group and competitive with those in the same industries, as well as designing the remuneration and benefit structure for other companies in GC Group to create management uniformity and synergy.

### 2. PEOPLE

Recruitment: Recruitment contributes to the success of GC's corporate strategies, and GC places importance on the recruitment of employees for essential functions in accordance with business needs in anticipation of future business expansion. This year, GC has created a database of over 600 candidates for various positions, including researchers and analysts, and drawn up plans for operators in the maintenance and engineering group and the process technology group to support future business expansion and employment in the public sector.



In addition, GC has improved its recruitment processes and conducted various activities to enhance the corporate image and reputation:

- Adjusting the recruitment process by asking candidates to submit self-introduction videos and using Microsoft Teams for interviews during the COVID-19 pandemic.
- Enhancing GC's corporate image and reputation. This is achieved, for example, by joining a job fair at Samaggi Academic Conference and Careers Fair (SACC), held by Samaggi Samagom in England to raise awareness of GC's corporate image among Thai students in the UK and recruit talents interested in working with the Company. Another example is fostering social media content engagement via various of recruitment channels, such as Facebook, Line, and LinkedIn, to inspire and educate people on how to adapt to the new normal, with contents such as Reskilling & Upskilling for the Post-COVID-19 World, Changing Your Mindset for a Meaningful Life, and Lifelong Learning. GC has also fostered good relations with government agencies to benefit future business contacts between government agencies and Matrix (UK) Solutions.
- Continuously fostering relations and creating opportunities for the youth of Rayong by supporting Plook Fun Pun Dao Camp, which seek to develop their skills for job application, such as resume writing and preparation for interviews in the new normal era.

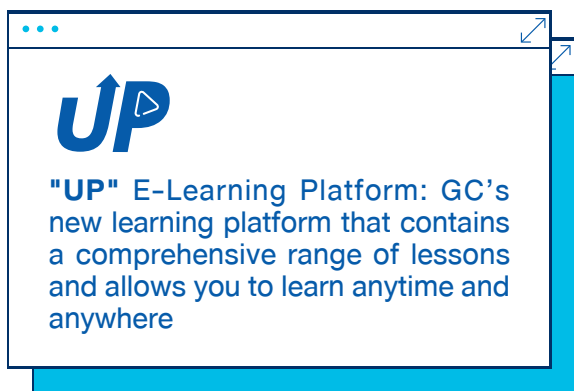
Performance Management System: To ensure that performance assessment boost employees' morale and motivate them to make achievements, GC has reviewed, improved, and integrated its performance assessment system through its performance assessment policy, beginning with setting annual goals, followed by mid-year review and year-end assessment. Also, to make certain that the corporate goals are reflected on individual levels, Key Performance Indicator (KPI) alignment is conducted within each function, and a review performance alignment is

carried out internally to ensure the function operates to the same standard. Moreover, company policy requires that employees and their supervisors meet formally at least twice a year to discuss employees' performance. Periodic performance check-ins are also enforced, allowing supervisors to monitor the progress of their supervisees and to offer assistance whenever needed. Furthermore, GC has produced various materials, such as a coaching video entitled "The Words" to encourage the use of positive reinforcement, such as praise, verbal appreciation, confidence building, and words of encouragement, during coaching between supervisors and their staff members to promote employee development and improve employee performance. After the year-end assessment is conducted, supervisors compare the outcome with the results of the peer review to identify disparity, which affects the annual salary adjustment according to the company's remuneration policy and operating results. Furthermore, to ensure that these assessments truly lead to continuous development, GC has integrated individual development planning into the employee performance assessment system. This is achieved by adding to the performance assessment system a communication channel through which employees can express their own wishes regarding their career in the next 1-3 years. Their wishes are then taken into account in the consideration of job rotations, people development, and future recruitment.

Employee Relations: To give employees a good quality of life, foster employee engagement, and promote a happy working life, GC has carried out well-being projects since 2018 to take care of its employees in terms of health, wealth, and mindfulness. Additionally, GC boosts the morale of long-serving employees by giving long service awards for employees at each specific year of service, organizing the GC Happy Retirement Program to help those retiring in 2020 with financial preparedness and healthcare after retirement, and holding a ceremony to express appreciation to retiring employees. GC also hosts educational sessions on financial management and healthcare for employees over 55.

Learning and Development: To accommodate business transformation for the digital age, which is rapidly affecting employees' working and daily life, GC has carried out employee development projects to enhance their adaptability. GC has incorporated the 70:20:10 (Experience: Exposure: Education) concept into the design of the development programs for all job families. GC believes that this concept will drive changes in the attitude and vision of its employees at all levels. The concept has also been employed in designing training courses for internal instructors in pursuit of international expertise. In addition, GC has placed emphasis on 24/7 learning through a digital learning platform so as to enable employees to learn anywhere and anytime, effectively elevating GC into an organization of learning. Below are the highlights of these programs:

- Orientation and the Onboarding Camp: Designed for newcomers from day one to their first service year at GC, these activities cultivate the organizational culture, build their engagement with GC, and foster bonds between new employees. New employees also engage in CSR activities to strengthen relationship between employees and communities.
- Data Science and Engineering Program: The program develops skills in data analysis for employees at all levels to develop data-oriented personnel.
- STAR Interviewer Certified Trainer Program: This internal instructor development course, developed by a leading international institute, develops line managers' ability to conduct effective interviews for the recruitment of new employees and selection of those to be promoted in an efficient and effective way.
- Young Leaders Development Program. The program seeks to develop representatives from each workstream into leaders who inspire change across the organization and take leading roles in business transformation. These leaders are equipped with analytical skills to support initiative owners and coordinate with internal and external organizations to debottleneck the work process, as well as problem-solving skills and ability to identify opportunities to boost GC's operating results.
- PSM Enhance Capability and Culture Transformation Training Program: Based on the guidelines of world-class companies, this program boosts the capabilities of production and maintenance personnel in terms of safety management in production in order to meet international standards and foster a sustainable safety culture.
- Competency Readiness Program: This program ensures that GC's employees have the competency for the management of change in personnel, particularly in positions involving process safety and plant reliability.
- English Skill Development: To enhance the English skills and knowledge of its personnel, GC has employed an online application developed by VOXY, a language institute recognized by the world's leading educational institutions. The application enables employees to learn anytime, anywhere, and through a variety of devices.



AN E-LEARNING SYSTEM THAT PROMOTES  
NEW WAYS OF LEARNING

## Four UP Learning Modes

### Conicle X E-Learning

Knowledge enrichment through over 100 courses, such as New Skills, Soft Skills, Productivity, Technology

### Learning Path

A learning mode that combines a series of courses into a single program

### GC E-Learning

All the information about every unit of GC, from leadership or functions

### Classroom/ Class Program

Classrooms and live classrooms that make everything easy to understand

Knowledge Management (KM): GC prioritizes organizational development and people development to enhance capabilities and expertise based on an excellent foundation of knowledge. It is GC's goal to become an effective petrochemical and refinery knowledge-based organization as well as a learning organization. Therefore, knowledge management is a crucial tool to drive the continuous and systematic collection and exchange of knowledge and experience between units. Knowledge management activities include knowledge sharing sessions, exchange of lessons learned to prevent future mistakes, application of knowledge to employee training in coaching and mentoring, on-the-job training, and classroom training to as a way to develop future trainers. GC has also created a knowledge archive curated by subject matter experts and those due to retire in 3-5 years to preserve their expert knowledge. To systematically integrate the KM System into its regular operation and continuously improve best practices, the Company also ensures that existing knowledge is transferred, applied, and developed, while future knowledge is explored in collaboration with its networks and stakeholders to improve its processes, products, and services and develop new businesses. In the past year, GC promoted the learning both on individual and team levels and developed a Knowledge-Based System (KBS), which integrated all operations and enabled all employees to store, access, and search for knowledge at all times.

Career Management System: To ensure employees understand about their career path and can grow accordingly, GC has designed a career management system for both managerial track and the specialist track according to the success profiles defined by the company, consisting of competency, exposure, organization knowledge, and GC SPIRIT 4 Core Behaviors. There are two types of career growth. The first type is level advancement in the same band. GC allows employees to present their achievements twice a year in April and October to seek promotion. The achievements must illustrate their skills and capabilities that align with the job expectations of the next level. The second type is appointment, meaning promotion into the managerial level. GC supports job rotation as specified in the career path system so as to equip employees with adequate, all-around skills to step up to the managerial level. These career management tools help employees clearly see their career path and enable them to state their career wishes and design their own career plans for consultation with their superiors. At the same time, superiors will have more concrete guidance for developing their subordinates' competency consistent with current and future business needs.

Succession Planning: To ensure executive readiness and the continuity of business strategy implementation, GC has put succession plans in place for managerial positions, starting from the division manager level onwards, placing emphasis on the executives who are going to retire in order to ensure a seamless transition. Successors are evaluated by a third party, which not only ensures neutrality but also compares them to other executives worldwide. Based on the comparison, GC has designed a development program for its talents with a focus on strengthening their vision and outlook as the head of the company and strives to regularly develop potential executives to make certain that the Company is always ready to fill any expected vacancies due to retirement and any key positions in our subsidiaries.

International HR Management: GC's overseas growth has led to new challenging opportunities for employees in the US, Europe, and other Southeast Asian countries. To this end, GC has revised its overseas secondment management process to ensure that suitable employees are selected and that they are prepared to work abroad. The process is also linked to the talent pool of GC Group. Employees are trained for their secondment assignment based on the aforementioned 70:20:10 concept in accordance with employees' career paths. Furthermore, the remuneration and living expenses for employees during their secondment period have been reviewed while the remuneration, benefits, and organization structure for secondment in new countries have been considered. Compliance with relevant regulations, policies, and laws, such as work permit and international tax laws, has also been reviewed to eliminate any legal risks for employees.

Furthermore, in response to the COVID-19 pandemic, GC has introduced a series of measures to take care of its personnel's wellbeing right from the onset of the outbreak.

1. At the onset of the pandemic, GC prioritized the safety of all employees and introduced various initiatives designed in adherence with employee health management principles and the government's measures.

2. GC has introduced a number of measures to take care of its employees and ensure their safety during the COVID-19 pandemic:

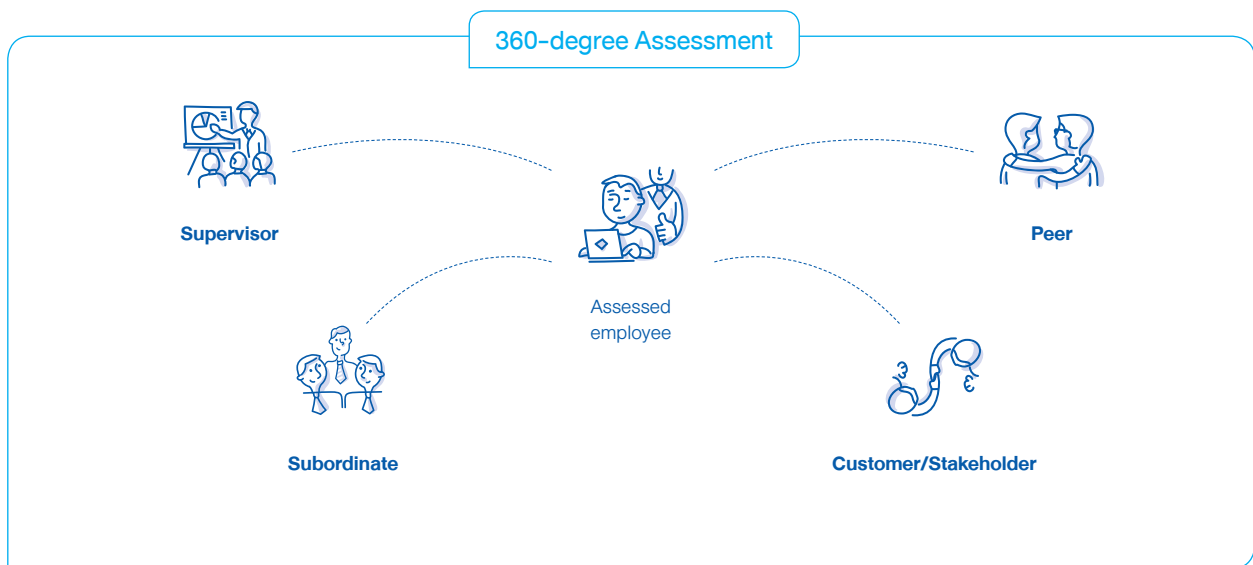
- COVID-19 insurance has been provided to personnel considered to be in the risk group under the criteria of the Ministry of Health. At-risk employees are requested to take a COVID-19 test; the insurance covers all medical expenses if they test positive.
- A lock-up measure has been introduced for personnel working in sensitive areas or control rooms, and the "Chit Chat" activity has been organized to allow them to meet their families.
- Certain groups of employees have been assigned to Work from Home (WFH) to reduce risks.
- GC has collaborated with hospitals to offer a virtual teleconsultant service under the "Virtual Doctor Visit and Medicine Home Delivery" Project.
- Cloth face masks, thermometers, and alcohol spray have been given to employees.
- Measures have been introduced to heighten safety in office areas, such as mandatory face masks, screening points, temperature checks, and office space redesigning to ensure physical distancing.
- Training sessions have been converted into virtual training so that they can be conducted as planned, accommodate more participants, and reduce training costs. For example, the onboarding program between April and July 2020 was conducted via Microsoft Teams.
- GC has regularly conducted employee surveys to understand their problems and true needs in each period. Their opinions and suggestions have been used to improve WFH management, well-being management, and technological support to enable employees to work more efficiently.

### 3. CULTURE

GC drives GC SPIRIT 4 Core Behaviors through communication, day-to-day activities, and fundamental systems in order to foster an understanding among employees and enable them to adopt the behaviors as part of their daily life and propel the Company towards its goal: “To be a Leading Global Chemical Company for Better Living.”

This year, GC has continued to strengthen its efforts to drive the organizational culture, with all the Executives serving as role models, fostering awareness, and leading the charge in cultivating GC SPIRIT 4 Core Behaviors, which are essential to the success of the

organizational culture. In addition, GC has drawn up approaches to strength the organizational culture in accordance with its growth, prioritizing the needs and expectations of customers and cross-functional collaborations across the value chain. GC SPIRIT 4 Core Behaviors has also been promoted by applying concepts and approaches in digital transformation to foster and strengthen the organizational culture. GC has also further strengthened its organizational culture by putting in place quantifiable measures, such as a culture commitment survey, VP influencer survey, and a 360-degree 4 Core Behaviors assessment, all of which ensures the cultivation of the organizational culture is successful as planned.



**BEHAVIOR ASSESSMENT SYSTEM INFORMED BY THE PERSPECTIVES OF RELATED PARTIES IN ALL DIMENSIONS.**

GC strives to promote a happy work life, better living, as well as safety and occupational health for its employees. GC has also been committed to improving and enhancing its organizational and personnel management capabilities as people are the most valuable resources to GC’s strong and sustainable growth.

## EMPLOYEES

As of December 31, 2020, the Company hired a total of 6,883 employees, including those employed by its subsidiaries, according to business structure, which can be divided into the following functions:

1. Direct reports to the Chief Executive Officer and President	13	employees
2. Internal Audit	26	employees
3. International Business Operations and subsidiaries	640	employees
4. Corporate Strategy	53	employees
5. Finance and Accounting and subsidiaries	180	employees
6. Organizational Effectiveness	205	employees
7. Corporate Secretary and Legal	45	employees
8. Sustainability and Corporate Branding	71	employees
9. Direct reports to Senior Executive Vice President - Upstream Petrochemical Business, and subsidiaries	247	employees
10. Group Performance Center - Aromatics	326	employees
11. Group Performance Center - Refinery and Shared Facilities	307	employees
12. Group Performance Center - Olefins	711	employees
13. Group Performance Center - Utilities	246	employees
14. Direct reports to Senior Executive Vice President - Downstream Petrochemical Business	23	employees
15. Polymers Business Unit and subsidiaries	881	employees
16. EO-Based Performance Business Unit and subsidiaries	155	employees
17. Phenol Business Unit and subsidiaries	227	employees
18. Green Chemicals Business Unit and subsidiaries	251	employees
19. Downstream Strategy and Business Development and subsidiaries	222	employees
20. Marketing, Commercial and Supply	97	employees
21. Direct reports to Chief Operating Officer - Center of Excellence and subsidiaries	950	employees
22. Technical, Engineering and Maintenance	462	employees
23. CAPEX Excellence	164	employees
24. Quality, Safety, Occupational Health and Environment	170	employees
25. Transformation Excellence	64	employees
26. Procurement	96	employees
27. Science and Innovation	51	employees

## TOTAL REMUNERATION PAID TO EMPLOYEES IN 2020

Type of Remuneration	Total (Million Baht)
Salaries, Bonus, Wages, and Other Welfares	13,469
Provident Fund Contributions	657
Post-Employment Benefits	467
Other Long-Term Employee Benefits	125
<b>Total</b>	<b>14,718</b>

The number of employees joining the provident fund scheme accounts for 89% of all employees. Through its provident fund committee, GC selects a provident fund manager who is a signatory of the Investment Governance Code for Institutional Investors (I Code) as well as takes into consideration past investment performance.



LIST OF THE BOARD OF DIRECTORS IN SUBSIDIARIES/JOINT VENTURES/AFFILIATES  
(AS OF DECEMBER 31, 2020)

No.	Name - Surname	GC	Subsidiaries					Joint Ventures/ Affiliates			
			GGC	GC Inter	GCI	PTTGC America LLC	PTTGC America Corporation	PTT	GPSC	PTTT LDN	PTTT
1	Mr. Piyasvasti Amranand	▲									
2	Mr. Apisak Tantivorawong	■									
3	Professor Somkit Lertpaithoon	■									
4	Mr. Don Wasantapruek	■					■				
5	Mr. Grisada Boonrach	■									
6	Mr. Pakorn Nilprapunt	■									
7	Mrs. Watanan Petersik	■									
8	Major General Nithi Chungcharoen	■									
9	Mr. Prapas Kong-ied	■									
10	Mr. Wittawat Svasti-xuto	■					●	■			
11	Mr. Sarawut Kaewtathip	■									
12	Mr. Disathat Panyarachun	■					●		▲	▲	
13	Mrs. Arawadee Photisaro	■					●				
14	Mr. Chansin Treenuchagron	■									
15	Mr. Kongkrapan Intarajang	■ ●	▲	▲	▲	▲	▲	●	■		

Remarks: ▲ = Chairman      ■ = Director      ● = Executive

**Subsidiaries**

GGC = Global Green Chemicals Public Company Limited  
GC Inter = PTTGC International Private Limited  
GCI = GC International Corporation  
PTTGC America LLC = PTTGC America LLC  
PTTGC America Corporation = PTTGC America Corporation

**Joint Ventures/Affiliates**

PTT = PTT Public Company Limited  
GPSC = Global Power Synergy Public Company Limited  
PTTT LDN = PTT International Trading London Ltd.  
PTTT = PTT International Trading Pte Ltd.



**LIST OF DIRECTORIES IN SUBSIDIARIES WHOLLY 100% OWNED BY THE COMPANY  
(AS OF FEBRUARY 1, 2021)**

List of Directors	Position
<b>1. GC Glycol Company Limited</b>	
1. Mr. Wiboon Chuhepchunkamon	Chairman
2. Mr. Saroj Putthammawong	Director
3. Mr. Pukpong Wungrattanasopon	Director
4. Mrs. Chananchida Wiboonkanarak	Director
5. Mr. Vitaya Pinmuangngarm	Director/ Managing Director
<b>2. PTT Phenol Company Limited</b>	
1. Mr. Bowon Vongsinudom	Chairman
2. Mr. Wiboon Chuhepchunkamon	Director
3. Mr. Pukpong Wungrattanasopon	Director
4. Mrs. Chananchida Wiboonkanarak	Director
5. Mr. Pramin Phantaweesak	Director
6. Mr. Paisarn Sarapee	Director/ Managing Director
<b>3. GC Styrenics Company Limited</b>	
1. Mr. Pornsak Mongkoltrirat	Chairman
2. Mr. Anutin Chuaypen	Director
3. Mr. Vitaya Pinmuangngarm	Director
4. Mr. Panchoak Auetanapa	Director/ Managing Director
<b>4. Solution Creation Company Limited</b>	
1. Mr. Patiparn Sukorndhaman	Chairman
2. Mr. Wiboon Chuhepchunkamon	Director
3. Mrs. Warawan Tippawanich	Director
4. Mrs. Chananchida Wiboonkanarak	Director
5. Mr. Weerayuth Lorsathian	Director/ Managing Director
<b>5. NPC Safety and Environmental Service Company Limited</b>	
1. Mr. Varit Namwong	Chairman
2. Mr. Wirat Boonbumrungchai	Director
3. Mr. Khomson Piyawattana-viroj	Director
4. Mr. Anutin Chuaypen	Director
5. Mr. Kridsada Prasertsuko	Director/ Managing Director
<b>6. PTTGC International Private Limited</b>	
1. Mr. Kongkrapan Intarajang	Chairman
2. Ms. Pattaralada Sa-ngasang	Director
3. Mrs. Warawan Tippawanich	Director
4. Mr. Narongsak Jivakanun	Director/ Managing Director
<b>7. PTTGC America Corporation</b>	
1. Mr. Kongkrapan Intarajang	Chairman
2. Mr. Varit Namwong	Director
3. Ms. Pattaralada Sa-ngasang	Director
4. Mrs. Warawan Tippawanich	Director
5. Mr. Narongsak Jivakanun	Director/ Managing Director

List of Directors	Position
<b>8. GC Marketing Solutions Company Limited</b>	
1. Mr. Patiparn Sukorndhaman	Chairman
2. Mr. Varit Namwong	Director
3. Mr. Wiboon Chuhepchunkamon	Director
4. Mr. Pornsak Mongkoltrirat	Director
5. Mr. Saroj Putthammawong	Director
6. Mr. Thitipol Artsanchorn	Director/ Managing Director
<b>9. GC Logistics Solutions Company Limited</b>	
1. Mr. Pornsak Mongkoltrirat	Chairman
2. Mrs. Wilawan Songjaroen	Director
3. Mr. Thitipol Artsanchorn	Director
4. Mr. Supasit Tongsupachok	Director
5. Mr. Amnuai Phrom-Anant	Director/ Managing Director
<b>10. GC Maintenance and Engineering Company Limited</b>	
1. Mr. Varit Namwong	Chairman
2. Mr. Toasaporn Boonyapipat	Director
3. Mr. Pornsak Mongkoltrirat	Director
4. Mrs. Jeeranee Pimthanothai	Director
5. Mr. Piroj Samutthanant	Director/ Managing Director
<b>11. GC Oxirane Company Limited</b>	
1. Mr. Wiboon Chuhepchunkamon	Chairman
2. Ms. Pattaralada Sa-ngasang	Director
3. Mr. Saroj Putthammawong	Director
4. Mr. Vitaya Pinmuangngarm	Director
5. Mr. Somnuk Suwanpradit	Director/ Managing Director
<b>12. GC Treasury Center Company Limited</b>	
1. Ms. Pattaralada Sa-ngasang	Chairman
2. Mr. Saroj Putthammawong	Director
3. Ms. Kanoknun Buranapunsri	Director
4. Ms. Pornsook Limsathit	Director/ Managing Director
<b>13. GC Estate Company Limited</b>	
1. Mr. Toasaporn Boonyapipat	Chairman
2. Mr. Pirun Krimwongrut	Director
3. Mr. Supasit Tongsupachok	Director
4. Mrs. Rattana Nakasiri	Director
5. Mrs. Wacharee Hanwongpaiboon	Director/ Managing Director
<b>14. GC Ventures Company Limited</b>	
1. Mr. Narongsak Jivakanun	Chairman
2. Mrs. Warawan Tippawanich	Director
3. Mr. Chaya Chandavas	Director
4. Mr. Kevin Thomas Corby	Director

# Other Important Information

## COMPANY SECRETARY

Under the Securities and Exchange Act (No. 4) B.E. 2551 (2008), Sections 89/15 and 89/16, the Board of Directors at Meeting No. 10/2562 held on August 19, 2019 appointed Mrs. Pilasphan Udomjarumane, Senior Vice President, Corporate Secretary and Legal, as Company Secretary. By law, the responsibilities of Company Secretary include the preparation and safekeeping of important company documents, including the register of directors, meeting notices, Board and shareholders' meeting minutes, annual report and conflicts of interest form filled by Directors and Executives. The Company Secretary is in charge of organizing Board and shareholders' meetings and submitting copies of reports on Directors and Executives interests to the Chairman of the Board of

Directors and the Chairman of the Audit Committee. The Company Secretary also advises the Board and Executives on the rules and regulations they should familiarize themselves with, organizes training and orientation for current and new Directors, as well as providing them with information essential to their performance of duties as Directors. Moreover, the Company Secretary oversees compliance with laws, regulations and resolutions passed in Board and shareholders' meetings, as well as collaborates with relevant agencies on compliance. The Company Secretary has undergone training courses necessary for her to duly perform her roles. The qualifications of the Company Secretary are disclosed in Key Information on "Executives", page 162.

## CHIEF ACCOUNTANT

In 2020, GC assigned Mrs. Sutha Suwanrath, Vice President – Financial Accounting 1 as of August 1, 2020, and Mrs. Varanee Ubonphulphol, Vice President – Financial Accounting 1 from May 1, 2019 to July 31, 2020, to oversee the Company's accounting and ensure its compliance with relevant standards, laws, and regulations. The qualifications of the Chief Accountants are disclosed in Profile of the person supervising accounting (Chief Accountants) of PTT Global Chemical Public Company Limited on page 169.

## HEAD OF INTERNAL AUDIT

The Audit Committee meeting No. 8/2017 convened on September 18, 2017 resolved to approve the appointment of Mr. Amorn Putiphrawan as Senior Vice President, Internal Audit, responsible for auditing the adequacy and efficiency of GC's internal control for its activities and reporting to the Audit Committee and the Board of Directors, effective as of January 1, 2018, by virtue of his knowledge, capability, experience, and suitable qualifications as well as his responsibilities in GC's risk management and internal control between 2014 and 2017. The appointment, transfer, termination, and merits of Senior Vice President, Internal Audit, shall be approved by the Audit Committee as stipulated by the Audit Committee Charter. The qualifications of the Head of Internal Audit are disclosed in Key Information on "Executives", page 161.

## HEAD OF CORPORATE COMPLIANCE

Mrs. Rattana Nakasiri as Vice President, Corporate Governance, has been assigned as Head of Corporate Compliance on October 15, 2015. The responsibilities include overseeing corporate compliance, promoting corporate governance in business practices, and ensuring that the Executives and employees of GC Group comply with laws, rules, and regulations in countries where GC operates. The qualifications of the Head of Corporate Compliance are disclosed in Profile of the person supervising Corporate Compliance of PTT Global Chemical Public Company Limited on page 168.

## HEADS OF INVESTOR RELATIONS AND CONTACT INFORMATION

### VICE PRESIDENT – CORPORATE FINANCE & INVESTOR RELATIONS

Mr. Jittasak Soonthornpan  
Tel: 02-265-8172  
E-mail: Jittasak.s@pttgcgroup.com

### DIVISION MANAGER – INVESTOR RELATION

Miss Sirinya Wongpimaicram  
Tel: 02-265-8576  
E-mail: Sirinya.w@pttgcgroup.com

## AUDIT FEE AND NON-AUDIT FEE

### (1) AUDIT FEE

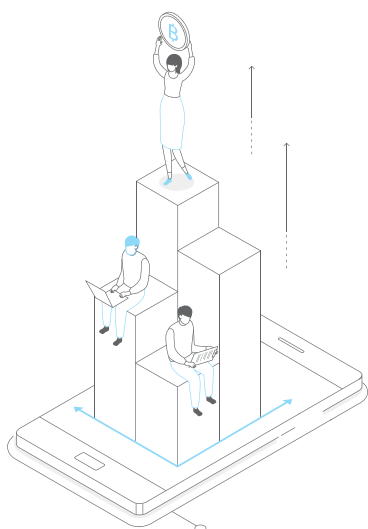
GC and its subsidiaries paid the audit fee to:

- Deloitte Touche Tohmatsu Jaiyos Audit Co., Ltd., which is the auditor of GC and its subsidiaries for the fiscal year of 2020 amounting to THB 10,442,000. Of this amount, GC paid THB 3,000,000 and its subsidiaries paid THB 7,442,000.
- The audit company that the auditor worked for, including persons or entities that are related to the auditors and the audit company for the fiscal year of 2020 amounting to SGD 25,000, USD 29,500, EUR 216,000, and VND 482,000,000.

### (2) NON-AUDIT FEE

GC and its subsidiaries paid the non-audit fee for performing agreed-upon procedures in connection with the requirements of the Board of Investment (“BOI”), consulting and document certifying for participation in the Thai Private Sector Collective Action Against Corruption Program (“CAC”), comfort letter for bond issuing of subsidiary, tax consulting services and other audits by agreed-upon procedures to:

- Deloitte Touche Tohmatsu Jaiyos Audit Co., Ltd., which is the auditor of GC and its subsidiaries for the fiscal year of 2020 amounting to THB 5,049,500 and for incomplete services in the fiscal year of 2020 that will be paid for a total of THB 3,080,500.
- The audit company that the auditor worked for, including persons or entities that are related to the auditors and the audit company for the fiscal year of 2020 amounting to THB 287,790, USD 256,567 and EUR 4,800 plus incomplete services in the fiscal year of 2020 that will be paid for a total of THB 841,000, and USD 79,800.



# Corporate Governance

## Report

### SUMMARY OF THE BOARD OF DIRECTOR'S PERFORMANCE

#### Nomination, Development, and Performance Assessment of the Board of Directors

##### (1) Nomination of Directors and Chief Executive Officers

For the appointment of a Director, the Nomination and Remuneration Committee, consisting of three Directors, two of whom are Independent Directors, is charged with selecting and reviewing qualified candidates with no prohibited characteristics according to relevant laws and regulations and GC's Articles of Association, as well as proposing a list of candidates for the review of professional and diverse Directors based on the structure, size, composition of the Board, the diversity of competency, expertise, and experience, and the proportion of Independent Directors and female Directors before offering its opinions to the Board of Directors for approval, and subsequently presenting the list of candidates to the shareholders' meeting for appointment according to the established criteria. Nomination can be divided into the following categories:

**Directors:** GC encourages shareholders to nominate qualified individuals in addition to selecting candidates from the Directors' Pool of trusted organizations, such as the Thai Institute of Directors Association (IOD). and State Enterprise Policy Office (SEPO). This process ensures a wholesome composition of the Board, compliance with the board diversity policy, and the best interests of the Company. A former Director may be re-nominated based on his or her performance during the past year, dedication, and participation in activities and events.

**Independent Directors:** GC strives to ensure its compliance with SEC's requirements regarding the suitable number of Independent Directors on the Board. Currently, the Board of Directors comprises eight Independent Directors out of total 15 members, which exceeds the requirements of the Securities and Exchange Commission (SEC). Independent Directors possess all the qualifications of Independent

Directors as stipulated by SEC's requirements and the Corporate Governance and Business Code of Conduct Handbook, which is published on GC's website.

**Chief Executive Officer:** If this position becomes vacant, the Nomination and Remuneration Committee will consider and nominate the member of the Board's Directors who possesses the skills, professional experiences, and specialization that are in the greatest benefit of GC's business. In other words, the nominee must be knowledgeable and capable of managing a business and having relevant expertise and experience in the petrochemical, petroleum, or energy sector. He or she must also demonstrate great leadership, have led an organization, and be held in high esteem by relevant businesses and organizations. The possibility of a conflict of interest must also be taken into account. The nomination will be presented to the Board for consideration, approval and appointment.

The provisions in GC's Articles of Association regarding shareholders' meetings and voting state that shareholders shall cast all of their votes on their voting cards to one nominee for directorship at a time.

##### (2) Development of Directors, Executives, and Company Secretary

**Development and Training of Directors:** GC has put in place a process to support the consistent development of its Directors. In 2020, the Company carried out the following activities:

- Orientation for new Directors: Newly appointed Directors must attend the board orientation, which includes a presentation on GC's nature of business, business data and practices, as well as applicable rules and regulations, corporate governance principles and the business code of conduct, and useful information for the position. Additionally, the Company prepares handbooks and other documents required to perform their roles, namely the strategic plan, the Company's Articles of Association, Memorandum of Association, annual report, related rules and regulations, and the Corporate Governance and Business Code of Conduct Handbook.



- GC encouraged Directors to participate in the following programs/seminars required for their duties:

Director	Program/Institute
1. Mr. Disathat Panyarachun	Ethical Leadership Program (ELP), Class 19/2020 Thai Institute of Directors Association (IOD)

- GC held a lecture for the Board entitled “Digital Trend in Petrochemical Industry,” led by consultants from McKinsey & Company, and a lecture entitled “Petrochemical Outlook: Impact of COVID-19 and Across the Longer Term,” hosted by consultants from IHS Markit to enrich the Board’s knowledge of the petrochemical industry.
- GC held activities that promoted and elevated good corporate governance, including visits to operating sites and key projects of GC Group (e.g. Olegins Reconfiguration (ORP) and PO/Polyols) in Rayong, which is the production base of the Company, so as to enrich the Board’s understanding of GC’s businesses and optimize their knowledge and experiences for GC’s benefit.
- GC held a training program entitled “Ethical Leadership: Turning Ethics into Action (2020),” with Asst. Prof. Opas Kitkamhang, Ph.D., Dean of the Faculty of Business Administration, Siam Technology College, as the guest speaker, for the Vice Presidents of companies in GC Group, so that they became aware of their obligation to ethical leadership and able to make decisions responsibly and ethically. The training program was organized as a workshop to enable the participants to exchange opinions and perspectives and summarize practices that aligned with GC’s business code of conduct.
- GC encouraged the Company Secretary to attend training programs to support the Board of Directors. In 2020, the Company Secretary attended the following programs offered by the Thai Institute of Directors Association (IOD): Company Reporting Program (CRP) Class 26/2020, Company Secretary Program (CSP) Class 107/2020, and Corporate Governance for Executives (CGE) Class16/2020.

**Training for Executives and Company Secretary:** GC encourages its Executives and the Company Secretary to pursue further education and participate in training programs to acquire knowledge beneficial to their duties as well as their roles in supporting GC and the Board of Directors, including:

- GC conducted training for Executives serving as Directors of GC’s subsidiaries and affiliates on the topic of duties and responsibilities of a Director under the laws and good corporate governance principles. The goal was to bolster their knowledge, skills, and capabilities as Directors of such subsidiaries.
- GC held a training program entitled “Ethical Challenges in New Normal,” with Adjunct Professor Vicha Mahakun, President of the Anti-Corruption Foundation, as the guest speaker, for GC’s top management and Executives who had been appointed Directors/Executives in GC Group to foster awareness of their roles in driving good corporate governance policies and treating all stakeholders across the business value chain with ethics in the long term.



“ETHICAL CHALLENGES IN NEW NORMAL” PROGRAM BY ADJUNCT PROFESSOR VICHA MAHAKUN

### (3) Board Performance Assessment

CG Code stipulates board performance assessment, which GC carries out annually using the performance assessment forms. In 2020, there were 15 directors completing the assessment forms in the following details.

**GROUP ASSESSMENT:** The group assessment form comprises six main sections: 1) Board policy, 2) Board performance, 3) Board structure (composition and qualifications), 4) Board style, 5) Board meeting, and 6) Board development. **The average group assessment score is 94.8%.**

**SELF-ASSESSMENT (ASSESSMENT OF INDIVIDUAL DIRECTORS):** The assessment form comprises three main sections: 1) Directors' knowledge and expertise, self-development, and teamwork, 2) Board performance of duties, and 3) dedication of time and meeting attendance. **The average self-assessment score is 94.3%.**

**CROSS-ASSESSMENT (INDIVIDUAL ASSESSMENT OF OTHER DIRECTORS):** The assessment form comprises three main sections: 1) the Director's knowledge and expertise, self-development, and teamwork, 2) Board performance of duties, and 3) dedication of time and meeting attendance. **The average cross-assessment score is 96.6%.**

#### SUB-COMMITTEES

The Company's Sub-committees consist of the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee. They also conduct the annual performance assessment, both at committee (group) and individual levels. In 2020, every Sub-committee reviewed and revised the assessment questionnaires and criteria to ensure alignment with good corporate governance practices.

#### Audit Committee

The group assessment comprises the following topics: the Audit Committee's Charter, composition,

meetings, training and resources, responsibilities, relationship with Senior Vice President – Internal Audit, auditors, and management, reporting to the Board and shareholders, and maintaining of performance quality.

The individual assessment comprises the following topics: responsibilities, adherence to business ethics and code of conduct, and dedication of time to duties and self-development.

**The average score of the group assessment is 96.17%, and the average score of the individual assessment is 92.06%.**

#### NOMINATION AND REMUNERATION COMMITTEE

The group assessment comprises the following topics: composition and qualifications, performance of duties, guidelines for Directors, meeting attendance, reporting and performance evaluation.

The individual assessment comprises the following topics: knowledge and expertise, performance of duties, guidelines for Directors, and dedication of time and meeting attendance.

**The average score of the group assessment is 87.6%, and the average score of the individual assessment is 85.8%.**

#### CORPORATE GOVERNANCE COMMITTEE

The group assessment comprises the following topics: composition and qualifications, performance of duties, guidelines for Directors, meeting attendance, reporting and performance evaluation.

The individual assessment comprises the following topics: knowledge and expertise, performance of duties, guidelines for Directors, and dedication of time and meeting attendance.

**The average score of the group assessment is 98.1%, and the average score of the individual assessment is 94.3%.**

## RISK MANAGEMENT COMMITTEE

The group assessment comprises the following topics: composition and qualifications, roles and responsibilities, and meeting attendance.

The individual assessment comprises the following topics: responsibilities, adherence to business ethics and code of conduct, and dedication of time to duties and self-development.

The average score of the group assessment is 96.3%, and the average score of the individual assessment is 98.5%.

## Meeting Attendance and Remuneration of Individual Directors

The Board of Directors has set up a fair and reasonable remuneration policy for its Directors in accordance with good corporate governance principles. The Nomination and Remuneration Committee determines suitable remuneration for Directors based on the Company's financial standing, taking in consideration the current economic situation of businesses related to the petroleum/petrochemical industry and the remuneration for Directors in companies listed on the Stock Exchange of Thailand (SET) and other companies of a similar size, the principles and policies approved by shareholders, the results of annual board performance assessment, as well as each Director's responsibilities. Directors appointed to Sub-Committees are entitled to additional remuneration due to their additional responsibilities.

Directors' remuneration must be approved by the shareholders. At the 2020 Annual General Meeting of Shareholders, held on June 2, 2020, shareholders passed a resolution approving the 2020 remuneration of Directors and Directors to Sub-Committees and their bonus for the year 2019 as follows:

### (1) Remuneration for the Board of Directors and Sub-committees

Type of Remuneration	Remuneration Rate
1. Board of Directors	Monthly Remuneration <ul style="list-style-type: none"><li>Chairman Baht 62,500 /Month</li><li>Director Bath 50,000 /Month/Director</li></ul> Remuneration for Meeting Attendance <ul style="list-style-type: none"><li>Chairman Baht 50,000 /Month</li><li>Director Baht 40,000 /Month/Director</li></ul>
2. Sub-committees <ul style="list-style-type: none"><li>Audit Committee</li><li>Nomination and Remuneration Committee</li><li>Corporate Governance Committee</li><li>Risk Management Committee</li></ul>	Remuneration for Meeting Attendance <ul style="list-style-type: none"><li>Chairman Baht 56,250 /Month</li><li>Director Baht 45,000 /Month/Director</li></ul>
3. Others	No other benefits

(2) With regard to the bonus for the year 2019 as the resolution of the 2020 Annual General Meeting of Shareholders, the Board of Directors as a group is to be awarded a bonus for the year when a dividend payment is made to the shareholders. The total sum of this bonus equals 0.30% of the year's net profit and up to Baht 60 million. Each Director's bonus is calculated based on the time served in the corresponding year, and the Chairman's bonus is to be 25% higher than those of other Directors. On June 2, 2020, the Board of Directors as a group was awarded a bonus for 2020 totalling Baht 35.05 million.

## DIRECTORS' MEETINGS

Name	Meetings in 2020							2020 Annual General Meeting of Shareholders
	Board of Directors	Independent Directors	Non - Executive Directors	Audit Committee	Nomination and Remuneration Committee	Corporate Governance Committee	Risk Management Committee	
	15 Times	1 Times	1 Times	7 Times	9 Times	6 Times	6 Times	
1. Mr. Piyasvasti Amranand	15/15	1/1	1/1	-	-	-	-	1/1
2. Mr. Apisak Tantivorawong	14/14	1/1	1/1	7/7	-	-	-	1/1
3. Professor Somkit Lertpaithoon	15/15	1/1	1/1	-	-	6/6	-	1/1
4. Mr. Don Wasantapruerk	15/15	1/1	1/1	-	9/9	-	-	1/1
5. Mr. Grisada Boonrach	7/ 8	1/1	1/1	-	-	-	3/3	-
6. Mr. Pakorn Nilprapunt	14/15	1/1	1/1	7/7	-	-	-	0/1
7. Mrs. Watanan Petersik	12/15	1/1	1/1	-	-	5/6	-	1/1
8. Major General Nithi Chungcharoen	15/15	1/1	1/1	-	8/9	6/6	-	1/1
9. Mr. Prapas Kong-ied	14/15	1/1	1/1	7/7	-	-	-	1/1
10.Mr. Wittawat Svasti-xuto	15/15	-	1/1	-	8/8	-	-	1/1
11.Mr. Sarawut Kaewtathip	7/7	-	-	-	-	-	3/3	-
12. Mr. Disathat Panyarachun	15/15	-	1/1	-	-	3/3	3/3	1/1
13.Mrs. Arawadee Photisaro	15/15	-	1/1	-	-	-	6/6	1/1
14. Mr. Chansin Treenuchagron	4/4	-	-	-	-	2/2	-	-
15. Mr. Kongkrapan Intarajang	15/15	-	-	-	-	-	6/6	1/1

## DIRECTORS WHO RETIRED BY ROTATION IN 2020

1. Mr. Prasert Bunsumpun	6/7	-	-	-	-	-	3/3	1/1
--------------------------	-----	---	---	---	---	---	-----	-----

## DIRECTORS WHO RESIGNED IN 2020

1. Mrs. Premrutai Vinaiphath	8/8	-	-	-	-	-	3/3	1/1
2. Mr. Supattanapong Punmeechaow	9/9	-	1/1	-	-	-	3/3	1/1

## DIRECTORS' REMUNERATION IN 2020

Name	Monthly Remuneration for GC Directors (Baht)	Remuneration for Meeting Attendance (Baht)	Remuneration for Sub-Committees Meeting Attendance (Baht)				2019 Bonus paid in 2020 (Baht)*	Total (Baht)
			Audit Committee	Nomination and Remuneration Committee	Corporate Governance Committee	Risk Management Committee		
1. Mr. Piyasvasti Amranand	750,000.00	750,000.00	-	-	-	-	2,987,520.60	4,487,520.60
2. Mr. Apisak Tantivorawong	562,903.23	560,000.00	337,500.00	-	-	-	-	1,460,403.23
3. Professor Somkit Lertpaithoon	600,000.00	600,000.00	-	-	337,500.00	-	2,390,016.48	3,927,516.48
4. Mr. Don Wasantapruek	600,000.00	600,000.00	-	506,250.00	-	-	2,390,016.48	4,096,266.48
5. Mr. Grisada Boonrach	348,333.33	280,000.00	-	-	-	168,750.00	-	797,083.33
6. Mr. Pakorn Nilrapunt	600,000.00	560,000.00	315,000.00	-	-	-	2,390,016.48	3,865,016.48
7. Mrs. Watanan Petersik	600,000.00	480,000.00	-	-	225,000.00	-	2,390,016.48	3,695,016.48
8. Major General Nithi Chungcharoen	600,000.00	600,000.00	-	360,000.00	270,000.00	-	2,390,016.48	4,220,016.48
9. Mr. Prapas Kong-ied	600,000.00	560,000.00	315,000.00	-	-	-	403,509.28	1,878,509.28
10. Mr. Wittawat Svasti-xuto	600,000.00	600,000.00	-	360,000.00	-	-	2,390,016.48	3,950,016.48
11. Mr. Sarawut Kaewtathip	269,354.84	280,000.00	-	-	-	135,000.00	-	684,354.84
12. Mr. Disathat Panyarachun	600,000.00	600,000.00	-	-	135,000.00	135,000.00	2,390,016.48	3,860,016.48
13. Mrs. Arawadee Photisaro	600,000.00	600,000.00	-	-	-	270,000.00	2,390,016.48	3,860,016.48
14. Mr. Chansin Treenuchagron	166,666.67	160,000.00	-	-	90,000.00	-	-	416,666.67
15. Mr. Kongkrapan Intarajang**	600,000.00	600,000.00	-	-	-	270,000.00	598,691.56	2,068,691.56
Directors who resigned and retired by rotation in 2019-2010 and earned remuneration in 2020								
1. Mr. Prasert Bunsumpun***	251,666.67	240,000.00	-	-	-	168,750.00	2,390,016.48	3,050,433.15
2. Mrs. Premrutai Vinaiphat****	324,193.55	320,000.00	-	-	-	135,000.00	2,082,496.68	2,861,690.23
3. Mr. Supattanapong Punmeechaow****	335,483.87	360,000.00	-	-	-	135,000.00	2,390,016.48	3,220,500.35
4. Mr. Amnuay Preemonwong	-	-	-	-	-	-	1,986,507.21	1,986,507.21
5. Mr. Anon Sirisaengtaksin	-	-	-	-	-	-	603,441.33	603,441.33
6. Mr. Prasan Chuaphanich	-	-	-	-	-	-	2,093,542.65	2,093,542.65
7. General Chatchalerm Chalermsook	-	-	-	-	-	-	163,701.27	163,701.27
8. Mr. Praphon Wongtharua	-	-	-	-	-	-	226,663.30	226,663.30
<b>Grand Total</b>	<b>9,008,602.16</b>	<b>8,750,000.00</b>	<b>967,500.00</b>	<b>1,226,250.00</b>	<b>1,057,500.00</b>	<b>1,417,500.00</b>	<b>35,046,238.68</b>	<b>57,473,590.84</b>

The company provides a corporate vehicle for the chairman throughout his term for corporate-related activities only.

### Remarks:

\* Bonus for 2019 performance paid in 2020 for time served in 2019 within a budget of Baht 60 million.

\*\* Remuneration for directorship only; Executive remuneration is not included.

\*\*\* One Director who retired by rotation in 2020 was Mr. Prasert Bunsampan. His term ended on June 2, 2020.

\*\*\*\* The two Directors who resigned in 2020 were Mrs. Premrutai Vinaiphat (effective July 16, 2020) and Mr. Supattanapong Punmeechaow (effective July 23, 2020).

## REMUNERATION RECEIVED BY THOSE SERVING AS INDEPENDENT DIRECTORS OF A PARENT COMPANY

GC's Independent Director who is an Independent Director of PTT Public Company Limited, the parent company, received remuneration as follows:

No.	Name - Surname	PTT Public Company Limited (PTT)				
		Position	Remuneration for the Year 2020	Sub-Committee Meeting Allowance (Baht)	Bonus 2020 (Baht)	Total (Baht)
		Chairman/ Director	Meeting Allowance (Including Monthly Allowance) (Baht)			
1	Mr. Don Wasantapruerk	Independent Director/ Chairman of the Nominating Committee	1,260,000	337,500	1,294,335.62	2,891,835.62

## DIRECTORS' REMUNERATION FOR DIRECTORSHIP AT MAJOR SUBSIDIARIES

The Company's Directors hold directorships at subsidiaries to ensure that their businesses are operated in compliance with GC Group's policies.

Name	Position	Total Remuneration
PTTGC International Private Limited (100% owned subsidiary)		
Mr. Kongkrapan Intarajang <sup>(1)</sup>	Chairman	13,000 SGD
Global Green Chemicals Public Company Limited (72.29 shareholding)		
Mr. Supattanapong Punmeechaow	Chairman (January 1, 2020 – June 30, 2020)	Baht 225,000
Mr. Kongkrapan Intarajang	Chairman (October 21, 2020 – December 31, 2020)	Baht 377,661.34

### Remarks:

(1) Mr. Kongkrapan Intarajang began serving as the Chairman of the Board of Directors of PTTGC International Private Limited on September 1, 2020.

## GOVERNANCE OF SUBSIDIARIES AND AFFILIATES

The Board of Directors has implemented the following governance mechanisms for overseeing the management and operation of GC's subsidiaries and affiliates to protect the Company's interests and investments.

(1) The Chief Executive Officer has the authority to establish policies, guidelines, conditions, and methods needed to appoint an employee or another individual as a Director of companies under GC Group as part of the Company's human resource management regulations. Those appointed are entrusted with the responsibility of acting in the best interests of the organization where he or she serves as Director.

(2) Ensuring that any major policies of companies under GC Group, such as Corporate Governance Policy, Corporate Compliance Policy, Finance, Accounting, Tax and Budget Policy, Quality, Security, Safety, Occupational Health, Environment and Business Continuity Policy, Human Resources Management Policy, Sustainability Management Policy, Risk Management Policy and Internal Control Policy, as well as any other relevant policies, are in compliance with regulations of Stock Exchange of Thailand and the Securities and Exchange Commission and any other relevant laws.

(3) GC Way of Conduct was reviewed and revised to produce the 2020 Edition, which provides more suitable and tangible guidance for the management



management and governance of companies in which GC is a shareholder and ensures alignment with GC's objectives, nature of business, and strategies, as well as with PTT Group Way of Conduct within the framework of multi-level governance and on the basis of the "Apply & Explain" principle so as to standardize the operation across the group.

- (4) The 2020 GC Way of Conduct Work Plan was established and communicated to the management and governance units in companies in GC Group as well as to GC Way of Conduct coordinators, who are responsible for driving the adoption of GC's operational standards in companies in GC Group, to standardize governance and management practices and ensure that they are connected and have the same direction.
- (5) MD Programs are held on important topics for GC's representatives assigned to serve as Directors or Executives of a company in GC Group or assigned to oversee governance of a company in GC Group. In 2020, GC held three MD Programs:
  - MD Program 1: GC Group Governance and the Management of companies in GC Group was held to develop an understanding among GC's representatives on the topics of Subsidiary Governance Principle from GC Way of Conduct, GC Group Governance and Legal & Governance for Managing Director.
  - MD Program 2: Investment Management for Subsidiaries was held to foster an understanding of investment management and decisions among Executives so as to create a uniform standard.
  - MD Program 3: Strengthen Governance Building Your Success was held for Executive and included the following topics: A Leader's Guide to Succeed in GRC / Encouraging Subsidiaries to Join the Thai Private Sector Collective Action against Corruption (CAC), Executives as CG Ambassadors, and Compliance Universe.

## ENSURING COMPLIANCE WITH CORPORATE GOVERNANCE POLICY AND PRACTICES

GC considers good corporate governance a priority and has thus established and included relevant policies and practices in its Corporate Governance and Business Code of Conduct Handbook. The Company also promotes its adoption to foster confidence among GC's stakeholders.

In the previous years, GC conducted various activities to ensure compliance with the corporate governance policy of GC and GC Group, which can be summarized as follows:

- The Company studied, analyzed, and assessed its compliance with good corporate governance principles against domestic and international criteria, namely the Dow Jones Sustainability Indices (DJSI), the Corporate Governance Report of the Thai Listed Companies (CGR) of Thai Institute of Directors Association (IOD), AGM Checklist, and the criteria of the Thai Private Sector Collective Action Against Corruption (CAC) so as to develop and improve GC's policy and best practices to ensure currency and prompt compliance with changes in such criteria, such as the organization of the 2020 Annual General Meeting of Shareholders during the COVID-19 pandemic and the revision of all 71 items on the self-assessment form in line with CAC's updated criteria.
- GC studied and kept abreast with data and laws relevant to its business operation in order to improve the scope and efficiency of its work process. In 2020, GC compiled important laws that were applicable to and might impact its business operation (Compliance Universe). Phase 1 has been completed and will be handed to process owners for use in the assessment of each relevant process and the identification of compliance risks arising from non-compliance so as to subsequently create control processes.
- GC ensured that its Executives and employees complied with the Corporate Governance Policy/ Corporate Governance & Business Code of Conduct Handbook as well as applicable laws, rules, and regulations, and that they signed an annual pledge to strictly comply with such policy/handbook and submit the annual conflict of interest disclosure report.
- The "Hook e-Learning" system (Learn Anytime, Anywhere) was created as a mandatory self-learning program for GC Group, where all Executives and employees can learn about GC's policies and practices with regard to corporate governance, corporate compliance, and business code of conduct and complete an understanding assessment every year.

- GC held a training session on the criteria, process, and method related to the execution of connected transactions of GC or companies in GC Group (where GC holds more than 51% shares) with persons connected with GC for coordinators between business units of GC and companies in GC Group.
- GC held a training session for newly-appointed division managers on the topic “Corporate Compliance Mandatory” to foster an understanding of corporate compliance with and potential risks and impacts from non-compliance.
- Compliance GC Group Talk 2020 was held for representatives of companies in GC Group to foster an understanding to compliance processes and plans as well as their connection to Governance, Risk Management, & Internal Control and Compliance (GRC) operations.
- PTT Group CG Day 2020 was held under the concept “Step to the Future” to promote and publicize PTT Group’s good corporate governance. It was held as a virtual conference for the first time this year.

GC complies with good corporate governance principles in line with international standards in the following five areas:

### 1. SHAREHOLDER RIGHTS

The protection of shareholder rights is prioritized and has been included as part of the Corporate Governance and Business Code of Conduct Handbook to ensure full compliance.

#### *(1) The Provision of Important and Pertinent Information to Shareholders*

GC provided shareholders with clear, up-to-date information of importance and pertinence to its business operations. To this end, it also disclosed information deemed necessary, albeit not legally required, on its website and via the portal of the Stock Exchange of Thailand (SET).

#### *(2) The 2020 Annual General Meeting of Shareholders*

GC held the 2020 Annual General Meeting of Shareholders (AGM) at 09.00 hours on Tuesday, June 2, 2020, at the Synergy Hall, 6th Floor, Building C, The Energy Complex, 555/3 Vibhavadi Rangsit Rd, Chatuchak, Chatuchak, Bangkok.

GC also ensured convenience for the attending shareholders during the COVID-19 pandemic as detailed below.

#### Prior to the Meeting

- Minority shareholders, defined as any single shareholder or a group of shareholders holding at least 0.1% of all shares with eligible voting rights, were allowed to, via SET Portal and the Company’s website, propose agenda items and nominate qualified candidates to be elected as Directors, with clear criteria and steps specified, from September 16 to December 31, 2019.
- Nominated candidates and proposed agenda items would be considered under the established criteria. The Nomination and Remuneration Committee would consider whether the proposed candidates possessed desired qualifications. Meanwhile, the Corporate Governance Committee would review and select proposed agenda items and then submit it to the Board of Directors for their final approval. The Board will later inform the shareholders of its decision and reasons to the AGM. For the year 2020, no shareholders proposed any agenda items or nominated candidates for directorship to the Company.
- According to the resolutions of the Board of Directors’ meeting held on February 17, 2020, GC instantly notified SET after the meeting to disseminate the news to its shareholders that the 2020 AGM would be held on April 9, 2020, and the record date was set for March 2, 2020, to afford shareholders the rights to attend the 2020 AGM and receive dividend payment. This information was also published on GC’s website. GC also published the invitation letter, comprising the agenda items with the Board’s opinions on each agenda item as well as the attachments, on GC’s website in both Thai and English version, on March 6, 2020, which was more than 30 days prior to the meeting.
- Due to the increasing severity and pervasiveness of the 2019 coronavirus disease (COVID-19) outbreak in Thailand, GC notified SET of the postponement of the 2020 AGM and the cancellation of the meeting date, the agenda items, and the record date for attending the 2020 AGM (XM), previously set for March 2, 2020. However, the record date for receiving dividend payment (XD) was maintained for the payment of interim dividend.

- According to the resolutions of the Board of Directors' meeting held on April 20, 2020, GC instantly notified SET after the meeting to inform its shareholders that the 2020 AGM would be held on June 2, 2020 at 09.00 hrs. and the record date for attending the 2020 AGM was set for May 5, 2020. GC also established measures and guidelines for attending the AGM during the COVID-19 pandemic, which were published on GC's website. GC also published the invitation letter, comprising the agenda items with the Board's opinions on each agenda item as well as the attachments, on GC's website in both Thai and English version, on April 30, 2020, which was more than 30 days prior to the meeting. In addition, GC sent an invitation letter, along with QR codes for registering to attend the 2020 AGM and for downloading the digital versions of the 2019 Annual Report and the 2019 Integrated Sustainability Report.
- If a shareholder would like to assign a proxy to attend and vote at the AGM on their behalf or if they were unable to attend the AGM in person, GC provided them with a proxy statement that allowed them to specify their "for," "against," or "abstain" vote for each agenda item. Independent Directors' names and profiles were also included for their consideration. Details of the proxy assignment process and documents required to facilitate the procedure were enclosed with the invitation letter. All of the documents were available in both Thai and English.
- The invitation letter was mailed to its shareholders on May 12, 2020, over 21 days ahead of the meeting. A map of the meeting venue and location and a phone number for inquiries were also included in the invitation letter.

#### On the Day of the Meeting

- During the outbreak of the coronavirus disease 2019 (COVID-19), GC introduced preventive measures in strict compliance with the orders of the Centre for COVID-19 Situation Administration (CCSA), announcement of the Bangkok Metropolitan Administration, as well as relevant laws and regulation. These included screening points, disease screening forms for shareholders, alcohol gel and disinfectant stations, 2-meter physical distancing to avoid crowding, the 50-seat limit for each meeting hall, and mandatory check-in and check-out via Thai Chana application before registering to attend the AGM. Shareholders were required to wear cloth face masks or medical face masks at all times while in the meeting venue. The AGM was also concluded within two hours.
- GC used barcode scanning in the registration process for convenience and efficiency. GC also assigned staff to verify shareholders' documents ahead of time. The said registration began more than two hours before the meeting started.
- For the convenience of shareholders who appointed proxies and did not attend the AGM in person, GC offered web-live broadcasting on its website, which they could view simply by providing their security holder registration number. The use of the technology is a testament to GC's adaptability and prompt response to the situation.
- 2020 AGM was attended by 14 out of 15 Directors (13 Directors were present in the meeting hall, while the other Director was residing overseas and attended the AGM via electronic means). Top management, auditors, legal advisors, shareholders volunteering to witness the vote counting, and shareholders' right protection volunteers from the Thai Investors Association responsible for evaluating the quality of the 2020 AGM were also present.

**GC HELD THE 2020 ANNUAL GENERAL MEETING OF SHAREHOLDERS IN COMPLIANCE WITH PREVENTIVE MEASURES ISSUED BY CCSA AND BANGKOK METROPOLITAN ADMINISTRATION.**



- Before the meeting began, shareholders were explicitly informed of the voting and vote-counting procedure for each agenda item. “For,” “against,” or “abstain” voting ballots for each agenda item were provided to shareholders and proxies.
- At the meeting, the Chairman proceeded with all agenda items in order and afforded all shareholders equal rights to express their opinions. During each agenda item, shareholders or proxies could submit inquiries in advance by scanning the QR code on the question form provided or write down their questions and submit them to the staff to be presented them to the Board of Directors. Subcommittee chairpersons, Chief Executive Officer, and any relevant top management were assigned to answer shareholders’ questions. All expressed questions and opinions were fully recorded in the minutes of the AGM.

#### After the Meeting

- GC disclosed its resolutions of the 2020 AGM through the SET Portal once the meeting was finished. The disclosed resolutions included a complete set of the “for,” “against,” “abstain,” and invalid ballots of each agenda item. The minutes of the AGM were prepared in Thai and English, specifying the names of Directors and Executives attending the meeting, as well as other relevant attendees, key explanations, a list of questions and answers and a summary of opinions expressed. The minutes were submitted to SET and other relevant organizational authorities within 14 days after the meeting. They were also made available on [www.pttggroup.com](http://www.pttggroup.com) for shareholders’ inspection.

### 2. EQUITABLE TREATMENT OF SHAREHOLDERS

The Board of Directors ensures equitable treatment of all shareholders, whether majority or minority, Thai or foreign. GC’s equitable treatment of shareholders is summarized as follows:

- The Company values all shareholders and has put in place measures to fairly and equitably safeguard the fundamental rights of every shareholder. These measures are aimed at fostering investors’ trust and confidence in the Company and ensuring continuous and suitable returns.
- Minority shareholders are given the opportunity to express their opinion, provide suggestions and submit complaints to the Board, Chairman of the Corporate Governance Committee (an Independent Director) and the Company Secretary via the GC website on Corporate Governance

or email at [cg@pttggroup.com](mailto:cg@pttggroup.com). The Corporate Governance Committee will review the complaints submitted and take appropriate action. Institutional investors can request information or express their opinions via email at [ir@pttggroup.com](mailto:ir@pttggroup.com) under the care of Investor Relations.

### 3. ROLE OF STAKEHOLDERS

GC places importance on the rights of all stakeholders. Based on principles related to the rights and impacts on stakeholders, written good practice guidelines have been formulated and published on GC’s website. Stakeholders are also provided with channels to express their opinions, suggestions, and recommendations. Stakeholder-related policies, guidelines, and actions in 2020, are summarized below:

- Shareholders: GC respects the fundamental rights of shareholders and treats every shareholder equitably for their utmost satisfaction. These rights include the right to participate in the AGM, the rights to vote, to propose meeting agenda items, and to nominate candidates for directors. GC also listens to their opinions and suggestions and has provided them with contact channels via [www.pttggroup.com](http://www.pttggroup.com) and via email addresses at [ir@pttggroup.com](mailto:ir@pttggroup.com) and [cg@pttggroup.com](mailto:cg@pttggroup.com)

With regard to the treatment of institutional and retail investors, GC held quarterly performance review meetings via Facebook Live and Microsoft Team and virtual roadshows, in which online booking channels were made available to enable interested institutional investors to directly make an appointment with GC.

In addition, the Company took part in the quarterly Opportunity Day as well as SET Digital Roadshow, an online meeting held in collaboration with the Stock Exchange of Thailand (SET) to provide investors with access to information sources and an opportunity to learn more about listed companies. To comply with the Code of Conduct for Investor Relations, GC refrained from meeting with investors for 14 calendar days prior to the disclosure of its operating results to protect and safeguard GC’s confidential information not yet publicly disclosed.

**GC’S 2020 AGM WAS RANKED  
“EXCELLENT” WITH A PERFECT SCORE OF  
100 FOR THE NINTH CONSECUTIVE YEAR  
FROM 2012-2020.**

- **Customers:** To achieve customer satisfaction, GC has continued to maintain and improve the quality of its products and services and established a key account management unit to listen to the voice of the customer to inform the development of its products and services and expand sale opportunities. GC has also collaborated with trade partners to develop protective equipment for COVID-19 to help society. The Company has also improved its facilities and product delivery processes to save costs and enhance service efficiency.

Additionally, GC guarantees product qualities in accordance with various international standards to enhance customer confidence and has put in place a whistleblower channel for complaints about its products and services to systematically handle such complaints, track progress, and report solutions to customers in every business unit. It also discloses complete information about its products and services to customers by holding coordinating meetings between the Commercial and Supply Unit, the Production Unit, and customers. Product training and information is also offered through various channels of the Company.

Furthermore, GC treats all customers equitably and protects its confidential data by creating a Data Lost Protection system and establishing a policy and working team to develop the management and protection measures for customer data in accordance with the Personal Data Protection Act (PDPA). The Company also supervises its operation to ensure the absence of profiteering and unfair trade conditions.

- **Suppliers:** Believing in a business model of mutual growth and sustainability, GC operates its businesses with fairness, transparency, accountability, and lawfulness. It adheres to the Supplier Code of Conduct and Procurement Code of Conduct, which are in alignment with the Corporate Governance and Business Code of Conduct Handbook. The Approved Vendor List (AVL) has also been developed, along with criteria for supplier selection, assessment, and audit, under the supervision of the AVL Committee. Supplier audit and assessments are conducted annually.

With regard to procurement, GC complies with international standards and PTT Group Operational Excellence and uses robotic processes automation

to issue price request forms to suppliers in place of procurement staff for procurement worth under Baht 5 million. GC also reviews and assesses procurement risks in the annual procurement plan and conducts self-audit to ensure that suppliers accurately and fully comply with contract terms. Supplier performance assessment is also carried out to determine whether or not procurement is efficient and meets the objective.

Furthermore, GC manages its relations with suppliers by hosting annual supplier conferences and fostering collaborations to enhance product management efficiency. An assessment of suppliers' environmental, social, and governance (ESG) performance is also conducted.

- **Business Competitors:** To ensure that treatment of business competitors is consistent with international standards and within the scope of the laws on trade competition, GC has established its Business Code of Conduct on Treatment of Business Competitors in conformity to those principles to ensure fair and transparent competition by neither seeking confidential information of business competitors through fraudulent or inappropriate means nor tarnishing their reputation with slanders.
- **Creditors:** GC treats its creditors fairly and responsibly and strictly complies with contractual terms and conditions. A Payment Tracking System (PTS) has been set up to enable creditors to conveniently track and check payment statuses. The Company, in collaboration with financial institutes, has introduced an e-mail Advice System, which is based on GC's Outsourced Payment System and informs its creditors in advance of a payment in process. An additional system has also been introduced to issue invoices, tax invoices, and receipts electronically. Accounts payable aging reports are also prepared for the benefit of tracking the resolution of overdue transactions. In the event that GC is unable to fulfill contractual obligations or terms, it will notify its creditors in advance to seek resolutions together.

In collaboration with banking institutions, GC has introduced blockchain to the management of letters of guarantee and implemented strict measures for the verification of changes in creditor data to prevent cybersecurity risks and ensure that all transactions are correct and appropriate.



GC has also enforced a new standard for companies in GC Group requiring that they comply with the conditions between GC and its creditors to ensure adherence to defined procedures, prudence, and accountability.

For financial institutions and debenture holders, GC gives equal opportunities for all financial institutes to propose transactions and maintains independence in decision making. It also acts on the basis of correctness without requesting, accepting, or offering any undue benefits in contacting financial institutions and debenture holders. All information of events related to GC's businesses is also regularly disclosed to financial institutions, debenture holders, and institutional investors. GC also fosters relations with creditors through activities every year.

- **Public Sector:** Recognizing the significance of the public sector as one of its stakeholders, GC has established a policy on the treatment of the public sector in the countries in which it invests so as to avoid adverse consequences. This policy has been included in the Corporate Governance and Business Code of Conduct Handbook. GC is committed to compliance with laws, rules, and governmental regulations in obtaining permits, benefits, and concessions according to applicable laws, rules, and regulations as well as established procedures, processes, and practices. All contacts and communication with the public sector, including local authorities and state enterprises, must be transparent, with full disclosure of accurate information as per governmental requirements. To this end, GC has adopted the Online Permits & Privilege Licenses System in the planning and monitoring of operation progress to ensure compliance with governmental rules, regulations, and conditions.

GC has also established an emergency communication center, which is connected to Rayong's local communication centers. The names of officers assigned to communicate with government agencies have been openly and appropriately disclosed so as to make known information communicated to relevant government agencies and local communities as well as create an accurate understanding of situations. GC also holds activities to foster relations with relevant government agencies, such as anti-corruption activities that fostered understanding and reaffirmed mutual commitment to transparency and anti-corruption efforts. GC also provided venues for meetings held to share knowledge on new laws.

- **Employees:** GC ensures that its employee care is in line with good corporate governance principles and business ethics by fostering positive experience for employees at every part of the employee life cycle, focusing on employee development through various forms of learning in order to promote practical application, which includes individual development plans (IDP) and a 24/7 digital learning platform where employees could learn anywhere and anytime. GC also ensures safety and a good workplace environment and conducts employee surveys on various topics to understand their issues and true needs and make improvements accordingly. GC's employee remuneration policy is also consistent with its operating results, while a Talent and Succession Management System has been introduced to prepare employees in anticipation business growth according to both domestic and overseas business needs.

In addition, it is GC's policy to employ and promote occupations for people with disabilities, in line with the Empowerment of Persons With Disabilities Act, B.E. 2550. The details of GC's employee treatment with respect of human rights appear in key information on the "Employees".

- **Society, Communities, and the Environment**  
GC's business operation is guided by responsibility towards communities, society, and the environment, which it achieves through activities and projects as well as continuous stakeholder engagement. Its strategy is to attain balance through sustainable development principles, focusing on social paradigm shifts, social enterprises (SE), creating shared value (CSV), and corporate social responsibility projects that strive to create shared value in three areas, namely the environment, economy, and society. GC also conducts site visits to consult and talk to local medical professionals and communities, especially in the vicinity of its plants, to better understand their issues and true needs and improve its operation.

GC has also adopted the world-class sustainability reporting framework known as Integrated Sustainability Report (ISR), which covers economic, social and environmental topics, as well as other issues that may significantly affect GC. Further details can be found in the Integrated Sustainability Report 2020.



#### 4. DISCLOSURE OF INFORMATION AND TRANSPARENCY

GC is committed to transparent and timely disclosure of accurate and complete information, financial and non-financial, to stakeholders in conformity to applicable laws, rules, and regulations via the SET Link and the Company's website at [www.pttggroup.com](http://www.pttggroup.com). Its Investors Relations (IR) and Corporate Secretary (CS) are in charge of information disclosure and addressing inquiries.

- Disclosure of Material Information in Form 56-1 One Report
  - Financial Information: GC's financial statements are audited by a professional auditor for the accuracy of their material information and conformance to financial auditing standards. Each set of financial statements has been approved by the Audit Committee and the Board of Directors before their disclosure to shareholders and the public. The Board of Directors' statement on the accountability of its financial reports is disclosed alongside the auditor's report in the annual report.
  - Non-financial Information: Non-financial information includes the operating structure of GC Group, risk management, business operations for sustainability, corporate governance, and material information about the Board of Directors, Sub-committees, Executives, and employees.
- Channels for the Disclosure of Essential Information in Thai and English
  - The SET Link;
  - GC's regularly updated website, [www.pttggroup.com](http://www.pttggroup.com), where channels for contacting the Board and other divisions are also fully and clearly displayed;
  - Information and news were disclosed to stakeholders via e-mail, exhibitions, press release and other activities, such as newspapers, television, and social media.
- Investor Relations: The Investor Relations Department serves as the center of communication, where essential information is made known to shareholders, institutional and minor investors, analysts, and relevant regulatory authorities. It also oversees the quality of financial reporting processes and essential information that could affect the price of its securities, such as financial statements, performance results, earnings reports and quarterly and annual Management Discussion and Analysis (MD&A). These are all indicators of the Company's financial standing, performance, and future trends. The Investor Relations Department also manages the disclosure of information via the SET Community Portal to foreign and domestic investors. Furthermore, an Investor Relations Code of Conduct has been established to determine the roles and best practices that enable investor relations officers to treat all shareholders equitably.

In 2020, GC's Executives regularly met with shareholders, financial analysts, investors, and employees through activities adapted for the new normal in order to present GC's performance. These activities included analyst meetings, domestic and international roadshows, and retail-investor events. Below is a summary of these events:

<b>Investor Meetings</b>	
Investor Meetings Abroad	11 times
Investor Meetings through virtual roadshows / conferences	10 times
Meetings with Financial Analysts	4 times
Meetings at the Company	3 times
Teleconferences	34 times
<b>Information Disclosure</b>	
Disclosure via SET Portal and Company Website	52 times
<b>Activities</b>	
Basic Training with Financial Analysts	2 times

Investors or interested persons may contact the Company via the following channels for more information:

- (1) Mail : Investor Relations Department,  
PTT Global Chemical Public  
Company Limited  
555/1 Energy Complex, Building A,  
4<sup>th</sup>-18<sup>th</sup> Floors, Vibhavadi Rangsit Road  
Chatuchak, Bangkok 10900
- (2) Phone : 66 (0) 2265-8400 ext. 8172, 8576,  
8364, 8637, 8513, and 8533
- (3) E-mail : [ir@pttgcgroup.com](mailto:ir@pttgcgroup.com)
- (4) Fax : 66 (0) 2265-8500
- (5) Website : [www.pttgcgroup.com](http://www.pttgcgroup.com)

In addition, the Company offers swift and convenient communication via e-mail. The e-mail address is displayed on the Company website under “Corporate Governance”. Shareholders, investors, and the public may contact the Board of Directors or the Chairman of the Corporate Governance Committee directly. They may also contact the Company Secretary for company information at [cg@pttgcgroup.com](mailto:cg@pttgcgroup.com).

## 5. RESPONSIBILITIES OF THE BOARD OF DIRECTORS

The Board of Directors has established the following policy regarding its composition and the scope of its responsibilities and duties:

### (1) BUSINESS STRATEGIES, POLICIES, AND DIRECTIONS

The Board establishes sustainable development policies, strategies, and goals under the strategic framework of universal sustainable business practices to strike an economic, environmental, and social balance; encourages innovation and the adoption of technology in the Company's operations; reviews at least once a year the corporate vision and sets corporate goals under the current economic condition; approves financial and other Key Performance Indicators (KPIs) and goals and monitors their progress periodically; and supervises the performance of the management team through the Chief Executive Officer to ensure the achievement of the Company's goals and plans.

### (2) CORPORATE GOVERNANCE AND BUSINESS CODE OF CONDUCT

The Board set the policies on Corporate Governance and Business Code of Conduct, and Corporate

Compliance for GC Group. Directors, Executives, and employees must abide by these policies to bring about efficient, standardized, ethical, transparent, and accountable operations. The Board also ensures the rights of all stakeholders in justly receiving the benefits guaranteed to them by their fundamental rights to bolster confidence as well as fostering recognition among the public. The Board also prioritizes anti-corruption efforts. To this end, it tasks the Corporate Governance Committee with ensuring the Company's strict compliance with such policies, as well as all applicable laws, objectives, GC's Articles of Association, and shareholder resolutions, overseeing equitable treatment of all shareholders, and cultivating an understanding of corporate governance among employees to promote compliance.

### (3) INTERNAL CONTROL AND INTERNAL AUDIT

To ensure that GC and its subsidiaries adopt internal control systems of international standards and adequate risk management with appropriate risk appetites and tolerance, the Board of Directors has tasked the Audit Committee and Internal Audit with regular reviews and monitoring of internal audit. They must also ensure that GC provides adequate, credible information, internally and externally. In addition, they must regularly monitor and assess its compliance with applicable laws, rules, and regulations, and foster confidence among Executives, investors, and stakeholders. Further information appears under “Internal Control and Connected Transactions”.

### (4) RISK MANAGEMENT

The Board oversees GC's management system for risks to its strategic objectives. It has assigned the Risk Management Committee to devise risk management policies and frameworks; ensure the efficiency of its risk management; review risks of negative impacts on the Company's objectives; consider substantial risks at project and organizational levels; formulate execution plans, and consistently monitor, assess and make adjustments to such plans to keep the risk level within the risk appetite. Furthermore, the Risk Management Committee is to report results of risk management to the Board regularly and on an ad hoc basis, as disclosed under “Risk Management.”

### (5) CONFLICTS OF INTEREST

The Board of Directors has laid down a policy and guidelines for considering transactions that involve or potentially involve a conflict of interest in the Corporate Governance and Business Code of Conduct Handbook, to which all Directors, Executives, and employees must adhere. They must also carefully

follow the guidelines for connected transactions and refrain from violating the regulations of the Securities and Exchange Commission (SEC) and the Stock Exchange of Thailand (SET). Directors and Executives by SEC's definition must report to the Company their interests and those of their related parties. In addition, a connected transactions manual has been issued, and principles concerning connected transactions has been communicated to relevant units under GC and its subsidiaries. In addition, information on these transactions has been compiled in a database retrievable by relevant departments for reference so as to prevent operational errors.

Furthermore, GC has put in place measures to prevent conflicts of interest. Directors, Executives, and all employees are required to annually report potential conflicts of interest. If a conflict of interest has arisen, the person with vested interests must immediately report GC of such a conflict, using the Conflict of Interest Disclosure Form (for the Directors) or the electronic form via the intranet (for Executives and employees) to their immediate supervisors for acknowledgment and further action.

GC's performance in ensuring corporate governance in four areas are summarized below.

### *1. Prevention of conflicts of interest*

GC prioritizes the interests of the Company and its stakeholders in its business operation as an important policy and has thus established best practices to demonstrate its commitment to transparency and accountability. Under these practices, it is the duty of GC's Directors, Executives, and employees at all levels, including related persons, to avoid involving in a conflict of interest or acting in such a matter that may bring about a conflict of interest. In case such avoidance is impossible, responsible units must supervise the transaction to ensure its transparency and clarity for the best interests of the Company. The details of the Corporate Governance Policy appear under "Overview of Corporate Governance Policy and Practices."

GC's activities for the prevention of conflicts of interests in 2020 are summarized below.

- (1) GC conducted follow-ups and successfully achieved 100% submission of annual conflict of interest disclosure reports by GC Groups' Executives and employees through its system.
- (2) The Internal Audit Unit conducted an audit of GC's procedures related to the disclosure of conflicts of interest and found that they were in compliance with relevant practices.

- (3) To comply with the criteria and methods stipulated by the announcements of the Securities and Exchange Commission (SEC) and the Stock Exchange of Thailand (SET) regarding connected transactions, GC initiated the revision of its connected transaction handbook, in which the names and roles of units responsible for overseeing a connected transaction when one arises were added to ensure alignment with the organizational structure.

### *2. Use of Internal Information*

An Internal Information Use Policy has been established and included in the Corporate Governance and Business Code of Conduct Handbook. It has also been published on the Company's website for shareholders' ready access. Directors, Executives and employees are constantly reminded to comply with the policy, under which they are prohibited from using material internal information not yet publicly disclosed for personal gain or the benefit of others, including for trading GC's securities. The details of the policy appear under "Policy and Practices for Compliance with Corporate Governance Principles."

In 2020, it was not found that any Directors or Executives traded securities during GC's blackout period. Changes in the shareholding of the Board of Directors, their spouses, and their minors appear under Key Information on the "Board of Directors" and "Executives".

### *3. Anti-Corruption*

GC has established and included its anti-corruption policy and practices in the Corporate Governance and Business Code of Conduct Handbook. Placing importance on anti-corruption efforts, GC strives to comply with laws against fraud and corruption as well as bribery of both Thai and foreign public officials or officers of private organizations. The Company also seeks to cultivate anti-corruption consciousness in its employees at all levels to combat corruption of all forms.

The Board of Directors has developed anti-corruption policy and practices and included them in the Corporate Governance Handbook and Business Code of Conduct for employees at all levels to adhere to. Any violation of law is considered wrong and against GC's policies and will result in disciplinary action and punishment according to applicable laws.

GC demonstrated its intent to join the Thai Private Sector Collective Action Against Corruption (CAC) on July 18, 2012 and was first certified as a member on July 4, 2014. It was recertified for the third time on June 30, 2020.

In 2020, GC carried out activities that demonstrated its commitment to anti-corruption efforts. A summary is provided below.

- (1) GC conducted an annual review of all 71 items on its anti-corruption self-assessment form with supporting evidence, which was later assessed by the Internal Auditor Unit. The results were reported to the Audit Committee so as to ensure that GC had comprehensive, suitable, and adequate anti-corruption measures in place and that it operated its business under CAC-prescribed CG principles.
- (2) GC communicated and provided mandatory training on anti-corruption practices for employees at all levels through the “Hook e-Learning” system – a self-learning system where employees could learn about GC’s policies and practices with regard to governance, compliance, and business code of conduct and complete an understanding assessment. All Executives and employees completed this self-learning lesson. GC also organized a training program entitled “Ethical Challenges in New Normal” for the top management and Executives who had been appointed Directors/Executives in GC’s subsidiaries to foster awareness of their roles in driving corporate governance policies and treating all stakeholders across the business value chain with ethics. The “Ethical Leadership: Turning Ethics into Action (2020)” program was also held for the Vice Presidents of companies in GC Group, so that they became aware of their obligation to ethical leadership and able to make decisions responsibly and ethically.
- (3) GC has issued a No-Gift Policy (no gift, no treat nor any other benefits) under its Anti-Corruption Policy. Strictly enforced across GC Group, the policy mandates that any person employed by GC Group must not request or receive any gift, meal, or form of favor from a business partner of GC Group so as to prevent any influence on his or her decision or selective treatment or conflicts of interest. This policy has been communicated to all external parties involved in its business operation for their acknowledgment so as to maintain the transparency, integrity, and lawfulness of GC’s business conduct.
- (4) GC has entered the NACC Integrity Awards every year so as to show the intention of firmly adhering to ethical and transparent business practices while supporting the government’s efforts to promote awareness, social values, morality, and ethics to prevent and suppress corruption, propel Thailand’s transparency towards an internationally accepted standard, and promote a corporate governance culture.
- (5) GC participated in The Thai Chamber of Commerce Business Ethics Standard Test Award 2020 (TCC Best Awards 2020) and won a TCC Best Award. The concept of the 18<sup>th</sup> TCC Best Awards was “Overcoming a Crisis with Ethics.”
- (6) GC places importance on fostering business ethics awareness in Thai youths for Thai society. To this end, GC has supported the Anti-Corruption Foundation to continue its projects aimed at cultivating an ethical mindset in young people across Thailand and encouraging anti-corruption efforts to create a society of transparency and zero tolerance against corruption.
- (7) GC welcomed CAC’s working team, which discussed and exchange opinions with the Company on anti-corruption efforts. The working team also invited GC to become a Change Agent and to encourage its stakeholders to join the CAC, held on November 3, 2020 at its head office at the Energy Complex Building A in Bangkok.
- (8) GC participated in several other activities to demonstrate its commitment and efforts in the fight against corruption, including the International Anti-Corruption Day (Thailand), organized by the Royal Thai Government in collaboration with the Office of the National Anti-Corruption Commission (NACC), the Office of the Public Sector Anti-Corruption Commission (PACC), the Anti-Corruption Organization of Thailand, and Thailand’s anti-corruption network, held on December 9, 2020. GC also participated in the National Anti-Corruption Day (Thailand) 2020, organized by the Anti-Corruption Organization of Thailand, on September 15, 2020.

(9) GC has provided channels for reporting violations of GC's policies or corruption and put in place whistleblower protection.

(10) To keep track of its implementation of the Anti-corruption Policy, GC reported its anti-corruption performance to the Corporate Governance Committee and the Audit Committee for acknowledgment and provided a summary to shareholders in the annual report.

#### 4. Whistleblowing

GC recognizes the important roles of all stakeholders in its Corporate Governance. Whenever they witness any violation of the Business Code of Conduct, any form of fraud and corruption, or any other case, they may submit a report, notification, or complaint directly to either the Chairman of the Corporate Governance Committee, the head of Internal Audit, or the Company Secretary, or via the GC-provided complaint channels, or any other channels that they trust.

Chairman of the Corporate Governance Committee/ Head of Internal Audit/ Company Secretary	: PTT Global Chemical Public Company Limited 555/1 Energy Complex, Building A, 18 <sup>th</sup> Floor Vibhavadi Rangsit Road, Chatuchak Bangkok 10900
E-mail	: whistleblower@pttgcgroup.com
Website	: www.pttgcgroup.com

#### Whistleblowing Policy Procedure

GC has formulated and announced the following Whistleblower Policy Procedure:

- (1) Complaint Screening: The responsible department screens the essential information under the established policy. Even anonymous complaints will also be considered if they provide clear reasons and sufficient evidence. If the whistleblower has provided his or her name or contact information, he or she will be notified by the Company.
- (2) Investigation: For valid complaints, CEO will appoint an investigation committee under the Company's work regulations to conduct an investigation and fact-finding as well as to determine disciplinary action according to GC's regulations so as to ensure fairness to all parties.

- (3) Reporting: Once the complaint has been dealt with, the whistleblower will be notified of the outcome if the contact information is provided. The outcome will also be reported to the Corporate Governance Committee and the Audit Committee.

#### Whistleblower and Witness Protection

Whistleblowers or witnesses who collaborate in the investigation will be provided with the following protection under the Whistleblower Policy:

- (1) A whistleblower, a stakeholder, or any person who cooperates in good faith in the investigation will be protected from retaliation (non-retaliation).
- (2) Information of the whistleblower or of any persons involved will be classified as strictly confidential according to GC's regulations on information classification and security of confidential documents.
- (3) The Company will provide suitable mitigation measures to the whistleblower or the affected party.

#### Complaint Statistics

In 2020, the Company received a total of 132 complaints, categorized as follows:

Category	Number of Complaints	Progress
Voice of Customer	121	113 cases have been resolved.
Voice from Community	5	5 cases have been resolved.
Safety, Occupational Health, and Environment	-	-
Business Code of Conduct	6	5 cases have been resolved (Investigation found no violation of GC's business code of conduct or policies) and one case has been investigated.

# Audit Committee Report

## Dear Shareholders

PTT Global Chemical Public Company Limited, GC, has appointed the Audit Committee and has delegated the Internal Audit Function to perform the review and support to the business activities of GC to assure of good corporate governance, adequate risk management and internal control, and compliance with business-related laws and regulations.

The Audit Committee qualifications and components are consistent with the announcement of the Capital Market Supervisory Board B.E. 2551 (2008), comprising 3 independent directors with in-depth expertise and rich experience in accounting or finance, law, etc. The Audit Committee independently and objectively executes its duties as prescribed by the Audit Committee Charter and as assigned by the Board of Directors, in alignment with the announcement of the Stock Exchange of Thailand and the Securities and Exchange Commission.

In 2020, the Audit Committee further focused on improving the quality of internal audit work in building confidence and creating added value in the long term for the organization while taking into account the needs of stakeholders in all aspects, namely

- Supporting various departments in carrying out their duties and responsibilities in accordance with the latest revision of the Three Lines Model of the Institute of Internal Auditors, that holistically covers and links various work facets and numerous departments in support of the organization's operations to achieve its objectives.
- Conceptually approve internal audit governance principles, guidelines, internal audit activities in all GC group companies and encourage all group companies to accommodate an internal audit to ensure that the governance of internal audit works are in line with the principles of good corporate governance and the international standards for the professional practice of internal auditing.
- Promote the sharing of knowledge and best practices among all GC group companies in the areas of good corporate governance, legal compliance, as well as risk management and internal control, in order for them to be applied to the context of each business for proper alignment.
- Support and promote business data management in linking data between functions, work systems, and various applications within the organization so they can be analyzed for decision-making and utilized in planning and problem-solving at both management and operational levels.
- Focus on Lean Process improvements to enhance competitiveness in the drastically changed scenario brought about by the COVID-19 pandemic and the global economic downturn.

In 2020, there were 7 Audit Committee meetings, from which major activities of the Audit Committee can be listed as follows:

### 1. Review of financial reports

The Audit Committee reviewed material information of the quarterly financial statements and the financial statements for the year 2020, and connected transactions as well as transactions that may pose conflicts of interest among business groups. They also reviewed material issues, special items, impact of changes in financial reporting standards as well as supplemental clarification from the financial auditors and the management. This is to ensure that the preparation of financial statements and the disclosure of Notes to Financial Statements, adequately and fully meet the financial reporting standards. The Audit Committee thus approved the financial report that the financial auditors have reviewed and gave unqualified opinions.



Additionally, the Audit Committee held an exclusive meeting with the financial auditor without management in attendance, to independently discuss the obtaining of audit information, material information in the preparation of the financial statements, disclosure of information that meets the financial reporting standards, key audit matters from the audit of the financial statements, and independence in performance. The financial auditor did not present any material observations nor find any suspicious circumstances.

## **2. Review of risk management**

The Audit Committee acknowledged the organization's risk management report as presented to the Board of Directors meeting, together with the audit reports of the internal audit function and the financial auditors, to ensure that the Company efficiently manages key risk factors that may affect the Company's operations, has a designated responsible party, and has adequate measures to support and cover all short and long term risk factors.

## **3. Review of internal control**

The Audit Committee performed an internal control review based on the internal audit report and the report on the implementation of the recommendations from the Audit Committee conducted by the management, and also reviewed the internal control in accounting and finance based on the audit and review from the financial auditor. There were no significant issues nor deficiencies that may affect the financial statements. The Audit Committee also reviewed the adequacy and appropriateness of the internal control system utilizing the Securities and Exchange Commission (SEC) assessment form as completed by the management. There were no significant issues or deficiencies that may affect the Company's main objectives. It is thus reasonable to assurance that the Company has an adequate and appropriate internal control system for business operations that is able to support the operations of the Company, and achieve the specified objectives and goals.

## **4. Review of corporate governance**

The review of corporate governance was performed through scrutiny of reports summarizing the complaints from the Company and subsidiaries, and reports on the implementation of anti-corruption and anti-corruption measures. Emphasis was also placed on compliance with the Corporate Governance and Business Code of Conduct Handbook as well as communication to companies in the group to ensure full information disclosure in accordance with the regulations of the Stock Exchange of Thailand. This will ensure that business operations are carried out in accordance with the corporate governance principles to sustainably create value for the business. In addition, the Audit Committee has also promoted and encouraged group companies to join Thai Private Sector Collective Action Against Corruption (CAC) project as well.

## **5. Governance of internal audit**

The Audit Committee has overseen that the internal audit activities are independent and efficient, and has further encouraged the increased utilization of information technology systems in internal auditing, such as creating Common Data Models leading up to big data analysis, creating a Visualized Reports and Analytics Dashboard, etc. The Audit Committee also approved the strategy and goals of the internal audit function as well as the annual audit plan, internal audit reports, and the provision of suggestions and follow up on improvements of significant issues on a regular basis. The Audit Committee also reviewed the internal audit quality assessment according to International Standards for the Professional Practice of Internal Auditing, the internal audit charter, personnel development plan, encouraging auditors to obtain professional certification, assessed the adequacy and appropriateness of resources and budget for the development of systems and quality improvement of internal audit works.

## **6. Review of compliance with applicable laws**

The Audit Committee has reviewed the Company's business operations for compliance with the regulations on securities and exchange requirements of the Stock Exchange of Thailand, laws and regulations in industrial works, environment, and other laws related to the Company's business operations, through the internal audit reports of the internal audit function. They also mandated the follow up of new laws that will become effective in the future and may affect the Company in both domestic operations and overseas investment locations.

## 7. Appointment of financial auditors

The Audit Committee has selected and proposed the appointment of the financial auditors based on the qualifications, namely knowledge, experience in business auditing, audit approach, performance, and independence of the financial auditor in accordance with the professional ethics in auditing as required by the Federation of Accounting Professions and according to the regulations of the Securities and Exchange Commission, and appropriate audit fees. The Audit Committee will propose the appointment of the financial auditor to the Board of Directors for consideration which shall be presented in the general meeting of shareholders for approval.

In 2020, the shareholders approved the appointment of Deloitte Touche Tohmatsu Audit Company Limited as the Company's auditor for the year 2020.

## 8. Consideration of connected transactions or conflict of interest comply with legal requirements and stipulation of the Stock Exchange of Thailand

The Audit Committee has reviewed and remarked on connected transactions or transactions that have or may have conflicts of interest with the Company, based on the principles of justifiability, transparency, adequate disclosure of information, and in the best interest of the Company. In 2020, there were no significant connected transactions or transactions that deviate from the contract conditions that required disclosure of information according to the regulations of the Stock Exchange of Thailand. The review of the internal audit report on connected transactions reported that no significant issues were found to affect the achievement of the organizational objectives, which coincided with the report from the financial auditor of no irregularities in the connected transactions transpired.

## 9. Other matters

The Audit Committee performed the annual review of the Audit Committee Charter for alignment with the principles and guidelines specified by the Securities and Exchange Commission and reported its performance to the Board of Directors periodically on four occasions. Furthermore, the Audit Committee completed individual and collective performance assessments and reported the results to the Board of Directors for acknowledgment, as a further enhancement of the performance of the Audit Committee.

The Audit Committee has thoroughly fulfilled their duties and responsibilities as stated in the Audit Committee Charter and as prescribed to them by the Board of Directors whilst adhering to the principles of righteousness, thoroughness, independence, all the while being mindful of equitable treatment to all stakeholders.

The Audit Committee is thus of the opinion that the Company has a accurate and reliable accounting and financial reporting system, adequate information disclosure, compliance with generally accepted accounting standards and financial reporting standards, compliance with laws and regulations related to the Company's business operations, with corporate governance, adequate risk management and appropriate internal controls for business operations, an efficient internal audit system, diligent monitoring of the various changes in preparation for the confronting the current and future risks.

Lastly, the performance of duties by the Audit Committee throughout 2020 received excellent collaboration from the Board of Directors, executives, financial auditors and all concerned parties. The Audit Committee would like to take this opportunity to express thanks and appreciation to all.

On behalf of the Audit Committee

(Signed) Apisak Tantivorawong

**(Mr. Apisak Tantivorawong)**

Chairman of the Audit Committee

# Report of the Corporate Governance Committee

## Dear Shareholders,

In 2020, the Corporate Governance Committee comprised its Chairman, namely Professor Somkit Lertpaithoon and its Committee members, namely Major General Nithi Chungcharoen, Mrs. Watanan Petersik, and Mr. Chansin Treenuchagron. The Committee performed its duties as stipulated by the Corporate Governance Committee Charter and executed tasks as assigned by the Board of Directors. The Committee held a total of six meetings. A summary of its activities is given below.

### 1. Ensuring Compliance with Requirements, Laws, Rules, Regulations, and Best Practices

- Overseeing the operation of GC and its subsidiaries to ensure corporate compliance. In 2020, the Corporate Governance Committee supported the establishment of Compliance Universe, a compilation of relevant laws that 1<sup>st</sup> line operators could use to inform compliance risk assessment and compliance operations in companies in GC Group, both domestic and abroad.
- Overseeing and monitoring GC's corporate governance to ensure compliance with international standards and criteria set forth by domestic regulatory agencies.
  - Overseeing the preparation of the 2020 Annual General Meeting of Shareholders (AGM) during the COVID-19 pandemic to ensure compliance with announcements, orders, and measures issued by the government, applicable laws, corporate governance principles, and best practices. To this end, GC received a perfect assessment score of 100 on the 2020 AGM checklist, with a rating of Excellence, for the ninth consecutive year from the Thai Investors Association (TIA).
  - Reviewing and providing guidelines for establishing criteria to ensure that minority shareholders were given more than three months in advance of the 2021 AGM to propose agenda items and nominate director candidates, from September 16 to December 31, 2020
  - Reviewing the suitability of the adoption of the Corporate Governance Code for Listed Companies 2017 (CG Code), providing comments and suggestions to the Board of Directors to improve and develop their performance of duties in accordance with the business situation and context, and disclosing relevant information in Form 56-1 One Report.
  - Reviewing and providing comments and suggestions on the disclosure of information related to corporate governance in Form 56-1 One Report to ensure the complete disclosure of all material information and compliance with the criteria of regulatory agencies. As a result, GC continued to receive the "Excellent" rating on the Corporate Governance Report of the Thai Listed Companies (CGR) of Thai Institute of Directors Association (IOD) for the ninth consecutive year.
- Overseeing complaint handling through the whistleblower channel to ensure compliance with the Whistleblower Policy, monitoring complaints filed through other channels with respect to shareholders and investors, the environment, communities, and customers through quarterly reports, and encouraging other companies in GC Group to establish their own whistleblower system.
- Supporting the adoption of an integrated management system for governance, risk management and internal control, and compliance (GRC) to boost efficiency and enhance corporate governance with GC Group as well as the use of digitization in creating databases to improve the agility, promptness, and efficiency of GC's risk assessment, monitoring, and fraud risk warning.

## 2. Promoting Compliance with Corporate Governance Policy and Business Code of Conduct

- Overseeing and monitoring activities related to GC's corporate governance to ensure compliance with the Corporate Governance Policy and the Corporate Governance and Business Code of Conduct Handbook as well as GC's business strategies and directors through regular reporting.
- Overseeing, monitoring, and promoting the development and improvement of GC's corporate governance practices under GC Way of Conduct to standardize practices across GC Group and improve suitability and alignment with the business context of each company.
- Reviewing policies and practices in the Corporate Governance and Business Code of Conduct Handbook to ensure currency, compliance with domestic and international standards, and suitability for application across the organization.
- Commenting and advising on anti-corruption measures and corruption risk assessment in GC's procedures, and approving GC's anti-corruption plan for 2021, which is clearly defined, suitable for GC's business context, and in line with relevant regulations, such as the criteria issued by Thai Private Sector Collective Action Against Corruption (CAC) and the Transparent Organization Project under the Office of the National Anti-Corruption Commission. The Committee also continuously monitored and encouraged GC's subsidiaries to join the CAC.
- Reviewing and approving GC's corporate governance plan for 2021 to serve as guidelines for executing, monitoring, and assessing GC Group's corporate governance performance in a tangible manner.

## 3. Supervising Sustainable Development Operations

- Overseeing Company's sustainable development to maintain its leadership as one of the Top 10 World Members in Chemical Sector by the Dow Jones Sustainability Indices (DJSI). In 2020, GC worked towards two main goals, which were to driving climate strategies to reduce greenhouse gas emissions and to introduce the concept of circular economy to society, under three core strategies, 1) Smart Operating, which refers to the creation of a business that uses technology to improve production in order to reduce consumption of natural resources; 2) Responsible Caring, which refers to the development of environmentally friendly products; and 3) Loop Connecting, which refers to increased collaboration with stakeholders to create a closed loop of integrated businesses.
- Overseeing GC's business operations to ensure responsibility towards stakeholders in accordance with good corporate governance principles; advising on and monitoring the results of relevant activities continuously through reports; and assessing the confidence of different stakeholder groups towards GC's business conduct in accordance with good corporate governance principles so as to establish plans to respond to the expectations of each stakeholder group.
- Promoting and valuing stewardship of communities and society of Rayong, GC's operating base, in collaboration with all sectors through CSR projects (Rayong Programs) designed to solve problems and meet the expectations of Rayong communities. The Committee also advised and monitored the CSR projects through regular reporting.
- Reviewing the Company's sustainable development to ensure alignment with international standards, such as the Dow Jones Sustainability Indices (DJSI) and the UN Global Compact and Carbon Disclosure Project (CDP) as well as reviewing every component of the Company's sustainability framework to ensure that it aligned with the global circumstances and rapidly evolving challenges. The Committee also approved sustainability plans and key performance indicators for 2021 to maintain its position as the world's leader in sustainability.

#### 4. Reporting the Performance, Assessment, and Development of Directors

- Pre-setting the dates for its meetings for the entire year, arranging at least one meeting per quarter. Ad-hoc meetings were allowed to be held if necessary. In these meetings, the Committee considered and acknowledged the Company's performance and report as well as provided any recommendations to the Board of Directors and the Management.
- Reviewing the Corporate Governance Committee Charter to ensure its contents align with their roles and duties and any applicable rules and regulations.
- Reviewing the Corporate Governance Committee's assessment forms (group assessment and self-assessment) to ensure alignment with the current situation and compliance with international standards and criteria of domestic regulatory agencies.
- Reporting the performance as well as group and self-assessment results of the Committee for 2020 to the Board of Directors for their acknowledgment.
- Continuously ensuring Director development under good corporate governance principles by encouraging them to attend training courses of Thai Institute of Directors Association. In 2020, GC invited an external lecturer to share knowledge with Directors on digital trends and impacts of the 2019 coronavirus disease on the economy and the petrochemical industry.

The Corporate Governance Committee places great importance on ensuring GC's strict compliance with the Corporate Governance Policy and Business Code of Conduct. The Committee is also committed to continually enhancing corporate governance practices on par with international standards. GC believes that good corporate governance is a vital factor in promoting operational efficiency and business sustainability, which will enable the Company to earn the confidence of its stakeholders as well as international recognition.

On behalf of the Corporate Governance Committee

(Signed) Somkit Lertpaithoon

**(Professor Somkit Lertpaithoon)**

Chairman of the Corporate Governance Committee

# Report of the Nomination and Remuneration Committee

## Dear Shareholders,

The Nomination and Remuneration Committee comprised its chairman, namely Mr. Don Wasantapruek (Independent Director) and its committee members, namely Major General Nithi Chungcharoen (Independent Director) and Mr. Wittawat Svasti-xuto.

In 2020, the Nomination and Remuneration Committee performed its duties as stipulated by its charter and executed tasks as assigned by the Board of Directors. The Committee held a total of nine meetings. A summary of its activities is given below.

### 1. Nomination and Selection of Directors and Sub-committee Members

- Nominating candidates to replace Directors who retired by rotation at the 2020 Annual General Meeting of Shareholders (AGM). Shareholders were given a period of time more than three months prior to the AGM to nominate candidates for vacant positions. Since there were no submissions of candidates from shareholders, the Committee resolved to nominate Mr. Grisada Boonrach to replace a retiring director. The Committee also resolved to nominate Mr. Prapas Kong-ied, Mrs. Premrutai Vinaiphath, Mr. Wittawat Svasti-xuto, and Mrs. Arawadee Photisarao to be re-elected as directors for another term. The candidates possessed all the required qualifications and did not have any prohibited characteristics according to relevant laws and criteria. They also possessed knowledge, competency, and experience that aligned with the Company's business strategies. The 2020 AGM thus resolved to approve the appointment of these candidates as Directors as instructed by the Committee.
- Nominating qualified candidates to replace Directors who resigned during 2020, namely Mr. Apisak Tantivorawong, Mr. Sarawut Kaewtathip, and Mr. Chansin Treenuchagron. The list of candidates was presented to the Board of Directors for consideration and approval. The Committee took into consideration the qualifications required by applicable laws and criteria, GC's Articles of Association, good corporate governance principles, and the Board Skills Matrix. The Committee also considered the Director's Pool of the State Enterprise Policy Office and the Thai Institute of Directors Association. The Board of Directors approved the appointment of the candidates as Directors as instructed by the Committee.
- Nominating Directors to fill vacant positions on the Sub-committees and presenting a list of candidates to the Board of Directors for consideration and approval. The Committee took into consideration the composition of each Sub-committees and the qualifications of each Directors in accordance with regulations of the Securities and Exchange Commission (SEC) and the Stock Exchange of Thailand (SET), GC's Articles of Association, and the charters of Sub-committees. The Board Skills Matrix and specialized experience that could benefit their role on the Sub-committees were also taken into account.

### 2. Remuneration of Directors, Sub-committee Members, and Chief Executive Officer

- Considering and proposing the 2020 remuneration for the Board of Directors and for the Directors of each Sub-committee as well as the Board's bonus for 2019 to the Board of Directors and the Annual General Meeting of Shareholders (AGM) for consideration and approval. The proposed remuneration was determined in accordance with good corporate governance principles, based on GC's operating results compared to the current economic situation of petroleum and petrochemical businesses, the principles and policies approved by shareholders, the duties and responsibilities of the Board of Directors, the results of Board performance assessment, and the remunerations of Directors working at other listed companies of a similar size in the same industry. The 2020 AGM resolved to approve the Board's remuneration and bonus as instructed by the Committee.



- Determining the remuneration of the Chief Executive Officer (CEO) for 2020, based on his performance and assigned responsibilities, before proposing the remuneration to the Board of Directors for consideration and approval.

### 3. Performance Assessment of the Board of Directors and Chief Executive Officer

- Reviewing the Board of Directors' assessment form (group assessment, self-assessment, and cross-assessment) for 2020 to ensure its completeness, currency, and compliance with the Corporate Governance Code for Listed Companies 2017 (CG Code), the Dow Jones Sustainability Indices (DJSI), and the ASEAN Corporate Governance Scorecard. Apart from the Company's operating results, these assessment results were used to determine the remuneration of the Board of Directors.
- Reporting the performance of Board of Directors for 2020 and establishing the Board's key performance indicators (Board KPIs) for 2021, ensuring their alignment with CG Code and DJSI standards with regard to the roles and responsibility of the board. The Board KPIs were then presented to the Board of Directors for approval.
- Establishing the key performance indicators (KPIs) for the CEO and President and assessing the performance of the CEO to determine suitable and fair remuneration, which were then presented to the Board of Directors for approval. The Committee also acknowledged and provided recommendations on the performance of the President in 2020.

### 4. Performance Development

- Pre-setting the dates for its meetings for 2020, arranging at least four meetings per year. Ad-hoc meetings were allowed to be held if necessary. In these meetings, the Committee considered and acknowledged the Company's performance and reports as well as provided any recommendations to the Board of Directors and the Management.
- Revising the Committee's assessment form (group assessment and self-assessment) for 2020 to ensure its completeness, alignment with the current situation, and compliance with CG Code, the Dow Jones Sustainability Indices (DJSI), and the Nomination and Remuneration Committee Charter.
- Conducting the Committee's assessment for 2020 and reporting its assessment results to the Board of Directors before disclosing them in Form 56-1 One Report.
- Reviewing and revising the Nomination and Remuneration Committee Charter to ensure alignment with CG Code and the Committee's current duties.
- Reviewing and revising the Board Skills Matrix to ensure alignment with CG Code, DJSI standards, and best practices for Nomination Committee of Thai Institute of Directors Association (IOD), which would benefit the nomination and selection of new Directors and Sub-committee members and led to the skill development of current Directors to achieve a complete range of skills that aligned with GC's business directions.

The Nomination and Remuneration Committee strives to discharge its duties with responsibility, prudence, and ethics in accordance with good corporate governance principles, prioritizing the best interest of shareholders and stakeholders, to ensure that GC's nomination and remuneration processes are transparent and fair, which will drive the organization towards its goal of sustainable growth.

On behalf of the Nomination and Remuneration Committee

(Signed) Don Wasantapruerk

**(Mr. Don Wasantapruerk)**

Chairman of the Nomination and Remuneration Committee

# Report of the Risk Management Committee

## Dear Shareholders,

In 2020, GC faced with the enormous and unexpected crisis (Black Swan) from the coronavirus disease 2019 (COVID-19) pandemic that sent ripples across the world and caused immense impact on global economies as well as human life and health together with the impacts of the price volatility brought on by the U.S.-China trade war that has begun since 2019. Additionally, GC still faced negative factors as a result of a crude oil price war and water shortages in Thailand. The Risk Management Committee performed its duties to the best of its ability to provide comments and suggestions on GC's measures for managing of risks and crises in different areas as well as foster collaboration with all sectors to mitigate impact on the employees' securities, GC's performance and business continuity. Consequently, GC successfully rebounded from its lowest point in 2020, representing to the standard of GC's risk management and its effectiveness in promptly coping with fluctuations of the global economy, uncertainties, and new risks.

GC emphasizes on the continuous development and enhancement of its risk management in anticipation of unexpected situations that may be more complex and severe than in the past. To this end, the Company fosters a risk management culture across the organization as the foundation for its risk and crisis management so as to enable GC to achieve its objectives and targets, prevent and minimize potential loss, and create business opportunities from risks efficiently. In 2020, GC obtained the first rank in risk and crisis management from the Dow Jones Sustainability Indices (DJSI) for the second consecutive year which represents GC's internationally recognized risk management standard.

The Risk Management Committee performed its duties to the utmost of its ability within its scope of roles and responsibilities and in conformity with its charter. In 2020, The Committee held a total of six meetings to provide comments, suggestions and acknowledge agenda items under its responsibility as detailed below.

- Reviewing the risk appetite, with emphasis on maintaining liquidity during a crisis and keeping its credit rating above the investment grade, and approving the revision of risk management policy, objective, and risk management framework to achieve flexibility and compatibility with the business circumstances during a transition towards a new normal and to serve as guidelines for the Management in controlling GC's enterprise risk management mechanisms.
- Closely monitoring situations of the petroleum and petrochemical markets and exchange rates, providing recommendations for managing price, spread, and exchange rate risks on a monthly basis, and approving the adjustment of the hedging framework to be more flexible and applicable with the rapidly changing circumstances so as to minimize impact on GC's performance.
- Providing opinions and recommendations on the priority of future investments in response to GC's strategic direction and industrial trends to enhance competitiveness and create long-term business growth and sustainability; ensuring risk management in important investments with respect to financing, technology selection, resource management, and other sustainability concerns while maintaining the credit rating; and providing opinions and recommendations on the risk assessment and measures for large-scale investment projects, such as the Olefins Modification Project, as supplementary information for the Board's decision making.

- Monitoring and providing opinions and suggestions on GC's corporate risk and crisis management in 2020 to ensure its adequacy, suitability, and timeliness covering emerging risks, such as counterparty risks and risks of business interruption; monitoring risk trends through leading and lagging key risk indicators, which consisted of internal and external factors; advising the Management on the revision of risk management measures to ensure alignment with the current circumstances; and regularly reporting the performance of the Risk Management Committee to the Board of Directors.
- Considering and commenting on GC's 2021 corporate risk factors and management measures in line with economic conditions, industrial trends, and other uncertainties to ensure that GC would be able to accomplish its targets according to its strategies as well as business goals in the face of more complicated risk factors.
- Reviewing the information on risk management and risk factors disclosed in the Annual Registration Statements to assure shareholders that GC had analyzed risks that might affect its business targets and provided systematic management measures in place.

In 2021, the overall petroleum and petrochemical industry is still characterized by a high level of uncertainty as seen in 2020, especially with respect to the coronavirus disease 2019 (COVID-19) pandemic, which has adverse impact on the recovery of the global economy. Other external factors that may contribute to the overall uncertainty of the economy and the industry include crude oil prices, trade war, conflicts in the Middle East, domestic and foreign political uncertainties, a shift in the government's direction and consumer behaviors towards eco-consciousness and green chemicals, and the new normal. As they have direct and indirect impact on the demand of GC's products as well as their prices and the spread between product and feedstock prices, the Risk Management Committee will closely monitor these factors and provide opinions as well as adequate and suitable suggestions.

In summary, the Risk Management Committee has adequately and properly fulfilled its roles as prescribed in the charter. A corporate risk management system has been developed and improved to align with standards and the rapidly changing nature of the industry. Besides, the Committee has continuously monitored and commented on all aspects of the Company's risk management, embracing all key short-term and long-term risks as well as paying attention to emerging risks potentially affecting GC's future businesses to ensure that GC has suitable and effective risk management with a healthy risk appetite that will enable it to achieve its goals and continuously create sustainable value to its business in the long run.

On behalf of the Risk Management Committee

(Signed) Grisada Boonrach

**(Mr. Grisada Boonrach)**

Chairman of the Risk Management Committee

# Internal Control and Connected Transactions

## Internal Control

PTT Global Chemical Public Company Limited (GC) runs an Internal Control System in accordance with the international standards of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to achieve internal control objectives relating to operations, reporting, and compliance with laws and regulations.

During the Board of Directors Meeting 2/2021 held on February 15, 2021, the GC's system was evaluated based on an internal control assessment report prepared by executives following Securities and Exchange Commission (SEC) guidelines. Together with the results of the Audit Committee's internal control review, the Board of Directors viewed that GC's internal control was adequate and effective for its businesses. No significant problems or material shortcomings were detected that could interfere with achieving internal control objectives. GC's Internal Control System functioned properly in an adequate manner. The operation was efficiently managed with sufficient numbers of qualified and competent employees and processes. In addition, GC implemented a monitoring system to ensure the achievement of business objectives with effective and efficient operations, reliable reporting, and compliance with applicable laws and regulations as well as safeguarding GC's assets against misuse or unauthorized use by the Board of Directors, executives, and employees.

GC improved on internal control procedures and processes in 2020 to increase robustness and speed in identifying risks including enhanced internal control in response to the New Normal. GC's Internal Control System in accordance with COSO can be summarized in five categories:

## 1. Control Environment

The Board of Directors and executives strive to promote a corporate culture that focuses on integrity and ethics. They also supervise operations to ensure compliance with the organizational vision and mission and to ensure that GC's control environment is appropriate for implementing the Internal Control System, as detailed below.

- The Board of Directors and executives establish the Corporate Governance Policy, Business Code of Conduct, Corporate Compliance Policy and Anti-Corruption Guidance setting out preferred practices for the Board of Directors, executives, and employees. Executives and employees are required to study, test understanding, and sign in e-CG Handbook in Hook e-Learning system to pledge their compliance in the policy, principles, and business ethics. They are also required to annually declare any potential Conflict of Interest in the online system. The Company also emphasizes on communicating these policies and consequential penalties to executives and employees.
- GC regularly builds awareness in Ethic and Business code of conduct to executives and employees through training courses, orientation, e-mail communication and other activities. For example, Hook Talk is conducted by top management to communicate ethics and business code of conduct to employees and promote a good corporate governance culture. In addition, GC also announces corporate governance and code of conduct principles on the Company's website to emphasize the policy to suppliers/vendors, joint-venture partners, and company representatives to operate their businesses with integrity.

- The Board of directors is independent from executives and responsible for supervising overall operations as well as expressing views on the direction and strategy to formulate business and operating plans. Furthermore, the Board of directors regularly monitors GC's performance and its sub-committees to ensure that GC achieves objectives and goals.
- GC's corporate structure is grouped into business units and functions that best support efficient business operations and good governance. This structure embedded with checks and balances principal, in which duties and responsibilities were delegated appropriately. Furthermore, all employees acknowledge their roles, authorities, responsibilities, and accountabilities.
- GC specifies the qualifications for all positions, which form the basis of recruitment and personnel development aligned with corporate culture. Succession plans are in place for key management positions to ensure business continuity. Furthermore, performance-management and fair-reward systems are in place to incentive and motivate employees. In 2020, GC implemented 360-degree evaluation — a tool to evaluate employee's behavioral attributes against GC SPIRIT 4 Core Behaviors by supervisors, subordinates, peers, and outside stakeholders. This evaluation was also part of the annual performance evaluation. In addition, the Company encouraged all employees to enhance their capability and knowledge through the e-Learning platform "UP" that contain various contents to shape the learning to be more interesting, convenient, comfortable, accessible, and to make GC being the learning organization.
- GC establishes the Internal Control Policy that all employees are accountable for their internal control activities and consistently communicates with executives and employees through training courses, public communication, and other activities to ensure accurate understanding of everyone's roles and responsibilities in relation to the internal control system.
- GC applies Integrated Governance, Risk Management, & Internal Control and Compliance principle (Integrated GRC) in the Company's business process to ensure efficient and effective operations. The Company appoints GRC personnel to major business unit to strengthen and ensure GRC integration. The workshops for executives are held to enhance GRC awareness and understanding. Integrated GRC principle is also deployed to subsidiaries through GRC committees to govern, review, monitor, and assess GRC performance. Additionally, GRC Health Check questionnaire is annually conducted to assess the understanding and compliance of employees. The results showed that most executives and employees are aware and understand GRC. This result will finally be used to analyze and plan GRC execution to be more efficient. Furthermore, the Company regularly communicates GRC from top management to employees (Tone at the top). In 2020, GRC was communicated in the CEO Town Hall activity to enhance and increase awareness and understanding of GRC to all executives and employees.

## 2. Risk Assessment

The Board of Directors and Executives emphasize on risk management to ensure the achievement in both short-term and long-term goals. The Risk Management Committee is appointed by the Board of Directors, along with the Enterprise Risk Management Committee and taskforces are appointed by the CEO to manage business risk and specific issues. This structure is appropriated, allowing the Company to have flexibility and ensure efficiency and effectiveness.

GC has implemented the Integrated Enterprise Risk Management systematically and continuously throughout the organization according to the international risk management framework and guidelines. The risk assessment is conducted in various aspects, including current business-related risk factors, future business-related risk factors, emerging risk factors, and the potential for fraud and corruption, thus the mitigation plans are developed accordingly.

Risk factors and mitigation plans are reviewed and monitored regularly to assure short-term and long-term GC's goals. GC develops Key Risk Indicators (KRI) to monitor changes in risk factors and efficiently manage risk in timely manner. The Company annually tests the robustness of Business Continuity plan (BCP) by simulating events that could disrupt business operations and affect business continuity to assure that GC is well prepared to cope with such crises effectively. The BCP plan is continuously improved from the lesson learn before the incident occurs.

Subsequence of the situation in 2020, there were several risk factors that could impact our business continuity. GC proactively set up specific taskforces to ensure the least impact to our business operation. The "Water Management Taskforce" and the "Supply Chain Management Taskforce for year 2020 Drought" were appointed to closely monitor the situations. "The Corona virus infection Prevention and Control committee" was appointed to establish guidelines and preventive measures in respond to the rapidly evolving situation such as Work from Home policy. Details on risk management are described under "Risk Management and Risk Factors".

### 3. Control Activities

GC have defined control activities to mitigate risks of not achieving the Company's goals and ensure that the residual risks are at acceptable level. These include:

- The designed control activities align with internal control principles, such as segregation of duties, check and balance system, conflict-of-interest declaration. To ensure that the business is operated in a transparent, fair, and auditable manner for utmost benefit to the organization.
- Rules, regulations, policies, and procedures are in place with clear boundaries of authorization to limit the power and authority of the CEO, the President, executives, and other employees. Furthermore, operations are reviewed regularly to ensure compliance with rules, regulations, policies, and procedures.
- GC implements the automated control in crucial processes: For example, SAP GRC Access Control is in place to ensure that SAP operating system access rights accord with good practices in segregation of duties. GC also uses the Continuous Control Monitoring System (CCMS) for crucial processes to help detect and follow up exceptional transactions and to notify designated employees to correct problematic transactions in a timely manner. In 2020, GC developed the automated control in corresponding to the situations as follow:
  - Reviewed and designed the access rights on SAP system in accordance with the job function, segregation of duties and current operations. The automated access rights were developed based on the user's job function on SAP system.
  - Established the detecting rules in the Continuous Control Monitoring System (CCMS) to find anomalies of transactions in the sales and payment received processes.
  - Extended the use of Robotics Process Automation (RPA) from procurement to accounting and financial processes in order to enhance the performance and efficiency and the mean time reduce time, step of work, and human errors.
  - Developed the Salesforce CRM system in sales and service processes to quickly and accurately respond customer needs, increase transparency and reduce human errors through automated control in each process. The system could record and verify the transaction with an automatic notification and systematic reporting.
- GC has in place an Information Technology Security Policy in accordance with the ISO/IEC27001 – Information Security Management standards and international standards framework and guidance. The policy is reviewed and updated regularly. All executives and employees are required to sign and pledge to comply with the policy to ensure information security and continually business operation of GC group. Furthermore, Cyberthreat



prevention training and communication are regularly provided to all employees for up-lifting information security standards according to current situations.

- Based on the situation of the COVID-19 outbreak in 2020, GC set up important preventive controls to prevent risks that may occur, such as Work from Home policy, Covid-19 report system to screen risks of employees and their family or close people through the Application, temperature measurement before entering the work area. The information management system have been provided to support efficient Work from Home, for example, expanding the Direct Access & Always on VPN system, implementing new application for ease of use and providing online Service Desk to provide working environment as at the Company. Moreover, GC enhanced the security of information technology systems by establishing “Bring Your Own Device Policy” to support the personal devices usage in order to prevent the leakage of corporate information, increase the convenience and flexibility in working for employees and access information anywhere and anytime.
- GC governs and manages its subsidiaries to ensure that their directions, policy and procedure align with GC. Subsidiaries’ performance is monitored regularly and continuously. GC developed the guideline called “ GC Way of Conduct”, which is regularly improved and continually communicated to subsidiaries in the GC group. The training programs are arranged to executives of GC Group to raise understanding and awareness. The assessment is conducted every year to evaluate the implementation for further improvement and enforcement. The progress of this program is regularly reported to top management for acknowledgment.

## 4. Information and Communication

GC values the quality of information and communication that supports the effectiveness of its Internal Control System, as detailed below.

- GC establishes information classification along with instructions for filing important and controlled documents, including information from both internal and external sources. This process ensures security, accuracy, and completeness of information for the future use.
  - GC implements SAP ECC 6.0 to process key business transactions, reducing duplication of small legacy systems, and enhancing the efficiency of management reporting.
  - In 2020, GC developed the “Idea MANI” (Multi Access for New Initiatives) program that centralized the information of operational development and investment projects. The system reduces duplication of information, improves efficiency of data management by integrating all existing systems from project review to the approval process. Then, those are delivered to the next phase.
  - In 2020, GC prepared to comply with the Personal Data Protection Act 2019 in conjunction with a professional consulting firm to support the enforcement in the year 2021. The training and workshops were organized to communicate and provide basic knowledge and understanding to all parties. The assessment was conducted to determine operational plans and procedures for handling and protection of personal information in accordance with the Personal Data Protection Law.
  - GC has formed team of analysts call “GC EYE” with their expertise in business, the economy, and market outlook, GC EYE provides updated analysis on external factors and collaborates closely with various department to report potential business impact to executives. GC EYE’s news and analysis are communicated to executives and relevant parties through mobile

- application platform. In 2020, GC organized the “GC EYE Day” forum to exchange views on the global economy related to petrochemical industry and market in the New Normal to all executives and employees so that they comprehend the current business situations and trends.
- GC communicates relevant information to the Board of Directors, Executives, employees, and stakeholders to support efficient operations and internal controls.
    - The Board of Directors meeting’s documents are delivered to directors before Board meetings to allow sufficient time for them to study and review in order to make decisions. When necessary, the Board of Directors may request additional information from specific departments or employees. Furthermore, to easily and swiftly dispatch information and meeting documents, GC has developed and utilized the application called “Digital Join”, in which all directors have access to the electronic documents, protected by data encryption, on their devices.
    - GC creates multi-channels communication within organization. These include the organization’s intranet, email, feed important information through online orientation and Town Hall activities for facilitating communication from top management to employee. In 2020, town hall was held through Microsoft Team Live Streaming to comply with the New Normal and enable all employee’s accessibility in this activity. Moreover, the Company launched CEO podcast following new lifestyle to communicate and share various issues and topics in relation to our business.
  - GC communicates with external stakeholders, through the Company’s website, Facebook, and Twitter. In addition, designated departments are responsible for disclosing important information to all stakeholders regularly. A Customer Solutions Center (CSC) was established as a one-stop service center to provide information relating to GC products and services to customers and interested parties. In 2020, GC expanded communication channels with external stakeholders through “LINE GC Official” to communicate important information.
  - GC allows shareholders to propose agenda for the Annual General Meeting of Shareholders (AGM) and names of qualified candidates to be nominated for election as company directors to enhance good corporate governance regarding the rights and equitable treatment of shareholders. GC arranged the Annual General Meeting of Shareholders for the year 2020 following the preventive measures according to the Center for COVID-19 Situation Administration (CCSA) and the Bangkok Metropolitan Administration. The meeting was also organized in Web-live Broadcast via the Company’s website for shareholders who give proxies and do not attend the meeting. In addition, GC modified the Analyst meeting to announce the Company’s performance via Microsoft Teams and Facebook Live. The new application and technology allow the Company to adapt and well respond to the New Normal.
  - GC establishes an open communication channel for whistleblowers. This allows employees and external individuals to be confident that any complaints will be handled with transparency, straightforwardness, confidentiality, and in a timely manner.

## 5. Monitoring Activities

GC continually monitors and evaluates the adequacy of its internal controls. Development and improvement plans are also in place to ensure efficient and effective internal controls as shown below.

- GC evaluates the adequacy of corporate internal controls system annually for both organization and process level, in which the process owners conduct Control Self-Assessment (CSA). The adequacy and appropriateness of assessment results are verified by the Internal Control System Division and GRC personnel who also provide recommendations for correcting any internal control deficiencies. Reporting and monitoring procedures are also in place to report deficiencies to executives and track remediation progress to ensure that problems are addressed in a timely manner. In 2020, the Internal Control Self-Assessment assessment was transformed to the online system “CSA Connect system”, which integrated database and systematically stores assessed data. Users are able to use the data for further analysis to develop and improve the performance of internal control to be more efficient and effective.
- Internal Audit, an independent unit reporting directly to the Audit Committee, examines and evaluates the effectiveness and operation of internal control activities according to the audit plan approved by the Audit Committee and provides suggestions and supports. This audit plan is aligned with GC’s strategy and its associated risks. Deficiencies and recommendations are communicated by executives to those responsible. The audit reports and findings are presented to the Audit Committee regularly. Internal controls for financial reporting are reviewed by external auditors who report to the Audit Committee quarterly and yearly.

- GC continually follow up within GC group for compliance monitoring and reporting through compliance checklist to ensure that all activities comply to policy, rules, laws and regulation.
- GC was certified as a member of the Thai Private Sector Collective Action Against Corruption (CAC) for the first time on July 4, 2014. The Company sets up the anti-corruption working group to annually conduct the anti-Corruption self-assessment. Every 3 years, this assessment is reviewed by the Audit Committee and signed by the Chairman of the Audit Committee and the CEO in order to re-certify membership status. In 2020, the Company was re-certified the 3<sup>rd</sup> time to renew membership status on June 30, 2020. It was confirmed that the Company has a policy, practice guideline and measures to prevent corruption as well as operates in the principles of good corporate governance.

**GC HAS ESTABLISHED  
AN INTERNAL CONTROL SYSTEM  
IN COMPLIANCE WITH THE COSO  
FRAMEWORK TO ASSURE EVERYONE  
AT GC THAT ITS OPERATIONS  
ARE EFFECTIVE AND EFFICIENT  
AND WILL ENABLE THE COMPANY  
TO ACHIEVE ITS CORPORATE OBJECTIVES.**

## CONNECTED TRANSACTION

### CONNECTED TRANSACTION BETWEEN RELATED COMPANIES

For the 2020 accounting period, GC conducted significant business transactions with its subsidiaries and related companies with common shareholders and/or Directors. Connected transactions with other entities which may result in conflicts of interest are based on market or contractual prices (the prices agreed in previous contracts) - if there are no reference market prices. Details of the relationships with these companies are as follows:

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
1. PTT Public Company Limited (PTT)	<ul style="list-style-type: none"> <li>• Major shareholder holding 45.41% of the shares in GC</li> <li>• Common Directors:               <ol style="list-style-type: none"> <li>1. Mr. Don Wasantapruek</li> </ol> </li> <li>• Directors who are PTT Executives:               <ol style="list-style-type: none"> <li>1. Mr. Wittawat Svasti-xuto</li> <li>2. Mrs. Arawadee Photisaro</li> <li>3. Mr. Disathat Panyarachun</li> <li>4. Mr. Kongkrapan Intarajang</li> </ol> </li> <li>• Common Management:               <ol style="list-style-type: none"> <li>1. Mr. Kongkrapan Intarajang</li> </ol> </li> <li>• Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	124,542	29,047	17,738
		Purchases of goods or receiving of services	310,191	237,553	176,071
		Other income	76	26	519
		Interest expense	-	-	16
		Other expense	115	193	74
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	3,576	2,265	2,056
		Other accounts receivable – related parties	49	38	168
		Trade accounts payable – related parties	23,678	17,400	12,427
Other accounts payable – related parties	43	90	57		
2. Global Power Synergy Public Company Limited (GPSC)	<ul style="list-style-type: none"> <li>• Associate company (GC holds 22.73% of the shares)</li> <li>• Major shareholder (PTT) holds 31.72% of the shares</li> <li>• Common Director:               <ol style="list-style-type: none"> <li>1. Mr. Wittawat Svasti-xuto</li> </ol> </li> <li>• Executive who is Director of GPSC:               <ol style="list-style-type: none"> <li>1. Mr. Kongkrapan Intarajang</li> <li>2. Mr. Boonchai Chunhawiksit</li> </ol> </li> <li>• Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	37	69	99
		Purchases of goods or receiving of services	8,966	9,405	9,025
		Interest income	-	163	4
		Other income	9	7	103
		Interest expense	-	-	1
		Other expense	-	2	2
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	10	25	13
		Other accounts receivable – related parties	159	173	105
Trade accounts payable – related parties	1,771	1,024	1,082		
Other accounts payable – related parties	13	6	8		
Payables to contractors – related parties	19	21	3		

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
3. PTT Digital Solutions Company Limited (PTT DIGITAL)	<ul style="list-style-type: none"> <li>Associate company (GC holds 40% of the shares)</li> <li>Major shareholder (PTT) holds 20% of the shares</li> <li>Executive who is Director of PTT DIGITAL:               <ol style="list-style-type: none"> <li>Mr. Pirun Krimwongrut</li> <li>Mrs. Chatsuda Kanjanarat</li> </ol> </li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Purchases of goods or receiving of services	1	5	4
		Other income	52	55	46
		Other expense	455	451	470
		<b>Statements of Financial Position Balances</b>			
		Other accounts receivable – related parties	26	29	13
		Other accounts payable – related parties	84	104	144
Payables to contractors – related parties	62	79	66		
4. PTT Energy Solutions Company Limited (PTTES)	<ul style="list-style-type: none"> <li>Associate company (GC holds 20% of the shares)</li> <li>Major shareholder (PTT) holds 40% of the shares</li> <li>Common Director:               <ol style="list-style-type: none"> <li>Mr. Wittawat Svasti-xuto</li> </ol> </li> <li>Executive who is Director of PTTES:               <ol style="list-style-type: none"> <li>Mrs. Jeeranee Pimthanothai</li> </ol> </li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	3	7	6
		Purchases of goods or receiving of services	122	103	93
		Other expense	8	2	8
		<b>Statements of Financial Position Balances</b>			
		Other accounts receivable – related parties	27	1	1
		Other accounts payable – related parties	52	1	4
5. TOP Solvent Company Limited (TS)	<ul style="list-style-type: none"> <li>Subsidiary of TOP</li> <li>Sales/Purchase transaction of products</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	184	130	176
		Purchases of goods or receiving of services	274	206	105
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	10	6	15
		Trade accounts payable – related parties	21	10	8
Other accounts payable – related parties	3	3	5		

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
6. Dhipaya Insurance Public Company Limited (TIP)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 13.33% of the shares</li> <li>Common Director: 1. Mr. Prapas Kong-ied</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Purchases of goods or receiving of services	618	653	732
		Other income	1	39	444
		Other expense	64	22	48
		<b>Statements of Financial Position Balances</b>			
		Other accounts receivable – related parties	503	477	1,064
		Trade accounts payable – related parties	7	1	2
		Other accounts payable – related parties	16	3	10
Payables to contractors – related parties	-	-	2		
7. Thai Paraxylene Company Limited (TPX)	<ul style="list-style-type: none"> <li>Subsidiary of TOP</li> <li>Sales/Purchase transaction of products</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	55	-
		<b>Statements of Financial Position Balances</b>			
		Trade accounts payable – related parties	201	-	-
8. Thai Oil Public Company Limited (TOP)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 45.03% of the shares</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	992	1,557	2,286
		Other income	6	4	-
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	8	100	147
		Other accounts receivable – related parties	39	-	-
Other accounts payable – related parties	-	4	-		
9. Business Services Alliance Company Limited (BSA)	<ul style="list-style-type: none"> <li>GC holds 25% of the preference shares</li> <li>Major shareholder (PTT) holds 100% of the shares</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	1	-
		Purchases of goods or receiving of services	160	142	122
		Other income	-	4	-
		Other expense	108	126	125
		<b>Statements of Financial Position Balances</b>			
		Other accounts receivable – related parties	-	4	1
		Trade accounts payable – related parties	57	93	40
		Other accounts payable – related parties	60	63	46
		Payables to contractors – related parties	3	3	1



Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
10. PTT Oil and Retail Business Public Company Limited (PTTOR)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 100% of the shares</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	69,948	123,025	99,346
		Purchases of goods or receiving of services	52	108	88
		Other income	143	12	69
		Other expense	-	2	3
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	8,108	8,705	4,521
		Other accounts receivable – related parties	86	77	86
		Trade accounts payable – related parties	-	6	8
		Other accounts payable – related parties	3	105	20
Payables to contractors – related parties	21	-	-		
11. PTTEP Siam Limited (PTTEPS)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Sales/Purchase transaction of products and services.</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	1	2	6
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	-	-	2		
12. PTTEP International Limited (PTTEPI)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	-	1
13. PTT Exploration and Production Public Company Limited (PTTEP)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 63.79% of the shares</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	12	13	8
		Other expense	2	8	4
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	5	1	2
Other accounts payable – related parties	2	-	-		

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
14. PTT Tank Terminal Company Limited (PTT TANK)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 100% of the shares</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	46	47	48
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	8	6	5
		Other accounts payable – related parties	-	1	-
15. PTT International Trading Pte. Ltd. (PTTT)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 100% of the shares</li> <li>Sales/Purchase transaction of products</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	24,330	9,889	9,962
		Purchases of goods or receiving of services	1,252	1,317	33
		Other income	21	2	5
		Other expense	7	13	-
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	1,724	2,374	1,217
		Other accounts receivable – related parties	209	93	-
Trade accounts payable – related parties	251	221	-		
Other accounts payable – related parties	39	29	174		
16. PTT LNG Company Limited (PTTLNG)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 100% of the shares</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	9	4	6
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	1	3	5		
17. PTTEP Services Limited (PTTEP Services)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Other expense	1	1	1
18. Labix Company Limited (LABIX)	<ul style="list-style-type: none"> <li>Subsidiary of TOP</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	9	10	2
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	1	-	-		

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
19. Sak Chaisidhi Co., Ltd. (SAKC)	<ul style="list-style-type: none"> <li>Subsidiary of TOP</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	2,320	2,124	1,309
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	181	206	131
20. Sport Services Alliance Company Limited (SSS)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) indirectly holds shares</li> <li>Executive who is Director of SSS: 1. Mr. Pirun Krimwongrut</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Other expense	37	37	11
21. UBE Chemicals (Asia) Public Co., Ltd. (UCHA)	<ul style="list-style-type: none"> <li>Associate of IRPC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	20	22	22
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	5	2	2
22. Energy Complex Company Limited (ENCO)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 50% of the shares</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	47	46	48
		Other income	-	-	2
		Interest expense	-	-	3
		Other expense	205	213	146
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	13	9	8
		Other accounts receivable – related parties	47	1	1
23. IRPC Polyol Company Limited (IRPCP)	<ul style="list-style-type: none"> <li>Joint venture of IRPC</li> <li>Sales/Purchase transaction of products</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	23	13	57
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	4	5	30
		Other accounts receivable – related parties	-	-	29

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
24. IRPC Public Company Limited (IRPC)	<ul style="list-style-type: none"> <li>Major shareholder (PTT) holds 45.05% of the shares</li> <li>Common Director: 1. Mr. Chansin Treenuchagron</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	26,560	19,892	12,056
		Purchases of goods or receiving of services	20,253	14,150	6,168
		Other income	11	1	26
		Other expense	5	9	-
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	2,022	1,816	1,008
		Other accounts receivable – related parties	35	3	25
Trade accounts payable – related parties	1,583	1,224	618		
Other accounts payable – related parties	1	3	-		
25. PTTEP International Limited (Yangon Branch) (PTTEPYAN)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	2	-	-
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	1	-	-		
26. PTT International Trading DMCC (PTTT DMCC)	<ul style="list-style-type: none"> <li>Subsidiary of PTTT</li> <li>Sales/Purchase transaction of products</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	1,417	-	-
27. TOP Solvent (Vietnam) LLC. (TSV)	<ul style="list-style-type: none"> <li>Subsidiary of TOP</li> <li>Sales/Purchase transaction of products</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	142	54	165
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	1	1	17		
28. Sarn Palung Social Enterprise Company Limited (SPSE)	<ul style="list-style-type: none"> <li>Other related company (GC holds 15% of the shares)</li> <li>Major shareholder (PTT) holds 20% of the shares</li> <li>Executive who is Director of SPSE: 1. Mr. Chaya Chandavasu</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Other expense	-	3	2
		<b>Statements of Financial Position Balances</b>			
Other accounts payable – related parties	-	-	1		

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
29. Glow Energy Public Company Limited (GEN)	<ul style="list-style-type: none"> <li>Subsidiary of GPSC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	261	315
		Purchases of goods or receiving of services	-	2,851	3,388
		Other income	-	-	5
		Other expense	-	3	3
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	-	26	33
		Other accounts receivable – related parties	-	2	2
		Trade accounts payable – related parties	-	323	299
Other accounts payable – related parties	-	1	1		
30. Glow SPP 2 Company Limited (GSPP2)	<ul style="list-style-type: none"> <li>Subsidiary of GPSC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	9	11
		Purchases of goods or receiving of services	-	-	80
		Other expense	-	-	2
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	-	2	2
Trade accounts payable – related parties	-	-	7		
31. Glow SPP 3 Company Limited (GSPP3)	<ul style="list-style-type: none"> <li>Subsidiary of GPSC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	6	8
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	-	2	2		
32. Glow SPP 11 Company Limited (GSPP11)	<ul style="list-style-type: none"> <li>Subsidiary of GPSC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	3	4
		<b>Statements of Financial Position Balances</b>			
Trade accounts receivable – related parties	-	1	1		
33. Glow IPP Company Limited (GIPP)	<ul style="list-style-type: none"> <li>Subsidiary of GPSC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	2	3

Company	Relationship As at 31 <sup>st</sup> December 2020	Connected Transaction	2018	2019	2020
(million baht)					
34. GHECO-One Company Limited (GHECO1)	<ul style="list-style-type: none"> <li>Subsidiary of GPSC</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	7	10
		<b>Statements of Financial Position Balances</b>			
		Trade accounts receivable – related parties	-	2	2
35. PTTEP South Asia Limited (PTTEPSA)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	1	-
36. AI and Robotics Ventures Company Limited (ARV)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Services transaction</li> </ul>	<b>Statements of Income Transactions</b>			
		Other expense	-	-	10
37. PTTEP SP Limited (PTTEPSP)	<ul style="list-style-type: none"> <li>Subsidiary of PTTEP</li> <li>Sales/Purchase transaction of products and services</li> </ul>	<b>Statements of Income Transactions</b>			
		Sales of goods or rendering of services	-	-	1

## MEASURE AND PROCEDURE FOR APPROVAL OF CONNECTED TRANSACTION

The Company's Articles of Association stated that a Director can acquire or dispose of GC assets or perform any business transaction involving GC either by himself or herself or on behalf of others only with the approval from the Audit Committee and the Board of Director. However, any Director who personally gains from any acquisition or disposal of GC asset or any transaction of GC is not allowed to vote on that matter.

After receiving approval from the Audit Committee and the Board of Directors, GC can perform any business transactions or acquire or dispose of major assets in line with the announcement of the Stock Exchange of Thailand (SET) and the Securities and Exchange Commission, Thailand (SEC). This also applies to GC's subsidiaries in the SET announcement concerning connected transaction of listed companies as well as the buying and selling of registered company assets.

## NECESSITY AND JUSTIFICATION OF CONNECTED TRANSACTION

The sales of products by GC to connected companies have been carried out mainly so that they may process its products into their own products for sale at prices corresponding to long-term off-take agreements or spot prices. Prices must prove mutually beneficial and based on market prices without any undue transfer of interests or extraordinary items to both parties. When providing services to connected companies, transactions must cover transportation or storage costs of products. The charges for services are both market-based and benefit-based without any undue transfer of interests or extraordinary items.

For the product and feedstock supply and/or services as well as the volume of products, feedstock or services given by connected companies must meet the needs and business operation of GC. Prices of products trading or services are as agreed by GC and connected companies without any undue transfer of interests or extraordinary items. In addition, GC



is required to purchase feedstock from connected companies because the capacity and quality of such feedstock meet its needs. GC also saves on transportation expenses since the feedstock can be transferred safely by GC's pipeline systems from their plants in Map Ta Phut Industrial Estate, Rayong.

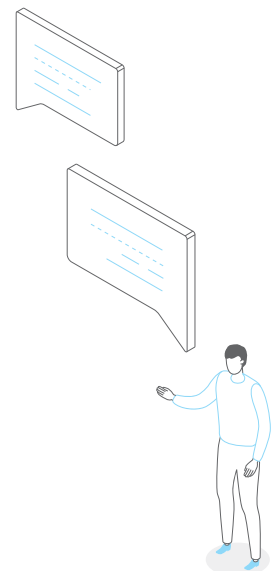
## OPINION OF INDEPENDENT DIRECTORS

The Independent Directors agreed with the Board of Directors.

## POLICY AND TREND ON FUTURE CONNECTED TRANSACTION

Future connected transactions between GC and connected companies will be conducted as part of the normal course of business with no special favors and no transfer of benefits. For the pricing policy between GC and connected companies, the price of products or feedstock purchased will be set in agreement and or linked to market prices. In addition, service charges paid to connected companies will also be at arm's length. The price of product sold or purchased between GC and connected companies will, as a rule, be linked to market prices.

Disclosure of the Company's connected transaction must be in compliance with the rules and regulations of the Securities and Exchange Commission, Thailand (SEC) and the Stock Exchange of Thailand (SET). The audit standards for connected parties will be as specified by the Federation of Accounting Professions under The Royal Patronage of His Majesty the King.



# Reskill Upskill

GC adjusts its work model to keep pace with the changing world by introducing technology to support the knowledge enrichment and self-development of its employees in preparation **for the ever-evolving challenges of the business world.**



Employees can learn

**anytime,  
anywhere,  
and on any device**

via the UP Learning Management Platform – an online learning model that replaces traditional ones



Over  
**130**

**E-learning programs**  
on leadership  
and soft skills



Over  
**60**

**E-learning programs**  
for internal use



An average  
of **8**

**New E-learning training programs**  
per month

**FINANCIAL REPORTS**  
**AND FINANCIAL**  
**STATEMENTS**

# Report of the Board of Directors’ Accountability to Financial Report

The consolidated financial statements of PTT Global Chemical Public Company Limited and its subsidiaries were prepared in accordance with relevant laws and regulations of the Securities Exchange Commission as well as financial reporting standards prescribed by the Federation of Accounting Professions, accounting laws, and generally accepted accounting practices in Thailand.

The Company’s Board of Directors is accountable for the financial report of PTT Global Chemical Public Company Limited and its subsidiaries, prepared to provide reasonable assurance that the financial report fairly presents the financial position, financial performance, and cash flows. The accounting data is sufficiently and accurately recorded to preserve the Company’s assets and prevent fraud and irregularity. The financial report has been prepared according to appropriate accounting policy and consistent practices, and in compliance with the Thai Financial Reporting Standards. Material information has been sufficiently disclosed in notes to financial statements, and the auditor expressed an opinion on the financial statements of PTT Global Chemical Public Company Limited and its subsidiaries in the auditor’s report.

(Signed) Mr. Piyasvasti Amranand

**(Mr. Piyasvasti Amranand)**  
Chairman

(Signed) Mr. Kongkrapan Intarajang

**(Mr. Kongkrapan Intarajang)**  
Chief Executive Officer

# Report of the Independent Certified Public Accountants

## **To the Shareholders and Board of Directors**

### **PTT Global Chemical Public Company Limited**

#### **Opinion**

We have audited the consolidated financial statements of PTT Global Chemical Public Company Limited and its subsidiaries (the “Group”) and the separate financial statements of PTT Global Chemical Public Company Limited (the “Company”) which comprise the consolidated and separate statements of financial position as at December 31, 2020, and the related consolidated and separate statements of profit or loss, comprehensive income, changes in shareholders’ equity and cash flows for the year then ended, and notes to the consolidated and separate financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated and separate financial statements present fairly, in all material respects, the financial position of PTT Global Chemical Public Company Limited and its subsidiaries and of PTT Global Chemical Public Company Limited as at December 31, 2020, and financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards (“TFRSs”).

#### **Basis for Opinion**

We conducted our audit in accordance with Thai Standards on Auditing (“TSAs”). Our responsibilities under those standards are further described in the Auditor’s Responsibilities for the Audit of the Consolidated and Separate Financial Statements section of our report. We are independent of the Group in accordance with the Federation of Accounting Professions’ Code of Ethics for Professional Accountants together with the ethical requirements that are relevant to the audit of the consolidated and separate financial statements, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

## Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated and separate financial statements of the current period. This matter was addressed in the context of our audit of the consolidated and separate financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on this matter.

Key Audit Matter	Audit Responses
<p><b>The measurement of inventories valuation</b> Inventories of the Group are significant balance to the consolidated and separate financial statements. The raw material and finished goods are commodities that contain intense price volatility. This volatility may lead to valuation of inventories at the end of reporting period as inventories are measured at the lower of cost or net realizable value.</p> <p>The accounting policy of inventories valuation of the Group and the detail of inventories are disclosed in notes to the financial statements no. 3.5 and 8, respectively.</p>	<p><b>Key audit procedures included:</b></p> <ul style="list-style-type: none"><li>• Gaining understanding and performing test of design and implementation as well as operating effectiveness of the relevant controls over inventories valuation measurement process.</li><li>• Assessing the appropriateness of the methodology used to calculate the net realizable value of inventories at the reporting period, considering the reasonableness of the market prices used by reference to expected selling price of commodity, and testing the accuracy of the calculation.</li><li>• If the net realizable value is lower than the cost, considering to propose the adjustment of allowance for diminution in value of inventories in the consolidated and separate financial statements.</li><li>• Assessing the adequate disclosure in relation to the estimation of allowance for diminution in value of inventories in notes to the financial statements.</li></ul>

## Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and our auditor's report thereon.

Our opinion on the consolidated and separate financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated and separate financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.



## **Responsibilities of Management and Those Charged with Governance for the Consolidated and Separate Financial Statements**

Management is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with TFRSs, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, management is responsible for assessing the Group's and the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group and the Company or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's financial reporting process.

## **Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements**

Our objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with TSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with TSAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's and the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group and the Company to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the consolidated and separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.



**Mongkol Somphol**

Certified Public Accountant (Thailand)

Registration No. 8444

DELOITTE TOUCHE TOHMATSU JAIYOS AUDIT CO., LTD.

BANGKOK  
February 15, 2021

# Statements of Financial Position

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

AS AT DECEMBER 31, 2020

Unit : Baht

	Notes	Consolidated financial statements		Separate financial statements	
		2020	2019	2020	2019
<b>ASSETS</b>					
<b>CURRENT ASSETS</b>					
Cash and cash equivalents	5	44,313,023,735	18,840,303,824	31,535,290,773	12,397,417,335
Temporary investments	12	-	6,719,876,693	-	4,045,408,193
Current investments in financial assets	12	16,345,335,498	-	15,945,335,498	-
Trade receivables	6	29,276,983,757	34,156,903,430	22,591,899,926	28,118,814,466
Other receivables	7	3,725,913,018	3,149,134,830	2,013,182,817	2,314,454,135
Short-term loans to related parties	28	-	1,122,984,334	2,401,461,599	1,552,287,222
Current portion of long-term loans to related parties	28	537,230,897	1,558,404,698	537,230,897	1,558,404,698
Inventories	8	33,445,076,435	36,252,319,422	22,588,222,395	26,380,866,034
Receivable from oil fuel fund		352,786,655	151,284,595	352,786,655	151,284,595
Value-added tax receivable		1,017,003,656	1,719,267,430	-	492,422,615
Derivatives	35	126,419,586	27,747,308	102,956,057	13,789,747
Other current assets		771,178,572	796,042,409	438,395,600	526,201,836
<b>Total Current Assets</b>		<b>129,910,951,809</b>	<b>104,494,268,973</b>	<b>98,506,762,217</b>	<b>77,551,350,876</b>
<b>NON-CURRENT ASSETS</b>					
Investments in subsidiaries	9	-	-	76,486,497,045	72,551,269,640
Investments in joint ventures	10	32,537,248,418	32,444,000,414	15,372,927,810	15,372,927,810
Investments in associates	11	31,872,568,662	29,829,463,974	27,545,624,981	26,812,494,981
Other long-term investments	12	-	2,910,779,525	-	2,340,894,476
Non-current investments in financial assets	12	1,088,132,065	-	391,765,312	-
Long-term loans to related parties	28	176,910,584	716,754,888	176,910,584	716,754,888
Investment properties	13	6,059,315,512	6,497,895,823	1,740,783,392	1,740,783,392
Property, plant and equipment	14	269,176,931,994	264,563,608,523	182,435,178,148	181,731,952,350
Right-of-use assets	15	7,039,246,740	-	6,247,321,966	-
Land leasehold rights	16	-	190,505,835	-	184,162,171
Goodwill	17	931,328,672	931,328,672	-	-
Intangible assets	18	8,591,696,182	8,220,730,578	5,832,116,969	5,809,170,180
Deferred tax assets	19	1,193,775,690	1,073,520,214	-	-
Other non-current assets		804,546,537	641,532,387	237,170,701	278,035,974
<b>Total Non-current Assets</b>		<b>359,471,701,056</b>	<b>348,020,120,833</b>	<b>316,466,296,908</b>	<b>307,538,445,862</b>
<b>TOTAL ASSETS</b>		<b>489,382,652,865</b>	<b>452,514,389,806</b>	<b>414,973,059,125</b>	<b>385,089,796,738</b>

Notes to the financial statements form an integral part of these statements

# Statements of Financial Position (Continued)

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

AS AT DECEMBER 31, 2020

Unit : Baht

	Notes	Consolidated financial statements		Separate financial statements	
		2020	2019	2020	2019
<b>LIABILITIES AND SHAREHOLDERS' EQUITY</b>					
<b>CURRENT LIABILITIES</b>					
Short-term borrowings from					
financial institutions	20.1	19,000,000	2,020,952,712	-	-
Trade payables	22	20,114,248,744	25,479,128,189	14,813,013,042	19,920,282,931
Other payables	23	12,505,402,375	13,905,785,462	6,237,433,297	8,302,479,491
Payables to contractors		2,955,798,483	2,717,169,778	2,020,050,501	2,778,691,141
Current portion of long-term borrowings					
from financial institutions	20.2	1,974,396,723	8,108,139,389	-	7,077,794,084
Current portion of long-term borrowings					
from other parties	20.2	44,720,765	40,599,692	-	-
Current portion of debentures	20.3	19,997,512,767	-	19,997,512,767	-
Current portion of lease liabilities	21	1,056,561,073	186,734,336	1,104,511,331	140,987,006
Short-term borrowings from related parties	20.1, 28	-	-	5,607,533,287	3,040,910,019
Income tax payable		218,499,158	125,041,110	-	-
Current provisions		38,040,125	97,106,390	-	-
Derivatives	35	100,644,196	319,631,248	98,520,508	68,847,127
Other current liabilities		16,664,501	32,849,201	-	-
<b>Total Current Liabilities</b>		<b>59,041,488,910</b>	<b>53,033,137,507</b>	<b>49,878,574,733</b>	<b>41,329,991,799</b>
<b>NON-CURRENT LIABILITIES</b>					
Long-term borrowings from					
financial institutions	20.2	60,977,020,390	26,517,395,423	32,831,030,148	2,995,267,683
Long-term borrowings from other parties	20.2	249,277,714	268,922,401	-	-
Long-term borrowing from a related party	20.2, 28	-	-	14,947,739,623	14,991,042,331
Debentures	20.3	65,034,485,827	70,131,423,772	50,166,555,151	55,221,250,537
Lease liabilities	21	5,730,475,260	214,528,410	4,959,309,709	148,195,224
Deferred tax liabilities	19	1,722,849,607	2,465,252,662	905,155,989	1,591,933,250
Provisions for employee benefits	24	6,378,372,984	5,558,472,038	4,549,218,304	4,014,311,572
Other non-current provisions		675,728,127	420,019,035	-	-
Derivatives	35	95,878,510	12,423,815	-	12,423,815
Other non-current liabilities		483,116,039	297,466,567	396,595,553	211,741,142
<b>Total Non-current Liabilities</b>		<b>141,347,204,458</b>	<b>105,885,904,123</b>	<b>108,755,604,477</b>	<b>79,186,165,554</b>
<b>TOTAL LIABILITIES</b>		<b>200,388,693,368</b>	<b>158,919,041,630</b>	<b>158,634,179,210</b>	<b>120,516,157,353</b>

Notes to the financial statements form an integral part of these statements

# Statements of Financial Position (Continued)

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

AS AT DECEMBER 31, 2020

Unit : Baht

Notes	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
<b>LIABILITIES AND SHAREHOLDERS' EQUITY</b>				
(CONTINUED)				
<b>SHAREHOLDERS' EQUITY</b>				
Share capital	25			
Authorized share capital				
4,508,849,117 ordinary shares of Baht 10 each		45,088,491,170	45,088,491,170	45,088,491,170
Issued and paid-up share capital				
4,508,849,117 ordinary shares of Baht 10 each		45,088,491,170	45,088,491,170	45,088,491,170
Treasury stock	27	(1,187,603,325)	(1,187,603,325)	(1,187,603,325)
Premium on ordinary shares	26	36,936,829,684	36,936,829,684	36,936,829,684
Premium on treasury stock	26	1,386,740,109	1,386,740,109	1,386,740,109
Difference arising from business combination under common control	26	1,690,706,891	1,690,706,891	77,453,518
Difference arising from the change in the ownership interest in an investment	11	(3,407,679,334)	(3,407,679,334)	-
Put option over non-controlling interest	2.6	(1,286,083,982)	-	-
Retained earnings				
Appropriated				
Legal reserve	26	4,512,930,269	4,512,930,269	4,512,930,269
Loan repayment reserve		807,802,564	807,802,564	807,802,564
Projects expansion reserve		12,446,994,126	12,446,994,126	12,446,994,126
Treasury stock reserve	26, 27	1,187,603,325	1,187,603,325	1,187,603,325
Unappropriated		183,652,322,579	187,854,749,537	155,067,062,758
Other components of shareholder's equity		(813,946,776)	(1,487,395,383)	14,575,717
Total attributions to owners of the parent		281,015,107,300	285,830,169,633	256,338,879,915
Non-controlling interests		7,978,852,197	7,765,178,543	-
<b>TOTAL SHAREHOLDERS' EQUITY</b>		<b>288,993,959,497</b>	<b>293,595,348,176</b>	<b>256,338,879,915</b>
<b>TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY</b>		<b>489,382,652,865</b>	<b>452,514,389,806</b>	<b>414,973,059,125</b>

Notes to the financial statements form an integral part of these statements

# Statements of Profit or Loss

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Baht

	Notes	Consolidated financial statements		Separate financial statements	
		2020	2019	2020	2019
Revenues from sale of goods and rendering of services		329,291,166,983	412,810,235,767	270,233,104,363	351,547,082,842
Cost of sale of goods and rendering of services		(317,093,362,394)	(390,619,277,638)	(268,328,751,453)	(339,068,290,381)
Gross profit		12,197,804,589	22,190,958,129	1,904,352,910	12,478,792,461
Investment income		362,352,831	1,000,821,422	3,501,096,568	5,195,501,283
Other income		1,920,160,459	1,317,855,026	2,704,704,537	1,916,888,618
Gain on bargain purchases	4	-	31,482,857	-	-
Selling and distribution expenses		(3,687,133,983)	(3,931,395,732)	(1,823,419,161)	(1,962,918,351)
Administrative expenses		(11,194,067,223)	(12,537,256,860)	(7,404,040,088)	(8,741,700,962)
Reversal of expenses from raw materials derogation		-	232,483,965	-	-
Reversal of (expenses from) impairment losses on assets		312,702,016	-	-	(63,052,760)
Net derivative gain		1,168,860,166	1,498,820,135	629,245,829	1,499,404,054
Net gain (loss) on foreign exchange rate		(349,539,489)	1,755,535,325	(274,500,540)	1,523,281,288
Finance costs	31	(3,511,095,162)	(3,119,419,221)	(3,276,306,464)	(2,618,771,176)
Share of profit of investments in joint ventures	10	863,193,963	2,625,714,096	-	-
Share of profit of investments in associates	11	2,459,356,255	1,933,059,453	-	-
Profit (loss) before Income tax benefit (expense)		542,594,422	12,998,658,595	(4,038,866,409)	9,227,424,455
Income tax benefit (expense)	19	109,285,418	(649,361,925)	659,318,891	(74,349,225)
<b>PROFIT (LOSS) FOR THE YEAR</b>		<b>651,879,840</b>	<b>12,349,296,670</b>	<b>(3,379,547,518)</b>	<b>9,153,075,230</b>
<b>PROFIT (LOSS) ATTRIBUTABLE TO</b>					
Owners of the parent		199,606,690	11,682,079,566	(3,379,547,518)	9,153,075,230
Non-controlling interests		452,273,150	667,217,104	-	-
		<b>651,879,840</b>	<b>12,349,296,670</b>	<b>(3,379,547,518)</b>	<b>9,153,075,230</b>
<b>BASIC EARNINGS (LOSS) PER SHARE</b>	33	0.04	2.59	(0.75)	2.03

Notes to the financial statements form an integral part of these statements



# Statements of Comprehensive Income

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Baht

Notes	Consolidated financial statements		Separate financial statements	
	2020	2019	2020	2019
<b>PROFIT (LOSS) FOR THE YEAR</b>	651,879,840	12,349,296,670	(3,379,547,518)	9,153,075,230
<b>OTHER COMPREHENSIVE INCOME (LOSS)</b>				
Items that will be reclassified subsequently to profit or loss				
Exchange differences on translating financial statements	239,453,623	(675,835,696)	-	-
Gain (loss) on remeasurement of investments in financial assets measured at fair value through other comprehensive income	(17,597,358)	33,877,577	(17,597,358)	33,877,577
Gain (loss) on cash flow hedges	293,797,310	(262,701,249)	82,695,848	(482,589,523)
Share of other comprehensive income (loss) of joint ventures	10 54,122,545	(446,306,794)	-	-
Share of other comprehensive income (loss) of associates	11 89,762,492	(383,170,024)	-	-
Items that will not be reclassified subsequently to profit or loss				
Loss on remeasurements of defined benefit plans	(344,793,249)	(54,831,636)	(216,626,068)	-
Loss on remeasurement of investments in financial assets measured at fair value through other comprehensive income	(9,592,392)	-	-	-
Share of other comprehensive income (loss) of joint ventures	10 224,643,094	(85,407,851)	-	-
Share of other comprehensive loss of associates	11 (55,376,370)	(1,911,962)	-	-
<b>OTHER COMPREHENSIVE INCOME (LOSS) FOR THE YEAR, NET OF TAX</b>	474,419,695	(1,876,287,635)	(151,527,578)	(448,711,946)
<b>TOTAL COMPREHENSIVE INCOME (LOSS) FOR THE YEAR</b>	1,126,299,535	10,473,009,035	(3,531,075,096)	8,704,363,284
<b>TOTAL COMPREHENSIVE INCOME (LOSS) ATTRIBUTABLE TO</b>				
Owners of the parent	642,584,328	9,840,397,339	(3,531,075,096)	8,704,363,284
Non-controlling interests	483,715,207	632,611,696	-	-
	1,126,299,535	10,473,009,035	(3,531,075,096)	8,704,363,284

Notes to the financial statements form an integral part of these statements

# Statement Of Changes In Shareholders' Equity

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

Notes	Issued and paid-up share capital	Treasury stock	Premium on ordinary shares	Premium on treasury stock	Difference arising from business combination under common control	Difference arising from the change in the ownership interest in an investment	Put option over non-controlling interest	Legal reserve	Loans repayment reserve	Retained earnings
										Projects expansion reserve
<b>BALANCE AS AT JANUARY 1, 2019</b>	45,088,491,170	-	36,936,829,684	1,386,740,109	1,690,706,891	-	-	4,512,930,269	807,802,564	12,446,994,126
Treasury stock purchased	27	(1,187,603,325)	-	-	-	-	-	-	-	-
Dividends paid	34	-	-	-	-	-	-	-	-	-
Increase investment in a subsidiary		-	-	-	-	-	-	-	-	-
Difference arising from the change in the ownership interest in an investment	11	-	-	-	-	(3,407,679,334)	-	-	-	-
Interests in equity of associate		-	-	-	-	-	-	-	-	-
Profit for the year		-	-	-	-	-	-	-	-	-
Other comprehensive income (loss)		-	-	-	-	-	-	-	-	-
<b>BALANCE AS AT DECEMBER 31, 2019</b>	<b>45,088,491,170</b>	<b>(1,187,603,325)</b>	<b>36,936,829,684</b>	<b>1,386,740,109</b>	<b>1,690,706,891</b>	<b>(3,407,679,334)</b>	<b>-</b>	<b>4,512,930,269</b>	<b>807,802,564</b>	<b>12,446,994,126</b>
<b>BALANCE AS AT JANUARY 1, 2020</b>										
- AS PREVIOUSLY REPORTED	45,088,491,170	(1,187,603,325)	36,936,829,684	1,386,740,109	1,690,706,891	(3,407,679,334)	-	4,512,930,269	807,802,564	12,446,994,126
Effects from first-time adoption of new accounting policies	2.6	-	-	-	-	-	(1,286,083,982)	-	-	-
<b>BALANCE AS AT JANUARY 1, 2020</b>										
- RESTATED	45,088,491,170	(1,187,603,325)	36,936,829,684	1,386,740,109	1,690,706,891	(3,407,679,334)	(1,286,083,982)	4,512,930,269	807,802,564	12,446,994,126
Dividends paid	34	-	-	-	-	-	-	-	-	-
Increase investment in a subsidiary		-	-	-	-	-	-	-	-	-
Profit for the year		-	-	-	-	-	-	-	-	-
Other comprehensive income (loss)		-	-	-	-	-	-	-	-	-
<b>BALANCE AS AT DECEMBER 31, 2020</b>	<b>45,088,491,170</b>	<b>(1,187,603,325)</b>	<b>36,936,829,684</b>	<b>1,386,740,109</b>	<b>1,690,706,891</b>	<b>(3,407,679,334)</b>	<b>(1,286,083,982)</b>	<b>4,512,930,269</b>	<b>807,802,564</b>	<b>12,446,994,126</b>

Notes to the financial statements form an integral part of these statements

## Consolidated financial statements

		Other components of shareholders' equity								
Treasury stock reserve	Unappropriated	Exchange differences on translating financial statements	Gain (loss) on remeasurement of investments in financial assets	Gain (loss) on arising on hedging instruments	Share of other comprehensive income (loss) of joint ventures	Share of other comprehensive income (loss) of associates	Total other components of shareholders' equity	Total attributions to owners of the parent	Non- controlling interests	Total shareholders' equity
			measured at fair value through other comprehensive income	from cash flow hedges	income (loss) of joint ventures	income (loss) of associates	equity	the parent	interests	equity
-	192,959,190,549	(480,236,466)	51,683,707	15,126,679	607,711,607	21,791,680	216,077,207	296,045,762,569	7,436,445,365	303,482,207,934
1,187,603,325	(1,187,603,325)	-	-	-	-	-	-	(1,187,603,325)	-	(1,187,603,325)
-	(15,779,901,765)	-	-	-	-	-	-	(15,779,901,765)	(556,380,393)	(16,336,282,158)
-	-	-	-	-	-	-	-	-	252,501,875	252,501,875
-	-	-	-	-	-	-	-	(3,407,679,334)	-	(3,407,679,334)
-	319,194,149	-	-	-	-	-	-	319,194,149	-	319,194,149
-	11,682,079,566	-	-	-	-	-	-	11,682,079,566	667,217,104	12,349,296,670
-	(138,209,637)	(644,186,753)	33,877,577	(263,686,596)	(446,306,794)	(383,170,024)	(1,703,472,590)	(1,841,682,227)	(34,605,408)	(1,876,287,635)
1,187,603,325	187,854,749,537	(1,124,423,219)	85,561,284	(248,559,917)	161,404,813	(361,378,344)	(1,487,395,383)	285,830,169,633	7,765,178,543	293,595,348,176
1,187,603,325	187,854,749,537	(1,124,423,219)	85,561,284	(248,559,917)	161,404,813	(361,378,344)	(1,487,395,383)	285,830,169,633	7,765,178,543	293,595,348,176
-	501,104,973	-	(71,362,242)	-	(3,255,570)	(111,721,683)	(186,339,495)	(971,318,504)	-	(971,318,504)
1,187,603,325	188,355,854,510	(1,124,423,219)	14,199,042	(248,559,917)	158,149,243	(473,100,027)	(1,673,734,878)	284,858,851,129	7,765,178,543	292,624,029,672
-	(4,486,328,157)	-	-	-	-	-	-	(4,486,328,157)	(537,692,786)	(5,024,020,943)
-	-	-	-	-	-	-	-	-	267,651,233	267,651,233
-	199,606,690	-	-	-	-	-	-	199,606,690	452,273,150	651,879,840
-	(416,810,464)	210,617,614	(27,189,749)	275,037,181	339,258,608	62,064,448	859,788,102	442,977,638	31,442,057	474,419,695
1,187,603,325	183,652,322,579	(913,805,605)	(12,990,707)	26,477,264	497,407,851	(411,035,579)	(813,946,776)	281,015,107,300	7,978,852,197	288,993,959,497

# Statement Of Changes In Shareholders' Equity

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

					Difference	
					arising from	
	Issued and	Treasury stock	Premium	Premium	business	Legal
Notes	paid-up share		on ordinary	on treasury	combination under	reserve
	capital		shares	stock	common control	
<b>BALANCE AS AT JANUARY 1, 2019</b>	45,088,491,170	-	36,936,829,684	1,386,740,109	77,453,518	4,512,930,269
Treasury stock	27	(1,187,603,325)	-	-	-	-
Dividends paid	34	-	-	-	-	-
Profit for the year		-	-	-	-	-
Other comprehensive income (loss)		-	-	-	-	-
<b>BALANCE AS AT DECEMBER 31, 2019</b>	<u>45,088,491,170</u>	<u>(1,187,603,325)</u>	<u>36,936,829,684</u>	<u>1,386,740,109</u>	<u>77,453,518</u>	<u>4,512,930,269</u>
<b>BALANCE AS AT JANUARY 1, 2020</b>						
- AS PREVIOUSLY REPORTED	45,088,491,170	(1,187,603,325)	36,936,829,684	1,386,740,109	77,453,518	4,512,930,269
Effects from first-time adoption of new accounting policies	2.6	-	-	-	-	-
<b>BALANCE AS AT JANUARY 1, 2020</b>						
- RESTATED	45,088,491,170	(1,187,603,325)	36,936,829,684	1,386,740,109	77,453,518	4,512,930,269
Dividends paid	34	-	-	-	-	-
Loss for the year		-	-	-	-	-
Other comprehensive income (loss)		-	-	-	-	-
<b>BALANCE AS AT DECEMBER 31, 2020</b>	<u>45,088,491,170</u>	<u>(1,187,603,325)</u>	<u>36,936,829,684</u>	<u>1,386,740,109</u>	<u>77,453,518</u>	<u>4,512,930,269</u>

Notes to the financial statements form an integral part of these statements

(Continued)

Unit : Baht

Separate financial statements							
Retained earnings				Other components of shareholders' equity			
Loans repayment reserve	Projects expansion reserve	Treasury stock reserve	Unappropriated	Gain (loss) on remeasurement of investments in financial assets measured at fair value through other comprehensive income	Gain (loss) on arising on hedging instruments from cash flow hedges	Total other components of shareholders' equity	Total shareholders' equity
807,802,564	12,446,994,126	-	171,114,157,807	51,683,707	413,698,237	465,381,944	272,836,781,191
-	-	1,187,603,325	(1,187,603,325)	-	-	-	(1,187,603,325)
-	-	-	(15,779,901,765)	-	-	-	(15,779,901,765)
-	-	-	9,153,075,230	-	-	-	9,153,075,230
-	-	-	-	33,877,577	(482,589,523)	(448,711,946)	(448,711,946)
<u>807,802,564</u>	<u>12,446,994,126</u>	<u>1,187,603,325</u>	<u>163,299,727,947</u>	<u>85,561,284</u>	<u>(68,891,286)</u>	<u>16,669,998</u>	<u>264,573,639,385</u>
807,802,564	12,446,994,126	1,187,603,325	163,299,727,947	85,561,284	(68,891,286)	16,669,998	264,573,639,385
-	-	-	(150,163,446)	(67,192,771)	-	(67,192,771)	(217,356,217)
807,802,564	12,446,994,126	1,187,603,325	163,149,564,501	18,368,513	(68,891,286)	(50,522,773)	264,356,283,168
-	-	-	(4,486,328,157)	-	-	-	(4,486,328,157)
-	-	-	(3,379,547,518)	-	-	-	(3,379,547,518)
-	-	-	(216,626,068)	(17,597,358)	82,695,848	65,098,490	(151,527,578)
<u>807,802,564</u>	<u>12,446,994,126</u>	<u>1,187,603,325</u>	<u>155,067,062,758</u>	<u>771,155</u>	<u>13,804,562</u>	<u>14,575,717</u>	<u>256,338,879,915</u>

# Statement of Cash Flows

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

	Unit : Baht			
	Consolidated		Separate	
	financial statements		financial statements	
	2020	2019	2020	2019
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>				
Profit (loss) for the year	651,879,840	12,349,296,670	(3,379,547,518)	9,153,075,230
Adjustments for:				
Income tax (benefit) expense	(109,285,418)	649,361,925	(659,318,891)	74,349,225
Depreciation and amortization	20,291,818,509	19,197,797,105	14,322,549,643	13,366,391,225
Investment income	(394,040,492)	(1,000,821,422)	(3,532,784,229)	(5,195,501,283)
Gain on settlement of borrowings	-	(211,556,237)	-	-
Loss from capital distribution of subsidiaries	-	-	-	69,799
Loss from sale of investment in an associate	-	13,115,757	-	-
Finance costs	3,511,095,162	3,119,419,221	3,276,306,464	2,618,771,176
Unrealised gain on derivatives	(762,191,080)	(54,827,103)	(266,620,570)	(19,990,128)
(Gain) loss on foreign exchange rates	145,131,878	(2,518,930,371)	(102,674,163)	(2,279,982,317)
Loss on remeasurement of investments in financial assets measured at fair value	31,687,661	-	31,687,661	-
Bad debt and doubtful debt expenses	18,605,911	172,882,726	8,870,997	159,994,458
(Reversal of) loss on obsolete inventories	(10,485,624)	(83,122,717)	4,800,289	(50,921,726)
Reversal of loss on inventories devaluation	(275,457,874)	(1,060,886,068)	(236,874,043)	(1,089,977,606)
Reversal of expenses from raw materials derogation	-	(232,483,965)	-	-
Loss from written-off of assets	84,007,489	52,766,502	36,134,970	69,384,731
(Reversal of) impairment losses on assets	(312,702,016)	-	-	63,052,760
(Gain) loss on disposal of property, plant and equipment	109,796,962	40,554,053	36,950,764	(7,941,860)
Gain on disposal of right-of-use assets	(1,707,247)	-	(2,510,573)	-
Provision for employee benefits	592,025,240	1,501,638,645	425,344,122	1,156,107,086
Other revenues	(11,388,015)	(8,369,972)	(10,910,452)	(9,792,233)
Gain on bargain purchases	-	(31,482,857)	-	-
Share of profit of investments in joint ventures	(863,193,963)	(2,625,714,096)	-	-
Share of profit of investments in associates	(2,459,356,255)	(1,933,059,453)	-	-
Profit from operations before changes in operating assets and liabilities	20,236,240,668	27,335,578,343	9,951,404,471	18,007,088,537
Operating assets (increase) decrease				
Trade receivables	4,840,046,689	7,688,772,097	5,368,317,930	6,769,976,249
Other receivables	(317,538,768)	655,357,356	32,091,018	504,402,338
Inventories	5,003,944,314	4,206,895,474	4,011,782,026	3,795,750,644
Value-added tax receivable	713,859,858	456,218,332	492,422,615	134,764,625
Other current assets	(292,450,496)	1,216,416,609	(129,871,876)	1,346,221,634
Other non-current assets	(223,918,175)	(121,134,464)	3,976,372	(24,216,553)
Operating liabilities increase (decrease)				
Trade payables	(5,513,946,257)	(8,962,108,450)	(5,108,399,197)	(7,540,342,464)
Other payables	(1,546,144,943)	(405,767,945)	(2,176,382,563)	(2,731,219,413)
Current provisions	(65,887,076)	38,484,724	-	-
Other current liabilities	(16,183,807)	(10,756,357)	-	-
Cash paid for provisions for employee benefits	(240,429,549)	(233,434,021)	(141,782,676)	(157,074,878)
Other non-current provisions	23,040,419	(30,534,035)	-	-
Other non-current liabilities	(13,346,055)	(105,677,642)	(8,900,807)	(122,090,260)
Cash received from operations	22,587,286,822	31,728,310,021	12,294,657,313	19,983,260,459
Cash (paid) received for income tax	(441,525,689)	(1,553,273,997)	203,609,645	(959,971,523)
Net cash flows provided by operating activities	22,145,761,133	30,175,036,024	12,498,266,958	19,023,288,936

Notes to the financial statements form an integral part of these statements



# Statement of Cash Flows (Continued)

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Baht

	Consolidated		Separate	
	financial statements		financial statements	
	2020	2019	2020	2019
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>				
Interest received	345,062,304	970,074,693	291,907,332	796,872,684
Dividends received	2,762,834,580	2,247,743,282	3,201,503,566	4,372,126,568
Acquisition of property, plant and equipment and intangible assets	(25,059,291,918)	(40,816,927,040)	(14,897,302,064)	(22,996,121,309)
Proceeds from sale of property, plant and equipment	112,161,140	129,650,962	31,815,106	118,513,574
Acquisition of other non-current assets	-	(6,981,143)	-	-
Decrease of held-to-maturities debt securities	-	4,245,796,605	-	240,351,300
Decrease of available-for-sale securities	-	10,368,985,604	-	10,368,985,604
Increase of investments in financial assets in debt instruments	(7,628,656,269)	-	(9,954,679,903)	-
Cash paid for investments in financial assets in equity instruments	(123,242,102)	-	-	-
Cash received from sales of investments in financial assets in equity instruments	182,576,677	-	182,576,677	-
Acquisition of investments in subsidiaries, joint ventures and associates	(1,549,450,000)	(19,061,859,511)	(4,668,357,405)	(22,562,924,510)
Cash received from sale of investment in an associate	-	212,663,057	-	-
Cash received from capital distribution of subsidiaries	-	-	-	1,927,949
Cash paid for other non-marketable equity securities	-	(259,855,403)	-	(1,125,000)
Cash received from sales of other non-marketable equity securities	-	28,289,253	-	28,289,253
Proceeds from short-term loans to related parties	1,122,984,335	7,101,928,666	1,122,984,335	7,279,289,288
Increase in short-term loans to related parties	-	(8,000,000,000)	(1,972,158,712)	(8,000,000,000)
Proceeds from long-term loans to related parties	1,560,553,399	1,827,494,000	1,560,553,399	1,827,494,000
Increase in long-term loans to related parties	-	(766,981,093)	-	(766,981,093)
Net cash flows used in investing activities	(28,274,467,854)	(41,779,978,068)	(25,101,157,669)	(29,293,301,692)
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>				
Finance costs paid	(3,364,687,807)	(2,917,779,970)	(3,141,230,556)	(2,449,463,098)
Dividends paid	(5,024,020,943)	(16,336,282,158)	(4,486,328,157)	(15,779,901,765)
Repayment of lease liabilities	(982,065,003)	(175,771,913)	(1,056,547,971)	(121,544,992)
Proceeds from short-term borrowings from financial institutions	10,400,000	144,468,261	-	-
Proceeds from short-term borrowings from related parties	-	-	2,587,547,946	1,579,522,387
Proceeds from long-term borrowings from financial institutions	36,108,345,000	13,237,281,710	30,000,000,000	-
Proceeds from long-term borrowings from other parties	-	15,637,595	-	-
Repayment of short-term borrowings from financial institutions	(2,036,354,170)	(1,425,000,000)	-	-
Repayment of short-term borrowings from related parties	-	-	(20,924,678)	(469,497,207)
Repayment of long-term borrowings from financial institutions	(8,142,495,000)	(16,083,908,280)	(7,111,495,000)	(4,280,202,000)
Repayment of long-term borrowings from other parties	(42,929,835)	(42,186,998)	-	-
Proceeds from increase in investment in a subsidiary from non-controlling interests	267,651,233	252,501,875	-	-
Proceeds from debentures	15,000,000,000	20,000,000,000	15,000,000,000	20,000,000,000
Repayment of debentures	-	(1,942,000,000)	-	(1,942,000,000)
Cash paid for treasury stock	-	(1,187,603,325)	-	(1,187,603,325)
Net cash flows provided by (used in) financing activities	31,793,843,475	(6,460,643,203)	31,771,021,584	(4,650,690,000)

Notes to the financial statements form an integral part of these statements

# Statement of Cash Flows (Continued)

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Baht

	Consolidated		Separate	
	financial statements		financial statements	
	2020	2019	2020	2019
Net increase (decrease) in cash and cash equivalents, before effect from foreign exchange rate	25,665,136,754	(18,065,585,247)	19,168,130,873	(14,920,702,756)
Effect from foreign exchange rate in cash and cash equivalents and effect from translation differences on financial statements	(192,416,843)	161,848,944	(30,257,435)	176,139,833
Net increase (decrease) in cash and cash equivalents	25,472,719,911	(17,903,736,303)	19,137,873,438	(14,744,562,923)
Cash and cash equivalents as at January 1,	18,840,303,824	36,744,040,127	12,397,417,335	27,141,980,258
<b>Cash and cash equivalents as at December 31,</b>	<b>44,313,023,735</b>	<b>18,840,303,824</b>	<b>31,535,290,773</b>	<b>12,397,417,335</b>
<b>Non-cash items</b>				
Payables to contractors	2,955,798,483	2,717,169,778	2,020,050,501	2,778,691,141

Notes to the financial statements form an integral part of these statements

# Notes to the Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

FOR THE YEAR ENDED DECEMBER 31, 2020

## Notes Contents

1. The Company's operations and general information
2. Basis for preparation and presentation of the financial statements
3. Significant accounting policies
4. Acquisition of businesses
5. Cash and cash equivalents
6. Trade receivables
7. Other receivables
8. Inventories
9. Investments in subsidiaries
10. Investments in joint ventures
11. Investments in associates
12. Other investments and investments in financial assets
13. Investment properties
14. Property, plant and equipment
15. Right-of-use assets
16. Land leasehold right
17. Goodwill
18. Intangible assets

## Notes Contents

19. Income tax expense and deferred tax
20. Borrowings and debentures
21. Lease liabilities
22. Trade payables
23. Other payables
24. Provisions for employee benefits
25. Share capital
26. Additional paid-in capital and reserves
27. Treasury stock
28. Transactions with related parties
29. Financial information by segment
30. Expenses by nature
31. Finance costs
32. Promotional privileges
33. Basic earnings (loss) per share
34. Dividends paid
35. Financial instruments
36. Commitments with non-related parties
37. Litigations
38. Event after the reporting period
39. Approval of the financial statements

### 1. THE COMPANY'S OPERATIONS AND GENERAL INFORMATION

PTT Global Chemical Public Company Limited (the "Company") was registered on October 19, 2011 in accordance with the Public Company Limited Act, B.E. 2535. The Board of Governors of the SET approved the listing of the Company on the day that the Registrar accepted the registration on October 19, 2011.

The Company is a company in the PTT Public Company Limited ("PTT") group of companies. PTT is incorporated in Thailand and is the major shareholder of the Company, holding 45.41% of the Company's issued and paid-up share capital.

The Company is incorporated in Thailand and has its registered offices as follows:

Head Office	: 555/1, Energy Complex, Building A, 14th - 18th Floor, Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand
Branch 1 (Rayong office Branch)	: 59, Radniyom Road, Tambon Noenphra, Amphoe Mueang Rayong, Rayong, Thailand
Branch 2 (Olefin 1 Branch)	: 14, I-1 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 3 (Olefin 2 Branch)	: 9, I-4 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 4 (Aromatics 1 Branch)	: 4, I-2 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 5 (Aromatics 2 Branch)	: 98/9, Rayong 3191 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 6 (Refining Branch)	: 8, I-8 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 7 (Jetty and Buffer Tank Farm Branch)	: 19, Rong Pui Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 8 (Aromatics reserve Branch)	: 11, I-4 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 9 (Lab Service Center Branch)	: 24/9, Pakorn Songkrao-Rat Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 10 (PTTGC 10 Branch)	: 555/1, Energy Complex, Building A, 1st and 10th Floor, Vibhavadi-Rangsit Road, Chatuchak, Bangkok, Thailand
Branch 11 (Olefin 3 Branch)	: 8, Phadang Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 12 (Polyethylene Branch)	: 8, Map Ta Phut Industrial Estate, I-10 Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 13 (Innoplus Solution Center Branch)	: 83/9-10, Moo 5, Tambon Tagma, Amphoe Mueang Rayong, Rayong, Thailand
Branch 14 (Maintenance office)	: 32, Rong Pui Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand

The principal businesses of the Company are refining and provision of integrated petroleum products, production and distribution of aromatics products including aromatic derivatives and production and distribution of ethylene, propylene, polyethylene plastic pellets and biochemical products. By-products are mixed C4, cracker bottom and tail gas. Minor activities are production and distribution of electricity, water, steam and other utilities. In addition, the Company also operates production support facilities such as jetty and buffer tank farm services for liquid chemical, oil and gas.

### Coronavirus Disease 2019 Pandemic

The Coronavirus disease 2019 (“COVID-19”) pandemic is continuing to evolve, resulting in an economic slowdown and adversely impacting most businesses and industries. This situation may bring uncertainties and have an impact on the operating environment. The Company and its subsidiaries’ (the “Group”) management considered that there is no financial impact in respect of valuation of assets, provisions and contingent liabilities. However, the Group’s management will continue to monitor the ongoing situation.

## 2. BASIS FOR PREPARATION AND PRESENTATION OF THE FINANCIAL STATEMENTS

- 2.1 The Group maintains its accounting records in Thai Baht and prepares its statutory financial statements in the Thai language in conformity with Thai Financial Reporting Standards (TFRS) and accounting practices generally accepted in Thailand.
- 2.2 The Group’s financial statements have been prepared in accordance with the Thai Accounting Standard (TAS) No. 1 “Presentation of Financial Statements”, which was effective for financial periods beginning on or after January 1, 2020 onward, and the Regulation of The Stock Exchange of Thailand (SET) dated October 2, 2017, regarding the preparation and submission of financial statements and reports for the financial position and results of operations of the listed companies B.E. 2560 and the Notification of the Department of Business Development regarding “The Brief Particulars in the Financial Statements (No.3) B.E. 2562” dated December 26, 2019.
- 2.3 The financial statements have been prepared under the historical cost convention except as disclosed in the significant accounting policies.
- 2.4 An English version of the financial statements have been prepared from the financial statements that is in the Thai language under law. In the event of a conflict or a difference in interpretation between the two languages, the Thai language financial information shall prevail.
- 2.5 The consolidated financial statements included the accounts of the Group, after elimination of intercompany transactions, of which the percentage of shareholding as at December 31, 2020 and 2019, are as follows:

<u>Name of the entity</u>	<u>Type of business</u>	<u>Country of incorporation</u>	<u>Ownership interest (%)</u>	
			<u>2020</u>	<u>2019</u>
<b><i>Direct subsidiaries</i></b>				
Global Green Chemicals Plc.	Manufacturing and distributing biochemical products	Thailand	72.29	72.29
GC Glycol Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
GC Polyols Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	82.10	82.10
GC Marketing Solutions Co., Ltd.	Development, marketing and distributing polymers products, by-products and other polymers-related products	Thailand	100	100
GC Maintenance and Engineering Co., Ltd.	Factory maintenance and engineering services	Thailand	100	100

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

<u>Name of the entity</u>	<u>Type of business</u>	<u>Country of incorporation</u>	<u>Ownership interest (%)</u>	
			<u>2020</u>	<u>2019</u>
GC Logistics Solutions Co., Ltd.	Transportation, warehouse and bagging packing management of polyethylene plastic pellets	Thailand	100	100
GC Ventures Co., Ltd.	Invest in form of Corporate Venture Capital (CVC)	Thailand	100	100
GC Treasury Center Co., Ltd.	Financial service management for the group	Thailand	100	100
GC Styrenics Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
GC Oxirane Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
GC-M PTA Co., Ltd. (49% Direct interest and 25% Indirect interest)	Manufacturing and distributing petrochemical products	Thailand	74	74
GC Estate Co., Ltd.	Real estate development for rent and to invest in petrochemical and related industries	Thailand	100	100
Solution Creation Co., Ltd.	Manufacturing and distributing petrochemical products and health and nutrition products	Thailand	100	100
Thai Tank Terminal Limited	Service for the storage and handling of liquid chemicals, oil and gas	Thailand	51	51
PTT Phenol Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
NPC Safety and Environmental Service Co., Ltd.	Safety and environmental services	Thailand	100	100
Envicco Co., Ltd.	Manufacturing, distributing and developing recycled plastic and by-products	Thailand	70	-
PTTGC America Corporation	Holding and operating international business	United States of America	100	100
PTTGC International Private Limited	Holding and operating international business	Singapore	100	100



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

<u>Name of the entity</u>	<u>Type of business</u>	<u>Country of incorporation</u>	<u>Ownership interest (%)</u>	
			<u>2020</u>	<u>2019</u>
<i>Indirect subsidiaries</i>				
GGC Biochemicals Co., Ltd.	Holding and operating in Thailand	Thailand	72.29	72.29
Thai Fatty Alcohols Co., Ltd.	Manufacturing and distributing biochemical products	Thailand	72.29	72.29
Thai Pet Resin Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	74	74
PL Global Transport Co., Ltd.	Transportation of polyethylene plastic pellets	Thailand	100	100
NPC S&E Security Guard Co., Ltd.	Safety services	Thailand	100	100
GC Logistics Solutions (Vietnam) Co., Ltd.	Transportation, warehouse and bagging packing management of polyethylene plastic pellets	Vietnam	100	100
GC Ventures America Corporation	Invest in form of Corporate Venture Capital (CVC) outside Thailand	United States of America	100	100
GCM Polymer Trading DMCC	Distributing polymer products and other polymers-related products	United Arab Emirates	100	100
GC Marketing Solutions Myanmar Co., Ltd.	Distributing polymer products and other polymers-related products	Myanmar	100	100
GC Marketing Solutions Vietnam Co., Ltd.	Distributing polymer products and other polymers-related products	Vietnam	100	100
PT GCM Marketing Solutions Indonesia	Distributing polymer products and other polymers-related products	Indonesia	67	67
PTTGC America LLC	Operating petrochemical business	United States of America	100	100
PTTGC Innovation America Corporation	Research and development of bio-based chemicals	United States of America	100	100
PTTGC International (Netherlands) B.V.	Holding and operating international business	Netherlands	100	100
GC International Corporation (Formerly PTTGC International (USA) Inc.)	Holding and operating international business	United States of America	100	100
Vencorex Holding	Manufacturing and distributing chemical specialties	France	90.82	90.82

## 2.6 Thai Financial Reporting Standards affecting the presentation and disclosure in the current period financial statements

During the year, the Group has adopted the revised and new financial reporting standards and guidelines on accounting issued by the Federation of Accounting Professions which become effective for fiscal years beginning on or after January 1, 2020. These financial reporting standards were aimed at alignment with the corresponding International Financial Reporting Standards, with most of the changes directed towards revision of wording and terminology, and provision of interpretations and accounting guidance to users of standards. The adoption of these financial reporting standards does not have any significant impact on the Group's financial statements, except the following financial reporting standards:

Group of Financial Instruments Standards**Thai Accounting Standards ("TAS")**

TAS 32 Financial Instruments: Presentation

**Thai Financial Reporting Standards ("TFRS")**

TFRS 7 Financial Instruments: Disclosures

TFRS 9 Financial Instruments

**Thai Financial Reporting Standard Interpretations ("TFRIC")**

TFRIC 16 Hedges of a Net Investment in a Foreign Operation

TFRIC 19 Extinguishing Financial Liabilities with Equity Instruments

The Group's management has adopted these Financial Instruments Standards by recognising the cumulative effect of initially adopting of these TFRSs as an adjustment to the opening balance of retained earnings and other component of shareholders' equity of the reporting period.

The Group's management has assessed the impact of such Financial Instruments Standards, which have the material impact as follows:

- Classification of financial assets.
- Measurement of financial assets as measured at fair value through profit or loss and as measured at fair value through other comprehensive income.
- Designating of a financial liability as measured at fair value through profit or loss.

The total impact on the retained earnings and other components of shareholders' equity as at January 1, 2020 are as follows:

	<b><u>Consolidated</u></b> <b><u>financial statements</u></b>	<b>Unit : Million Baht</b> <b><u>Separate</u></b> <b><u>financial statements</u></b>
<b>Unappropriated retained earnings</b>		
Unappropriated retained earnings as at		
December 31, 2019	187,855	163,300
Derivatives - net of tax	496	(217)
Financial assets - Fair value through profit or loss - net of tax	5	67
Adjusted unappropriated retained earnings from adoption of TFRS 9 as at January 1, 2020	<u>188,356</u>	<u>163,150</u>
<b>Other components of shareholders' equity</b>		
Other components of shareholders' equity as at		
December 31, 2019	(1,487)	17
Hedge accounting - net of tax	(4)	-
Financial assets - Fair value through profit or loss - net of tax	(67)	(67)
Financial assets - Fair value through other comprehensive income - net of tax	(115)	-
Adjusted other components of shareholders' equity from adoption of TFRS 9 as at January 1, 2020	<u>(1,673)</u>	<u>(50)</u>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

The table below presented information relating to financial assets and liabilities that have been reclassified as a result of transition to TFRS 9.

	<b>Consolidated financial statements</b>				<b>Unit : Million Baht</b>
	<b>(i) TAS 105 Carrying amount as of December 31, 2019</b>	<b>(ii) Reclassifications</b>	<b>(iii) Remeasurement's</b>	<b>(iv) = (i)+(ii)+(iii) TFRS 9 Carrying amount as of January 1, 2020</b>	<b>Category</b>
<b>Assets</b>					
<b>Current</b>					
Temporary investments	6,720	(6,720)	-	-	
Current investment in financial assets	-	6,175	-	6,175	Financial asset measured at amortised cost
Current investment in financial assets	-	545	-	545	Financial asset measured at fair value through other comprehensive income
Derivatives	28	-	194	222	Financial asset measured at fair value through profit or loss
<b>Non-current</b>					
Investment in joint ventures (see Note 10)	32,444	-	(4)	32,440	
Investment in associates (see Note 11)	29,829	-	(173)	29,656	
Other long-term investments	2,911	(2,911)	-	-	
Non-current investments in financial assets	-	450	-	450	Financial asset measured at amortised cost
Non-current investments in financial assets	-	414	-	414	Financial asset measured at fair value through profit or loss
Non-current investments in financial assets	-	2,047	(4)	2,043	Financial asset measured at fair value through other comprehensive income
<b>Liabilities</b>					
<b>Current</b>					
Derivatives	320	-	466	786	Financial liability measured at fair value through profit or loss
<b>Non-current</b>					
Derivatives	12	-	573	585	Financial liability measured at fair value through profit or loss
Deferred tax liabilities	2,465	-	(55)	2,410	
<b>Shareholders' equity</b>					
Put option over non-controlling interest <sup>1)</sup>	-	-	(1,286)	(1,286)	
Unappropriated retained earnings	187,855	-	501	188,356	
Other components of shareholders' equity	(1,487)	-	(186)	(1,673)	

<sup>1)</sup> Put option over non-controlling interest is a present value of expected payments at the acquisition date. Under the securityholders agreement, non-controlling interest is granted the right to sell the remaining 9.18% holding in Vencorex Holding with conditions and exercise prices as stipulated in the agreement.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Million Baht

	<u>Separate financial statements</u>				<u>Category</u>
	<u>(i)</u> <u>TAS 105</u> <u>Carrying</u> <u>amount</u> <u>as of</u> <u>December 31,</u> <u>2019</u>	<u>(ii)</u> <u>Reclassifications</u>	<u>(iii)</u> <u>Remeasurements</u>	<u>(iv) =</u> <u>(i)+(ii)+(iii)</u> <u>TFRS 9</u> <u>Carrying</u> <u>amount</u> <u>as of</u> <u>January 1,</u> <u>2020</u>	
<b>Assets</b>					
<u>Current</u>					
Temporary investments	4,045	(4,045)	-	-	
Current investments in financial assets	-	3,500	-	3,500	Financial asset measured at amortised cost
Current investments in financial assets	-	545	-	545	Financial asset measured at fair value through other comprehensive income
Derivatives	14	-	194	208	Financial asset measured at fair value through profit or loss
<u>Non-current</u>					
Other long-term investments	2,341	(2,341)	-	-	
Non-current investments in financial assets	-	450	-	450	Financial asset measured at amortised cost
Non-current investments in financial assets	-	384	-	384	Financial asset measured at fair value through profit or loss
Non-current investments in financial assets	-	1,507	-	1,507	Financial asset measured at fair value through other comprehensive income
<b>Liabilities</b>					
<u>Current</u>					
Derivatives	69	-	466	535	Financial liability measured at fair value through profit or loss
<u>Non-current</u>					
Deferred tax liabilities	1,592	-	(55)	1,537	
<b>Shareholders' equity</b>					
Unappropriated retained earnings	163,300	-	(150)	163,150	
Other components of shareholders' equity	17	-	(67)	(50)	

### Thai Financial Reporting Standard No. 16 "Leases"

This TFRS provides a comprehensive model for the identification of lease arrangements and their treatment in the financial statements of both lessees and lessors and supersedes the relating to lease, Standards and Interpretations upon its effective date, which are Thai Accounting Standard No.17 "Leases" ("TAS 17"), Thai Accounting Standard Interpretation No.15 "Operating Lease - Incentives", Thai Accounting Standard Interpretation No.27 "Evaluating the Substance of Transactions involving the Legal Form of a Lease" and Thai Financial Reporting Standard Interpretation No.4 "Determining whether on Arrangement contains a Lease".

This TFRS does not significantly change the lease accounting for lessor.

For lessee accounting, there are significant changes to lease accounting in this TFRS by removing the distinction between operating and finance leases under TAS 17 and requiring a lessee to recognise a right-of-use asset and a lease liability at commencement for all leases, except for short-term leases and leases of low value assets. However, the lessor accounting treatment continues to require a lessor to classify a lease either as an operating lease or a finance lease, using the same concept as TAS 17. Details of these new requirements are described in Note 3.11. The impact of the adoption of TFRS 16 on the Group's consolidated financial statements is described below.

The date of initial application of TFRS 16 “Leases” is January 1, 2020.

The Group’s management adopt this TFRS as following:

- Recognises lease liability at the date of initial application for all lease previously classified as operating lease under TAS 17. The lessee measures the lease liability at the present value of the remaining lease payment, discounted by using the rate implicit in the lease. If this rate cannot be readily determined, the Group uses its incremental borrowing rate at the date of initial application.
- Recognises right-of-use asset at the date of initial application for all lease previously classified as operating lease under TAS 17. The lessee measures the right-of-use asset by lease contract at the lease liability value, adjusted by the amount of any prepaid or accrued lease payments correspondent to the lease contract recognised in the statement of financial position before the date of initial application.
- The Group applied a single discount rate to a portfolio of leases with reasonably similar characteristics.
- The Group elected not to recognise right-of-use assets and lease liabilities to leases for which the lease term is not over 12 months from the date of initial application, which recognise the lease payments as operating expense on a straight-line basis over the term of the lease.

### Financial impact of the initial application of TFRS 16 “Leases” (“TFRS 16”)

The Group applied TFRS 16 using the cumulative effect and did not restated the comparative information according to TAS 17.

The following table presented the operating lease commitments disclosed by applying TAS 17 as at December 31, 2019, using the discounted rate and the lease liabilities recognised in the statement of financial position at the date of initial application.

	<u>Consolidated</u> <u>financial statements</u>	<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>
Operating lease commitments as at December 31, 2019	5,241	4,975
Effect of discounting the above amounts	(1,039)	(900)
Liabilities from rights to extend lease period	187	-
<b>Lease liabilities recognised as at January 1, 2020</b>	<b>4,389</b>	<b>4,075</b>
Right-of-use assets recognised as at January 1, 2020	4,389	4,075
Reclassified to be right-of-use assets:		
Prepaid expenses	175	100
Property, plant and equipment (see Note 14)	376	275
Land leasehold rights	184	184
Intangible assets	151	87
<b>Right-of-use assets as at January 1, 2020</b> (see Note 15)	<b>5,275</b>	<b>4,721</b>

The discount rate used in the lease liabilities assessment recognised in the statement of financial position is between 2.10% - 3.80% per annum.

The Group and the Company have reclassified the lease liabilities in the consolidated and separate financial statements as at December 31, 2019 as follows:

<u>Account name</u>	<b>Unit : Million Baht</b>			
	<u>Previous presentation</u>	<u>Current presentation</u>	<u>Consolidated financial statements</u>	<u>Separate financial statements</u>
Current portion of finance lease liabilities	Other payables	Current portion of lease liabilities	186,734,336	140,987,006
Finance lease liabilities	Other non-current liabilities	Lease liabilities	214,528,410	148,195,224

### 2.7 Thai Financial Reporting Standards announced in the Royal Gazette but not yet effective

The Federation of Accounting Professions has issued the Notification regarding Thai Financial Reporting Standards (TFRSs) that will be effective for the financial statements for the period beginning on or after January 1, 2021 onwards, which has been announced in the Royal Gazette on September 17, 2020. These financial reporting standards were aimed at alignment with the corresponding International Financial Reporting Standards, with most of the changes directed towards revisions to references to the Conceptual Framework in TFRSs, the amendment for definition of business, the amendment for definition of materiality and accounting requirements for interest rate reform.

Thai Financial Reporting Standard No.16 “Leases” (“TFRS 16”) has been amended for the Rent Concessions related to COVID-19, which is effective from June 1, 2020 with earlier application permitted. The amendment permits lessees, as a practical expedient, not to assess whether rent concessions that occur as a direct consequence of the COVID-19 pandemic and meet specified conditions are lease modifications and, instead, to account for those rent concessions as if they were not lease modifications. In addition, the revised TFRS 16 also added the requirements for the temporary exception arising from interest rate benchmark reform, which an entity shall apply these amendments for the reporting periods beginning on or after January 1, 2022 with earlier application permitted. This revised TFRS 16 has been announced in the Royal Gazette on January 27, 2021.

The Group’s management will adopt the relevant TFRSs in the preparation of Group’s financial statements when they become effective. Also, the Group’s management is on the evaluating process to assess the impact of these TFRSs on the financial statements of the Group in the period of initial application.

## 3. SIGNIFICANT ACCOUNTING POLICIES

The significant accounting policies are as follows:

### 3.1 Basis of consolidation

The consolidated financial statements relate to the Company and its subsidiaries and the Group’s interests in joint ventures and associates.

#### *Business combinations*

The Group applies the acquisition method for all business combinations when control is transferred to the Group, as describe in subsidiaries section, other than those with entities under common control.

The Group recognises goodwill at the acquisition date measured as the excess of (1) over (2) as:

(1) The aggregate of:

- the fair value of the consideration transferred;
- the recognised amount of any non-controlling interests in the acquiree; and
- if the business combination is achieved in stages, the fair value of the existing equity interest in the acquiree.



(2) The net fair value of the identifiable assets acquired and liabilities assumed.

If value of (1) is less than (2), difference is contributed to gain on bargain purchase and recognised immediately in profit or loss.

The consideration transferred is recognised at fair value at the acquisition date.

Transaction costs that the Group incurs in connection with a business combination, such as legal fees, and other professional and consulting fees are expensed as incurred.

If the initial accounting for a business combination is incomplete by the end of the reporting period in which the combination occurs, the Group reports provisional amounts for the items for which the accounting is incomplete. Those provisional amounts are adjusted during the measurement period, or additional assets or liabilities are recognised, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognised at that date.

### *Acquisitions from entities under common control*

Business combinations under common control are accounted for using a method similar to the pooling of interest method. Under that method the acquirer recognises assets and liabilities of the acquired businesses at their carrying amounts in the consolidated financial statements of the ultimate parent company at the moment of the transaction. The difference between the carrying amounts of the acquired net assets and the consideration transferred is recognised as surplus or discount from business combinations under common control in shareholder's equity. The surplus or discount will be transferred to retained earnings upon divestment of the businesses acquired.

The results from operations of the acquired businesses will be included in the consolidated financial statements of the acquirer from the beginning of the comparative period or the moment the businesses came under common control, whichever date is later, until control ceases.

### *Subsidiaries*

Subsidiaries are entities controlled by the Group. The Group controls an entity when it has rights to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

### *Non-controlling interests*

At the acquisition date, the Group measures any non-controlling interest at its proportionate interest in the identifiable net assets of the acquiree.

Changes in the Group's interest in a subsidiary that do not result in a loss of control are accounted for as equity transactions.

### *Loss of control*

When the Group loses control over a subsidiary, it derecognises the assets and liabilities of the subsidiary, and any related non-controlling interests and other components of equity. Any resulting gain or loss is recognised in profit or loss. Any interest retained in the former subsidiary is measured at fair value when control is lost.

### *Interests in equity-accounted investees*

The Group's interests in equity-accounted investees comprise interests in joint ventures and associates.

A joint venture is an arrangement in which the Group has joint control, whereby the Group has rights to the net assets of the arrangement, rather than the rights to its assets and obligations for its liabilities. Associates are those entities in which the Group has significant influence, but not control or joint control, over the financial and operating policies.

Interests in joint ventures and associates are accounted for using the equity method. They are recognised initially at cost. Subsequent to initial recognition, the consolidated financial statements include the Group's share of the profit or loss and other comprehensive income of equity-accounted investees, until the date on which joint control or significant influence ceases.

### *Transactions eliminated on consolidation*

Intra-group balances and transactions and any unrealised income or expenses arising from intra-group transactions are eliminated in the preparing of the consolidated financial statements. Unrealised gains and losses arising from transactions with joint ventures and associates are eliminated against the investment to the extent of the Group's interest in the investee.

## 3.2 Foreign currencies

### *Foreign currency transactions*

Transactions in foreign currencies are translated to the respective functional currency of Group entities at exchange rate at the dates of the transactions.

Monetary assets and liabilities denominated in foreign currencies at the reporting date are translated to the functional currency at the exchange rate at the reporting date.

Non-monetary assets and liabilities measured at cost in foreign currencies are translated to the functional currency at the exchange rate at the dates of the transactions.

Foreign currency differences arising on retranslation are generally recognised in profit or loss. However, foreign currency differences arising from the translation of qualifying cash flow hedges to the extent that the hedges are effective are recognised in other comprehensive income.

### *Foreign operations*

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on acquisition of foreign operations, are translated to Thai Baht at the exchange rates at the end of the reporting date.

The revenues and expenses of foreign operations are translated to Thai Baht at the average rates during the year.

Foreign exchange differences are recognised in other comprehensive income and presented in the foreign currency translation reserve in equity until disposal of the investment, except to extent that the translation difference is allocated to non-controlling interest.

## 3.3 Cash and cash equivalents

Cash and cash equivalents comprise cash balances, deposits and highly liquid current investments.

## 3.4 Trade and other receivables

### *Policies applicable from January 1, 2020*

Trade and other receivables are stated at their invoice value less allowance for expected credit losses.

The allowance for expected credit losses is disclosed in Note 3.6.

### *Policies applicable prior to January 1, 2020*

Trade and other receivables are stated at their invoice value less allowance for doubtful accounts.

The allowance for doubtful accounts is assessed primarily on analysis of overdue aging and future expectations of customer payments. Bad debts are written off when incurred.

### 3.5 Inventories

Inventories are stated at the lower of cost or net realisable value.

Cost is calculated using the weighted average cost principle, and comprises all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition. In the case of manufactured inventories and work-in-progress, cost includes an appropriate share of production overheads based on normal operating capacity.

Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs to complete and to make the sale.

Provision is made for obsolete and slow-moving of finished goods, raw materials, factory supplies and spare parts based on the items that are obsoleted and expected to be unsalable.

### 3.6 Financial Instruments

*Policies applicable from January 1, 2020*

The Group shall recognise a financial asset or a financial liability in its statement of financial position only when the Group becomes party to the contractual provisions of the instrument.

*Recognition, Measurement and Classification of financial assets*

Regular way of purchases and sales of financial assets are recognised on trade-date, the date on which the Group commits to purchase or sell the asset. Financial assets are derecognised only when the rights to receive cash flows from the financial assets have expired or when the Group has transferred the financial assets which transferred substantially all the risks and rewards of ownership of the financial assets.

At initial recognition, the Group measures a financial asset as follows:

- A financial asset measured at amortised cost and a financial asset measured at fair value through other comprehensive income are measured at their fair value, plus transaction costs that are directly attributable to the acquisition or issuance of the financial assets.
- A financial asset measured at fair value through profit or loss is measured at its fair value. Transaction costs are expensed in profit or loss.

Subsequent measurement of financial assets depends on the Group's business model for managing the financial asset and the cash flow characteristics of the financial assets. There are three measurement categories into which the Group classifies its financial assets:

- Amortised cost - A financial asset will be measured at amortised cost when the financial asset is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows. In addition, the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. Interest income from these financial assets is using the effective interest rate method. Any gain or loss arising on derecognition and reclassification are recognised directly in profit or loss and impairment losses are presented in profit or loss.
- Fair value through other comprehensive income (FVTOCI) - A financial asset will be measured at FVTOCI when it is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets. In addition, the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding. Movements in the carrying amount are taken through other comprehensive income, except for the recognition of impairment losses and interest income using effective interest rate method. When the financial asset is derecognised, the cumulative gain or loss previously recognised in other comprehensive income is reclassified to profit or loss or retained earnings.
- Fair value through profit or loss (FVTPL) - A financial asset that does not meet the criteria for amortised cost or FVTOCI are measured at FVTPL.

### *Impairment*

The Group assesses on a forward-looking basis the expected credit loss associated with its financial assets carried at amortised cost and investments in debt instruments that are measured at FVTOCI. The Group applies general or simplified approach for credit-impaired consideration which depends on the significant of credit risk.

In determining allowance of expected credit loss, the financial asset is considered to have low credit risk and no significant incremental of credit risk since initial recognition. The Group will not recognize any allowance of expected credit loss.

### *Policies applicable prior to January 1, 2020 for impairment of financial asset and calculation of recoverable amount*

When a decline in the fair value of an available-for-sale financial asset has been recognised directly in equity and there is objective evidence that the value of the asset is impaired, the cumulative loss that had been recognised directly in equity is recognised in profit or loss even though the financial asset has not been derecognised. The amount of the cumulative loss that is recognised in profit or loss is the difference between the acquisition cost and current fair value, less any impairment loss on that financial asset previously recognised in profit or loss.

### *Calculation of recoverable amount*

The recoverable amount of held-to-maturity securities carried at amortised cost is calculated as the present value of the estimated future cash flows discounted at the original effective interest rate.

The recoverable amount of available-for-sale financial assets is calculated by reference to the fair value.

### *Reversals of impairment*

An impairment loss in respect of a financial asset is reversed if the subsequent increase in recoverable amount can be related objectively to an event occurring after the impairment loss was recognised in profit or loss.

### *Derecognition of financial assets*

The Group derecognizes a financial asset only when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another entity.

On derecognition of a financial asset measured at amortized cost, the difference between the asset's carrying amount and the sum of the consideration received and receivable is recognized in profit or loss. In addition, on derecognition of an investment in a debt instrument classified as at FVTOCI, the cumulative gain or loss previously accumulated in the investments revaluation reserve is reclassified to profit or loss. In contrast, on derecognition of an investment in equity instrument which the Group has elected on initial recognition to measure at FVTOCI, the cumulative gain or loss previously accumulated in the investments revaluation reserve is not reclassified to profit or loss, but is transferred to retained earnings.

### *Recognition, Measurement and Classification of financial liabilities and equities*

Financial instruments issued by the Group must be classified as financial liabilities or equity instruments by considering contractual obligations.

- Where the Group has an unconditional contractual obligation to deliver cash or another financial asset to another entity and is unable to deny or avoid the settlement of the obligation indefinitely, it is considered a financial liability.
- Where the Group has no contractual obligation or has an unconditional right to avoid the settlement of the obligation, it is considered an equity instrument.

At initial recognition, the Group measures financial liabilities, which are not measured at FVTPL, at fair value minus transaction costs that are directly attributable to the acquisition or issuance of the financial assets. The Group classifies all financial liabilities as subsequently measured at amortised cost, except for some financial liabilities.

### *Derecognition of financial liabilities*

The Group derecognizes financial liabilities when, and only when, the Group's obligations are discharged, cancelled or have expired. The difference between the carrying amount of the financial liability derecognized and the consideration paid and payable is recognized in profit or loss.

When the Group exchanges with the existing lender one debt instrument into another one with the substantially different terms, such exchange is accounted for as an extinguishment of the original financial liability and the recognition of a new financial liability. Similarly, the Group accounts for substantial modification of terms of an existing financial liability or part of it as an extinguishment of the original financial liability and the recognition of a new financial liability. It is assumed that the terms are substantially different if the discounted present value of the cash flows under the new terms, including any fees paid net of any fees received and discounted using the original effective date is at least 10 percent different from the discounted present value of the remaining cash flows of the original financial liability. If the modification is not substantial, the difference between; (1) the carrying amount of the liability before the modification; and (2) the present value of cash flows after modification; is recognized in profit or loss as the modification gain or loss within other gains and losses.

### *Derivatives*

Derivatives are used to manage exposure to foreign exchange, interest rate arising from operating, financing and investing activities. Derivatives are not used for trading purposes. However, derivatives that do not qualify for hedging instruments are accounted for as trading instruments.

Derivatives are recognised initially at fair value; attributable transaction costs are recognised in profit or loss when incurred. Subsequent to initial recognition, they are remeasured at fair value. The gain or loss on remeasurement is recognised immediately in profit or loss.

The fair value of interest rate swaps is based on broker quotes at the reporting date. Those quotes are tested for reasonableness by discounting estimated future cash flows based on the terms and maturity of each contract and using market interest rates for a similar instrument at the reporting date.

The fair value of forward exchange contracts is based on their listed market price as the reporting date, if available. If the listed market price is not available, then fair value is estimated by forward contract with the same nature and maturity date at the reporting date.

### *Hedge accounting*

When a derivative is designated as the hedging instrument in a hedge of the variability in cash flows of a non-financial asset or non-financial liability, the effective portion of gain or loss from subsequent measurement of fair value of the derivative is recognised in other comprehensive income and presented in the hedging reserve in equity. Any ineffective portion is recognised immediately in profit or loss.

When a hedge of a non-financial asset or non-financial liability occurs, the gain or loss recognised in other comprehensive income is included in the cost of the non-financial asset or non-financial liability.

### *Discontinuing hedge accounting*

When the hedging instrument expires or is sold, terminated, or no longer qualifies for hedge accounting, the hedge accounting is discontinued prospectively. Any cumulative gain or loss on the hedging instrument existing in equity is retained in equity. When the hedge of the non-financial assets or non-financial liabilities item ultimately occurs, the gain or loss is adjusted according to cash flow hedges accounting.

When the non-financial assets or non-financial liabilities item is no longer expected to occur, the cumulative gain or loss that was reported in equity is recognised in profit or loss immediately.

### 3.7 Investments in subsidiaries, joint ventures and associates

Investments in subsidiaries, joint ventures and associates in the separate financial statements of the Company are accounted for using the cost method less allowance for impairment. Investments in joint ventures and associates in the consolidated financial statements are accounted for using the equity method.

#### *Disposal of investments*

On disposal of an investment, the difference between net disposal proceeds and the carrying amount is recognised in profit or loss in the statement of income.

If the Group disposes of part of its holding of a particular investment, the deemed cost of the part sold is determined using the weighted average method applied to the carrying value of the total holding of the investment.

### 3.8 Temporary investments and other long-term investments

#### *Policies applicable prior to January 1, 2020*

Debt securities that the Group has the positive intent and ability to hold to maturity are classified as held-to-maturity investments. Held-to-maturity investments are stated at amortised cost, less any impairment losses. The difference between the acquisition cost and redemption value of such debt securities is amortised using the effective interest rate method over the period to maturity.

Debt securities and marketable equity securities, other than those securities held for trading or intended to be held to maturity, are classified as available-for-sale securities. Available-for-sale securities are, subsequent to initial recognition, stated at fair value, and changes therein, other than impairment losses and foreign currency differences on available-for-sale monetary items, are recognised directly in equity. Impairment losses and foreign exchange differences are recognised in profit or loss. When these investments are derecognised, the cumulative gain or loss previously recognised directly in equity is recognised in profit or loss. Where these investments are interest-bearing, interest calculated using the effective interest method is recognised in profit or loss.

Equity securities which are not marketable are stated at cost less any impairment losses.

The fair value of financial instruments classified as available-for-sale is determined as the quoted bid price at the reporting date.

#### *Disposal of investments*

On disposal of an investment, the difference between net disposal proceeds and the carrying amount together with the associated cumulative gain or loss that was reported in equity is recognised in profit or loss.

### 3.9 Investment properties

Property that is held for long-term rental yields or for capital appreciation or both, and that is not occupied by the companies in the consolidated Group, is classified as investment properties.

Investment properties of the Group are land and buildings held for long-term rental yields or for capital appreciation.

Investment properties are measured initially at its cost, including related transaction costs and borrowing costs. Borrowing costs incurred for the purpose of acquiring, constructing or producing a qualifying investment properties are capitalised as part of its cost.

After initial recognition, investment properties are carried at cost less accumulated depreciation and accumulated impairment losses.

Land is not depreciated. Depreciation on other investment properties which are buildings is calculated using the straight line method to allocate their cost to their residual values over their estimated useful life for 27 years.



Subsequent expenditure is capitalised to the asset's carrying amount only when it is probable that future economic benefits associated with the expenditure will flow to the Group and the cost of the item can be measured reliably. All other repairs and maintenance costs is expensed when incurred. When part of an investment property is replaced, the carrying amount of the replaced part is derecognised.

### 3.10 Property, plant and equipment

#### *Recognition and measurement*

#### *Owned assets*

Land are stated at cost less accumulated impairment losses.

Land improvement, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses.

Cost includes expenditure that is directly attributable to the acquisition of the asset. The cost of self-constructed assets includes the cost of materials and direct labour, any other costs directly attributable to bringing the assets to a working condition for their intended use, the costs of dismantling and removing the items and restoring the site on which they are located, and capitalised borrowing costs. Cost also may include transfers from other comprehensive income of any gain or loss on qualifying cash flow hedges of foreign currency purchases of property, plant and equipment. Purchased software that is integral to the functionality of the related equipment is capitalised as part of that equipment.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Any gains and losses on disposal of an item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of property, plant and equipment, and are recognised in profit or loss.

#### *Subsequent costs*

The cost of replacing a part of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefits embodied within the part will flow to the Group, and its cost can be measured reliably. The carrying amount of the replaced part is derecognised. The costs of the day-to-day servicing of property, plant and equipment are recognised in profit or loss as incurred.

#### *Depreciation*

Depreciation on other assets is calculated based on the depreciable amount, which is the cost of an asset, or other amount substituted for cost, less its residual value.

Depreciation is charged to profit or loss on a straight-line basis over the estimated useful lives of each component of an item of assets. The estimated useful lives are as follows:

Land improvement	5-30 years
Plant, machinery, equipment and factory tools	5-40 years
Buildings and buildings improvement	5-30 years
Furniture, fixtures and equipment	3-10 years
Vehicles	5-25 years

No depreciation is provided on land and assets under construction.

Depreciation methods, useful lives and residual values are reviewed at the end of reporting period and adjusted if appropriate.

### 3.11 Leases

*Policies applicable from January 1, 2020*

*The Group as lessee*

The Group assesses whether a contract is or contains a lease, at inception of the contract. The Group recognises a right-of-use asset and corresponding lease liability with respect to all lease arrangements in which it is the lease, except for short-term leases with a lease term of 12 months or less and leases of low value assets, in which the lease payments are recognised as operating expense on a straight-line basis over the lease term and presents as an expense in the statement of income.

The lease liability is initially measured at the present value of the lease payments that are not paid at that date, discounted by using the interest rate implicit in the lease. If this rate cannot be readily determined, the Group uses its incremental borrowing rate.

Lease payments included in the measurement of the lease liability comprise:

- Fixed payments (including in-substance fixed payments), less any lease incentives receivable;
- Variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date;
- Amount expected to be payable by the lease under residual value guarantees;
- Exercise price of purchase options, if the lease is reasonably certain to exercise the options; and
- Payments of penalties for terminating the lease, if the lease term reflects the lessee exercising an option to terminate the lease.

The lease liability is subsequently measured using the effective interest method and by reducing the carrying amount to reflect the lease payments made. The Group recognises interest from lease liability in the statement of income.

The Group remeasures the lease liability and makes a corresponding adjustment to the related right-of-use asset whenever:

- The lease term has been changed resulting in a change in the assessment of exercise of a purchase option to purchase the underlying asset, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate.
- The lease payments have been changed due to changes in an index or a rate or a change in expected payment under a guaranteed residual value, in which cases the lease liability is remeasured by discounting the revised lease payments using an unchanged discount rate.
- A lease contract is modified and the lease modification that is not accounted for as a separate lease, in which case the lease liability is remeasured based on the lease term of the modified lease by discounting the revised lease payments using a revised discount rate at the effective date of the modification.

The right-of-use assets comprise the initial measurement of the corresponding lease liability, including lease payments made at or before the commencement day, any initial direct costs, less any lease incentives received. They are subsequently measured at cost less accumulated depreciation and accumulated impairment losses.

Right-of-use assets are depreciated over the shorter period of lease term and useful life of the underlying asset. If a lease transfers ownership of the underlying asset and the Group expects to exercise a purchase option, the related right-of-use is depreciated over the useful life of the underlying asset. The depreciation starts at the commencement date of the lease. In addition, the right-of-use assets are assessed for impairment in accordance with TAS 36 "Impairment of assets".

### *The Group as lessor*

Leases for which the Group is a lessor are classified as operating leases.

Rental income from operating leases is recognised on a straight line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognised on a straight line basis over the lease term.

### *Policies applicable prior to January 1, 2020*

#### *Leased assets*

Leases in terms of which the Group substantially assumes all the risk and rewards of ownership are classified as finance leases. Property, plant and equipment acquired by way of finance leases are capitalised at the lower of their fair value and the present value of the minimum lease payments at the inception of the lease, less accumulated depreciation and impairment losses. Lease payments are apportioned between the finance charges and reduction of the lease liability so as to achieve a constant rate of interest on the remaining balance of the liability. Finance charges are charged directly to the profit or loss.

#### *Operating leases*

Payments made under operating leases are recognised in profit or loss on a straight line basis over the term of the lease.

Contingent lease payments which the lease adjustment is confirmed are accounted for by revising the minimum lease payments over the remaining term of the lease.

### 3.12 Intangible assets

#### *Goodwill*

Goodwill that arises upon the acquisition of businesses is included in intangible assets. Subsequent to initial recognition, goodwill is measured at cost less accumulated impairment losses.

Goodwill in investment in joint ventures and associates is included in the carrying amount of the investment in joint ventures and associates, impairment loss on such an investment is deducted directly in investment in joint ventures and associates.

#### *Other intangible assets*

Other intangible assets that are acquired by the Group and have finite useful lives are measured at cost less accumulated amortisation and accumulated impairment losses.

#### *Subsequent expenditure*

Subsequent expenditure is capitalised only when it increases the future economic benefits embodied in the specific asset to which it relates. All other expenditure, including expenditure on internally generated goodwill and brands, are recognised in profit or loss as incurred.

#### *Amortisation*

Amortisation is based on the cost of the asset less its residual value.

Amortisation is recognised in profit or loss on a straight-line basis over the estimated useful lives of intangible assets, other than goodwill and trademark, from the date that they are available for use, since this most closely reflects the expected pattern of consumption of the future economic benefits embodied in the asset. The estimated useful lives are as follows:

Production licence fees	10-30 years
Computer software	3-10 years
Right to use - others	3-15 years

Amortisation methods, useful lives and residual values are reviewed at the end of reporting period and adjusted if appropriate.

### 3.13 Impairment

The carrying amounts of the Group's assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, the assets' recoverable amounts are estimated. For goodwill and intangible assets that have indefinite useful lives or are not yet available for use, the recoverable amount is estimated each year at the same time.

An impairment loss is recognised if the carrying amount of an asset or its cash-generating unit exceeds its recoverable amount. The impairment loss is recognised in profit or loss.

#### *Calculation of recoverable amount*

The recoverable amount of a non-financial asset is the greater of the asset's value in use and fair value less costs to sell. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. For an asset that does not generate cash inflows largely independent of those from other assets, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

#### *Reversals of impairment*

An impairment loss in respect of goodwill is not reversed.

Impairment losses recognised in prior periods in respect of other non-financial assets are assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

### 3.14 Employee benefits

#### *Defined contribution plans*

Obligations for contributions to defined contribution plans are expensed as the related service is provided. The defined contribution plans comprise provident funds established by the Group for its employees. Membership to the funds is on a voluntary basis. Contributions are made monthly by the employees at the minimum rate as required by law not exceeding 15% of their basic salaries and the Group contributes at the minimum rate as required by law not exceeding 15% of the employees' basic salaries. The provident funds are registered with the Ministry of Finance as juristic entities and are managed by a licensed Fund Manager.

#### *Defined benefit plans*

The Group's net obligation in respect of defined benefit plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in the current and prior periods, discounting that amount.

The calculation of defined benefit obligations is performed every 3 years by a qualified actuary using the projected unit credit method.

Remeasurements of the defined benefit liability, actuarial gain or loss are recognised immediately in Other comprehensive income. The Group determines the interest expense on the defined benefit liability for the period by applying the discount rate used to measure the defined benefit obligation at the beginning of the annual period. Interest expense and other expenses related to defined benefit plans are recognised in profit or loss.

When the benefits of a plan are changed or when a plan is curtailed, the resulting change in benefit that relates to past service or the gain or loss on curtailment is recognised immediately in profit or loss. The Group recognises gains and losses on the settlement of a defined benefit plan when the settlement occurs.

### *Other long-term employee benefits*

The Group's net obligation in respect of long-term employee benefits is the amount of future benefit that employees have earned in return for their service in the current and prior periods. That benefit is discounted to determine its present value. Remeasurements are recognised in profit or loss in the period in which they arise.

### *Termination benefits*

Termination benefits are expensed at the earlier of when the Group can no longer withdraw the offer of those benefits and when the Group recognises costs for a restructuring. If benefits are not expected to be settled wholly within 12 months of the end of the reporting period, then they are discounted.

### *Short-term employee benefits*

Short-term employee benefits are expensed as the related service is provided. A liability is recognised for the amount expected to be paid if the Group has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

## 3.15 Provisions

A provision is recognised if, as a result of a past event, the Group has a present legal or constructive obligation that can be estimated reliably, and it is probable that an outflow of economic benefits will be required to settle the obligation. Provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The unwinding of the discount on provisions is recognised as finance cost.

## 3.16 Repurchase of share capital (treasury stock)

When share capital recognised as equity is repurchased, the amount of consideration paid, including directly attributable costs, is classified as treasury stock and recognised as a deduction from equity. An equal amount is appropriated from retained earnings and taken to a reserve for treasury stock within equity. When treasury stock are sold, the amount received is recognised as an increase in equity by crediting the cost of the treasury stock sold, calculated using the weighted average method, to the treasury stock account and transferring the equivalent amount back from treasury stock reserve to retained earnings. Surpluses on the sale of treasury stock are taken directly to a separate category within equity, 'Premium on treasury stock'. Net deficits on sale or cancellation of treasury stock are debited to retained earnings after setting off against any remaining balance of premium on treasury stock.

## 3.17 Revenue

Revenue excludes value added taxes and is arrived at after deduction of trade discounts.

### *Revenues from sale of goods and rendering of services*

Revenues from sale of goods is recognised when control of the goods has transferred to the customer, being at the point the goods are delivered to the customer. Revenues from rendering of services is recognised as a performance obligation satisfied at a point in time when services underlying the particular performance obligation is transferred to the customer or is recognised over time based on the stage of completion of the contract.

### *Investment income*

Investment income consists of dividend income, interest income from investments and bank deposits, and net gain or loss arises from financial assets or financial liability measured at FVTPL. Dividend income is recognised in profit or loss on the date the Group's right to receive payments is established. Interest income is recognised on a time basis, based on the principle outstanding and the applicable interest rate.

### *Other income*

Other income is recognised on an accrual basis.

### 3.18 Finance costs

Finance costs is recognised using the effective interest method and comprise interest expense on borrowings, unwinding of the discount on provisions and contingent consideration.

Borrowing costs that are not directly attributable to the acquisition, construction or production of a qualifying asset are recognised in profit or loss using the effective interest method

### 3.19 Income tax

Income tax expense for the year comprises current and deferred tax. Current and deferred tax are recognised in profit or loss except to the extent that they are relate to the items recognised in equity are recognised in other comprehensive income.

Current tax is the expected tax payable or receivable on the taxable income for the year, using tax rates enacted at the end of the reporting period, and any adjustment to tax payable or receivable in respect of previous years.

Deferred tax is recognised in respect of temporary differences between the carrying amounts and taxable value of assets and liabilities, using tax rates enacted or substantively enacted to the temporary differences when they reverse.

Deferred tax is not recognised for the following temporary differences:

- the initial recognition of goodwill and related transactions
- the initial recognition of assets or liabilities in a transaction that is not a business combination and that affects neither accounting nor taxable profit or loss
- differences relating to investments in subsidiaries to the extent that it is probable that they will not reverse in the foreseeable future.

The measurement of deferred tax reflects the tax consequences that would follow the manner in which the Group expects, at the end of the reporting period, to recover or settle the carrying amount of its assets and liabilities.

In determining the amount of current and deferred tax, the Group takes into account the impact of uncertain tax positions and whether additional taxes and interest may be due. The Group believes that its accruals for tax liabilities are adequate for all open tax years based on its assessment of many factors, including interpretations of tax law and prior experience. This assessment relies on estimates and assumptions and may involve a series of judgements about future events. New information may become available that causes the Group to change its judgement regarding the adequacy of existing tax liabilities; such changes to tax liabilities will impact tax expense in the period that such a determination is made.

Deferred tax assets and liabilities on different tax entities are offset if there is a legally enforceable right to offset current tax assets and liabilities, and they relate to income taxes levied by the same tax authority.

A deferred tax asset is recognised to the extent that it is probable that deferred tax assets can be utilised as future tax benefit. Deferred tax assets are reviewed at each reporting date and reduced to the extent that it is no longer probable that the related tax benefit will be realised.

### 3.20 Basic earnings (loss) per share

Basic earnings (loss) per share (“EPS”) is calculated by dividing profit (loss) for the year attributable to owners of the parent by the weighted average number of ordinary shares outstanding during the year, adjusted for treasury shares.

### 3.21 Financial information by segment

Segment results that are reported to the Group’s Management Committee (the chief operating decision maker) include items directly attributable to a segment as well as those that can be allocated on a reasonable basis.



### 3.22 Measurement of fair values

A number of the Group's accounting policies and disclosures require the measurement of fair values, for both financial assets and liabilities.

When measuring the fair value of an asset or a liability, the Group uses observable market data as far as possible. Fair values are categorised into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at the measurement date.
- Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly.
- Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

If the inputs used to measure the fair value of an asset or liability might be categorised in different levels of the fair value hierarchy, then the fair value measurement is categorised in its entirety in the same level of the fair value hierarchy as the lowest level input that is significant to the entire measurement.

### 3.23 Use of management's judgments

The preparation of financial statements in conformity with TFRS requires the Group's management to exercise judgments in order to determine the accounting policies, estimates and various assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the end of the reporting period and the reported amounts of revenues and expenses during the reporting period. Although these estimates are based on management's reasonable consideration of current events, actual results may differ from these estimates. The significant uses of management's judgements are as follows:

#### 3.23.1 Fair value measurements and valuation processes

Some of the Group's assets and liabilities are measured at fair value for financial reporting purposes.

In estimating the fair value of an asset or liability, the Group uses market-observable data to the extent it is available. Where Level 1 inputs are not available, the Group uses other observable information either directly or indirectly or other unobservable information according to level of fair value respectively.

Information about valuation techniques and inputs used in determining the fair value of various assets and liabilities are disclosed in Note 35.

#### 3.23.2 Calculation of recoverable amount

In the calculation of recoverable amount, the Group's management estimated the future cash flows discounted to their present value using an appropriate discount rate that reflects current market assessments of the time value of money and the risks specific to the asset.

#### 3.23.3 Impairment of goodwill

Determining whether goodwill is impaired requires an estimation of the value in use of the cash-generating units to which goodwill has been allocated. The value in use calculation requires the Group's management to estimate the future cash flows expected to arise from the cash-generating unit and a suitable discount rate in order to calculate present value where the actual future cash flows are less than expected, an impairment loss may arise.

#### 3.23.4 Recognition of deferred tax assets

The recognition of deferred tax assets is based upon whether it is probable that sufficient taxable profits will be available in the future against which the reversal of temporary differences can be deducted which involves judgement regarding the future financial performance of the Group.

**4. ACQUISITION OF BUSINESSES**

On August 8, 2018, the Group entered into the Shares Purchase Agreement to acquire 74% share of Siam Mitsui PTA Company Limited, Purified Terephthalic Acid producer, and 74% share of Thai PET Resin Company Limited, Polyethylene Terephthalate resin producer, directly and indirectly, from SCG Chemicals Co., Ltd. and Mitsui Chemicals, Inc. Subsequently on December 27, 2018, the Group completed the share acquisition of subsidiaries for a preliminary cash consideration of approximately Baht 4,123 million. The final purchase price was settled with the seller for an additional payment of approximately Baht 1,249 million, which already paid in March 2019.

Management believes that the acquisition is harmonised with the business strategy of the Company that intends to expand the downstream investment and increase market potential in polymer business to satisfy customer's need.

The purchase under this condition is in accordance with TFRS 3 Business Combinations, requires the recognition of assets, liabilities and contingent liabilities acquired at the acquisition date at fair value. The Group is in process of hiring an independent appraiser to determine the fair value of assets and liabilities acquired during the measurement period, which must not exceed one year from the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date. Accordingly, the fair value of assets acquired and liabilities assumed have been provisionally determined at the acquisition date (the value of property, plant and equipment determined by independent assets appraiser).

However, the fair value of assets acquired and liabilities have been already completed. Therefore, the fair value of assets acquired and liabilities have been adjusted and a gain on bargain purchase of Baht 31 million has been recognised in the consolidated income statement for the year ended December 31, 2019.

The following summarises the major classes of consideration transferred, and the recognised amounts of assets acquired and liabilities assumed at the acquisition date:

Identifiable assets acquired and liabilities assumed as at December 31, 2018:

	<b>Fair values (in million Baht)</b>
Cash and cash equivalents	1,589
Trade receivables	2,481
Inventories	2,201
Property, plant and equipment	9,549
Intangible assets	8
Trade payables	(2,777)
Other payables	(183)
Long-term borrowings from financial institutions	(750)
Deferred tax	(584)
Other assets/(liabilities), net	(2,444)
<b>Net identifiable assets acquired and liabilities assumed</b>	<b>9,090</b>
Non-controlling interest acquired	(2,363)
<b>Net assets acquired and liabilities assumed</b>	<b>6,727</b>
Gain on bargain purchase	(1,355)
<b>Total consideration</b>	<b>5,372</b>
Cash acquired	(1,589)
<b>Net consideration</b>	<b>3,783</b>

*Acquisition-related costs*

The Group incurred acquisition-related costs of Baht 110 million related to external legal fees and due diligence costs. The legal fees and due diligence costs have been included in administrative expenses in the Group's consolidated statement of income in the period which transaction occurred.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 5. CASH AND CASH EQUIVALENTS

5.1 Cash and cash equivalents as at December 31, 2020 and 2019 consist of:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Cash on hand	2	2	2	2
Cash and highly liquid current investments (Private funds)	-	62	-	62
Cash at banks - current accounts	2,307	822	100	5
Cash at banks - savings accounts	30,262	13,091	20,633	9,283
Cash at banks - foreign accounts	2,484	2,321	1,838	1,546
Highly liquid current investments	-	2,542	-	1,499
Financial assets at amortisation costs				
- Deposit at bank	9,257	-	8,961	-
Financial assets at fair value through other comprehensive income				
- Treasury bills	1	-	1	-
<b>Total</b>	<b>44,313</b>	<b>18,840</b>	<b>31,535</b>	<b>12,397</b>

As at December 31, 2020 and 2019, bank accounts of two subsidiaries totalling Baht 726 million and Baht 60 million, respectively, are pledged as collateral to secure credit facilities obtained from financial institutions. However, the pledged bank accounts can be withdrawn in accordance with the objective and conditions stipulated in the loan agreements for use as working capital required in the normal course of business (see Note 20.2).

5.2 Non-cash transactions:

Reconciliation of liabilities arising from financing activities

The table below details changes in the liabilities arising from financing activities, including both cash and non-cash changes.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

As at December 31, 2020

Unit : Million Baht

	Consolidated financial statements									
	Balance as at January 1, 2020	Net financing cash flows	Non-cash changes						Others	Balance as at December 31, 2020
			Interest expense	Interest expense capitalised as part of fixed assets	Amortisation of deferred financing fees	Increase in lease liabilities	Amortisation of deferred interest from lease	(Gain) Loss on exchange rate		
Accrued interest expense	846	(3,365)	4,118	(867)	220	-	-	-	-	952
Lease liabilities	401	(982)	-	-	-	7,220	170	17	(39)	6,787
Short-term borrowings from financial institutions	2,021	(2,026)	-	-	-	-	-	24	-	19
Long-term borrowings from financial institutions	34,626	27,966	-	-	(152)	-	-	511	-	62,951
Long-term borrowings from other parties	310	(43)	-	-	-	-	-	27	-	294
Debentures	70,131	15,000	-	-	22	-	-	(121)	-	85,032
<b>Total</b>	<b>108,335</b>	<b>36,550</b>	<b>4,118</b>	<b>(867)</b>	<b>90</b>	<b>7,220</b>	<b>170</b>	<b>458</b>	<b>(39)</b>	<b>156,035</b>

As at December 31, 2019

Unit : Million Baht

	Consolidated financial statements									
	Balance as at January 1, 2019	Net financing cash flows	Non-cash changes						Others	Balance as at December 31, 2019
			Interest expense	Interest expense capitalised as part of fixed assets	Amortisation of deferred financing fees	Increase in lease liabilities	Amortisation of deferred interest from lease	Gain on exchange rate		
Accrued interest expense	706	(2,918)	3,637	(658)	93	-	-	(14)	-	846
Lease liabilities	320	(176)	-	-	-	250	7	-	-	401
Short-term borrowings from financial institutions	3,343	(1,281)	-	-	-	-	-	(41)	-	2,021
Long-term borrowings from financial institutions	37,962	(2,847)	-	-	39	-	-	(552)	24	34,626
Long-term borrowings from other parties	1,252	(27)	-	-	3	-	-	(71)	(847)	310
Debentures	54,350	18,058	-	-	47	-	-	(2,324)	-	70,131
<b>Total</b>	<b>97,933</b>	<b>10,809</b>	<b>3,637</b>	<b>(658)</b>	<b>182</b>	<b>250</b>	<b>7</b>	<b>(3,002)</b>	<b>(823)</b>	<b>108,335</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

As at December 31, 2020

Unit : Million Baht

	Separate financial statements								Balance as at December 31, 2020
	Balance as at January 1, 2020	Net financing cash flows	Non-cash changes					(Gain) Loss on exchange rate	
			Interest expense	Interest expense capitalised as part of fixed assets	Amortisation of deferred financing fees	Increase in lease liabilities	Amortisation of deferred interest from lease		
Accrued interest expense	863	(3,141)	3,456	(407)	199	-	-	-	970
Lease liabilities	289	(1,057)	-	-	-	6,672	160	-	6,064
Short-term borrowings from related parties	3,041	2,567	-	-	-	-	-	-	5,608
Long-term borrowings from financial institutions	10,073	22,889	-	-	(156)	-	-	25	32,831
Long-term borrowing from a related party	14,991	-	-	-	18	-	-	(61)	14,948
Debentures	55,221	15,000	-	-	6	-	-	(63)	70,164
<b>Total</b>	<b>84,478</b>	<b>36,258</b>	<b>3,456</b>	<b>(407)</b>	<b>67</b>	<b>6,672</b>	<b>160</b>	<b>(99)</b>	<b>130,585</b>

As at December 31, 2019

Unit : Million Baht

	Separate financial statements								Balance as at December 31, 2019
	Balance as at January 1, 2019	Net financing cash flows	Non-cash changes					Gain on exchange rate	
			Interest expense	Interest expense capitalised as part of fixed assets	Amortisation of deferred financing fees	Increase in lease liabilities	Amortisation of deferred interest from lease		
Accrued interest expense	715	(2,449)	2,851	(280)	26	-	-	-	863
Lease liabilities	226	(122)	-	-	-	180	5	-	289
Short-term borrowings from related parties	1,931	1,110	-	-	-	-	-	-	3,041
Long-term borrowings from financial institutions	14,419	(4,280)	-	-	5	-	-	(71)	10,073
Long-term borrowing from a related party	16,105	-	-	-	18	-	-	(1,132)	14,991
Debentures	38,321	18,058	-	-	(7)	-	-	(1,151)	55,221
<b>Total</b>	<b>71,717</b>	<b>12,317</b>	<b>2,851</b>	<b>(280)</b>	<b>42</b>	<b>180</b>	<b>5</b>	<b>(2,354)</b>	<b>84,478</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 6. TRADE RECEIVABLES

Trade receivables as at December 31, 2020 and 2019 consist of:

	<i>Note</i>	Unit : Million Baht			
		<u>Consolidated</u> <u>financial statements</u>		<u>Separate</u> <u>financial statements</u>	
		<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Related parties	28	11,150	16,721	17,794	22,433
Other parties		18,186	17,485	4,817	5,705
<b>Total</b>		<b>29,336</b>	<b>34,206</b>	<b>22,611</b>	<b>28,138</b>
<u>Less</u> Allowance for credit loss		(59)	-	(19)	-
Allowance for doubtful accounts		-	(49)	-	(19)
<b>Total trade receivables</b>		<b>29,277</b>	<b>34,157</b>	<b>22,592</b>	<b>28,119</b>

The following table shows the details of trade receivables as at December 31, 2020 and 2019, classified by aging and expected credit losses ("ECL"):

As at December 31, 2020	Not due	Unit : Million Baht				Total
		<u>Consolidated financial statements</u>				
		Trade receivables				
		Past due				
		Less than 3 months	Over 3 months but less than 6 months	Over 6 months but less than 12 months	Over 12 months	
Expected credit loss rate	0.00%	0.12%	30.32%	73.90%	90.82%	
Expected total gross carrying amount at default						
- Related parties	11,128	22	-	-	-	<b>11,150</b>
- Other parties	17,625	483	21	3	54	<b>18,186</b>
Lifetime ECL	-	(1)	(7)	(2)	(49)	<b>(59)</b>
<b>Total trade receivables</b>	<b>28,753</b>	<b>504</b>	<b>14</b>	<b>1</b>	<b>5</b>	<b>29,277</b>

As at December 31, 2019	Not due	Unit : Million Baht				Total
		<u>Consolidated financial statements</u>				
		Trade receivables				
		Past due				
		Less than 3 months	Over 3 months but less than 6 months	Over 6 months but less than 12 months	Over 12 months	
Trade receivables						
- Related parties	16,705	16	-	-	-	<b>16,721</b>
- Other parties	16,980	453	8	6	38	<b>17,485</b>
Allowance for doubtful accounts	-	(2)	(6)	(3)	(38)	<b>(49)</b>
<b>Total trade receivables</b>	<b>33,685</b>	<b>467</b>	<b>2</b>	<b>3</b>	<b>-</b>	<b>34,157</b>



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Million Baht

As at December 31, 2020	Not due	<u>Separate financial statements</u>				Total
		Trade receivables				
		Past due		Past due		
		Less than 3 months	Over 3 months but less than 6 months	Over 6 months but less than 12 months	Over 12 months	
Expected credit loss rate	0.00%	0.00%	0.00%	0.00%	100.00%	
Expected total gross carrying amount at default						
- Related parties	17,793	1	-	-	-	17,794
- Other parties	4,789	9	-	-	19	4,817
Lifetime ECL	-	-	-	-	(19)	(19)
<b>Total trade receivables</b>	<b>22,582</b>	<b>10</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>22,592</b>

Unit : Million Baht

As at December 31, 2019	Not due	<u>Separate financial statements</u>				Total
		Trade receivables				
		Past due		Past due		
		Less than 3 months	Over 3 months but less than 6 months	Over 6 months but less than 12 months	Over 12 months	
Trade receivables						
- Related parties	22,428	5	-	-	-	22,433
- Other parties	5,684	2	-	-	19	5,705
Allowance for doubtful accounts	-	-	-	-	(19)	(19)
<b>Total trade receivables</b>	<b>28,112</b>	<b>7</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>28,119</b>

The normal credit term granted by the Group ranges from 14 days to 90 days.

The following table shows the movement in lifetime ECL that has been recognised for trade receivables in accordance with the simplified approach set out in TFRS 9 for the year ended December 31, 2020.

	Unit : Million Baht	
	<u>Consolidated financial statements</u>	<u>Separate financial statements</u>
<b>Balance as at January 1, 2020</b>	49	19
Net remeasurement of loss allowance	33	-
Amounts recovered	(25)	-
Foreign exchange gains and translation differences	2	-
<b>Balance as at December 31, 2020</b>	<b>59</b>	<b>19</b>

### 7. OTHER RECEIVABLES

Other receivables as at December 31, 2020 and 2019 consist of:

	Unit : Million Baht			
	<u>Consolidated financial statements</u>		<u>Separate financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Prepaid expenses	1,733	1,358	917	747
Receivable from oil hedging contracts	34	417	34	417
Accrued income	619	216	500	305
Other receivables	943	579	458	578
Receivable from The Revenue Department	210	367	69	222
Others	187	212	35	46
<b>Total</b>	<b>3,726</b>	<b>3,149</b>	<b>2,013</b>	<b>2,315</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 8. INVENTORIES

Inventories as at December 31, 2020 and 2019 consist of:

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Finished goods	11,604	14,078	7,620	9,405
Work in progress	1,446	1,618	855	992
Raw materials	5,868	9,387	4,544	8,095
Factory supplies and spare parts	11,749	10,406	8,596	8,113
Goods in transit	2,960	1,221	1,014	49
<b>Total</b>	<b>33,627</b>	<b>36,710</b>	<b>22,629</b>	<b>26,654</b>
<u>Less</u> Allowance for decline in value	(28)	(303)	(3)	(240)
Allowance for obsolescence	(154)	(155)	(38)	(33)
<b>Net</b>	<b>33,445</b>	<b>36,252</b>	<b>22,588</b>	<b>26,381</b>

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Inventories recognised as an expense in cost of sales of goods				
- Cost of sales	315,658	389,752	268,282	339,857
- Reversal of write-down to net realisable value of inventories	(275)	(1,061)	(237)	(1,090)
<b>Net</b>	<b>315,383</b>	<b>388,691</b>	<b>268,045</b>	<b>338,767</b>

As at December 31, 2020 and 2019, the Company's inventories included petroleum legal reserve of 227 million liters with approximated value of Baht 2,204 million and 302 million liters with approximated value of Baht 4,072 million, respectively.

### 9. INVESTMENTS IN SUBSIDIARIES

Movements of investments in subsidiaries for the years ended December 31, were as follows:

	<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>
<b><i>Subsidiaries</i></b>		
As at January 1,	72,551	67,783
Acquisition	3,935	4,833
Capital distribution	-	(2)
Allowance for impairment	-	(63)
<b>As at December 31,</b>	<b>76,486</b>	<b>72,551</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Investments in subsidiaries as at December 31, 2020 and 2019, and dividend income for the years ended December 31, 2020 and 2019 were as follows:

	Separate financial statements										Unit : Million Baht				
	Ownership Interest (%)		Paid-up capital		Cost		Impairment		At cost-net			Fair value of listed securities		Dividend income	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019		2020	2019	2020	2019
<b>Subsidiaries</b>															
Global Green Chemicals Plc.	72	72	10,237	10,237	7,400	7,400	7,400	-	7,400	7,400	6,956	9,324	148	111	
GC Glycol Co., Ltd.	100	100	5,395	5,395	5,395	5,395	5,395	-	5,395	5,395	-	-	-	432	
GC Polyols Co., Ltd.	82	82	3,693	2,692	3,032	2,210	3,032	-	2,210	2,210	-	-	-	-	
GC Marketing Solutions Co., Ltd.	99	99	40	40	451	451	451	-	451	451	-	-	422	40	
GC Maintenance and Engineering Co., Ltd.	100	100	137	137	155	155	155	-	155	155	-	-	6	128	
GC Logistics Solutions Co., Ltd.	99	99	1,200	1,200	1,607	1,607	1,607	-	1,607	1,607	-	-	30	30	
GC Ventures Co., Ltd.	100	100	567	465	567	465	567	-	465	465	-	-	-	-	
GC Treasury Center Co., Ltd.	100	100	10	10	10	10	10	-	10	10	-	-	29	-	
GC Styrenics Co., Ltd.	100	100	190	190	190	190	190	-	190	190	-	-	-	-	
GC Oxtrane Co., Ltd.	100	100	7,136	5,267	7,136	5,267	7,136	-	5,267	5,267	-	-	-	-	
GC-M PTA Company Limited	49	49	4,800	4,800	2,903	2,903	2,903	-	2,903	2,903	-	-	-	-	
GC Estate Co., Ltd.	100	100	7,200	7,200	7,200	7,200	7,200	-	7,200	7,200	-	-	-	-	
Solution Creation Co., Ltd.	100	100	826	524	826	524	826	-	524	524	-	-	-	-	
Thai Tank Terminal Limited	51	51	900	900	459	459	459	-	459	459	-	-	500	535	
PTT Phenol Co., Ltd.	100	100	11,851	11,851	13,155	13,155	13,155	-	13,155	13,155	-	-	460	1,390	
NPC Safety and Environmental Service Co., Ltd.	100	100	165	165	165	165	165	-	165	165	-	-	11	-	
ENVICCO Limited	70	-	270	-	189	-	189	-	-	-	-	-	-	-	
PTTGC America Corporation	100	100	-	-	5,058	4,407	5,058	-	4,407	4,407	-	-	-	-	
PTTGC International Private Limited	100	100	30,877	30,877	30,877	30,877	(10,289)	(10,289)	20,588	20,588	-	-	-	-	
<b>Total investments in subsidiaries</b>			<b>86,775</b>	<b>82,840</b>	<b>76,486</b>	<b>72,551</b>	<b>(10,289)</b>	<b>(10,289)</b>	<b>6,956</b>	<b>9,324</b>	<b>1,606</b>	<b>2,666</b>			

### *Change in investments in subsidiaries*

#### *GC Polyols Co., Ltd.*

During the year ended December 31, 2020, GC Polyols Co., Ltd. (“GCP”) has called for paid-up capital from the capital increase by the Board of Directors’ Meeting of GCP held on November 11, 2019 for conducting a Polyols & PU System Project at Baht 294.23 million, of which fully received in January 2020 and March 2020. Subsequently on April 8, 2020, GCP registered for capital increase by the Annual General Meeting for the year 2020 of shareholders of GCP totalling 9,520,000 shares at Baht 100 per share amounting to Baht 952 million, in which the GCP’s registered capital increased from the original registered capital amounting to Baht 3,050 million to a new registered capital amounting to Baht 4,002 million, and called for paid-up capital from the capital increase totalling at Baht 642.60 million from the shareholders, of which fully received amounting to Baht 527.57 million from the Company during the year ended December 31, 2020.

During the year ended December 31, 2019, GC Polyols Co., Ltd. has called for paid-up capital from the capital increase by the Board of Directors’ Meeting of the subsidiary held on November 14, 2018 for conducting a Polyols & PU System Project at Baht 1,158.12 million, of which fully received during the year ended December 31, 2019.

#### *GC Ventures Co., Ltd.*

On August 3, 2020, GC Ventures Co., Ltd. has called for paid-up capital from the capital increase by the Annual General Meeting for the year 2020 of shareholders of the subsidiary held on March 19, 2020 for investment in Corporate Venture Capital (CVC) at Baht 102.13 million, of which fully received in August 2020.

During the year ended December 31, 2019, GC Ventures Co., Ltd. has called for paid-up capital from the capital increase by the Annual General Meeting of shareholders of the subsidiary held on March 25, 2019, for investment in Corporate Venture Capital (CVC) at Baht 320.76 million, of which fully received during the year ended December 31, 2019.

#### *GC Oxirane Co., Ltd.*

On January 3, 2020, GC Oxirane Co., Ltd. (“GCO”) has called for paid-up capital from the capital increase by the Board of Directors’ Meeting of GCO held on October 5, 2017 for conducting a Propylene Oxide Project at Baht 262.68 million, of which fully received in January 2020. In addition, GCO registered for capital increase by the Extraordinary General Meeting of shareholders of GCO held on December 9, 2019 totalling 22,310,000 shares at Baht 100 per share amounting to Baht 2,231 million, in which the GCO’s registered capital increased from the original registered capital amounting to Baht 5,530 million to a new registered capital amounting to Baht 7,761 million. During the year ended December 31, 2020, GCO has called for paid-up capital from the capital increase by the Board of Directors’ Meeting of GCO held on January 15, 2020 totalling at Baht 1,606.32 million, of which fully received during the year ended December 31, 2020.

During the year ended December 31, 2019, GC Oxirane Co., Ltd. has called for paid-up capital from the capital increase by the Board of Directors’ Meeting of the subsidiary held on October 5, 2017 for conducting a Propylene Oxide Project at Baht 2,875.60 million, of which fully received during the year ended December 31, 2019.

#### *Solution Creation Co., Ltd.*

On July 22, 2020, Solution Creation Co., Ltd. has called for paid-up capital from the capital increase by the Extraordinary General Meeting of shareholders of the subsidiary held on May 7, 2020 to invest in Dynachisso Thai Co., Ltd. at Baht 302.12 million, of which fully received in July 2020.

On March 14, 2019, Solution Creation Co., Ltd. has called for paid-up capital from the capital increase from the Company following the Extraordinary General Meeting of shareholders of the subsidiary held on January 11, 2019 to invest in Revolve Group Limited at Baht 340.90 million, of which received in March 2019.

*ENVICCO Limited*

On July 22, 2019, the Board of Directors' Meeting of the Company approved to establish ENVICCO Limited ("ENVICCO") as a subsidiary in which share capital held by the Company as 70% and ALPHA TH Recyclingbeteiligungsgesellschaft m.b.H. as 30%. The purpose of ENVICCO is for conducting a Recycled Plastic Project. On February 3, 2020, ENVICCO registered the establishment with registered capital of 1,000 shares at Baht 100 per share amounting to Baht 0.10 million and called for paid-up capital of 1,000 shares at Baht 25 per share, totalling Baht 25,000 from the Company. Subsequently on February 20, 2020, ENVICCO registered for capital increase totalling 10,799,000 shares at Baht 100 per share amounting to Baht 1,079.90 million, in which the ENVICCO's registered capital increased from the original registered capital amounting to Baht 0.10 million to a new registered capital amounting to Baht 1,080 million, and called for paid-up capital of 25% of registered capital amounting to Baht 270 million from the shareholders, of which fully received amounting to Baht 189 million from the Company in March 2020.

*PTTGC America Corporation*

During the year ended December 31, 2020, PTTGC America Corporation has called for paid-up capital from the capital increase by the Board of Directors' Meeting of the subsidiary held on July 15, 2016 and September 15, 2020 for the purpose of US Petrochemical Complex Project investment totalling at USD 20.84 million or equivalent to Baht 651.18 million, of which fully received during the year ended December 31, 2020.

On August 28, 2019, PTTGC America Corporation has called for paid-up capital from the capital increase by the Board of Directors' Meeting of the subsidiary held on July 15, 2016 for the purpose of US Petrochemical Complex Project investment at USD 1.50 million or equivalent to Baht 46.24 million, of which fully received in September 2019.

*PTTGC International Private Limited*

On May 8, 2019, PTTGC International Private Limited has called for paid-up capital from the capital increase by the Board of Directors' Meeting of the subsidiary held on April 29, 2019 for the purpose of corporate and its subsidiary operation at SGD 3.92 million or equivalent to Baht 91.89 million, of which fully received in May 2019.

**Impairment loss on investment in a subsidiary***PTTGC International Private Limited*

During the year ended December 31, 2019, the Company recognised impairment loss on the investment in PTTGC International Private Limited totalling Baht 63.05 million in the separate financial statements as the recoverable amount of investment in PTTGC Innovation America Corp. was less than its carrying amount.

**10. INVESTMENTS IN JOINT VENTURES**

Movements of investments in joint ventures for the years ended December 31, were as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Joint ventures</b>				
As at January 1,	32,444	30,758	15,373	15,373
Acquisitions	522	794	-	-
Share of profit of investments in joint ventures	863	2,626	-	-
Share of other comprehensive income (loss) of joint ventures	279	(532)	-	-
Dividend income	(1,600)	(1,367)	-	-
Effect from translation differences on foreign investment	33	165	-	-
Effect from first-time adoption of new accounting policy (see Note 2.6)	(4)	-	-	-
<b>As at December 31,</b>	<b>32,537</b>	<b>32,444</b>	<b>15,373</b>	<b>15,373</b>





## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Joint ventures

The following table summarises the financial information of the joint ventures as included in their own financial statements, adjusted for fair value adjustments at acquisition and differences in accounting policies. The table also reconciles the summarised financial information to the carrying amount of the Group's interest in these companies.

	<u>PTT Asahi Chemical Co., Ltd.</u>		<u>HMC Polymers Co., Ltd.</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Unit : Million Baht</b>				
<b>For the years ended December 31,</b>				
<b>Statement of profit or loss</b>				
Revenue	8,293	13,141	25,128	27,033
Depreciation and amortisation	1,361	(866)	1,709	(1,579)
Profit (loss) for the year	(843)	2,617	703	1,627
Other comprehensive income (loss)	(14)	-	688	(951)
<b>Total comprehensive income (loss) for the year</b>	<b>(857)</b>	<b>2,617</b>	<b>1,391</b>	<b>676</b>
<b>As at December 31,</b>				
<b>Statement of financial position</b>				
Current assets	3,407	5,158	7,615	7,510
Non-current assets	24,904	21,186	29,089	25,481
Current liabilities	(1,793)	(1,428)	(2,462)	(5,365)
Non-current liabilities	(5,619)	(3,160)	(11,109)	(5,186)
<b>Net assets</b>	<b>20,899</b>	<b>21,756</b>	<b>23,133</b>	<b>22,440</b>
Proportion of the Group's ownership interest in joint ventures (%)	50.00	50.00	41.44	41.44
	10,449	10,878	9,586	9,299
Investment amount over net asset at acquisition date	-	-	3,038	3,038
<b>Carrying amount of interest in investee</b>	<b>10,449</b>	<b>10,878</b>	<b>12,624</b>	<b>12,337</b>
<i>Remark:</i>				
Cash and cash equivalents	1,097	854	1,835	1,344

The reconciliation of the summarised financial information to the carrying amount of the Group's interest in these companies.

	<u>PTT Asahi Chemical Co., Ltd.</u>		<u>HMC Polymers Co., Ltd.</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Unit : Million Baht</b>				
<b>Group's interest in net assets of investee</b>				
as at January 1,	10,878	9,569	12,337	12,885
Total comprehensive income (loss) attributable to the Group	(429)	1,309	576	280
Dividends received during the year	-	-	(289)	(828)
<b>Carrying amount of interest in investee as at December 31,</b>	<b>10,449</b>	<b>10,878</b>	<b>12,624</b>	<b>12,337</b>

### Immaterial joint ventures

The summarised financial information for the Group's interest in immaterial joint ventures based on the amounts reported in the Group's consolidated financial statements:

	<u>Immaterial joint ventures</u>	
	<u>2020</u>	<u>2019</u>
<b>Unit : Million Baht</b>		
<b>For the years ended December 31,</b>		
Carrying amount of interests in immaterial joint ventures	9,464	9,229
Group's share of:		
- Profit for the year	1,026	643
- Other comprehensive income (loss)	(2)	28
- Total comprehensive income for the year	1,024	671

### *Change in investments in joint ventures*

#### *GGC KTIS Bioindustrial Co., Ltd.*

During the year ended December 31, 2020, GGC KTIS Bioindustrial Company Limited, an indirect joint venture of the Group, has called for paid-up capital from the capital increase of Baht 522.50 million from GGC Biochemicals Company Limited, of which fully received during the year ended December 31, 2020.

#### *Revolve Group Limited*

On March 26, 2019, Solution Creation Co., Ltd., a subsidiary, acquired 49% of shares of Revolve Group Limited (“RGL”) from previous shareholder and by subscription of newly issued shares of RGL. The subsidiary paid for the share purchase totalling pound sterling 6.4 million or equivalent to Baht 269.54 million according to Share Sale and Subscription Agreement. The investment is harmonised with the Company’s business strategy that intends to expand the investment toward downstream and enhance the value chain of performance chemicals products.

## 11. INVESTMENTS IN ASSOCIATES

Movements of investments in associates for the years ended December 31, were as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Associates</b>				
As at January 1,	29,829	15,450	26,813	9,793
Acquisition	1,027	17,020	733	17,020
Disposal	-	(212)	-	-
Share of profit of investments in associates	2,459	1,933	-	-
Share of other comprehensive income (loss)				
of investments in associates	34	(385)	-	-
Allowance for impairment	(9)	-	-	-
Dividend income	(1,294)	(875)	-	-
Difference arising from the change in the ownership interest in an investment <sup>(1)</sup>	-	(3,408)	-	-
Interests in equity of associate	-	319	-	-
Effect from translation differences on foreign investment	-	(13)	-	-
Effect from first-time adoption of new accounting policy (see Note 2.6)	(173)	-	-	-
<b>As at December 31,</b>	<b>31,873</b>	<b>29,829</b>	<b>27,546</b>	<b>26,813</b>

<sup>(1)</sup> *Difference arising from the change in the ownership interest in investment*

Global Power Synergy Public Company Limited (“GPSC”) had completed Tender Offer for shares of Glow Energy Public Company Limited (“GLOW”) on May 22, 2019 and December 2, 2019. In 2019, GPSC has made payment for shares to minority shareholders of totalling Baht 40,806.27 million. GPSC therefore directly and indirectly held 99.83%, increased from 69.11%, of the total authorised and paid-up shares. GPSC recognised the negative movement from change in ownership interest of Baht 14,991.99 million in its shareholders’ equity as at December 31, 2019. The Company therefore recognised this transaction as the difference arising from the change in the ownership interest in an investment, according to its shareholding interest in GPSC of 22.73%, amounting to Baht 3,407.68 million in shareholders’ equity.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Investments in associates as at December 31, 2020 and 2019, and dividend income for the years ended December 31, 2020 and 2019 were as follows:

Consolidated financial statements														
Unit : Million Baht														
	Ownership Interest (%)		Paid-up capital		Cost		Equity method		Impairment		Equity method - net		Dividend income	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
<b>Direct associates</b>														
Global Power Synergy Plc.	23	23	28,197	28,197	22,753	22,753	23,378	22,599	-	-	23,378	22,599	833	443
Kuraray GC Advanced Materials Co., Ltd.	33	33	4,203	2,008	1,404	1,336	1,336	629	-	-	1,336	629	-	-
PTT Energy Solutions Co., Ltd.	20	20	150	150	30	30	48	42	-	-	48	42	-	-
PTT Digital Solutions Co., Ltd.	40	40	150	150	60	60	1,014	824	-	-	1,014	824	38	35
Vinythai Plc.	25	25	7,111	7,111	3,297	3,297	5,761	5,642	-	-	5,761	5,642	415	385
Eastern Fluid Transport Co., Ltd.	23	23	10	10	2	2	12	16	-	-	12	16	8	12
			<b>27,546</b>	<b>26,813</b>	<b>27,546</b>	<b>26,813</b>	<b>31,549</b>	<b>29,752</b>	<b>-</b>	<b>-</b>	<b>31,549</b>	<b>29,752</b>	<b>1,294</b>	<b>875</b>
<b>Indirect associates</b>														
Thai Eastern Top Seeds Oil Co., Ltd.	30	30	222	222	67	67	9	28	(9)	(9)	-	-	28	-
S.P. Petpack Inter Group Co., Ltd.	25	25	200	200	50	50	40	49	-	-	40	49	-	-
Dynachisso Thai Co., Ltd.	42	-	120	-	294	-	284	-	-	-	284	-	-	-
			<b>411</b>	<b>117</b>	<b>411</b>	<b>117</b>	<b>333</b>	<b>77</b>	<b>(9)</b>	<b>(9)</b>	<b>324</b>	<b>77</b>	<b>-</b>	<b>-</b>
			<b>27,957</b>	<b>26,930</b>	<b>27,957</b>	<b>26,930</b>	<b>31,882</b>	<b>29,829</b>	<b>(9)</b>	<b>(9)</b>	<b>31,873</b>	<b>29,829</b>	<b>1,294</b>	<b>875</b>
<b>Total investments in associates</b>														
Separate financial statements														
Unit : Million Baht														
	Ownership Interest (%)		Paid-up capital		Cost		Impairment		At cost - net		Fair value of listed securities		Dividend income	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
<b>Associates</b>														
Global Power Synergy Plc.	23	23	28,197	28,197	22,753	22,753	-	-	22,753	22,753	47,267	54,959	833	443
Kuraray GC Advanced Materials Co., Ltd.	33	33	4,203	2,008	1,404	671	-	-	1,404	671	-	-	-	-
PTT Energy Solutions Co., Ltd.	20	20	150	150	30	30	-	-	30	30	-	-	-	-
PTT Digital Solutions Co., Ltd.	40	40	150	150	60	60	-	-	60	60	-	-	38	35
Vinythai Plc.	25	25	7,111	7,111	3,297	3,297	-	-	3,297	3,297	9,473	7,475	415	385
Eastern Fluid Transport Co., Ltd.	15	15	10	10	2	2	-	-	2	2	-	-	6	8
			<b>27,546</b>	<b>26,813</b>	<b>27,546</b>	<b>26,813</b>	<b>-</b>	<b>-</b>	<b>27,546</b>	<b>26,813</b>	<b>56,740</b>	<b>62,434</b>	<b>1,292</b>	<b>871</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Associates

The following table summarises the financial information of the associate as included in its own financial statements, adjusted for fair value adjustments at acquisition and differences in accounting policies. The table also reconciles the summarised financial information to the carrying amount of the Group's interest in the associate.

	Unit : Million Baht	
	<b>Global Power Synergy Plc.</b>	
	<b><u>2020</u></b>	<b><u>2019</u></b>
<b>For the years ended December 31,</b>		
<b>Statement of profit or loss</b>		
Revenue	68,757	65,789
Profit for the year	7,509	3,893
Other comprehensive loss	(146)	(1,452)
<b>Total comprehensive income for the year</b>	<b><u>7,363</u></b>	<b><u>2,441</u></b>
<b>As at December 31,</b>		
<b>Statement of financial position</b>		
Current assets	43,453	38,760
Non-current assets	213,146	212,952
Current liabilities	(22,063)	(39,055)
Non-current liabilities	(122,726)	(103,949)
<b>Net assets</b>	<b><u>111,810</u></b>	<b><u>108,708</u></b>
Non-controlling interests	(8,961)	(9,283)
<b>Total attributions to owners of the parent</b>	<b><u>102,849</u></b>	<b><u>99,425</u></b>
Proportion of the Group's ownership interest in associate (%)	22.73	22.73
<b>Carrying amount of interest in investee</b>	<b><u>23,378</u></b>	<b><u>22,599</u></b>
<i>Remark:</i>		
Cash and cash equivalents	20,289	18,839

The reconciliation of the summarised financial information to the carrying amount of the Group's interest in this associate.

	Unit : Million Baht	
	<b>Global Power Synergy Plc.</b>	
	<b><u>2020</u></b>	<b><u>2019</u></b>
Group's interest in net assets of investee as at January 1,	22,599	8,756
Total comprehensive income attributable to the Group	1,785	556
Dividends received during the year	(833)	(443)
Acquisition	-	16,819
Difference arising from the change in the ownership interest in an investment <sup>(1)</sup>	-	(3,408)
Invest in equity of associate	-	319
Effect from first-time adoption of new accounting policy	(173)	-
<b>Carrying amount of interest in investee as at December 31,</b>	<b><u>23,378</u></b>	<b><u>22,599</u></b>

*Immaterial associates*

The summarised financial information for the Group's interest in immaterial associates based on the amounts reported in the Group's consolidated financial statements:

	Unit : Million Baht	
	<u>Immaterial associates</u>	
	<u>2020</u>	<u>2019</u>
<b>For the years ended December 31,</b>		
Carrying amount of interests in immaterial associates	8,495	7,230
Group's share of:		
- Profit for the year	691	1,049
- Other comprehensive loss	(45)	(69)
- Total comprehensive income for the year	646	980

*Change in investment in associates**Global Power Synergy Plc.*

On August 28, 2019, the Extraordinary General Meeting No.1/2019 of Global Power Synergy Plc. ("GPSC") passed a resolution approving the registered capital increase of GPSC by issuing 1,321,428,571 ordinary shares, with a par value of Baht 10 per share amounting to Baht 13,214,285,710. From the original registered capital amounting to Baht 14,983,008,000 to a new registered capital amounting to Baht 28,197,293,710, and GPSC had received such share subscription amounting to Baht 13,214,285,670. On October 9, 2019, GPSC has already registered the change of registered capital and, on September 26, 2019, GPSC called for paid-up capital from the capital increase in the number proportionate to its shareholding GPSC of 300,344,470 shares at Baht 56 per share, totalling Baht 16,819.29 million, of which fully received in October 2019.

*Kuraray GC Advanced Materials Co., Ltd.*

On December 25, 2019 and during the year ended December 31, 2020, Kuraray GC Advanced Materials Co., Ltd., a direct associate of the Group, has called for paid-up capital from the capital increase of 7,331,300 shares at Baht 100 per share, totalling Baht 733.13 million, of which fully received during the year ended December 31, 2020.

On November 18, 2019, Kuraray GC Advanced Materials Co., Ltd., a direct associate of the Group, has called for paid-up capital from the capital increase of 2,004,000 shares at Baht 100 per share, totalling Baht 200.40 million, of which fully received in December 2019.

*Dynachisso Thai Co., Ltd.*

On July 31, 2020, Solution Creation Co., Ltd., a subsidiary, acquired 41.5% shares of Dynachisso Thai Co., Ltd. to advance in the PP compound engineering plastic business from Dynachem (Hong Kong) Limited. The subsidiary paid for the share purchase totalling Baht 293.82 million according to Share Sale and Subscription Agreement. The investment is aligned with the Company's business strategy to enhance competitiveness and add value to products to meet customer's demands.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 12. OTHER INVESTMENTS AND INVESTMENTS IN FINANCIAL ASSETS

Other investments and investments in financial assets as at December 31, 2020 and 2019 consisted of:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Temporary investments</b>				
Held-to-maturities debt securities	-	6,175	-	3,500
Available-for-sale debt securities (Private funds)	-	545	-	545
<b>Total temporary investments</b>	<b>-</b>	<b>6,720</b>	<b>-</b>	<b>4,045</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Current investments in financial assets</b>				
Financial assets at amortisation costs				
- Deposit at bank	16,275	-	15,875	-
Financial assets at fair value through other comprehensive income				
- Corporate bond	70	-	70	-
<b>Total current investments in financial assets</b>	<b>16,345</b>	<b>-</b>	<b>15,945</b>	<b>-</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Other long-term investments</b>				
Held-to-maturities debt securities	-	480	-	450
Available-for-sale debt securities (Private funds)	-	1,503	-	1,503
Available-for-sale equity securities	-	384	-	384
Other non-marketable equity securities:				
- Exeltium SAS (4% shareholding by the Group)	-	238	-	-
- Others	-	306	-	4
<b>Total other long-term investments</b>	<b>-</b>	<b>2,911</b>	<b>-</b>	<b>2,341</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Non-current investments in financial assets</b>				
Financial assets at fair value through profit or loss	382	-	352	-
Financial assets at fair value through other comprehensive income				
- Corporate bond	36	-	36	-
- Equity instruments	670	-	4	-
<b>Total non-current investments in financial assets</b>	<b>1,088</b>	<b>-</b>	<b>392</b>	<b>-</b>

The fair value of the investments and the valuation methodology for these investments are disclosed in Note 35 and the dividends received in respect of these investments as recorded in the consolidated and separate financial statements totaling Baht 14 million.



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Other gains (losses) arising on these investments for the year ended December 31, 2020 were as follows:

	<u>Consolidated</u> <u>financial statements</u>	Unit : Million Baht <u>Separate</u> <u>financial statements</u>
Net loss arising on financial assets mandatorily measured at FVTPL	(32)	(32)
Reclassification of net gain on debt investments classified as at FVTOCI from equity to profit or loss upon disposal	34	34
<b>Total</b>	<u>2</u>	<u>2</u>

### 13. INVESTMENT PROPERTIES

Investment properties as at December 31, 2020 and 2019 consisted of:

	<u>Land</u>	<u>Consolidated</u> <u>financial statements</u> <u>Buildings</u>	<u>Total</u>	Unit : Million Baht <u>Separate</u> <u>financial statements</u> <u>Land</u>
<i>Cost</i>				
As at January 1, 2019	6,459	41	6,500	1,741
<b>As at December 31, 2019 and January 1, 2020</b>	<u>6,459</u>	<u>41</u>	<u>6,500</u>	<u>1,741</u>
Transfers	(420)	(14)	(434)	-
Disposals	(4)	-	(4)	-
<b>As at December 31, 2020</b>	<u>6,035</u>	<u>27</u>	<u>6,062</u>	<u>1,741</u>
<i>Accumulated depreciation</i>				
As at January 1, 2019	-	(1)	(1)	-
Depreciation charge for the year	-	(1)	(1)	-
<b>As at December 31, 2019 and January 1, 2020</b>	<u>-</u>	<u>(2)</u>	<u>(2)</u>	<u>-</u>
Depreciation charge for the year	-	(2)	(2)	-
Transfers	-	1	1	-
<b>As at December 31, 2020</b>	<u>-</u>	<u>(3)</u>	<u>(3)</u>	<u>-</u>
<i>Net book value</i>				
As at January 1, 2019	6,459	40	6,499	1,741
<b>As at December 31, 2019 and January 1, 2020</b>	<u>6,459</u>	<u>39</u>	<u>6,498</u>	<u>1,741</u>
<b>As at December 31, 2020</b>	<u>6,035</u>	<u>24</u>	<u>6,059</u>	<u>1,741</u>

The fair value of investment properties of the Group as at December 31, 2020 of Baht 8,019 million (2019: Baht 8,435 million) was determined at open market values on an existing use basis and income approach. The fair value measurement for investment properties has been categorised as Levels 2 and 3 fair value, respectively.

The fair value of investment properties of the Company as at December 31, 2020 of Baht 3,700 million (2019: Baht 3,700 million) was determined at open market values on an existing use basis. The fair value measurement for investment properties has been categorised as a Level 2 fair value.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Measurement of fair value

#### *Level 2 fair value*

The fair value of investment properties for land was determined by independent property valuers at open market values by scoring and weighted other different factors.

#### *Level 3 fair value*

The fair value of investment properties for land and buildings was determined by the Group at income approach. The significant unobservable inputs comprise yield rate and finance costs.

Amounts recognised in the statements of profit or loss that are related to investment properties for the years ended December 31, are as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>	<u>financial statements</u>	<u>Separate</u>	<u>Separate</u>
	<u>2020</u>	<u>2019</u>	<u>financial statements</u>	<u>financial statements</u>
			<u>2020</u>	<u>2019</u>
Rental income	130	122	167	162

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 14. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment as at December 31, 2020 and 2019 consist of:

<i>Cost</i>	<i>Note</i>	<u>Consolidated financial statements</u>						<b>Unit : Million Baht</b>
		<u>Land and land improvement</u>	<u>Plant, machinery, equipment and factory tools</u>	<u>Buildings and buildings improvement</u>	<u>Furniture, fixtures and equipment</u>	<u>Vehicles</u>	<u>Assets under construction</u>	
As at January 1, 2019		12,263	364,527	17,614	2,798	881	40,966	439,049
Additions		76	2,073	37	300	251	30,837	33,574
Transfers		41	10,458	406	91	1	(11,057)	(60)
Disposals		-	(3,918)	(8)	(204)	(168)	(18)	(4,316)
Effect of change in foreign exchange rates		(111)	(980)	(130)	(11)	-	(458)	(1,690)
<b>As at December 31, 2019</b>		<b>12,269</b>	<b>372,160</b>	<b>17,919</b>	<b>2,974</b>	<b>965</b>	<b>60,270</b>	<b>466,557</b>
Effect from first-time adoption of new accounting policy	2.6	(57)	(3)	(8)	(420)	(232)	-	(720)
<b>As at January 1, 2020</b>		<b>12,212</b>	<b>372,157</b>	<b>17,911</b>	<b>2,554</b>	<b>733</b>	<b>60,270</b>	<b>465,837</b>
Additions		39	1,220	37	207	6	20,805	22,314
Transfers		654	32,293	1,743	19	54	(33,983)	780
Disposals		(67)	(2,873)	(8)	(39)	(19)	(21)	(3,027)
Effect of change in foreign exchange rates		18	801	119	1	2	(37)	904
<b>As at December 31, 2020</b>		<b>12,856</b>	<b>403,598</b>	<b>19,802</b>	<b>2,742</b>	<b>776</b>	<b>47,034</b>	<b>486,808</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	<u>Consolidated financial statements</u>						Unit : Million Baht	
	<u>Note</u>	<u>Land and land improvement</u>	<u>Plant, machinery, equipment and factory tools</u>	<u>Buildings and buildings improvement</u>	<u>Furniture, fixtures and equipment</u>	<u>Vehicles</u>	<u>Assets under construction</u>	<u>Total</u>
<b>Accumulated depreciation and allowance for impairment</b>								
As at January 1, 2019		(1,370)	(175,379)	(7,764)	(2,006)	(645)	(1,555)	(188,719)
Depreciation charge for the year		(99)	(16,937)	(727)	(327)	(98)	-	(18,188)
Transfers		-	(25)	-	-	(2)	-	(27)
Disposals		-	3,875	4	191	168	-	4,238
Reversal of impairment losses		3	-	-	-	-	-	3
Effect of change in foreign exchange rates		38	508	53	9	-	91	699
<b>As at December 31, 2019</b>		<b>(1,428)</b>	<b>(187,958)</b>	<b>(8,434)</b>	<b>(2,133)</b>	<b>(577)</b>	<b>(1,464)</b>	<b>(201,994)</b>
Effect from first-time adoption of new accounting policy	2.6	57	3	8	166	110	-	344
<b>As at January 1, 2020</b>		<b>(1,371)</b>	<b>(187,955)</b>	<b>(8,426)</b>	<b>(1,967)</b>	<b>(467)</b>	<b>(1,464)</b>	<b>(201,650)</b>
Depreciation charge for the year		(92)	(17,158)	(738)	(207)	(62)	-	(18,257)
Transfers		(4)	(440)	(2)	23	(44)	-	(467)
Disposals		2	2,724	7	38	18	-	2,789
Reversal of impairment losses		-	371	-	-	-	-	371
Effect of change in foreign exchange rates		2	(374)	(50)	(1)	1	5	(417)
<b>As at December 31, 2020</b>		<b>(1,463)</b>	<b>(202,832)</b>	<b>(9,209)</b>	<b>(2,114)</b>	<b>(554)</b>	<b>(1,459)</b>	<b>(217,631)</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Million Baht

### Consolidated financial statements

	<u>Land and land improvement</u>	<u>Plant, machinery, equipment and factory tools</u>	<u>Buildings and buildings improvement</u>	<u>Furniture, fixtures and equipment</u>	<u>Vehicles</u>	<u>Assets under construction</u>	<u>Total</u>
<i>Net book value</i>							
<b>As at January 1, 2019</b>							
Owned assets	10,893	189,148	9,850	618	109	39,411	250,029
Assets under finance leases	-	-	-	174	127	-	301
	<b>10,893</b>	<b>189,148</b>	<b>9,850</b>	<b>792</b>	<b>236</b>	<b>39,411</b>	<b>250,330</b>
<b>As at December 31, 2019</b>							
Owned assets	10,841	184,202	9,485	587	266	58,806	264,187
Assets under finance leases	-	-	-	254	122	-	376
	<b>10,841</b>	<b>184,202</b>	<b>9,485</b>	<b>841</b>	<b>388</b>	<b>58,806</b>	<b>264,563</b>
<b>As at January 1, 2020</b>							
Owned assets	10,841	184,202	9,485	587	266	58,806	264,187
Assets under finance leases	-	-	-	-	-	-	-
	<b>10,841</b>	<b>184,202</b>	<b>9,485</b>	<b>587</b>	<b>266</b>	<b>58,806</b>	<b>264,187</b>
<b>As at December 31, 2020</b>							
Owned assets	11,393	200,755	10,593	628	222	45,575	269,166
Assets under hire purchase agreement	-	11	-	-	-	-	11
	<b>11,393</b>	<b>200,766</b>	<b>10,593</b>	<b>628</b>	<b>222</b>	<b>45,575</b>	<b>269,177</b>

The gross amount of the Group's fully depreciated buildings and equipment that was still in use as at December 31, 2020 amounted to Baht 25,026 million (2019: Baht 20,213 million).

### *Security*

As at December 31, 2020, net book value of assets of the Group of Baht 14,638 million (2019: Baht 15,837 million) were registered to secured loan from financial institutions (see Note 20.2). In addition, the Group pledged some of the machinery, bank accounts and various rights as collateral as reported to the financial institutions.

### *Property, plant and equipment under construction*

As at December 31, 2020, capitalised borrowing costs, relating to the acquisition of the land and the construction of the new factory, were included in a part of purchases of assets amounted to Baht 947 million in the consolidated statements of financial position (2019: Baht 735 million). The Group capitalised borrowing costs using the rates of 2.60% to 5.00% per annum (2019: 3.59% to 5.00% per annum).

### *Reversal of impairment loss for machinery and equipment*

In 2020, a subsidiary has considered to reverse impairment loss for machinery and equipment which had been previously recognized as allowance for impairment of unused machinery and equipment. In estimating the reversal of impairment loss, the management has changed the estimation used to determine the increased recoverable amount in consideration to the improving market situation as well as the increasing in demand of products from expansion of customers' capacity.



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Million Baht

### Separate financial statements

	<u>Note</u>	<u>Land and land improvement</u>	<u>Plant, machinery, equipment and factory tools</u>	<u>Buildings and buildings improvement</u>	<u>Furniture, fixtures and equipment</u>	<u>Vehicles</u>	<u>Assets under construction</u>	<u>Total</u>
<b>Cost</b>								
As at January 1, 2019		4,898	281,112	9,704	1,742	557	20,503	318,516
Additions		20	1,703	33	225	227	17,907	20,115
Transfers		34	6,481	64	50	-	(6,659)	(30)
Disposals		-	(2,696)	(3)	(124)	(146)	(15)	(2,984)
<b>As at December 31, 2019</b>		<b>4,952</b>	<b>286,600</b>	<b>9,798</b>	<b>1,893</b>	<b>638</b>	<b>31,736</b>	<b>335,617</b>
Effect from first-time adoption of new accounting policy	2.6	-	-	-	(323)	(148)	-	(471)
<b>As at January 1, 2020</b>		<b>4,952</b>	<b>286,600</b>	<b>9,798</b>	<b>1,570</b>	<b>490</b>	<b>31,736</b>	<b>335,146</b>
Additions		3	638	19	152	-	12,954	13,766
Transfers		50	6,375	327	35	52	(6,849)	(10)
Disposals		(3)	(2,455)	-	(17)	(14)	(5)	(2,494)
<b>As at December 31, 2020</b>		<b>5,002</b>	<b>291,158</b>	<b>10,144</b>	<b>1,740</b>	<b>528</b>	<b>37,836</b>	<b>346,408</b>
<b>Accumulated depreciation</b>								
As at January 1, 2019		(596)	(137,191)	(4,323)	(1,232)	(414)	(270)	(144,026)
Depreciation charge for the year		(55)	(12,048)	(406)	(218)	(68)	-	(12,795)
Disposals		-	2,665	2	124	145	-	2,936
<b>As at December 31, 2019</b>		<b>(651)</b>	<b>(146,574)</b>	<b>(4,727)</b>	<b>(1,326)</b>	<b>(337)</b>	<b>(270)</b>	<b>(153,885)</b>
Effect from first-time adoption of new accounting policy	2.6	-	-	-	124	72	-	196
<b>As at January 1, 2020</b>		<b>(651)</b>	<b>(146,574)</b>	<b>(4,727)</b>	<b>(1,202)</b>	<b>(265)</b>	<b>(270)</b>	<b>(153,689)</b>
Depreciation charge for the year		(45)	(12,019)	(414)	(132)	(52)	-	(12,662)
Transfers		-	-	-	(5)	(41)	-	(46)
Disposals		2	2,393	-	17	12	-	2,424
<b>As at December 31, 2020</b>		<b>(694)</b>	<b>(156,200)</b>	<b>(5,141)</b>	<b>(1,322)</b>	<b>(346)</b>	<b>(270)</b>	<b>(163,973)</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	<u>Separate financial statements</u>						Unit : Million Baht
	<u>Land and land improvement</u>	<u>Plant, machinery, equipment and factory tools</u>	<u>Buildings and buildings improvement</u>	<u>Furniture, fixtures and equipment</u>	<u>Vehicles</u>	<u>Assets under construction</u>	
<b>Net book value</b>							
<b>As at January 1, 2019</b>							
Owned assets	4,302	143,921	5,381	371	63	20,233	174,271
Assets under finance leases	-	-	-	139	80	-	219
	<u>4,302</u>	<u>143,921</u>	<u>5,381</u>	<u>510</u>	<u>143</u>	<u>20,233</u>	<u>174,490</u>
<b>As at December 31, 2019</b>							
Owned assets	4,301	140,026	5,071	368	225	31,466	181,457
Assets under finance leases	-	-	-	199	76	-	275
	<u>4,301</u>	<u>140,026</u>	<u>5,071</u>	<u>567</u>	<u>301</u>	<u>31,466</u>	<u>181,732</u>
<b>As at January 1, 2020</b>							
Owned assets	4,301	140,026	5,071	368	225	31,466	181,457
Assets under finance leases	-	-	-	-	-	-	-
	<u>4,301</u>	<u>140,026</u>	<u>5,071</u>	<u>368</u>	<u>225</u>	<u>31,466</u>	<u>181,457</u>
<b>As at December 31, 2020</b>							
Owned assets	4,308	134,958	5,003	418	182	37,566	182,435
Assets under finance leases	-	-	-	-	-	-	-
	<u>4,308</u>	<u>134,958</u>	<u>5,003</u>	<u>418</u>	<u>182</u>	<u>37,566</u>	<u>182,435</u>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

The gross amount of the Company's fully depreciated buildings and equipment that was still in use as at December 31, 2020 amounted to Baht 16,428 million (2019: Baht 12,612 million).

### *Property, plant and equipment under construction*

As at December 31, 2020, capitalised borrowing costs, relating to the acquisition of the land and the construction of the new factory, were included in a part of purchases of assets amounted to Baht 459 million in the separate statements of financial position (2019: Baht 329 million). In 2020 and 2019, the Company capitalised borrowing costs using the rates of 5.00% per annum.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 15. RIGHT-OF-USE ASSETS

Movements of right-of-use assets during the year ended December 31, 2020 were as follows:

<i>Cost</i>	<i>Note</i>	<u>Consolidated financial statements</u>				<b>Unit : Million Baht</b>
		<u>Land and land improvement</u>	<u>Plant, machinery, equipment and factory tools</u>	<u>Buildings and buildings improvement</u>	<u>Furniture, fixtures and equipment</u>	
As at January 1, 2020		-	-	-	-	-
Effect from first-time adoption of new accounting policy	2.6	4,309	1,275	331	430	554
Additions		2,360	199	15	104	183
Transfers		11	362	-	23	(55)
Termination		-	(15)	-	(21)	(18)
Modification		-	-	(1)	-	(5)
Effect of change in foreign exchange rates		(1)	9	7	-	3
<b>As at December 31, 2020</b>		<b>6,679</b>	<b>1,830</b>	<b>352</b>	<b>536</b>	<b>662</b>
<b>Accumulated depreciation and allowance for impairment</b>						
As at January 1, 2020		-	-	-	-	-
Effect from first-time adoption of new accounting policy	2.6	(999)	(343)	(7)	(166)	(1,624)
Depreciation charge for the year		(343)	(309)	(126)	(150)	(205)
Transfers		-	(268)	-	(24)	44
Termination		-	2	-	21	9
Loss on impairment of assets		(49)	-	-	-	(49)
Effect of change in foreign exchange rates		3	(1)	-	-	2
<b>As at December 31, 2020</b>		<b>(1,388)</b>	<b>(919)</b>	<b>(133)</b>	<b>(319)</b>	<b>(261)</b>
<i>Net book value</i>						
As at January 1, 2020		-	-	-	-	-
As at December 31, 2020		<b>5,291</b>	<b>911</b>	<b>219</b>	<b>217</b>	<b>401</b>
						<b>7,039</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Million Baht

	Note	Separate financial statements					Total
		Land and land improvement	Plant, machinery, equipment and factory tools	Buildings and buildings improvement	Furniture, fixtures and equipment	Vehicles	
<b>Cost</b>							
As at January 1, 2020		-	-	-	-	-	-
Effect from first-time adoption of new accounting policy	2.6	3,531	1,841	96	323	388	6,179
Additions		2,337	134	2	82	92	2,647
Transfers		-	2	-	(7)	(52)	(57)
Termination		-	(4)	-	(14)	(7)	(25)
Modification		-	(6)	(1)	-	-	(7)
<b>As at December 31, 2020</b>		<b>5,868</b>	<b>1,967</b>	<b>97</b>	<b>384</b>	<b>421</b>	<b>8,737</b>
<b>Accumulated depreciation and allowance for impairment</b>							
As at January 1, 2020		-	-	-	-	-	-
Effect from first-time adoption of new accounting policy	2.6	(946)	(316)	-	(124)	(72)	(1,458)
Depreciation charge for the year		(239)	(552)	(55)	(114)	(136)	(1,096)
Transfers		-	(3)	-	7	41	45
Termination		-	1	-	13	5	19
<b>As at December 31, 2020</b>		<b>(1,185)</b>	<b>(870)</b>	<b>(55)</b>	<b>(218)</b>	<b>(162)</b>	<b>(2,490)</b>
<b>Net book value</b>							
As at January 1, 2020		-	-	-	-	-	-
<b>As at December 31, 2020</b>		<b>4,683</b>	<b>1,097</b>	<b>42</b>	<b>166</b>	<b>259</b>	<b>6,247</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Amount recognised in profit and loss for the year ended December 31, 2020 are as follows:

	<u>Consolidated</u> <u>financial statements</u> 2020	<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u> 2020
Depreciation expense on right-of-use assets	1,133	1,096
Interest expense on lease liabilities		
- net of interest capitalised as part of asset under construction	170	160
Expense relating to short-term leases	114	206
Expense relating to leases of low value assets	14	6
Expense relating to variable lease payments not included in the measurement of the lease liability	1	57
Income from sub-leasing right-of-use assets	1	2

The maturity analysis of lease liabilities is presented in Note 21.

### 16. LAND LEASEHOLD RIGHT

Land leasehold right as at December 31, 2020 and 2019 consist of:

	<u>Note</u>	<u>Consolidated</u> <u>financial statements</u>	<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>
<i>Cost</i>			
As at January 1, 2019		1,131	1,130
Additions		7	-
<b>As at December 31, 2019 and January 1, 2020</b>		<b>1,138</b>	<b>1,130</b>
Effect from first-time adoption of new accounting policy	2.6	(1,130)	(1,130)
Transfer		(8)	-
<b>As at December 31, 2020</b>		<b>-</b>	<b>-</b>
<i>Accumulated amortisation</i>			
As at January 1, 2019		(897)	(896)
Amortisation charge for the year		(50)	(50)
<b>As at December 31, 2019 and January 1, 2020</b>		<b>(947)</b>	<b>(946)</b>
Effect from first-time adoption of new accounting policy	2.6	946	946
Transfer		1	-
<b>As at December 31, 2020</b>		<b>-</b>	<b>-</b>
<i>Net book value</i>			
As at January 1, 2019		<b>234</b>	<b>234</b>
As at December 31, 2019 and January 1, 2020		<b>191</b>	<b>184</b>
As at December 31, 2020		<b>-</b>	<b>-</b>



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 17. GOODWILL

Goodwill as at December 31, 2020 and 2019 consist of:

	<b>Unit : Million Baht</b>
	<b><u>Consolidated</u></b>
	<b><u>financial statements</u></b>
<i>Cost</i>	
As at January 1, 2019	1,648
<b>As at December 31, 2019 and January 1, 2020</b>	<b>1,648</b>
<b>As at December 31, 2020</b>	<b>1,648</b>
<i>Allowance for impairment</i>	
As at January 1, 2019	(717)
<b>As at December 31, 2019 and January 1, 2020</b>	<b>(717)</b>
<b>As at December 31, 2020</b>	<b>(717)</b>
<i>Net book value</i>	
As at January 1, 2019	931
<b>As at December 31, 2019 and January 1, 2020</b>	<b>931</b>
<b>As at December 31, 2020</b>	<b>931</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 18. INTANGIBLE ASSETS

Intangible assets as at December 31, 2020 and 2019 consist of:

<i>Cost</i>	<u>Note</u>	<u>Consolidated financial statements</u>						<u>Total</u>
		<u>Production licence fees</u>	<u>Computer software</u>	<u>Customer contracts and the related customer relationships</u>	<u>Right to use pipe rack</u>	<u>Right to use others</u>	<u>Intangible assets under development</u>	
As at January 1, 2019		7,165	4,609	148	530	2,503	736	15,691
Additions		274	19	-	-	5	733	1,031
Transfers		268	389	-	17	41	(703)	12
Disposals		-	(7)	-	-	-	(86)	(93)
Effect of change in foreign exchange rates		-	(13)	(11)	-	(169)	(3)	(196)
<b>As at December 31, 2019 and January 1, 2020</b>		<b>7,707</b>	<b>4,997</b>	<b>137</b>	<b>547</b>	<b>2,380</b>	<b>677</b>	<b>16,445</b>
Effect from first-time adoption of new accounting policy	2.6	-	-	-	(440)	(56)	-	(496)
Additions		215	44	-	-	-	1,097	1,356
Transfers		887	425	-	(51)	(327)	(1,324)	(390)
Disposals		-	(9)	-	-	-	-	(9)
Effect of change in foreign exchange rates		-	10	1	-	80	-	91
<b>As at December 31, 2020</b>		<b>8,809</b>	<b>5,467</b>	<b>138</b>	<b>56</b>	<b>2,077</b>	<b>450</b>	<b>16,997</b>

Unit : Million Baht

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	<u>Consolidated financial statements</u>					Unit : Million Baht	
<u>Note</u>	<u>Production licence fees</u>	<u>Computer Software</u>	<u>Customer contracts and the related customer relationships</u>	<u>Right to use pipe rack</u>	<u>Right to use others</u>	<u>Intangible assets under development</u>	<u>Total</u>
<b>Accumulated amortisation and allowance for impairment</b>							
As at January 1, 2019	(2,598)	(2,668)	(140)	(387)	(1,821)	(22)	(7,636)
Amortisation charge for the year	(268)	(342)	(7)	(31)	(117)	-	(765)
Transfers	-	4	-	-	22	-	26
Disposals	-	5	-	-	-	-	5
Effect of change in foreign exchange rates	-	12	10	-	124	-	146
<b>As at December 31, 2019</b>	<b>(2,866)</b>	<b>(2,989)</b>	<b>(137)</b>	<b>(418)</b>	<b>(1,792)</b>	<b>(22)</b>	<b>(8,224)</b>
<b>and January 1, 2020</b>							
Effect from first-time adoption of new accounting policy	-	-	-	345	-	-	345
Amortisation charge for the year	(299)	(374)	-	(2)	(71)	-	(746)
Transfers	-	-	-	19	253	-	272
Disposal	-	4	-	-	-	-	4
Effect of change in foreign exchange rates	-	(10)	(1)	-	(45)	-	(56)
<b>As at December 31, 2020</b>	<b>(3,165)</b>	<b>(3,369)</b>	<b>(138)</b>	<b>(56)</b>	<b>(1,655)</b>	<b>(22)</b>	<b>(8,405)</b>
<b>Net book value</b>							
As at January 1, 2019	4,567	1,941	8	143	682	714	8,055
As at December 31, 2019 and January 1, 2020	4,841	2,008	-	129	588	655	8,221
As at December 31, 2020	5,644	2,098	-	-	422	428	8,592

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

<b>Cost</b>	<b>Note</b>	<b>Separate financial statements</b>					<b>Total</b>
		<b>Production licence fees</b>	<b>Computer software</b>	<b>Right to use pipe rack</b>	<b>Right to use others</b>	<b>Intangible assets under development</b>	
As at January 1, 2019		5,292	3,609	434	-	405	9,740
Additions		233	4	-	-	545	782
Transfers		267	219	20	-	(506)	-
Disposals		-	-	-	-	(62)	(62)
<b>As at December 31, 2019 and January 1, 2020</b>		<b>5,792</b>	<b>3,832</b>	<b>454</b>	<b>-</b>	<b>382</b>	<b>10,460</b>
Effect from first-time adoption of new accounting policy	2.6	-	-	(403)	-	-	(403)
Additions		213	16	-	-	428	657
Transfers		25	344	(51)	61	(379)	-
Disposals		-	-	-	-	-	-
<b>As at December 31, 2020</b>		<b>6,030</b>	<b>4,192</b>	<b>-</b>	<b>61</b>	<b>431</b>	<b>10,714</b>
<b>Accumulated amortisation</b>							
As at January 1, 2019		(1,833)	(1,976)	(305)	-	(22)	(4,136)
Amortisation charge for the year		(214)	(273)	(28)	-	-	(515)
Disposals		-	-	-	-	-	-
<b>As at December 31, 2019 and January 1, 2020</b>		<b>(2,047)</b>	<b>(2,249)</b>	<b>(333)</b>	<b>-</b>	<b>(22)</b>	<b>(4,651)</b>
Effect from first-time adoption of new accounting policy	2.6	-	-	316	-	-	316
Amortisation charge for the year		(243)	(298)	(2)	(4)	-	(547)
Transfers		-	-	19	(19)	-	-
Disposals		-	-	-	-	-	-
<b>As at December 31, 2020</b>		<b>(2,290)</b>	<b>(2,547)</b>	<b>-</b>	<b>(23)</b>	<b>(22)</b>	<b>(4,882)</b>
<b>Net book value</b>							
As at January 1, 2019		3,459	1,633	129	-	383	5,604
As at December 31, 2019 and January 1, 2020		3,745	1,583	121	-	360	5,809
As at December 31, 2020		3,740	1,645	-	38	409	5,832

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 19. INCOME TAX EXPENSE AND DEFERRED TAX

#### *Income tax (income) expense*

Income tax (income) expense for the years ended December 31, 2020 and 2019 consisted of:

	<b>Consolidated</b>		<b>Unit : Million Baht</b>	
	<b>financial statements</b>		<b>Separate</b>	
	<b>2020</b>	<b>2019</b>	<b>2020</b>	<b>2019</b>
<b><i>Current tax (income) expense</i></b>				
Current year	750	800	-	281
Over provided in prior years	(49)	(22)	(51)	(17)
	<u>701</u>	<u>778</u>	<u>(51)</u>	<u>264</u>
<b><i>Deferred tax (income) expense</i></b>				
Movements in temporary differences	(810)	(129)	(608)	(190)
<b>Total</b>	<b><u>(109)</u></b>	<b><u>649</u></b>	<b><u>(659)</u></b>	<b><u>74</u></b>

#### ***Reconciliation of effective tax rate***

	<b>Unit : Million Baht</b>			
	<b>Consolidated financial statements</b>			
	<b>2020</b>		<b>2019</b>	
	<b>Rate</b>		<b>Rate</b>	
	<b>(%)</b>		<b>(%)</b>	
Profit before income tax		543		12,999
Income tax using the Thai corporation tax rate	20.0	109	20.0	2,600
Effect of different tax rates in foreign jurisdictions		(42)		9
Income not subject to tax		(154)		(232)
Non-deductible tax expenses		538		351
Tax loss carryforward		(574)		(133)
Over provided in prior years		(49)		(22)
Share of profit of investments in joint ventures and associate		(665)		(857)
Temporary differences		(810)		(129)
Others		1,538		(938)
<b>Income tax (income) expense</b>	<b>-</b>	<b><u>(109)</u></b>	<b>5.0</b>	<b><u>649</u></b>

	<b>Unit : Million Baht</b>			
	<b>Separate financial statements</b>			
	<b>2020</b>		<b>2019</b>	
	<b>Rate</b>		<b>Rate</b>	
	<b>(%)</b>		<b>(%)</b>	
Profit (loss) before income tax		(4,039)		9,227
Income tax using the Thai corporation tax rate	20.0	(808)	20.0	1,845
Income not subject to tax		(640)		(1,363)
Non-deductible tax expenses		26		215
Over provided in prior years		(51)		(17)
Temporary differences		(608)		(190)
Others		1,422		(416)
<b>Income tax (income) expense</b>	<b>-</b>	<b><u>(659)</u></b>	<b>0.8</b>	<b><u>74</u></b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Deferred Tax

Movements in total deferred tax assets and liabilities during the years were as follows:

Unit : Million Baht

	<u>Consolidated financial statements</u>					<u>As at December 31, 2020</u>
	<u>(Charged) / credited to:</u>					
	<u>As at January 1, 2020</u>	<u>Profit or loss</u>	<u>Other comprehensive income (loss)</u>	<u>Exchange differences</u>	<u>Acquisition of businesses</u>	
<b>Deferred tax assets</b>						
Provisions for employee benefits	990	89	66	-	-	1,145
Property, plant and equipment	682	96	-	-	-	778
Lease liabilities	-	82	-	-	-	82
Tax loss carry forward	704	930	-	(1)	-	1,633
Others	102	(27)	(52)	2	-	25
<b>Total</b>	<b>2,478</b>	<b>1,170</b>	<b>14</b>	<b>1</b>	<b>-</b>	<b>3,663</b>
<b>Deferred tax liabilities</b>						
Property, plant and equipment	(3,696)	(319)	-	(12)	-	(4,027)
Right-of-use assets	-	(1)	-	-	-	(1)
Others	(174)	(40)	50	-	-	(164)
<b>Total</b>	<b>(3,870)</b>	<b>(360)</b>	<b>50</b>	<b>(12)</b>	<b>-</b>	<b>(4,192)</b>
<b>Net</b>	<b>(1,392)</b>	<b>810</b>	<b>64</b>	<b>(11)</b>	<b>-</b>	<b>(529)</b>

Unit : Million Baht

	<u>Consolidated financial statements</u>					<u>As at December 31, 2019</u>
	<u>(Charged) / credited to:</u>					
	<u>As at January 1, 2019</u>	<u>Profit or loss</u>	<u>Other comprehensive income (loss)</u>	<u>Exchange differences</u>	<u>Acquisition of businesses</u>	
<b>Deferred tax assets</b>						
Inventories	12	(8)	-	-	-	4
Provisions for employee benefits	725	262	3	-	-	990
Tax loss carry forward	848	(143)	-	-	(1)	704
Others	647	77	59	-	(3)	780
<b>Total</b>	<b>2,232</b>	<b>188</b>	<b>62</b>	<b>-</b>	<b>(4)</b>	<b>2,478</b>
<b>Deferred tax liabilities</b>						
Property, plant and equipment	(3,469)	(231)	-	(11)	15	(3,696)
Finance lease assets	(6)	-	-	-	-	(6)
Others	(333)	172	(8)	-	1	(168)
<b>Total</b>	<b>(3,808)</b>	<b>(59)</b>	<b>(8)</b>	<b>(11)</b>	<b>16</b>	<b>(3,870)</b>
<b>Net</b>	<b>(1,576)</b>	<b>129</b>	<b>54</b>	<b>(11)</b>	<b>12</b>	<b>(1,392)</b>



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	Unit : Million Baht				
	<u>Separate financial statements</u>				
	(Charged) / credited to:				
<u>As at</u> <u>January 1,</u> <u>2020</u>	<u>Profit</u> <u>or loss</u>	<u>Other</u> <u>comprehensive</u> <u>income (loss)</u>	<u>As at</u> <u>December 31,</u> <u>2020</u>		
<i>Deferred tax assets</i>					
Provisions for employee benefits	791	77	35	903	
Property, plant and equipment	416	16	-	432	
Lease liabilities	-	20	-	20	
Tax loss carry forward	-	930	-	930	
Others	22	2	(12)	12	
<b>Total</b>	<b>1,229</b>	<b>1,045</b>	<b>23</b>	<b>2,297</b>	
<i>Deferred tax liabilities</i>					
Property, plant and equipment	(2,719)	(398)	-	(3,117)	
Others	(102)	(39)	56	(85)	
<b>Total</b>	<b>(2,821)</b>	<b>(437)</b>	<b>56</b>	<b>(3,202)</b>	
<b>Net</b>	<b>(1,592)</b>	<b>608</b>	<b>79</b>	<b>(905)</b>	

	Unit : Million Baht				
	<u>Separate financial statements</u>				
	(Charged) / credited to:				
<u>As at</u> <u>January 1,</u> <u>2019</u>	<u>Profit</u> <u>or loss</u>	<u>Other</u> <u>comprehensive</u> <u>income (loss)</u>	<u>As at</u> <u>December 31,</u> <u>2019</u>		
<i>Deferred tax assets</i>					
Inventories	11	(8)	-	3	
Provisions for employee benefits	584	207	-	791	
Others	356	64	15	435	
<b>Total</b>	<b>951</b>	<b>263</b>	<b>15</b>	<b>1,229</b>	
<i>Deferred tax liabilities</i>					
Inventories	(244)	209	-	(35)	
Property, plant and equipment	(2,432)	(287)	-	(2,719)	
Finance lease assets	(5)	1	-	(4)	
Others	(59)	4	(8)	(63)	
<b>Total</b>	<b>(2,740)</b>	<b>(73)</b>	<b>(8)</b>	<b>(2,821)</b>	
<b>Net</b>	<b>(1,789)</b>	<b>190</b>	<b>7</b>	<b>(1,592)</b>	

## 20. BORROWINGS AND DEBENTURES

### 20.1 Short-term borrowings

Short-term borrowings balances as at December 31, 2020 and 2019 were as follows:

	<u>Note</u>	Unit : Million Baht			
		<u>Consolidated</u>		<u>Separate</u>	
		<u>financial statements</u>	<u>financial statements</u>	<u>financial statements</u>	<u>financial statements</u>
		<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Short-term borrowings from financial institutions					
- Secured		19	427	-	-
- Unsecured		-	1,594	-	-
Short-term borrowings from related parties					
- Unsecured	28	-	-	5,607	3,041
<b>Total</b>		<b>19</b>	<b>2,021</b>	<b>5,607</b>	<b>3,041</b>

## 20.2 Long-term borrowings

Long-term borrowings balances as at December 31, 2020 and 2019 were as follows:

	<u>Note</u>	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
		<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Current</b>					
Current portion of long-term borrowings from financial institutions					
- Secured		764	265	-	-
- Unsecured		1,210	7,843	-	7,078
Current portion of long-term borrowings from other parties					
- Secured		-	-	-	-
- Unsecured		45	41	-	-
<b>Total current</b>		<b>2,019</b>	<b>8,149</b>	<b>-</b>	<b>7,078</b>
<b>Non-current</b>					
Long-term borrowings from financial institutions					
- Secured		20,594	16,908	-	-
- Unsecured		40,383	9,610	32,831	2,995
Long-term borrowing from a related party					
- Unsecured	28	-	-	14,948	14,991
Long-term borrowings from other parties					
- Secured		-	-	-	-
- Unsecured		249	269	-	-
<b>Total non-current</b>		<b>61,226</b>	<b>26,787</b>	<b>47,779</b>	<b>17,986</b>
<b>Total</b>		<b>63,245</b>	<b>34,936</b>	<b>47,779</b>	<b>25,064</b>

As at December 31, 2020, the Group had unutilised credit facilities totalling Baht 14,670 million (2019: Baht 12,285 million).

Short-term borrowings as at December 31, 2020 and long-term borrowings as at December 31, 2020 and 2019 were secured on the following assets:

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Cash and cash equivalents	726	60	-	-
Property, plant and equipment	14,638	15,837	-	-

In addition, the Group pledged some of the machinery and various right as collateral as reported to financial institutions. However, the pledged bank accounts can be withdrawn with the objective and conditions stipulated in loan agreements (see Note 5.1)

Short-term borrowings as at December 31, 2019 were partially secured by trade receivables as collateral.

As at December 31, 2020, the Group and the Company had long-term and revolving long-term credit facility agreements with several financial institutions totalling Baht 62,951 million and Baht 32,831 million, respectively (2019: Baht 34,626 million and Baht 10,073 million, respectively) bear different interest rates and repayment terms as specified in each agreement. The Group is required to comply with certain covenants pertaining to maintain of certain financial ratios, percentage of share held by the major shareholder and other conditions as specified in each agreement.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Details of the Group's borrowings from financial institutions as at December 31, 2020 were as follows:

Currency	Facilities (in million)	Interest Rates (% p.a.)	Repayment Terms
<b>The Company</b>			
Baht	5,000	THBFIX 6M plus margin	Principal is repayable in 2 instalments in December 2020 and June 2023.
Baht	10,000	THBFIX 6M plus margin	Principal is repayable once in June 2025.
Baht	10,000	THBFIX 6M plus margin	Principal is repayable on a semi-annual basis, in 12 instalments commencing from January 2022.
Baht	10,000	MLR minus margin	Principal is repayable on a quarterly basis, in 12 instalments commencing from December 2022.
<b>Subsidiaries</b>			
EUR	180	EURIBOR 3M plus margin	Principal is repayable on an annual basis, in 6 instalments commencing from 2021.
EUR	30	EURIBOR 3M plus margin	Principal is repayable on a semi-annual basis, in 10 instalments commencing from 2022.
Baht	1,200	Fixed rate	Principal is repayable on monthly basis, in 17 instalments commencing from April 2022.
Baht	900	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on a semi-annual basis, in 14 instalments commencing from April 2016.
Baht	900	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on a semi-annual basis, in 14 instalments commencing from May 2016.
Baht	900	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on a semi-annual basis, in 12 instalments commencing from May 2017.
Baht	8,653.87	Highest interest rate for 6 month-fixed deposit (4 Banks averaged) plus margin	Principal is repayable on a semi-annual basis, in 17 instalments commencing from September 2018.
Baht	500	Fixed rate	Principal is repayable on a quarterly basis, in 13 instalments commencing from March 2021.
Baht	500	Fixed rate	Principal is repayable on a quarterly basis, in 10 instalments commencing from June 2019.
Baht	575	BIBOR 3M plus margin	Principal is repayable on a quarterly basis, in 13 instalments commencing from September 2019.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Currency	Facilities (in million)	Interest Rates (% p.a.)	Repayment Terms
Baht	14,357	THBFIX 3M plus margin	Principal is repayable on a semi-annual basis, in 24 instalments commencing from February 2021.
Baht	6,004	THBFIX 3M plus margin	Principal is repayable on a semi-annual basis, in 20 instalments commencing from February 2021.
Baht	1,250	THBFIX 6M plus margin	Principal is repayable on a semi-annual basis, in 15 instalments commencing from April 2023.

As at December 31, 2020, the subsidiaries' long-term borrowings and debentures were guaranteed by the Company totalling Baht 20,353 million (2019: Baht 19,777 million) (see Note 36).

### 20.3 Debentures

Debentures balances as at December 31, 2020 and 2019 were as follows:

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Current</b>				
Current portion of debenture				
- Unsecured	19,998	-	19,998	-
<b>Total current</b>	<b>19,998</b>	<b>-</b>	<b>19,998</b>	<b>-</b>
<b>Non-current</b>				
Debentures				
- Unsecured	65,034	70,131	50,166	55,221
<b>Total non-current</b>	<b>65,034</b>	<b>70,131</b>	<b>50,166</b>	<b>55,221</b>
<b>Total</b>	<b>85,032</b>	<b>70,131</b>	<b>70,164</b>	<b>55,221</b>

Details of the Group's debentures as at December 31, 2020 were as follows:

	Currency	Facilities (in million)	Face value per share	Years	Interest rates (% p.a.)	Repayment Terms
<b>The Company</b>						
Unsubordinated debenture at 99.108% of the face value unsecured with a debenture holders' representative	USD	504.11	1,000	10	4.25	Interest is payable on a semi-annual basis and maturity in September 2022.
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	10,000	1,000	7	4.50	Interest is payable on a semi-annual basis and maturity in August 2021.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	Currency	Facilities (in million)	Face value per share	Years	Interest rates (% p.a.)	Repayment Terms
Unsubordinated debenture unsecured with a debenture holders' representative and debenture issuer has right to redeem the debentures prior to maturity after one year of issuance	Baht	10,000	1,000	4	3.05	Interest is payable on a semi-annual basis and maturity in August 2021.
Unsubordinated debenture unsecured with a debenture holders' representative and debenture issuer has right to redeem the debentures prior to maturity after one year of issuance	Baht	10,000	1,000	5	2.90	Interest is payable on a semi-annual basis and maturity in August 2024.
Unsubordinated debenture unsecured without a debenture holders' representative	Baht	1,500	1,000	5	2.20	Interest is payable on a semi-annual basis and maturity in September 2024.
Unsubordinated debenture unsecured without a debenture holders' representative	Baht	7,000	1,000	7	2.43	Interest is payable on a semi-annual basis and maturity in September 2026.
Unsubordinated debenture unsecured without a debenture holders' representative	Baht	1,500	1,000	10	2.75	Interest is payable on a semi-annual basis and maturity in September 2029.
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	1,530	1,000	7	2.60	Interest is payable on a semi-annual basis and maturity in April 2027.
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	3,310	1,000	10	2.99	Interest is payable on a semi-annual basis and maturity in April 2030.
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	4,360	1,000	12	3.29	Interest is payable on a semi-annual basis and maturity in April 2032.
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	5,800	1,000	15	3.50	Interest is payable on a semi-annual basis and maturity in April 2035.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	Currency	Facilities (in million)	Face value per share	Years	Interest rates (% p.a.)	Repayment Terms
<b>Subsidiaries</b>						
Unsubordinated debenture at 100.00% of the face value unsecured with a debenture holders' representative	USD	495.89	1,000	4.2	4.25	Interest is payable on a semi-annual basis and maturity in September 2022.

The periods to maturity of interest-bearing liabilities, excluding finance lease liabilities, as at December 31, 2020 and 2019 were as follows:

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Within one year	22,036	10,170	25,605	10,119
After one year but within five years	84,502	75,970	69,671	64,717
After five years	41,759	20,948	28,274	8,490
<b>Total</b>	<b>148,297</b>	<b>107,088</b>	<b>123,550</b>	<b>83,326</b>

### 21. LEASE LIABILITIES

The periods to maturity of lease liabilities, as at December 31, 2020 and 2019 were as follows:

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Within one year	1,279	192	1,305	144
After one year but within five years	2,249	219	1,917	150
After five years	5,311	-	4,635	-
	<b>8,839</b>	<b>411</b>	<b>7,857</b>	<b>294</b>
<u>Less</u> Deferred interest expense	(2,052)	(10)	(1,793)	(5)
	<b>6,787</b>	<b>401</b>	<b>6,064</b>	<b>289</b>
Classification				
- Current portion of lease liabilities	1,057	187	1,105	141
- Lease liabilities	5,730	214	4,959	148
	<b>6,787</b>	<b>401</b>	<b>6,064</b>	<b>289</b>

### 22. TRADE PAYABLES

Trade payables as at December 31, 2020 and 2019 consisted of:

		<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>Note</u>	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Related parties	28	14,884	20,727	13,737	19,470
Other parties		5,230	4,752	1,076	450
<b>Total</b>		<b>20,114</b>	<b>25,479</b>	<b>14,813</b>	<b>19,920</b>



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 23. OTHER PAYABLES

Other payables as at December 31, 2020 and 2019 consisted of:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Accrued operating expenses	2,436	3,689	633	1,708
Accrued interest expenses	952	846	970	863
Other payables	4,384	5,265	3,985	5,138
Deposits and advances received	4,037	3,313	158	62
Withholding tax payable	372	460	255	327
Accrued other tax expenses	290	271	231	183
Others	34	62	5	21
<b>Total</b>	<b>12,505</b>	<b>13,906</b>	<b>6,237</b>	<b>8,302</b>

### 24. PROVISIONS FOR EMPLOYEE BENEFITS

Provisions for employee benefits as at December 31, 2020 and 2019 consisted of:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Post-employment benefits	5,604	4,860	4,036	3,553
Other long-term employee benefits	774	698	513	461
<b>Total</b>	<b>6,378</b>	<b>5,558</b>	<b>4,549</b>	<b>4,014</b>

Movement in the present value of the defined employee benefit obligations were as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
As at January 1,	5,558	4,283	4,014	3,015
<b>Include in profit or loss:</b>				
Current service costs	389	368	262	235
Interest on obligation	148	130	115	101
Past service costs	1	993	-	820
Actuarial loss	54	11	48	-
	592	1,502	425	1,156
<b>Included in other comprehensive income</b>				
Actuarial loss	410	57	251	-
Exchange differences on translating financial statement	53	(54)	-	-
	463	3	251	-
<b>Others</b>				
Benefits paid by the plan	(240)	(234)	(141)	(157)
Recorded as cost of assets under construction	5	4	-	-
	(235)	(230)	(141)	(157)
<b>As at December 31,</b>	<b>6,378</b>	<b>5,558</b>	<b>4,549</b>	<b>4,014</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

For the years ended December 31, Recognised in profit or loss:	<u>Consolidated</u>		Unit : Million Baht	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Post-employment benefits	467	1,418	332	1,111
Other long-term employee benefits	125	84	93	45
<b>Total</b>	<b>592</b>	<b>1,502</b>	<b>425</b>	<b>1,156</b>

The expense is recognised in the following line items in the statement of profit or loss:

	<u>Consolidated</u>		Unit : Million Baht	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Cost of sales	331	912	233	732
Selling and distribution and administrative expenses	261	590	192	424
<b>Total</b>	<b>592</b>	<b>1,502</b>	<b>425</b>	<b>1,156</b>

### Actuarial assumptions

The principal actuarial assumptions as at December 31, 2020 and 2019 (expressed as weighted-averages) were as follows:

	<u>Consolidated</u>		Unit: %	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Discount rate	0.5 - 1.7	1.0 - 4.0	1.5	2.9
Future salary growth	2.5 - 7.0	3.0 - 7.0	6.0	7.0
Employee turnover	0.0 - 50.0	0.0 - 50.0	0.0 - 3.0	0.0 - 3.0
Retirement age	55 - 65 years	55 - 65 years	60 years	60 years

Assumptions regarding future mortality have been based on published statistics and mortality tables.

As at December 31, 2020, the weighted-average duration of the defined benefit obligation was 10 years (2019: 18 years).

### Sensitivity analysis

Reasonably possible changes at the reporting date to one of the relevant actuarial assumptions, holding other assumptions constant, would have affected the defined benefit obligation by the amounts shown below:

	<u>Consolidated</u>		Unit : Million Baht	
	<u>financial statements</u>		<u>Separate</u>	
	<u>Increase</u>	<u>Decrease</u>	<u>Increase</u>	<u>Decrease</u>
<b>As at December 31, 2020</b>				
Discount rate (1% movement)	(715)	820	(478)	567
Future salary growth (1% movement)	735	(628)	481	(415)
<b>As at December 31, 2019</b>				
Discount rate (1% movement)	(577)	667	(422)	498
Future salary growth (1% movement)	602	(498)	423	(367)

Although the analysis does not take account of the full distribution of cash flows expected under the plan, it does provide an approximation of the sensitivity of the assumptions shown.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

The Labor Protection Act (No. 7) B.E. 2562 has been announced in the Royal Gazette on April 5, 2019, which will be effective after 30 days from the date announced in Royal Gazette. This Labor Protection Act stipulates additional legal severance pay rates for employees who have worked for an uninterrupted period of twenty years or more. Such employees are entitled to receive compensation of not less than 400 days at the employees' latest wage rate. This change is considered an amendment to post-employment benefits plan. The Group has already reflected the effect of such change by recognising past service cost as an expense in the consolidated and separate statements of profit or loss for the year ended December 31, 2019.

Provident fund contributions for their employees and recorded as expense in the statements of profit or loss for the years ended December 31, are as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Provident fund expense	657	630	515	506

### 25. SHARE CAPITAL

	<u>Par value</u> <u>per share</u> <u>(Baht)</u>	<u>Unit : Million Shares / Million Baht</u>			
		<u>2020</u>		<u>2019</u>	
		<u>Number</u>	<u>Amount</u>	<u>Number</u>	<u>Amount</u>
<i>Authorised</i>					
As at January 1, ordinary shares	10	<u>4,508.8</u>	<u>45,088.5</u>	<u>4,508.8</u>	<u>45,088.5</u>
<b>As at December 31, ordinary shares</b>	10	<b><u>4,508.8</u></b>	<b><u>45,088.5</u></b>	<b><u>4,508.8</u></b>	<b><u>45,088.5</u></b>
<i>Issued and paid-up</i>					
As at January 1, ordinary shares	10	<u>4,508.8</u>	<u>45,088.5</u>	<u>4,508.8</u>	<u>45,088.5</u>
<b>As at December 31, ordinary shares</b>	10	<b><u>4,508.8</u></b>	<b><u>45,088.5</u></b>	<b><u>4,508.8</u></b>	<b><u>45,088.5</u></b>

### 26. ADDITIONAL PAID-IN CAPITAL AND RESERVES

#### *Share premium*

Section 51 of the Public Companies Act B.E. 2535 requires companies to set aside share subscription monies received in excess of the par value of the shares issued to a reserve account ("share premium"). Share premium is not available for dividend distribution.

#### *Premium on treasury stock*

The premium on treasury stock represents the accumulated premium on sale of treasury stock, net of any deficits on sale or cancellation of treasury stock. The premium on treasury stock is not available for dividend distribution.

#### *Difference arising from business combination under common control*

Difference on common control transactions arising within equity represents the difference of the book values of certain entities or businesses under common control under or over their cost as of the date of their acquisition. The reserve is non-distributable and will be retained until the respective businesses are sold or otherwise disposed of.

### *Legal reserve*

Section 116 of the Public Companies Act B.E. 2535 requires that a company shall allocate not less than 5% of its annual net profit, less any accumulated losses brought forward (if any), to a reserve account (“legal reserve”), until this account reaches an amount not less than 10% of the registered authorised capital. The legal reserve is not available for dividend distribution.

### *Treasury stock reserve*

The treasury stock reserve represents the amount appropriated from retained earnings equal to the cost of the Company’s own shares held by the Company. The treasury stock reserve is not available for dividend distribution.

### *Other components of equity*

#### *Exchange differences on translating financial statements*

The exchange differences on translating financial statements account within equity comprises all foreign currency differences arising from the translation of the financial statements of foreign operations, as well as from the translation of liabilities that hedge the Company’s net investment in a foreign operation.

#### *Remeasurement of investments in financial assets measured at fair value through other comprehensive income*

Gain or loss on remeasurement of investments in financial assets measured at fair value through other comprehensive income account within equity comprises the cumulative net change in the fair value of investments in financial assets until the investments are derecognised or impaired.

#### *Cash flow hedges*

The cash flow hedges account within equity comprises the cumulative net change in the fair value of cash flow hedges related to hedged transactions that have not yet occurred for effective portion.

#### *Movements in reserves*

Movements in reserves are shown in the statements of changes in equity.

## **27. TREASURY STOCK**

At the Board of Directors’ Meeting held on May 27, 2019, the Board approved a share repurchase program for financial management purpose not exceeding 50 million shares, or approximately 1.1 percent of the total issued shares, with the maximum amount of Baht 3,000 million. The Company may purchase the shares through the Stock Exchange of Thailand within 6 months, during the period from June 11, 2019 to December 9, 2019. Treasury stock has to be resold after 6 months but no later than 3 years from the completion date of share repurchases.

On December 9, 2019, the Company has repurchased the shares under the program totalling 22.30 million shares, equivalent to 0.49% of issued share and paid-up capital, at a total cost of Baht 1,187.60 million with an equivalent amount had been appropriated from retained earnings to treasury stock reserve.

## **28. TRANSACTIONS WITH RELATED PARTIES**

A related party is as follows:

- An individual or an entity which has the ability, directly or indirectly, to control or joint control or exercise significant influence over the Group in making financial and operating decisions or;
- An individual or an entity which is subject to common control or common significant influence with the Group or;
- The Group has the ability, directly or indirectly, to control or joint control or exercise significant influence over an individual or an entity in making financial and operating decisions.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Relationships with significant related parties were as follows:

Name of entities	Country of incorporation/ nationality	Nature of relationships
PTT Plc.	Thailand	Parent, common director and management and the Company's director as management
Global Green Chemicals Plc.	Thailand	Subsidiary, 72.29% shareholding, common director and the Company's management as director
GC Glycol Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
GC Polyols Co., Ltd.	Thailand	Subsidiary, 82.10% shareholding and the Company's management as director
GC Maintenance and Engineering Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
GC Marketing Solutions Co., Ltd.	Thailand	Subsidiary, 100% shareholding by the Group, and the Company's management as director
GC Logistics Solutions Co., Ltd.	Thailand	Subsidiary, 100% shareholding by the Group
GC Ventures Co., Ltd.	Thailand	Subsidiary, 100% shareholding
GC Treasury Center Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
GC Styrenics Co., Ltd.	Thailand	Subsidiary, 100% shareholding
GC Estate Co., Ltd.	Thailand	Subsidiary, 100% shareholding
GC Oxirane Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
Solution Creation Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
Thai Tank Terminal Limited	Thailand	Subsidiary, 51% shareholding
PTT Phenol Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
GC-M PTA Company Limited	Thailand	Subsidiary, 49% shareholding by the Company and 25% shareholding by subsidiary and the Company's management as director
NPC Safety and Environmental Service Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as director
ENVICCO Limited	Thailand	Subsidiary, 70% shareholding
PTTGC America Corporation	United States of America	Subsidiary, 100% shareholding, common director and the Company's management as director
PTTGC International Private Limited	Singapore	Subsidiary, 100% shareholding, common director and the Company's management as director

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Name of entities	Country of incorporation/ nationality	Nature of relationships
GGC Biochemicals Co., Ltd.	Thailand	Indirect subsidiary, 100% shareholding by subsidiary
Thai PET Resin Co., Ltd.	Thailand	Indirect subsidiary, 84.40% shareholding by subsidiaries and the Company's management as director
Thai Fatty Alcohols Co., Ltd.	Thailand	Indirect subsidiary, 100% shareholding by subsidiary
PL Global Transport Co., Ltd.	Thailand	Indirect subsidiary, 100% shareholding by the Group
NPC S&E Security Guard Co., Ltd.	Thailand	Indirect subsidiary, 100% shareholding by the Group
Vencorex (Thailand) Co., Ltd.	Thailand	Indirect subsidiary, 100% shareholding by indirect subsidiary
GCM Polymer Trading DMCC	United Arab Emirates	Indirect subsidiary, 100% shareholding by the Group
GC Logistics Solutions (Vietnam) Co., Ltd.	Vietnam	Indirect subsidiary, 100% shareholding by the Group
GC Marketing Solutions Myanmar Co., Ltd.	Myanmar	Indirect subsidiary, 100% shareholding by the Group
GC Marketing Solutions Vietnam Co., Ltd.	Vietnam	Indirect subsidiary, 100% shareholding by the Group
GC Ventures America Corporation	United States of America	Indirect subsidiary, 100% shareholding by the Group
PTTGC America LLC	United States of America	Indirect subsidiary, 100% shareholding by the Group, common director and the Company's management as director
PTTGC Innovation America Corporation	United States of America	Indirect subsidiary, 100% shareholding by the Group and the Company's management as director
PTTGC International (Netherlands) B.V.	Netherlands	Indirect subsidiary, 100% shareholding by the Group
GC International Corporation (Formerly PTTGC International (USA) Inc.)	United States of America	Indirect subsidiary, 100% shareholding by the Group, common director and the Company's management as director
PT GCM Marketing Solutions Indonesia	Indonesia	Indirect subsidiary, 67% shareholding by the Group
Vencorex France S.A.S.	France	Indirect subsidiary, 100% shareholding by indirect subsidiary
Vencorex Holding	France	Indirect subsidiary, 90.82% shareholding by subsidiary and the Company's management as director
PTT Asahi Chemical Co., Ltd.	Thailand	Joint venture, 50% shareholding and the Company's management as director



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Name of entities	Country of incorporation/ nationality	Nature of relationships
PTT MCC Biochem Co., Ltd.	Thailand	Joint venture, 50% shareholding
HMC Polymers Co., Ltd.	Thailand	Joint venture, 41.44% shareholding and the Company's management as director
GGC KTIS Bioindustrial Company Limited	Thailand	Indirect joint venture, 50% shareholding by subsidiary
Thai Ethoxylate Co., Ltd.	Thailand	Indirect joint venture, 50% shareholding by subsidiary
NatureWorks Asia Pacific Co., Ltd.	Thailand	Indirect joint venture, 50% shareholding by the Group
Emery Oleochemicals (M) Sdn. Bhd.	Malaysia	Indirect joint venture, 50% shareholding by the Group and the Company's management as director
Emery Oleochemicals Marketing (M) Sdn. Bhd.	Malaysia	Indirect joint venture, 50% shareholding by the Group
Emery Specialty Chemicals Sdn. Bhd.	Malaysia	Indirect joint venture, 50% shareholding by the Group and the Company's management as director
Emeryoleo Specialties (M) Sdn. Bhd.	Malaysia	Indirect joint venture, 50% shareholding by the Group
NatureWorks LLC	United States of America	Indirect joint venture, 50% shareholding by the Group
Matrix Polymers Australia Pty Ltd.	Australia	Indirect joint venture, 49% shareholding by the Group
Matrix Polymers Ltd.	England	Indirect joint venture, 49% shareholding by the Group
Matrix Polymers New Zealand Pty Ltd.	New Zealand	Indirect joint venture, 49% shareholding by the Group
Revolve Group Limited	England	Indirect joint venture, 49% shareholding by the Group and the Company's management as director
Revolve Matrix Polymers Malaysia Sdn. Bhd.	Malaysia	Indirect joint venture, 49% shareholding by the Group
Global Power Synergy Plc.	Thailand	Associate, 22.73% shareholding, shareholding by parent company and common director
Kuraray GC Advanced Materials Company Limited	Thailand	Associate, 33.40% shareholding and the Company's management as director
PTT Energy Solutions Co., Ltd.	Thailand	Associate, 20% shareholding, shareholding by parent company and common director
PTT Digital Solutions Co., Ltd.	Thailand	Associate, 40% shareholding and shareholding by parent company

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Name of entities	Country of incorporation/ nationality	Nature of relationships
Vinythai Plc.	Thailand	Associate, 24.98% shareholding and the Company's management as director
Eastern Fluid Transport Co., Ltd.	Thailand	Associate, 15% shareholding by the Company and 15% shareholding by subsidiary
Combined Heat and Power Producing Co., Ltd.	Thailand	Indirect associate, 22.73% shareholding by the Group
GHECO-One Company Limited	Thailand	Indirect associate, 22.73% shareholding by the Group
Glow Energy Public Company Limited	Thailand	Indirect associate, 22.73% shareholding by the Group
Glow SPP 2 Company Limited	Thailand	Indirect associate, 22.73% shareholding by the Group
Glow SPP 3 Company Limited	Thailand	Indirect associate, 22.73% shareholding by the Group
Glow SPP 11 Company Limited	Thailand	Indirect associate, 22.73% shareholding by the Group
Glow IPP Company Limited	Thailand	Indirect associate, 22.73% shareholding by the Group
Dynachisso Thai Co., Ltd.	Thailand	Indirect associate, 41.50% shareholding by subsidiary
Thai Eastern Topseeds Oil Co., Ltd.	Thailand	Indirect associate, 30% shareholding by subsidiary
Advanced Biochemical (Thailand) Co., Ltd.	Thailand	Indirect associate, 24.98% shareholding by the Group
S.P. Petpack Inter Group Co., Ltd.	Thailand	Indirect associate, 25% shareholding by the Group
PT Indo Thai Trading	Indonesia	Indirect associate, 49% shareholding by the Group until July 2019
Thai Petroleum Pipeline Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Dhipaya Insurance Plc.	Thailand	Related party, shareholding by parent company, common director
Thai Paraxylene Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Thai Oil Plc.	Thailand	Related party, shareholding by parent company
TOP Solvent Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
TOP Solvent (Vietnam) LLC.	Vietnam	Related party, indirect shareholding by parent company

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Name of entities	Country of incorporation/ nationality	Nature of relationships
Business Services Alliance Co., Ltd.	Thailand	Related party, shareholding by parent company, the Company and two Company's associates, each of 25% shareholding of preferred stock
PTT Natural Gas Distribution Co., Ltd.	Thailand	Related party, shareholding by parent company
PTT Retail Services Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
PTT Retail Management Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
PTT Oil and Retail Business Plc.	Thailand	Related party, shareholding by parent company
PTTEP Siam Limited	Thailand	Related party, indirect shareholding by parent company
PTTEP International Limited	Thailand	Related party, indirect shareholding by parent company
PTT Exploration and Production Plc.	Thailand	Related party, shareholding by parent company
PTT Tank Terminal Limited	Thailand	Related party, shareholding by parent company
PTT Energy Resources Co., Ltd.	Thailand	Related party, shareholding by parent company
PTT LNG Co., Ltd.	Thailand	Related party, shareholding by parent company
Rak Phasak Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
LABIX Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Sak Chaisidhi Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Sport Services Alliance Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Community Partnership Association	Thailand	The Company's management as director
Sarn Palung Social Enterprise Company Limited	Thailand	Related party, 15% shareholding and shareholding by parent company
Amata Natural Gas Distribution Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Energy Complex Co., Ltd.	Thailand	Related party, shareholding by parent company
AI and Robotics Ventures Company Limited	Thailand	Related party, indirect shareholding by parent company

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Name of entities	Country of incorporation/ nationality	Nature of relationships
UBE Chemicals (Asia) Plc.	Thailand	Related party, indirect shareholding by parent company
IRPC Plc.	Thailand	Related party, shareholding by parent company and common director
IRPC Polyol Co., Ltd.	Thailand	Related party, indirect shareholding by parent company
Carigali-PTTEPI Operating Company Sdn. Bhd.	Malaysia	Related party, indirect shareholding by parent company
PTTEP South Asia Limited	Cayman Islands	Related party, indirect shareholding by parent company
PTT International Trading DMCC	United Arab Emirates	Related party, indirect shareholding by parent company
PTT International Trading London Ltd.	England	Related party, shareholding by parent company and common director
PTT International Trading Pte. Ltd.	Singapore	Related party, shareholding by parent company
TPBI & Myanmar Star Co., Ltd.	Myanmar	Related party, shareholding by subsidiary

The pricing policies for particular types of transactions are explained further below:

Transactions	Pricing policies
Sale of goods	Contract price / Regional market price / World market price
Rendering of services	Contract price
Purchase of goods / raw materials / services	Contract price / Market price
Interest on loan	Average cost of fund / Contractually agreed rate
Key management personnel compensation (Meeting allowance and bonus)	The rate approved by the Board of Directors and shareholders

Significant transactions for the years ended December 31, 2020 and 2019 with related parties were as follows:

	Unit : Million Baht			
	<u>Consolidated</u>		<u>Separate</u>	
	<u>financial statements</u>	<u>financial statements</u>	<u>financial statements</u>	<u>financial statements</u>
Parent	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Sales of goods or rendering of services	17,738	29,047	17,630	28,886
Purchases of goods or receiving of services	176,071	237,553	175,664	236,347
Other income	519	26	518	5
Interest expense	16	-	16	-
Other expense	74	193	66	129
Expense capitalised to fixed assets	88	-	81	-

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	Unit : Million Baht			
	<u>Consolidated</u>		<u>Separate</u>	
	<u>financial statements</u>		<u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Subsidiaries</b>				
Sales of goods or rendering of services	-	-	83,074	99,395
Purchases of goods or receiving of services	-	-	4,124	3,661
Interest income	-	-	26	15
Dividend income	-	-	1,606	2,666
Other income	-	-	1,100	1,144
Interest expense	-	-	824	762
Other expense	-	-	1,444	1,971
Expense capitalised to fixed assets	-	-	3,382	3,164
<b>Joint ventures</b>				
Sales of goods or rendering of services	8,299	7,874	3,720	4,469
Purchases of goods or receiving of services	3,868	3,745	99	204
Interest income	66	145	64	143
Dividend income	-	-	289	828
Other income	111	96	89	80
Other expense	-	1	-	1
<b>Associates</b>				
Sales of goods or rendering of services	4,622	5,831	4,010	4,531
Purchases of goods or receiving of services	12,982	12,916	7,352	7,220
Interest income	4	163	4	163
Dividend income	3	4	1,292	871
Other income	254	242	161	150
Interest expense	2	-	1	-
Other expense	505	459	373	353
Expense capitalised to fixed assets	237	304	196	224
<b>Other related parties</b>				
Sales of goods or rendering of services	125,521	156,928	115,747	150,458
Purchases of goods or receiving of services	7,248	16,577	6,841	15,312
Net derivative gain	134	-	134	-
Other income	547	59	544	22
Interest expense	3	-	3	-
Other expense	350	435	238	335
Expense capitalised to fixed assets	20	40	23	24
<b>Key management personnel</b>				
Key management personnel compensation				
Short-term benefits	289	374	180	193
Post-employment benefits and other long-term employee benefits	5	14	4	12
<b>Total key management personnel compensation</b>	<b>294</b>	<b>388</b>	<b>184</b>	<b>205</b>

Key management personnel in term of post-employment benefits and other long-term benefits of the subsidiaries will be paid by the Company, which is recognised as part of provisions for employee benefits.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Balances as at December 31, 2020 and 2019 with related parties were as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b><i>Trade receivables - related parties</i></b>				
Parent	2,056	2,265	2,027	2,251
Subsidiaries	-	-	8,490	6,942
Joint ventures	1,391	838	305	374
Associates	586	378	519	318
Other related parties	7,117	13,240	6,453	12,548
<b>Total</b>	<b>11,150</b>	<b>16,721</b>	<b>17,794</b>	<b>22,433</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b><i>Other receivables - related parties</i></b>				
Parent	168	38	168	36
Subsidiaries	-	-	225	425
Joint ventures	180	56	21	33
Associates	127	211	22	35
Other related parties	1,205	655	1,047	550
<b>Total</b>	<b>1,680</b>	<b>960</b>	<b>1,483</b>	<b>1,079</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b><i>Derivatives - Current assets</i></b>				
Other related parties	18	-	18	-
<b>Total</b>	<b>18</b>	<b>-</b>	<b>18</b>	<b>-</b>

### ***Loans to related parties***

	<u>Interest rate</u>		<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>(% per annum)</u>		<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b><i>Short-term loans</i></b>						
Subsidiaries	1.48 - 2.19	1.80 - 3.93	-	-	2,401	429
Associate	Fixed rate	Fixed rate	-	1,123	-	1,123
<b>Total</b>			<b>-</b>	<b>1,123</b>	<b>2,401</b>	<b>1,552</b>
<b><i>Long-term loans</i></b>						
Joint ventures	LIBOR plus margin	LIBOR plus margin	714	2,275	714	2,275
<b>Total</b>			<b>714</b>	<b>2,275</b>	<b>714</b>	<b>2,275</b>
<b><i>Summary of loans to related parties</i></b>						
Short-term loans			-	1,123	2,401	1,552
Long-term loans			714	2,275	714	2,275
<b>Total</b>			<b>714</b>	<b>3,398</b>	<b>3,115</b>	<b>3,827</b>



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Movements during the years ended December 31, 2020 and 2019 of loans to related parties were as follows:

### Loans to related parties

	<u>Consolidated</u>		Unit : Million Baht	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Short-term loans</b>				
<b>Subsidiaries</b>				
As at January 1,	-	-	429	607
Increase	-	-	1,972	-
Decrease	-	-	-	(178)
<b>As at December 31,</b>	<b>-</b>	<b>-</b>	<b>2,401</b>	<b>429</b>
<b>Joint venture</b>				
As at January 1,	-	242	-	242
Decrease	-	(225)	-	(225)
Effect of change in exchange rates	-	(17)	-	(17)
<b>As at December 31,</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Associate</b>				
As at January 1,	1,123	-	1,123	-
Increase	-	8,000	-	8,000
Decrease	(1,123)	(6,877)	(1,123)	(6,877)
<b>As at December 31,</b>	<b>-</b>	<b>1,123</b>	<b>-</b>	<b>1,123</b>
<b>Total</b>				
As at January 1,	1,123	242	1,552	849
Increase	-	8,000	1,972	8,000
Decrease	(1,123)	(7,102)	(1,123)	(7,280)
Effect of change in exchange rates	-	(17)	-	(17)
<b>As at December 31,</b>	<b>-</b>	<b>1,123</b>	<b>2,401</b>	<b>1,552</b>
<b>Long-term loans</b>				
<b>Joint ventures</b>				
As at January 1,	2,275	3,551	2,275	3,551
Increase	-	767	-	767
Decrease	(1,561)	(1,827)	(1,561)	(1,827)
Effect of change in exchange rates	-	(216)	-	(216)
<b>As at December 31,</b>	<b>714</b>	<b>2,275</b>	<b>714</b>	<b>2,275</b>
<b>Investments in subsidiaries (Note 9)</b>				
	-	-	76,486	72,551
<b>Investments in joint ventures (Note 10)</b>				
	32,537	32,444	15,373	15,373
<b>Investments in associates (Note 11)</b>				
	31,873	29,829	27,546	26,813

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<i>Trade payables - related parties</i>				
Parent	12,427	17,400	12,367	17,362
Subsidiaries	-	-	111	112
Joint ventures	373	386	8	11
Associates	1,408	1,386	649	691
Other related parties	676	1,555	602	1,294
<b>Total</b>	<b>14,884</b>	<b>20,727</b>	<b>13,737</b>	<b>19,470</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<i>Other payables - related parties</i>				
Parent	57	90	53	69
Subsidiaries	-	-	911	1,230
Joint ventures	2	16	1	3
Associates	158	112	115	77
Other related parties	263	215	243	196
<b>Total</b>	<b>480</b>	<b>433</b>	<b>1,323</b>	<b>1,575</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<i>Derivatives - Current liabilities</i>				
Other related parties	3	-	3	-
<b>Total</b>	<b>3</b>	<b>-</b>	<b>3</b>	<b>-</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<i>Payables to contractors - related parties</i>				
Subsidiaries	-	-	1,376	1,550
Associates	69	101	61	94
Other related parties	3	3	2	3
<b>Total</b>	<b>72</b>	<b>104</b>	<b>1,439</b>	<b>1,647</b>

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<i>Lease liabilities - related parties</i>				
Parent	356	-	343	-
Subsidiaries	-	-	881	-
Joint ventures	7	-	-	-
Associates	79	-	31	-
Other related parties	58	-	41	-
<b>Total</b>	<b>500</b>	<b>-</b>	<b>1,296</b>	<b>-</b>

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Borrowings from related parties

	<u>Interest rate</u> <u>(% per annum)</u>		<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
	<b>Short-term borrowings</b>					
Subsidiaries	1.10	1.10	-	-	5,608	3,041
<b>Total</b>			<b>-</b>	<b>-</b>	<b>5,608</b>	<b>3,041</b>
<b>Long-term borrowing</b>						
Subsidiary	4.68	4.68	-	-	14,948	14,991
<b>Total</b>			<b>-</b>	<b>-</b>	<b>14,948</b>	<b>14,991</b>

Movements during the years ended December 31, 2020 and 2019 of borrowings from related parties were as follows:

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
	<b>Short-term borrowings</b>			
<b>Parent</b>				
As at January 1,	-	-	-	-
Increase	4,000	-	4,000	-
Decrease	(4,000)	-	(4,000)	-
<b>As at December 31,</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Subsidiaries</b>				
As at January 1,	-	-	3,041	1,931
Increase	-	-	2,588	1,580
Decrease	-	-	(21)	(470)
<b>As at December 31,</b>	<b>-</b>	<b>-</b>	<b>5,608</b>	<b>3,041</b>
<b>Long-term borrowing</b>				
<b>Subsidiary</b>				
As at January 1,	-	-	14,991	16,105
Increase	-	-	-	-
Effect of change in exchange rate	-	-	(61)	(1,132)
	-	-	<b>14,930</b>	<b>14,973</b>
Amortise deferred financing cost	-	-	18	18
<b>As at December 31,</b>	<b>-</b>	<b>-</b>	<b>14,948</b>	<b>14,991</b>

### Significant agreements with related parties

The Group has significant agreements with related parties as at December 31, 2020 as follows:

#### Olefins Sales and Purchase Agreements

The Company has 4 Ethylene sales and purchase agreements with a parent company and 2 related parties. Selling prices are determined based on Ethylene price in the world market. These agreements are for the periods from 7 years to 21 years, commencing from the effective date specified in each agreement. One agreement that is expired in July 2021 is automatically renewed except for advance cancellation not less than 1 year through written notice by each party. Other three agreements will expire in December 2021, May 2022 and December 2027.

The Company has 4 Propylene sales and purchase agreements with 3 related parties. Selling prices are determined based on Polypropylene plastic pellets and Propylene prices in the world market. Three agreements are for the periods from 5 years to 15 years, commencing from the effective date specified in each agreement and expiring in December 2021, December 2026 and December 2035 and another agreement is for the period 15 years, start from the plant commercial operation date.

### ***By-Product Sales and Purchase Agreements***

The Company has a Hydrogen sales and purchase agreement with 3 related parties. Selling price in the agreement is determined based on Natural Gas price for the industry. These agreements are for the periods from 9 years 9 months to 15 years, commencing from the date as specified in the agreement and expiring from March 2024 to December 2035.

The Company has a Tail Gas sales and purchase agreement with a related party. Selling price in the agreement is determined based on Natural Gas price for the industry. The agreement is for the period of 15 years, commencing from the date as specified in the agreement and expiring in August 2021.

### ***Utilities and Other Services Agreements***

The Company has 3 Power Supply agreements with 3 related parties. Selling prices in these agreements are determined based on reference price from the Provincial Electricity Authority. These agreements are for the periods of 6 years 8 months and 15 years, commencing from the date as specified in each agreement and expiring in September 2022, June 2027 and September 2028.

The Company has 6 Utilities agreements covering electricity, steam and demineralised water with a related party. These agreements are for the periods from 12 years to 19 years 9 months, commencing from the date as specified in each agreement and expiring in December 2028.

The Company and certain related parties have many Utilities agreements for the industries covering electricity, steam, and water for industrial use with a related party. These agreements are for the periods from 15 years to 25 years, commencing from the date as specified in each agreement and expiring from December 2021 to December 2037. All agreements can be renewed for the period of 5 years with the terms and conditions agreed by both parties.

The Company has Tank Farm Storage and Service Agreement with a related party covering tank storage, utilities for product warehouse and transportation of Methanol. This agreement is for the period of 15 years, commencing from the effective date as specified in the agreement and expiring in March 2034, with the service charge as stipulated in the agreement.

### ***Feedstock and Fuel Gas Sales and Purchase Agreements***

The Company has a Natural Gas sales and purchase agreement with a parent company. The selling price is determined based on gas price as specified in the agreement. The agreement is for the period of 20 years, commencing from the date as specified in the agreement. Subsequently, the agreement is renewed for the period of 2 years 3 months and expiring in March 2021.

The Company has 2 Natural Gas sales and purchase agreements with a parent company. Selling prices are determined based on gas price as specified in each agreement and Thailand Producer Price Index as classification of products by activity (CPA). These agreements are for the periods of 10 years, commencing from the date as specified in each agreement and expiring in May 2023 and December 2029.

The Company and 2 related parties have various Natural Gas sales and purchase agreements with a parent company. Selling prices in these agreements are determined based on fuel oil prices and Thailand Producer Price Index (PPI). These agreements are for the periods from 10 years to 15 years, commencing from the date as specified in each agreement and expiring from February 2021 to December 2029.

The Company has an Ethane, Propane, LPG and NGL sales and purchase agreement with a parent company. Selling price in an agreement for Ethane is determined based on Polyethylene plastic pellets price. Selling price for Propane and LPG is determined based on Propane and Butane price in the world market and selling price for NGL is determined based on Naphtha price in the world market. The agreement is for the period of 11 years, commencing from the date as specified in the agreement and expiring in December 2030.

The Company has an Ethane Rich Gas sales and purchase agreement with a related party. The selling price is determined based on prevailing prices of Polyethylene and Polypropylene in the region. This agreement is for the period of 10 years and will expire in January 2021.

### ***Petroleum Product Offtake Agreement***

The Company has a Petroleum Product sales and purchase agreement with a parent company and a related party. For domestic sales, the product price reflects prices prevailing in Thailand for products of a similar quality that are sold in or imported to Thailand. For export sales, the product price reflects the prevailing international spot price for that product. This agreement is for the period of 18 years, commencing from the date as specified in the agreement and expiring in February 2024. The agreement is automatically renewed except for advance cancellation through written notice by each party.

### ***Expansion Phase Product Offtake Agreement***

The Company has an expansion phase product offtake agreement with a parent company and a related party, which a parent company and a related party agree to purchase 100% of the volume of refined petroleum products produce by reforming and upgrading complexes. As specified in the Product Offtake Agreement, at least 50% - 80% of such volume will be sold at a competitive domestic market price and the remaining sold at a competitive export market price or other mutually agreed price. The agreement is for the period of 18 years, commencing from the date as specified in the agreement and expiring in February 2024. The agreement is automatically renewed except for advance cancellation through written notice by each party.

### ***Long-term Crude Oil and Other Raw materials Supply Agreements***

The Company has entered into 2 supply agreements for crude oil and other raw materials with a parent company, the reference price being based on market price of crude oil and other raw materials. One agreement is for the period of 18 years, will expire in February 2024 and another agreement is for the period of 20 years, was automatically renewed and will expire in December 2021. These agreements are automatically renewed except for advance cancellation through written notice by each party.

### ***Crack Spread Swap Agreements***

The Company has entered into many crack spread swap agreements with a related party to hedge the Company's oil refinery margin. The floating amount of the basket refinery margin (calculated crack spread based on the Singapore price of refined petroleum products, which are Naphtha, Gasoline, Gasoil, Kerosene and Fuel Oil, against the price of Dubai crude oil) is swapped for a fixed amount of the basket refinery margin for a fixed quantity per month. Under the agreements, the Company shall receive or make payment for the crack spread difference according to terms and conditions stipulated in the agreements.

### ***Product Spread Swap Agreements***

The Company has entered into many petrochemical product margin spread swap agreements with a related party to hedge the Company's petrochemical margin. The floating amount of the petrochemical margin (calculated margin spread based on the key markets petrochemical products, Paraxylene, Benzene and other products against the Naphtha price) is swapped for a fixed amount of the petrochemical margin for a fixed quantity per month. Under the agreements, the Company shall receive or make payment of the product spread difference according to terms and conditions stipulated in the agreements.

### ***Crude Oil Price Hedging Agreements***

The Company has entered into many crude oil price hedging agreements to mitigate price risk with a related party. As at December 31, 2020, the Company has no oil volume under the agreements.

### ***Sales and Purchase Aromatics Product Agreements***

The Company, a parent company, related parties and various other companies have entered into many raw material and product sales and purchase agreements. The sales and purchase prices of raw material and product are based on the prices specified in the agreements. These agreements are for the periods from 1 year to 11 years 9 months, commencing from the effective date as specified in each agreement. The agreements will expire from December 2021 to December 2026. Other agreements are automatically renewed except for a cancellation through written notice by each party.

### ***Polyethylene plastic pellets Sales and Purchase Agreements***

The Company and a related party have 2 Polyethylene plastic pellets sales and purchase agreements with another related party. The Company and a related party agree to sell all Polyethylene plastic pellets to the other related party for distributing to the customers in the market. The Polyethylene pricing structure is linked to the Polyethylene product price that the related party sells to end customers, adjusted by the marketing expenses specified in the agreements. These agreements are for the period of 15 years, commencing from the effective date as specified in each agreement. One agreement will expire in December 2021 and another will expire in June 2023.

### ***Lending and Borrowing Agreements***

The Company has unsecured short-term lending agreements for the period of 3 years through Liquidity Management System (“LMS”) with 8 related parties with the credit facility of Baht 3,500 million, Baht 3,000 million, Baht 1,500 million, Baht 800 million, Baht 500 million, Baht 300 million and Baht 100 million. These loans bear interest based on market rate referenced to BIBOR O/N plus interest rate spread.

The Company has a secured long-term lending agreement for the period of 5 years with a related party with the credit facility of USD 7.90 million. This loan bears interest based on market rate referenced to LIBOR plus interest rate spread.

The Company has an unsecured long-term lending agreement for the period of 2 years with a related party with the credit facility of USD 17 million. This loan bears interest based on market rate referenced to LIBOR plus interest rate spread.

The Company has unsecured short-term borrowing agreements for the period of 3 years through LMS with 8 related parties with the credit facility of Baht 4,000 million, Baht 2,500 million, Baht 800 million, Baht 500 million, Baht 400 million, Baht 60 million and Baht 50 million. These loans bear interest based on market rate referenced to BIBOR O/N minus interest rate spread.

The Company has an unsecured long-term borrowing agreement for the period of 4.2 years with a related party with the credit facility of USD 495.89 million. This loan bear interest at the fixed rate.

The Company has an uncommitted and unsecured short-term Inter-Company Borrowing & Lending agreement (ICBL) for the period of 1 year with a parent company with the borrowing credit facility of Baht 10,000 million and lending credit facility of Baht 5,000 million. The agreement was expired on December 19, 2020 and has been extended for an additional period until December 19, 2021. This facility bears interest based on market rate referenced to BIBOR or LIBOR plus interest rate spread by taking into account the return on short-term investment, short-term interest rate and the credit ratings of the Company or the borrowing company.

### ***Service Agreements***

The Company has Shared Service agreements with 27 related parties for the provision of general services. All of these agreements are effective from the date as specified in the agreements and the service charges will be agreed in the fourth quarter of each year.

The Company has Management and Engineering agreement, Design, Supply, Construction and Installation agreement, Inspection of Construction, Equipment and Machinery agreement and Management and Maintenance Work agreement with a related party. These agreements are for the periods from 1 year 6 months to 5 years, commencing from the date as specified in the agreements and expiring in June 2023.

The Company has a Security Service agreement with a related party. Under which the related party agrees to provide security service to asset, employees and visitors in the location of the Company. The agreement is for the period of 2 years and will expire in December 2022.

The Company has a Safety Inspection Service agreement and an Emergency Control Center agreement with a related party. These agreements are for the period from 2 years to 3 years and will expire in December 2023 with service rate as stipulated in the agreements.

The Company has Warehouse Management agreements with a related party. The agreements are for the periods from 1 year to 21 years 3 months and expiring from December 2021 to December 2030.

The Company has a Logistics Services agreement with a related party. The agreement is for the period of 3 years and will expire in December 2023.

The Company has entered into 2 Information and Communication Technology Service agreements with a related party. Under which the related party agrees to provide Information Technology system maintenance and support services, system structure and data centre management, system supporting and advisory, including system design and development as the Company's requirements. These agreements are for the periods from 1 year to 15 years, commencing from the date as specified in the agreements and expiring in December 2021 and December 2027.

The Company has a Technical Services agreement with a related party. Under which the Company agreed to obtain certain technical advisory services. The agreement is for the period of 3 years and will expire in December 2022.

### ***Rental Agreements***

The Company has various Land Lease agreements with related parties. These agreements are for the periods from 14 years to 30 years, commencing from the date as specified in the agreements, and expiring from February 2029 to June 2040 with land lease rate and condition as specified in the agreements.

A subsidiary has Land Lease and Office Rental agreements with 6 related parties. These agreements are for the periods from 3 years to 30 years, commencing from the date as specified in the agreements and the renewal of the contract will be subject to negotiation with the counter party.

## **29. FINANCIAL INFORMATION BY SEGMENT**

The Group has significant business segments which offer different products and services, and are managed separately. For each of the business segments, the chief operating decision maker (CODM) reviews internal management reports on at least a quarterly basis. The operations in each of the Group's reportable segments have 7 reportable segments as follows;

Segment 1	Refinery
Segment 2	Aromatics
Segment 3	Olefins and Derivatives
Segment 4	Green Chemicals
Segment 5	Performance Materials and Chemicals
Segment 6	Service and Others
Segment 7	Investments in Other Joint Ventures and Associates

Performance information of each reportable segment is measured based on segment profit before finance cost, income tax, depreciation and amortisation which as included in the internal management reports that are reviewed by the Group's CODM. Management believes that using profit before finance cost, income tax, depreciation and amortisation to measure performance is the most relevant in evaluating the results of certain segments relative to other entities that operate within these industries.



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Information about reporting segments for the year ended December 31, 2020

	<u>Refinery</u>	<u>Aromatics</u>	<u>Olefins and Derivatives</u>	<u>Green Chemicals</u>	<u>Performance Materials and Chemicals</u>	<u>Service and Others</u>	<u>Investments in Other Joint Ventures and Associates</u>	<u>Elimination</u>	<u>Unit : Million Baht Total</u>
External revenues	136,155	34,218	106,253	16,592	34,112	1,961	-	-	329,291
Inter-segment revenues	13,938	42,777	9,534	1,610	-	6,494	-	(74,353)	-
<b>Total revenues</b>	<b>150,093</b>	<b>76,995</b>	<b>115,787</b>	<b>18,202</b>	<b>34,112</b>	<b>8,455</b>	-	<b>(74,353)</b>	<b>329,291</b>
Cost of sales and rendering of services	(154,007)	(74,977)	(94,066)	(16,217)	(26,256)	(6,066)	-	73,303	(298,286)
Selling, distribution and administrative expenses	(637)	(1,170)	(7,292)	(782)	(2,078)	(1,913)	-	761	(13,111)
<b>Profit (loss) before finance costs, income tax, depreciation, amortisation and others</b>	<b>(4,072)</b>	<b>1,563</b>	<b>15,065</b>	<b>1,244</b>	<b>6,019</b>	<b>1,737</b>	-	<b>(1,265)</b>	<b>20,291</b>
Investment income	54	30	110	19	25	3,204	-	(3,080)	362
Finance costs	(750)	(267)	(680)	(77)	(321)	(1,588)	-	172	(3,511)
Depreciation and amortisation	(2,911)	(3,336)	(10,451)	(717)	(3,133)	(329)	-	500	(20,377)
Reversal of (loss on) impairment of assets	(47)	(15)	359	(130)	(30)	(56)	-	31	112
Share of profit of investments in joint ventures and associates	-	-	36	53	-	-	3,241	(7)	3,323
Others	28	(32)	53	17	(186)	(55)	-	518	343
<b>Profit (loss) before income tax</b>	<b>(7,698)</b>	<b>(2,057)</b>	<b>4,492</b>	<b>409</b>	<b>2,374</b>	<b>2,913</b>	<b>3,241</b>	<b>(3,131)</b>	<b>543</b>
<b>Profit (loss) for reportable segment</b>	<b>(7,541)</b>	<b>(1,883)</b>	<b>4,796</b>	<b>245</b>	<b>2,485</b>	<b>1,985</b>	<b>3,241</b>	<b>(3,128)</b>	<b>200</b>
<b>Owners of the parent</b>									

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Information about reporting segments for the year ended December 31, 2019

	<u>Refinery</u>	<u>Aromatics</u>	<u>Olefins and Derivatives</u>	<u>Green Chemicals</u>	<u>Performance Materials and Chemicals</u>	<u>Service and Others</u>	<u>Investments in Other Joint Ventures and Associates</u>	<u>Elimination</u>	<u>Unit : Million Baht Total</u>
External revenues	175,036	54,653	132,338	12,017	36,769	1,997	-	-	412,810
Inter-segment revenues	17,417	54,549	10,418	1,037	-	6,455	-	(89,876)	-
<b>Total revenues</b>	<b>192,453</b>	<b>109,202</b>	<b>142,756</b>	<b>13,054</b>	<b>36,769</b>	<b>8,452</b>	-	<b>(89,876)</b>	<b>412,810</b>
Cost of sales and rendering of services	(187,844)	(107,204)	(117,865)	(11,795)	(31,026)	(6,289)	-	89,529	(372,494)
Selling, distribution and administrative expenses	(913)	(1,728)	(8,314)	(936)	(2,424)	(2,132)	-	1,376	(15,071)
<b>Profit before finance costs, income tax, depreciation, amortisation and others</b>	<b>4,208</b>	<b>1,042</b>	<b>17,085</b>	<b>604</b>	<b>3,533</b>	<b>1,340</b>	-	<b>(10)</b>	<b>27,802</b>
Interest income	115	69	362	54	63	375	-	(48)	990
Finance costs	(388)	(171)	(450)	(79)	(445)	(1,681)	-	95	(3,119)
Depreciation and amortisation	(2,784)	(3,259)	(9,692)	(519)	(2,727)	(744)	-	212	(19,513)
Reversal of expenses from raw materials derogation	-	-	-	232	-	-	-	-	232
Gain on bargain purchase	-	-	31	-	-	-	-	-	31
Dividend income	-	-	-	-	-	3,538	-	(3,527)	11
Share of profit (loss) of investments in joint ventures	-	-	(73)	60	-	-	2,639	-	2,626
Share of profit (loss) of investments in associates	-	-	(5)	(29)	-	-	1,972	(5)	1,933
Others	(173)	(84)	18	(3)	194	2,051	-	3	2,006
<b>Profit (loss) before income tax</b>	<b>978</b>	<b>(2,403)</b>	<b>7,276</b>	<b>320</b>	<b>618</b>	<b>4,879</b>	<b>4,611</b>	<b>(3,280)</b>	<b>12,999</b>
<b>Profit (loss) for reportable segment</b>	<b>1,008</b>	<b>(2,381)</b>	<b>7,022</b>	<b>162</b>	<b>395</b>	<b>4,126</b>	<b>4,611</b>	<b>(3,261)</b>	<b>11,682</b>
<b>Owners of the parent</b>									

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	<u>Refinery</u>	<u>Aromatics</u>	<u>Olefins and Derivatives</u>	<u>Green Chemicals</u>	<u>Performance Materials and Chemicals</u>	<u>Service and Others</u>	<u>Investments in Other Joint Ventures and Associates</u>	<u>Elimination</u>	<u>Unit : Million Baht Total</u>
<b>As at December 31, 2020</b>									
Segment assets	66,100	71,592	186,823	13,671	76,391	95,398	62,213	(82,805)	489,383
Investment in joint ventures and associates	-	-	574	1,623	-	-	62,213	-	64,410
Change in non-current assets (excluding deferred tax assets and derivatives)	(1,625)	(2,066)	7,269	1,044	7,394	5,007	1,309	(7,001)	11,331
<b>As at December 31, 2019</b>									
Segment assets	64,704	69,264	162,080	13,289	60,473	94,124	60,904	(72,324)	452,514
Investment in joint ventures and associates	-	-	244	1,125	-	-	60,904	-	62,273
Change in non-current assets (excluding deferred tax assets and derivatives)	1,293	(494)	6,057	(36)	6,142	(1,966)	15,534	(3,235)	23,295

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Geographical segments

In presenting information on the basis of geographical segments, segment revenue from sale of goods and rendering of services for the years ended December 31, 2020 and 2019 are based on the geographical location of customers. Segment non-current assets (exclude derivatives and deferred tax assets) as at December 31, 2020 and 2019 are based on the geographical location of the assets.

### Geographical information

	Unit: Million Baht	
	Revenues	
	<u>2020</u>	<u>2019</u>
Thailand	209,335	260,869
The People's Republic of China	36,270	42,994
Singapore	8,480	20,021
Vietnam	15,094	17,278
Malaysia	9,858	13,517
Indonesia	6,294	6,052
India	4,196	5,108
Japan	3,344	4,481
United States of America	2,392	2,786
Other countries	34,028	39,704
<b>Total</b>	<b><u>329,291</u></b>	<b><u>412,810</u></b>

	Unit: Million Baht	
	Non-current assets (excluding deferred tax assets and derivatives)	
	<u>2020</u>	<u>2019</u>
Thailand	334,914	324,881
United States of America	11,274	10,242
France	7,238	6,900
Malaysia	4,406	4,505
Other countries	446	419
<b>Total</b>	<b><u>358,278</u></b>	<b><u>346,947</u></b>

### Major customers

The Group's revenue from sale of goods and rendering of services for the years ended December 31, 2020 and 2019 mainly comprise revenue from one customer, which is the related party, of Refinery, Aromatics and Olefins and derivatives segment representing Baht 17,738 million (2019: Baht 29,047 million) and revenue from another customer, which is the related party, of Refinery and Green Chemicals segment representing Baht 99,346 million (2019: Baht 123,025 million).

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### 30. EXPENSES BY NATURE

The statements of income include an analysis of expenses by function. Expenses by nature disclosed in accordance with the requirements of various TFRS were as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b><i>Included in cost of sales of goods</i></b>				
Changes in finished goods and work in progress	2,646	1,677	1,922	1,443
Raw materials used	246,588	324,740	182,412	254,546
Personnel expense	9,246	10,397	4,921	5,956
Depreciation of property, plant and equipment	17,567	17,352	12,225	12,258
Depreciation of right-of-use assets	620	-	486	-
Amortisation of intangible assets	364	393	288	280
<b><i>Included in selling and distribution and administrative expenses</i></b>				
Personnel expense	5,484	6,448	3,566	4,401
Depreciation of property, plant and equipment	692	839	437	537
Depreciation of right-of-use assets	513	-	610	-
Amortisation of intangible assets	382	372	259	235
Minimum lease payments recognised as an operating lease expense	307	667	119	317

### 31. FINANCE COSTS

Finance costs for the years ended December 31, 2020 and 2019 consisted of:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>		<u>Separate</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b><i>Interest expense</i></b>				
Parent	2	-	2	-
Subsidiaries	-	-	782	762
Debentures	2,984	2,300	2,325	1,646
Derivatives	2	-	2	-
Bank loans and overdrafts	1,043	1,208	291	354
Borrowings from other parties	7	15	-	-
Interest expense on lease liabilities	176	8	160	5
<b>Total interest expense</b>	<b>4,214</b>	<b>3,531</b>	<b>3,562</b>	<b>2,767</b>
Other finance costs	250	323	173	181
<u>Less</u> Capitalised as cost of assets under construction	(953)	(735)	(459)	(329)
<b>Net</b>	<b>3,511</b>	<b>3,119</b>	<b>3,276</b>	<b>2,619</b>

**32. PROMOTIONAL PRIVILEGES**

By virtue of the provisions of the Industrial Investment Promotion Act of B.E. 2520, the Company has been granted privileges by the Board of Investment relating to production of upstream, intermediate and downstream petrochemical, utilities and production support facilities, jetty for transportation and storage of liquid product and transportation by marine vessels, production of petroleum product, research and development of polymer products and chemical formula, lab testing services and refinery. The privileges granted include:

- (a) exemption from payment of import duty on machinery approved by the Board;
- (b) exemption from payment of income tax not over 100 percent of investment excluded land and working capital of certain operations for a period of 8 years from the date on which the income is first derived from such operations;
- (c) a 50% reduction in the normal income tax rate on the net profit derived from certain operations for a period of five years, commencing from the expiry date in (b) above.

As promoted companies, the Company must comply with certain terms and conditions prescribed in the promotional certificates.

Summary of revenues from promoted and non-promoted businesses in separate financial statement for the years ended December 31, 2020 and 2019 were as follows:

	Unit : Million Baht					
	<u>Separate financial statements</u>					
	<u>2020</u>			<u>2019</u>		
	<u>Promoted businesses</u>	<u>Non- promoted businesses</u>	<u>Total</u>	<u>Promoted businesses</u>	<u>Non- promoted businesses</u>	<u>Total</u>
Export sales	20,443	5,331	25,774	2,027	28,176	30,203
Domestic sales	117,619	126,178	243,797	22,397	298,356	320,753
Services income	-	662	662	-	591	591
<b>Total revenues</b>	<b><u>138,062</u></b>	<b><u>132,171</u></b>	<b><u>270,233</u></b>	<b><u>24,424</u></b>	<b><u>327,123</u></b>	<b><u>351,547</u></b>

Certain subsidiaries in the Group have been granted promotional privileges as same as the Company.

**33. BASIC EARNINGS (LOSS) PER SHARE**

The calculation of basic earnings (loss) per share for the years ended December 31, 2020 and 2019 were based on the profit (loss) for the years attributable to ordinary shareholders of the parent company and the weighted average number of ordinary shares outstanding during the years as follows:

	Unit : Million Baht / Million shares			
	<u>Consolidated financial statements</u>		<u>Separate financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
Profit (Loss) attributable to ordinary shareholders of the parent company (basic)	<u>199.61</u>	<u>11,682.08</u>	<u>(3,379.55)</u>	<u>9,153.08</u>
Number of ordinary shares as at January 1,	<u>4,508.85</u>	<u>4,508.85</u>	<u>4,508.85</u>	<u>4,508.85</u>
Effect of treasury stock	<u>(22.30)</u>	<u>(2.59)</u>	<u>(22.30)</u>	<u>(2.59)</u>
Weighted average number of ordinary shares (basic)	<u>4,486.55</u>	<u>4,506.26</u>	<u>4,486.55</u>	<u>4,506.26</u>
<b>Earnings (loss) per share (basic) (in Baht)</b>	<b><u>0.04</u></b>	<b><u>2.59</u></b>	<b><u>(0.75)</u></b>	<b><u>2.03</u></b>

### 34. DIVIDENDS PAID

At the Annual General Meeting of the shareholders of the Company held on June 2, 2020, the shareholders acknowledged the appropriation of annual dividend from 2019 performance at Baht 2.00 per share, amounting to Baht 8,995 million. The Company had paid interim dividend of the first half year of 2019 at Baht 1.00 per share, amounting to Baht 4,508 million on September 13, 2019 and the payment of an interim dividend at Baht 1.00 per share, amounting to Baht 4,487 million by the Board of Directors at the Extraordinary Meeting No. 2/2020, held on April 1, 2020. Such dividend was paid to the shareholders on April 28, 2020.

At the Annual General Meeting of the shareholders of the Company held on April 5, 2019, the shareholders approved the appropriation of annual dividend from 2018 performance at Baht 4.25 per share, amounting to Baht 19,163 million. The Company had paid interim dividend of the first half year of 2018 at Baht 1.75 per share, amounting to Baht 7,890 million on September 18, 2018. The remaining dividend was paid for the second half year of 2018 at Baht 2.50 per share, amounting to Baht 11,272 million. Such dividend was paid to the shareholders in April 2019.

At the Board of Directors' Meeting of the Company held on August 19, 2019, the Board approved the appropriation of interim dividends from the earnings from January 1, 2019 to June 30, 2019 at Baht 1.00 per share. The dividend amounting to Baht 4,508 million was paid to the rightful shareholders in September 2019.

### 35. FINANCIAL INSTRUMENTS

#### *Financial risk management policies*

The Group is exposed to normal business risks from changes in market interest rates, currency exchange rates and commodity prices and from non-performance of contractual obligations by counterparties. The Group does not hold or issue derivative financial instruments for speculative or trading purposes.

Risk management is integral to the whole business of the Group. The management continually monitors the Group's risk management process to ensure that an appropriate balance between risk and control is achieved.

#### *Capital management*

The Company's Board of Directors' policy is to maintain a strong capital base so as to maintain investor, creditor, partners and other stakeholders. In addition, the Board monitors the return on capital and the level of dividends to ensure business sustainability.

#### *Interest rate risk*

Interest rate risk is the risk that future movements in market interest rates will affect the results of the Group's operations and its cash flows because the Group's finances loans which have both floating and fixed interest rates for their operations. The Group has managed this risk to ensure the appropriateness to the business operation.

The effective interest rates of interest-bearing liabilities as at December 31, 2020 and 2019 and the periods in which those liabilities mature or re-price were disclosed in note 20 to the financial statement.



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

### Interest rate sensitivity analysis

The sensitivity analyses below have been determined based on the exposure to interest rates for financial liabilities at the reporting date. For floating rate liabilities, the analysis is prepared assuming the amount of liability outstanding at the reporting date was outstanding for the whole year and using an increase or decrease rate by considering the reasonably possible change in interest rates.

	Unit : Million Baht			
	<u>Consolidated</u> <u>financial statements</u>		<u>Separate</u> <u>financial statements</u>	
	Increase	Decrease	Increase	Decrease
<b>As at December 31, 2020</b>				
<b>Interest rates change by 1%</b>				
Finance costs	625	(237)	330	(162)

### Foreign currency risk

The Group is exposed to foreign currency risk. Therefore, the Group primarily utilises forward exchange contracts to hedge such financial assets and liabilities denominated in foreign currencies.

As at December 31, 2020 and 2019, the Group was exposed to foreign currency risk in respect of financial assets and liabilities denominated in the following currencies:

	Unit : Million Baht			
	<u>Consolidated</u> <u>financial statements</u>		<u>Separate</u> <u>financial statements</u>	
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>USD</b>				
Financial assets	23,242	16,536	18,769	12,680
Financial liabilities	(19,846)	(21,295)	(33,503)	(34,681)
<b>Gross statement of financial position exposure</b>	<b>3,396</b>	<b>(4,759)</b>	<b>(14,734)</b>	<b>(22,001)</b>
<b>Net foreign currency exchange contracts</b>	<b>148</b>	<b>4,199</b>	<b>(634)</b>	<b>3,122</b>

### Foreign currency sensitivity analysis

The following table details the Group's sensitivity to an increase and decrease in THB currency against USD currency. The sensitivity analysis includes only outstanding foreign currency denominated monetary items and foreign exchange forward contracts applied cash flow hedges accounting for USD currency at the reporting date and using an increase or decrease rate by considering the reasonably possible change in foreign exchange rates.

	Unit : Million Baht			
	<u>Consolidated</u> <u>financial statements</u>		<u>Separate</u> <u>financial statements</u>	
	Strengthens	Weakens	Strengthens	Weakens
<b>As at December 31, 2020</b>				
<b>Exchange rate change by 10%</b>				
Net gain (loss) on foreign exchange rate	(237)	228	1,619	(1,619)
Other equity - gain (loss) on cash flow hedges	(117)	117	(83)	83

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

The Group performs foreign currency risk management on assets and liabilities held in USD. The Group has net assets and liabilities under USD currency. The Group manages net USD assets and liabilities by naturally hedged USD portion of net profit to minimise the impact from fluctuations in foreign currency to the Group's performance.

In addition to forward exchange contracts, the Group uses derivatives financial instruments, principally interest rate swap, to manage exposure to fluctuations in interest rates. As at December 31, 2020, the Group has no interest rate swap contract. (2019: Baht 0.48 million) to repay certain interest bearing liabilities in foreign currencies.

The following tables detail the foreign currency forward contracts outstanding at the reporting date for their hedged items related to forecasted purchases. Foreign currency forward contract assets and liabilities are presented in the line "Derivatives" (either as asset or as liabilities) within the statement of financial position.

<u>Hedging instruments</u> - Outstanding contracts	Average exchange rate	<u>Consolidated financial statements</u>		Carrying amount of the hedging instruments assets (liabilities) Million Baht
		Notional value: Foreign currency	Notional value: Local currency	
	[rate]	Million [FC]	Million Baht	
<b>As at December 31, 2020</b>				
<b>Cash flow hedges</b>				
<i>Buy [USD]</i>	30.45	39	1,187	(16)
<i>Buy [EUR]</i>	35.54	13	472	19
<i>Buy [SEK]</i>	3.46	72	249	15

<u>Hedging instruments</u> - Outstanding contracts	Average exchange rate	<u>Separate financial statements</u>		Carrying amount of the hedging instruments assets (liabilities) Million Baht
		Notional value: Foreign currency	Notional value: Local currency	
	[rate]	Million [FC]	Million Baht	
<b>As at December 31, 2020</b>				
<b>Cash flow hedges</b>				
<i>Buy [USD]</i>	30.65	27	843	(17)
<i>Buy [SEK]</i>	3.46	72	249	15

The Group assesses effectiveness by comparing the nominal amount of the net assets designated in the hedge relationship with the nominal amount of the hedging instruments. This is a simplified approach because the currency of the exposure and hedging instruments perfectly match and the company identified that there was no change in fair value for hedge ineffectiveness recognized in the income statement.

### **Commodity price risk**

The Group is exposed to commodity price risk relating to purchases and sales. The Group mitigates risk by closely monitoring market situation, feedstock, and product prices to adjust sales and production plans for our value chain facing rapidly changing situations. Moreover, the Group primarily utilises derivatives and forward to hedge the commodity price and spread fluctuations.

**Commodity price sensitivity analysis**

The following table details the Group's sensitivity to an increase and decrease in commodity price. The sensitivity analysis includes only outstanding commodity derivative contracts at the reporting date and using an increase or decrease rate by considering the reasonably possible change in commodity price.

	<u>Consolidated</u> <u>financial statements</u>		<u>Unit : Million Baht</u> <u>Separate</u> <u>financial statements</u>	
	Increase	Decrease	Increase	Decrease
<b>As at December 31, 2020</b>				
<b>Net derivatives gain (loss)</b>				
Petroleum Crack Spread hedging +/- 1 USD per BBL	(96)	96	(96)	96
Petrochemical Spread hedging +/- 1 USD per Ton	(0.4)	0.4	(0.4)	0.4

**Credit risk**

Credit risk is risk of failure from a customer or a counterparty to settle its obligations to the Group as and when they fall due.

Management has a policy in place and the exposure to credit risk is monitored on an ongoing basis. Credit evaluations are performed on all customers requiring credit over a certain amount. At the reporting date, there were no significant credit risk and the concentration of credit risk. The maximum exposure to credit risk is represented by the carrying amount of each financial asset in the statement of financial position. However, the majority of the customers are on the long-term contracted commitment and parts of them are the Company's shareholders which the company has consistently collected from them. For the customers who do not have the long-term contracted commitments, the Group monitors the risk on an ongoing basis and would do the business only with the credible customers by limiting the credit lines and requesting the guarantee on some cases. For the export, the credit of counterparty will be considered. The Group will demand a payment on a case to case basis and also has commercial credit insurance. Management anticipates no material losses from its debt collection.

- For trade receivables, the Group apply simplified approach in accordance with TFRS 9 to measure lifetime expected credit loss. The Group consider expected credit loss by using trade receivables provision table which estimate historical credit loss. The overdue circumstance adjusted to reflect current situation of receivables and the future economic conditions were taken into account. Therefore, credit risk of these financial assets is presented by consideration of overdue status in provision by aging table set out in note 6.
- The Company has loans to related parties. In assessing credit risk, the Company considers that there is high probability that payments will be made under the agreements. However, the Company continually monitors the possibility of payments from counterparties.
- The Group has deposits and investments in financial assets with financial institutions and companies which are rated at investment grade. The Group constantly assesses the financial status and stability of those financial institutions and companies to manage risks from deposit and investing.

### Liquidity risk

The Group monitors its liquidity risk and maintains a level of cash and cash equivalents deemed adequate by management to finance the Group's operations and to mitigate the effects of fluctuations in cash flows.

The following tables detail the Group's remaining contractual maturity for its non-derivative financial liabilities with agreed repayment periods. The tables have been drawn up based on the undiscounted cash flows of financial liabilities based on the earliest date on which the Group can be required to pay.

	Unit : Million Baht				
	<u>Consolidated financial statements</u>				
	Less than 1 year	1 - 2 years	2 - 5 years	Over 5 years	Total
<b>As at December 31, 2020</b>					
Short-term borrowings from financial institutions	19	-	-	-	19
Trade payables	20,114	-	-	-	20,114
Other payables	7,806	-	-	-	7,806
Payables to contractors	2,956	-	-	-	2,956
Lease liabilities	1,278	823	1,426	5,311	8,838
Long-term borrowings from financial institutions	2,008	4,853	38,206	18,232	63,299
Long-term borrowings from other parties	45	45	120	85	295
Debentures	20,000	30,534	11,500	23,500	85,534
Other non-current liabilities	-	126	196	23	345

	Unit : Million Baht				
	<u>Separate financial statements</u>				
	Less than 1 year	1 - 2 years	2 - 5 years	Over 5 years	Total
<b>As at December 31, 2020</b>					
Trade payables	14,813	-	-	-	14,813
Other payables	5,593	-	-	-	5,593
Payables to contractors	2,020	-	-	-	2,020
Lease liabilities	1,305	829	1,088	4,635	7,857
Short-term borrowings from related parties	5,608	-	-	-	5,608
Long-term borrowings from financial institutions	-	1,025	27,175	4,800	33,000
Long-term borrowings from a related party	-	16,473	-	-	16,473
Debentures	20,000	15,638	11,500	23,500	70,638
Other non-current liabilities	-	124	196	23	343

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

The following table details the Group's liquidity analysis for its derivative financial instruments based on contractual maturities. The table has been drawn up based on the undiscounted net cash inflows and outflows on derivative instruments.

	Unit : Million Baht				
	<u>Consolidated financial statements</u>				
	Less than 1 year	1 - 2 years	2 - 5 years	Over 5 years	Total
<b>As at December 31, 2020</b>					
<b>Cash inflows from</b>					
Foreign exchange forward contracts	8,357	-	-	-	8,357
Commodity forward contracts	57	-	-	-	57
<b>Cash outflows from</b>					
Foreign exchange forward contracts	(8,351)	-	-	-	(8,351)
Commodity forward contracts	(40)	-	-	-	(40)

	Unit : Million Baht				
	<u>Separate financial statements</u>				
	Less than 1 year	1 - 2 years	2 - 5 years	Over 5 years	Total
<b>As at December 31, 2020</b>					
<b>Cash inflows from</b>					
Foreign exchange forward contracts	6,639	-	-	-	6,639
Commodity forward contracts	57	-	-	-	57
<b>Cash outflows from</b>					
Foreign exchange forward contracts	(6,649)	-	-	-	(6,649)
Commodity forward contracts	(40)	-	-	-	(40)

### *Levels and categories of financial instruments and their fair values*

The following table details information as at December 31, 2020 of:

- classes of financial instruments based on their nature and characteristics;
- the carrying amounts of financial instruments;
- fair values of financial instruments (except fair values of financial instruments when carrying amount approximates their fair value); and
- fair value hierarchy levels of financial assets and financial liabilities for which fair value was disclosed.

The carrying values of cash and cash equivalents, current investments in financial assets, trade receivables, other receivables, short-term loans to related parties, short-term borrowings from financial institutions, trade payables, other payables, payables to contractors and short-term borrowings from related parties that measured at amortised cost approximate their fair values due to the short maturity period.

The carrying values of long-term loans to related parties, other non-current assets, long-term borrowings from financial institutions with floating interest rate, long-term borrowings from other party, lease liabilities and other non-current liability that measured at amortised cost approximate their fair values.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

Unit : Million Baht

	Consolidated financial statements						Fair value					
	Carrying value			Non-			Level					
	Financial assets	Financial liabilities	Total	Financial assets	Financial liabilities	Total	1	2	3			
FVTOCI - Derivatives designated in cash flow hedge relationships	FVTPL - mandatorily measured	FVTOCI - mandatorily measured	FVTOCI - Derivatives designated in cash flow hedge relationships	FVTPL - mandatorily measured	FVTOCI - mandatorily measured	Amortised cost	Amortised cost	Amortised cost	Total			
<b>As at December 31, 2020</b>												
Cash and cash equivalents	-	-	-	-	44,312	-	-	-	44,313	1	-	1
Current investments in financial assets	-	-	-	-	16,275	-	-	-	16,345	-	70	70
Trade receivables	-	-	-	-	29,277	-	-	-	29,277	-	-	-
Other receivables	-	-	-	-	1,744	-	-	-	3,726	-	-	-
Current derivatives assets	37	89	-	-	-	-	-	-	126	126	-	126
Non-current investments in financial assets	-	382	36	670	-	-	-	-	1,088	352	36	700
Long-term loans to related parties	-	-	-	-	714	-	-	-	714	-	-	-
Other non-current assets	-	-	-	-	247	-	-	-	805	-	-	-
Short-term borrowings from financial institutions	-	-	-	-	-	-	-	19	19	-	-	-
Trade payables	-	-	-	-	-	-	-	20,114	20,114	-	-	-
Other payables	-	-	-	-	-	-	-	7,806	12,505	-	-	-
Payables to contractors	-	-	-	-	-	-	-	2,956	2,956	-	-	-
Current derivatives liabilities	-	-	-	20	-	81	-	-	101	-	101	101
Long-term borrowings from financial institutions	-	-	-	-	-	-	-	62,951	62,951	-	818 *	818
Long-term borrowings from other parties	-	-	-	-	-	-	-	294	294	-	-	-
Debentures	-	-	-	-	-	-	-	85,032	85,032	-	87,942	87,942
Lease liabilities	-	-	-	-	-	-	-	6,787	6,787	-	-	-
Non-current derivatives liabilities	-	-	-	-	-	95	-	-	95	-	-	95
Other non-current liabilities	-	-	-	-	-	-	-	345	483	-	-	-

\* Fair value of long-term borrowings from financial institutions with fixed interest rate only.

## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

	Separated financial statements										Fair value			
	Carrying value					Non-					Level			
	Financial assets		Financial liabilities		Total	Financial assets		and non-		Total	1	2	3	Total
FVTOCI - Derivatives designated in cash flow hedge relationships	FVTPL - mandatorily measured	FVTOCI - mandatorily measured	FVTPL - mandatorily measured	FVTOCI - Derivatives designated in cash flow hedge relationships		FVTPL - mandatorily measured	financial assets	financial liabilities	1		2	3		
<b>As at December 31, 2020</b>														
Cash and cash equivalents	-	-	1	-	31,534	-	-	-	-	-	-	1	-	1
Current investments in financial assets	-	-	70	-	15,875	-	-	-	-	-	-	70	-	70
Trade receivables	-	-	-	-	22,592	-	-	-	-	-	-	-	-	-
Other receivables	-	-	-	-	1,004	-	-	-	-	-	-	-	-	1,009
Short-term loans to related parties	-	-	-	-	2,401	-	-	-	-	-	-	-	-	2,401
Current derivatives assets	15	88	-	-	-	-	-	-	-	-	-	103	-	103
Non-current investments in financial assets	-	352	36	4	-	-	-	-	-	-	352	36	4	392
Long-term loans to related parties	-	-	-	-	714	-	-	-	-	-	-	-	-	714
Other non-current assets	-	-	-	-	218	-	-	-	-	-	-	-	-	237
Trade payables	-	-	-	-	-	-	-	-	-	14,813	-	-	-	14,813
Other payables	-	-	-	-	-	-	-	-	-	5,593	644	-	-	6,237
Payables to contractors	-	-	-	-	-	-	-	-	-	2,020	-	-	-	2,020
Short-term borrowings from related parties	-	-	-	-	-	-	-	-	-	5,608	-	-	-	5,608
Current derivatives liabilities	-	-	-	-	-	18	81	-	-	-	-	99	-	99
Long-term borrowings from financial institutions	-	-	-	-	-	-	-	-	-	32,831	-	-	-	32,831
Long-term borrowings from a related party	-	-	-	-	-	-	-	-	-	14,948	-	15,808	-	15,808
Debentures	-	-	-	-	-	-	-	-	-	70,164	-	72,329	-	72,329
Lease liabilities	-	-	-	-	-	-	-	-	-	6,064	-	-	-	6,064
Other non-current liabilities	-	-	-	-	-	-	-	-	-	344	53	-	-	397



## Notes to The Financial Statements

PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED  
FOR THE YEAR ENDED DECEMBER 31, 2020

The following table details information as at December 31, 2019 of:

- the carrying amounts of financial instruments;
- fair values of financial instruments (except fair values of financial instruments when carrying amount approximates their fair value); and
- fair value hierarchy levels of financial assets and financial liabilities for which fair value was disclosed.

Unit : Million Baht

	<b>Consolidated financial statements</b>						
	<b>Carrying value</b>			<b>Fair value</b>			
	<b>Current</b>	<b>Non-current</b>	<b>Total</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Total</b>
<b>As at December 31, 2019</b>							
<b>Financial assets</b>							
Debt securities							
available-for-sale	545	1,503	2,048	-	2,048	-	2,048
Equity securities							
available-for-sale	-	384	384	384	-	-	384
Financial derivatives	28	-	28	-	28	-	28
Commodity derivatives	194	-	194	-	194	-	194
<b>Financial liabilities</b>							
Debentures	-	70,131	70,131	-	72,477	-	72,477
Financial derivatives	320	12	332	-	332	-	332
Commodity derivatives	466	-	466	-	466	-	466

Unit : Million Baht

	<b>Separate financial statements</b>						
	<b>Carrying value</b>			<b>Fair value</b>			
	<b>Current</b>	<b>Non-current</b>	<b>Total</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Total</b>
<b>As at December 31, 2019</b>							
<b>Financial assets</b>							
Debt securities							
available-for-sale	545	1,503	2,048	-	2,048	-	2,048
Equity securities							
available-for-sale	-	384	384	384	-	-	384
Financial derivatives	14	-	14	-	14	-	14
Commodity derivatives	194	-	194	-	194	-	194
<b>Financial liabilities</b>							
Long-term borrowing							
from a related party	-	14,991	14,991	-	15,808	-	15,808
Debentures	-	55,221	55,221	-	56,761	-	56,761
Financial derivatives	69	12	81	-	81	-	81
Commodity derivatives	466	-	466	-	466	-	466

**Measurement of fair values**

Level 1 of fair values for debt instruments measured at fair value through profit or loss and equity securities available-for-sale investments are based on quoted bid price as at the end of reporting period by references from the Stock Exchange of Thailand.

Level 2 of fair values for debt instruments measured at fair value through other comprehensive income and debt securities available-for-sale investments are based on the yield rate quoted by the Thai Bond Market Association or other markets and for simple over-the-counter financial derivative and commodity derivative instruments are based on broker quotes. Those quotes are tested for reasonableness by discounting expected future cash flows using market interest rate for a similar instrument at the measurement date. Fair values reflect the credit risk of the instrument and include adjustments to take account of the credit risk of the Group and counterparty when appropriate. For fixed-rate long-term borrowings are based on discounted future cash flows for the remaining periods using market interest rate for a similar instrument at the measurement date. For debentures are based on the last bid price on the Thai Bond Market Association at the measurement date.

Level 3 of fair value for debt instrument measured at fair value through profit or loss, which is an investment in a startup company, is based on valuation of the latest fundraising round.

Fair values for equity instruments measured at fair value through other comprehensive income are as follows;

- For investments in startup companies, the fair values are based on valuation of the latest fundraising round.
- For investments in non-marketable securities, the fair values are based on cost which considered as estimated fair values, except there are significant changes in their operations.
- For investments in funds, the fair values are referred to the net asset value of the funds.

Fair values for derivative liability, which is the put option over non-controlling interest, is based on present value of expected payments which is determined by considering the forecast earnings before financial costs, income taxes, depreciation and amortisation and discounted using discount rate.

**Reconciliation of Level 3 fair value measurements of financial instruments**

The following table includes the financial assets and the financial liability that are measured subsequently at fair value on Level 3.

	<b><u>Consolidated</u></b>	<b>Unit : Million Baht</b>
	<b><u>financial statements</u></b>	<b><u>Separate</u></b>
		<b><u>financial statements</u></b>
<b>Investments in financial assets in equity instruments</b>		
<b>Balance as at January 1, 2020</b>	574	4
Effect from first-time adoption of new accounting policy	(4)	-
Total gains or (losses):		
in profit or loss	-	-
in other comprehensive income	(10)	-
Purchases/ issues	123	-
Disposals/ settlements	-	-
Effect of change in foreign exchange rates	17	-
<b>Balance as at December 31, 2020</b>	<b>700</b>	<b>4</b>
<b>Derivative liability in put option over non-controlling interest</b>		
<b>Balance as at January 1, 2020</b>	-	-
Effect from first-time adoption of new accounting policy	573	-
Total (gains) or losses:		
in profit or loss	(514)	-
in other comprehensive income	-	-
Purchases/ issues	-	-
Disposals/ settlements	-	-
Effect of change in foreign exchange rates	36	-
<b>Balance as at December 31, 2020</b>	<b>95</b>	<b>-</b>

**36. COMMITMENTS WITH NON-RELATED PARTIES**

As at December 31, 2020 and 2019, the Company and its subsidiaries had commitments with non-related parties as follows:

	<u>Consolidated</u>		<u>Unit : Million Baht</u>	
	<u>financial statements</u>	<u>financial statements</u>	<u>Separate</u>	<u>financial statements</u>
	<u>2020</u>	<u>2019</u>	<u>2020</u>	<u>2019</u>
<b>Capital commitments</b>				
<i>contracted but not provided for</i>				
Land	-	5	-	2
Plant, machinery and equipment	6,387	13,475	3,624	9,084
Buildings and furniture, fixtures and equipment	116	107	111	98
Others	141	627	136	228
<b>Total</b>	<b>6,644</b>	<b>14,214</b>	<b>3,871</b>	<b>9,412</b>
<b>Non-cancellable operating lease commitments</b>				
Within one year	40	602	35	286
After one year but within five years	56	1,467	52	795
After five years	-	2,459	-	1,957
<b>Total</b>	<b>96</b>	<b>4,528</b>	<b>87</b>	<b>3,038</b>
<b>Other commitments</b>				
Letters of credits	327	333	100	-
Bank guarantees	3,609	3,336	1,944	1,467
Guarantees to subsidiaries and joint ventures for credit facilities, debentures and bank guarantees	631	754	21,284	20,802
Other agreements	10,094	8,699	7,805	7,214
<b>Total</b>	<b>14,661</b>	<b>13,122</b>	<b>31,133</b>	<b>29,483</b>

Under the Equity Contribution and Shareholders Support Agreement between the Company, two subsidiaries and lenders, the Company will provide financial support in case of occurrence of cost overrun during the construction period to both subsidiaries according to their shareholding interests not exceeding Baht 1,448.77 million. In addition, the Company will provide financial support in case of occurrence of cash deficiency to a subsidiary according to its shareholding interest not exceeding Baht 410.50 million during the commercial operation period.

**Utilities and Other Services Agreements with minimum purchase quantity**

The Group has 19 utilities and other services agreements which have minimum purchase quantity with other parties. These agreements are for the periods from 4 years to 30 years, commencing from the date as specified in each agreement and expiring in March 2022 to September 2035. The minimum purchase quantity, the selling price of products and the renewal of the contract will be subject as specified in the agreements.

**37. LITIGATIONS****a) Purchase and sales of raw materials agreement legal case**

On December 3, 2009, a company filed for arbitration against PTT Plc. ("PTT") and the Company as a producer to perform according to purchase and sales of raw materials agreement, of which the said company has been committed by PTT, or to compensate for damages of approximately Baht 13,805 million. On March 8, 2010, the dispute was struck out of the case-list by the arbitration ruling that the Company was not a party to the contract.

On August 27, 2010, the said company filed a civil suit to the Civil Court against PTT and the Company as a producer to perform according to purchase and sales of raw materials agreement, of which the said company has been committed by PTT, or to compensate for damages of approximately Baht 9,380 million. In this regards, the Company filed an objection against the indictment with the Civil Court on the basis that the Company was not a party to the contract.

On May 21, 2013, the Civil Court considered that the arbitration process between such company and PTT has not yet been finalised; therefore, the Court has temporarily struck the case out of the case-list until the final decision has been reached under arbitration process. Then, both parties or either party can resubmit the case to the Civil Court for the further trial.

Subsequently, on March 25, 2016, the arbitration has reached a conclusion for PTT to compensate the damages in some amount. On June 30, 2016, PTT submitted a motion for setting aside the arbitral award to the Civil Court. Thereafter, on September 19, 2019, the Civil Court rendered the judgement for enforcement of the arbitral award. PTT has appealed against the Civil Court's judgement to the Supreme Court and the case is currently under the consideration of the Supreme Court. The Company believes that the outcome of the consideration will not result in any liability to the Company, because the arbitral award and the judgement shall not be enforced on the Company due to the fact that the Company was not the party in the case. Therefore, the Company has not recorded any provisions against any losses that may result from this matter in the financial statements.

**b) Oil spill incident legal case**

During the third quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and the Rayong Provincial Court against the Company to claim the extra compensation from oil spill incident and to perform the rehabilitation of the sea and natural environmental recovery. Some cases have been dismissed and some cases have been passed a judgement by the Civil Court on August 25, 2016 by ordered the Company to compensate for damages including interest and rehabilitation of approximately Baht 11.26 million. The Company has appealed on February 17, 2017. Subsequently, on May 11, 2018, the Company made compromise agreements with majority plaintiffs at the Civil Court. On December 20, 2018, the Court of Appeal has passed the judgement according to the compromise agreements which the Company has already paid compensation in full amount. For the remaining plaintiffs, the Court of Appeal ordered the Company to pay compensation with its interest according to the judgement of the Court of First Instance and reduced the amount of interest. The Company has paid the compensation to all plaintiffs completely and no petition is submitted to Supreme Court by any plaintiffs. This case has become final.

For the case at Rayong Provincial Court, on September 28, 2018, the Court has made the judgement ordering the Company to pay damage cost with its interest of approximately Bath 38 million by deducting the remedy payment paid to the plaintiffs of Baht 24 million. The Company deposited the remaining damage cost with its interest to the Rayong Provincial Court on February 25, 2019. Some plaintiffs filed an appeal with the Rayong Provincial Court and the Company has filed an answer to the appeal with the Rayong Provincial Court on October 2, 2019. Subsequently, on January 22, 2020, the Rayong Provincial Court sent an appointment to hear the judgment of the Court of Appeal Region 2 on March 19, 2020 and the Court of Appeal Region 2 has postponed the date of hearing the judgment. On September 1, 2020, the Court of Appeal Region 2 has made the judgement ordering the Company to pay damage cost with its interest to the plaintiffs. The Company deposited the amount of Baht 25 million to the Rayong Provincial Court on September 30, 2020. Afterwards, on October 14, 2020, the Rayong Provincial Court sent an appointment to hear the judgement or the order of the Court of Appeal Region 2 on November 26, 2020. However, the plaintiffs have applied a motion to extend the Dika appeal period to March 1, 2021.

**c) Transfer of right for the payment of raw materials legal case of the subsidiary**

c.1) The subsidiary was informed by a company who received the transfer of claim from the supplier of the subsidiary for the payment of raw materials, which the supplier of the subsidiary borrowed from a company to purchase raw materials to sell to the subsidiary and the subsidiary had to pay for the raw materials to that company under the transfer of right for the payment of raw materials. After reviewing the provided documents, the subsidiary informed to a company that these documents were not in the system, nor there was no evidence regarding the delivery of raw materials as prescribed in the documents. Subsequently, on August 20, 2018, a company filed a civil lawsuit against the supplier of the subsidiary and the subsidiary as joint defendants for violation of loan agreement and transfer of claim, with damage claimed amounting to Baht 308.75 million with

interest rate at 15% per annum amounting to Baht 15.90 million, totalling Baht 324.65 million. The subsidiary's legal advisor considered the fact and the relevant evidences and provided opinion that the subsidiary is not liable for allegation. Therefore, the subsidiary appointed the lawyer and filed a statement of defense.

Subsequently on June 10, 2020, the First Instance issued its judgement and stipulated that the subsidiary shall pay damages of approximately Baht 289.56 million, including interest at the rate of 15% per annum from the default date to that company, and that the subsidiary and the supplier of the subsidiary shall jointly pay court fees by assigning a lawyer fee of Baht 1 million. However, the case is not yet settled, and the subsidiary and its legal advisor have considered the relevant facts and evidences and still confident on the subsidiary's ground of defenses for this case. The subsidiary filed an appeal on November 25, 2020. Currently, it is in the process of court proceedings, therefore the subsidiary has not recorded any provision against any losses from such case.

- c.2) On February 27, 2019, a financial institution filed a civil lawsuit against the supplier of the subsidiary, director of supplier of the subsidiary and the subsidiary as joint defendants for violation of credit limit agreement, sale of promissory notes, transfer of money, guarantee and forced mortgage, with damage claimed amounting to Baht 55.95 million and interest amounting to Baht 3.49 million, totaling Baht 59.44 million. Therefore, the subsidiary filed a statement of defense. On October 28, 2019, the plaintiff submitted the motion for permission to withdraw the plicant against the subsidiary and the Court granted such permission and struck the case out of the case-list of the Court.
- c.3) On September 8, 2020, the subsidiary received a summons and a copy of a Civil Court plaint from a company, a former supplier of the subsidiary, to filed a civil lawsuit against the subsidiary regarding the breach of an agreement concerning the reclaiming of purchase price on raw materials and claiming damages on the principal of Baht 470.03 million with interest at the rate of 7.5% per annum, amounting to Baht 595.10 million, starting from the date of the lawsuit until the date of completion of payment.

On November 8, 2020, the subsidiary received a summons and a copy of a Civil Court plaint from the aforementioned company to filed a civil lawsuit against the subsidiary as the first defendant and two other companies as joint defendants regarding the breach of principal-agent agreements and claiming damages on the principal of Baht 92.29 million with interest at the rate of 7.5% per annum, amounting to Baht 109.42 million, starting from the date of the lawsuit until the date of completion of payment.

On December 25, 2020, the subsidiary received a summons and a copy of a Civil Court plaint from the aforementioned company to filed a civil lawsuit against a supplier and the subsidiary as second defendants regarding the breach of agreements concerning the reclaiming of purchase price on raw materials and claiming damages on the principal of Baht 305.26 million with interest at the rate of 7.5% per annum, amounting to Baht 364.71 million, starting from the date of the lawsuit until the date of completion of payment.

The subsidiary and legal advisor of the subsidiary have considered relevant facts and evidences in all three cases and provided the opinion that the subsidiary has not breached the agreement and has no obligation to pay as claimed. Therefore, the subsidiary has appointed a lawyer and will file testimony with its defense in accordance with the applicable law. Therefore, the subsidiary has not recorded any provision against any losses from such case.

### **38. EVENT AFTER THE REPORTING PERIOD**

At the Board of Directors' Meeting of the Company held on February 15, 2021, the Board approved to submit for approval by the Annual General Meeting of the shareholders for the annual dividend payment from 2020 performance at Baht 1.00 per share to the shareholders entitled to receive the dividend, amounting to Baht 4,487 million. Such dividend is subjected to the approval of the shareholders at the Annual General Meeting to be held on April 5, 2021.

### **39. APPROVAL OF THE FINANCIAL STATEMENTS**

These financial statements have been approved for issue by the Board of Directors on February 15, 2021.

# **APPENDIX**

# Assets Used in Business Operations and Details of Asset Valuations

## PROPERTY, PLANT, AND EQUIPMENT

As at December 31, 2020, the net book value of GC's and its subsidiaries' operating fixed assets less accumulated depreciation and allowance for impairment was Bath 269,177 million. The total fixed assets shown in the consolidated financial statements are GC's and its subsidiaries' owned assets.

(Unit: Million Baht)

No.	Item	Ownership	Book Value	Obligation
			Dec 31, 2020	
1	Land and land improvement	GC and subsidiaries	11,393	541
2	Plant, machinery, equipment, and factory tools	GC and subsidiaries	200,766	12,851
3	Buildings and building improvement	GC and subsidiaries	10,593	1,246
4	Furniture, fixtures, and equipment	GC and subsidiaries	628	-
5	Vehicles	GC and subsidiaries	222	-
6	Assets under construction	GC and subsidiaries	45,575	-
	<b>Total</b>		<b>269,177</b>	<b>14,638</b>

## INVESTMENT PROPERTIES

(Unit: Million Baht)

No.	Item	Ownership	Book Value
			Dec 31, 2020
1	Property	GC and subsidiaries	6,035
2	Plant	GC and subsidiaries	24
	<b>Total</b>		<b>6,059</b>

## RIGHTS OF USE

As at December 31, 2020, GC and its subsidiaries' right-of-use assets less accumulated depreciation and allowance for impairment was Baht 7,039 million in net value, as detailed below.

(Unit: Million Baht)

No.	Item	Ownership	Book Value Dec 31, 2020	Remaining Lease Period
1	Land and land improvement	Long-term lease	5,291	1-29 Years
2	Plant, machinery, equipment, and factory tools	Long-term lease	911	1-20 Years
3	Buildings and building improvement	Long-term lease	219	1-16 Years
4	Furniture, fixtures, and equipment	Long-term lease	217	1-5 Years
5	Vehicles	Long-term lease	401	1-6 Years
	<b>Total</b>		<b>7,039</b>	



## DETAILS OF SIGNIFICANT RIGHTS OF USE

### LAND LEASEHOLD RIGHTS

#### BRANCH 2

- (1) Land parcel No. I-12 with a total area of 443 rai 2 ngan and 50 square wah owned by the lessor, with a term of 20 years from April 5, 2016 to April 4, 2036, leased as the site of Olefins I-1 Plant
- (2) Land parcel No. I-15/2 with a total area of 8 rai 1 ngan 95 square wah owned by the lessor, with a term of 20 years from August 9, 2019 to August 8, 2039, leased as the site of Olefins I-1 Plant
- (3) Land parcel No. G-21 with a total area of 9 rai 3 ngan 97.88 square wah owned by the lessor, with a term of 20 years from April 5, 2016 to April 4, 2036, leased as the site of Olefins I-1 Plant
- (4) Land parcel No. G-85 with a total area of 50 square wah owned by the lessor, with a term of 20 years from April 5, 2016 to April 4, 2036, leased as the site of Olefins I-1 Plant
- (5) Land parcel No. G-94 with a total area of 1 ngan 41.50 square wah owned by the lessor, with a term of 30 years from December 23, 2015 to December 22, 2045, leased as the site of Olefins I-1 Plant
- (6) Land parcel No. G-99 with a total area of 1 rai 2 ngan 46.60 square wah owned by the lessor, with a term of 30 years from August 3, 2020 to August 2, 2050, leased as the site of Olefins I-1 Plant

#### BRANCH 3

- (7) Land parcel No. I-18/3-1 with a total area of 7 rai 1 ngan 2.58 square wah owned by the lessor, with a term of 20 years from July 1, 2017 to June 30, 2037, leased as the site of Olefins I-4 Plant
- (8) Land parcel No. G-32 with a total area of 4 rai 3 ngan 80 square wah owned by the lessor, with a term of 3 years from January 1, 2019 to December 31, 2021, leased as the site of Olefins I-4 Plant
- (9) Land parcel No. I-17/1.1 with a total area of 312 rai 1 ngan 89.23 square wah owned by the lessor, with a term of 20 years from November 15, 2020 to November 14, 2040, leased as the site of Olefins I-4 Plant
- (10) Land parcel No. I-18/4 with a total area of 41 rai 2 ngan 45.83 square wah owned by the lessor, with a term of 30 years from June 28, 2002 to June 27, 2032, leased as the site of Olefins I-4 Plant

#### BRANCH 4

- (11) Land parcel No. I-20/2 with a total area of 156 rai 1 ngan owned by the lessor, with a term of 30 years from September 18, 1992 to September 17, 2022, leased as the site of Aromatics 1 Plant
- (12) Land parcel No. G-14 with a total area of 1 rai 1 ngan 39.36 square wah owned by the lessor, with a term of 3 years from November 15, 2020 to November 14, 2023, leased as the site of Aromatics 1 Plant
- (13) Land parcel No. G-17 with a total area of 2 rai 2 ngan 51 square wah owned by the lessor, with a term of 3 years from November 15, 2020 to November 14, 2023, leased as the site of Aromatics Tank Farm

#### BRANCH 6

- (14) Land parcel No. G-3 with a total area of 1 rai 3 ngan 22.56 square wah owned by the lessor, with a term of 3 years from January 1, 2019 to December 31, 2021, leased as the site of the refinery
- (15) Land parcel No. I-14/3,I-24/4 with a total area of 248 rai 3 ngan 10.6 square wah owned by the lessor, with a term of 30 years and 1 day from March 28, 1991 to March 28, 2021, leased as the site of the refinery
- (16) Land parcel No. I-25/1,I-25/2 with a total area of 500 rai 26.46 square wah owned by the lessor, with a term of 30 years from September 10, 1993 to September 9, 2023, leased as the site of the refinery
- (17) Land parcel No. G-75,G-75/1 with a total area of 1 ngan 75.81 square wah owned by the lessor, with a term of 3 years from May 2, 2018 to May 1, 2021, leased as the site of the refinery
- (18) Land parcel No. G-8/1 with a total area of 1 rai 59.14 square wah owned by the lessor, with a term of 28 years, 3 months, and 28 days from November 20, 1992 to March 28, 2021, leased as the site of the refinery for product pipeline installation
- (19) Land parcel No. G-56 with a total area of 3 ngan 10.09 square wah owned by the lessor, with a term of 30 years from January 2, 2009 to January 1, 2039, leased as the site of the refinery for product pipeline installation
- (20) Land parcel No. G-126 with a total area of 2 rai 2 ngan 95 square wah owned by the lessor, with a term of 5 years from June 1, 2020 to May 31, 2025, leased as the site of the refinery for product pipeline installation

#### BRANCH 7

(21) Land parcel No. G-96 with a total area of 2 ngan 23.90 square wah owned by the lessor, with a term of 3 years from January 1, 2019 to December 31, 2021, leased as the site of Buffer Tank Farm

#### BRANCH 8

(22) Land parcel No. I-17/2 with a total area of 97 rai 1 ngan 60.71 square wah owned by the lessor, with a term of 20 years from November 15, 2020 to November 14, 2040, leased as the site of Aromatics Tank Farm

#### BRANCH 11

(23) Land parcel No. P-2 with a total area of 18.40 square wah owned by the lessor, with a term of 3 years from March 2, 2018 to March 1, 2021, leased as the site of Olefins 3 Plant

#### BRANCH 12

(24) Land parcel No. I-15/1-2 with a total area of 84 rai 1 ngan 52 square wah owned by the lessor, with a term of 20 years from July 1, 2016 to June 30, 2036, leased as the site of Polyethylene Plant

(25) Land parcel No. G-29 with a total area of 62.5 square wah owned by the lessor, with a term of 3 years from July 1, 2019 to June 30, 2022, leased as the site of Polyethylene Plant

(26) Land parcel on I-10 Road with a total area of 7 rai 3 ngan owned by the lessor, with a term of 3 years from January 1, 2019 to December 31, 2021, leased as the site of Polyethylene Plant

(27) Land parcel No. G-16 with a total area of 1 rai 96 square wah owned by the lessor, with a term of 3 years from January 1, 2019 to December 31, 2021, leased as the site of Polyethylene Plant

(28) Land parcel on I-10 Road with a total area of 4 rai owned by the lessor, with a term of 3 years from January 1, 2019 to December 31, 2021, leased as the site of Polyethylene Plant

#### GCS

(29) Land parcel No. I-19/1 with a total area of 41 rai 51.31 square wah owned by the lessor, with a term of 30 years from April 22, 2008 to April 21, 2038, leased as the site of Polystyrene Plant

## OTHER LAND LEASEHOLD RIGHTS

### LAND LEASE AGREEMENTS WITH PTT

A land lease agreement for the construction of a jetty and a seaside tank farm for liquid chemicals in Tambon Map Ta Phut, Rayong, with a term of 22 years and 4 days from December 28, 2014 to December 31, 2037, consisting of:

- The rental rate of a 8-2-70.90 rai land parcel to which PTT has gained the right through expropriation by the Treasury Department
- The rental rate of a 67-2-52.90 rai land parcel owned by PTT

A portion of land in PTT Gas Separation Plant with a total area of 1 rai 1 ngan 24.5 square wah with a term of 3 years from 1 January 2019 to 31 December 2021

### LEASE AGREEMENT AND SERVICE AGREEMENT WITH ENERGY COMPLEX COMPANY LIMITED

555/1 Energy Complex Building A

- A lease agreement for a 14,839 sq. m. office space in Lobby A and on Floors 3, 10, 14-18 in Building A for a term of 3 years from October 1, 2018 to September 30, 2021, consisting of (1) 302 sq.m. office space in Lobby A, (2) 265 sq.m. office space on Floor 3, (3) 14,137 sq.m. office space on Floors 10, 14-18, and (4) 135 sq.m. storage space on Floors 14, 16-17. As of December 1, 2020, the rental of the 265 sq.m. office space on Floor 3 in (2) was discontinued.

### LEASE AGREEMENT WITH THE STATE RAILWAY OF THAILAND

- An area in the Map Ta Phut train station with a total area of 15,900 square meters with a term of 3 years from June 16, 2019 to June 15, 2022

## INTANGIBLE ASSETS

The intangible assets of GC and its subsidiaries as at December 31, 2020 consist of:

(Unit: Million Baht)

Intangible Asset	Net value after accumulated amortization and allowance for impairment	Useful Life
Production license fees	5,644	10-30 Years
Computer software	2,098	3-10 Years
Right to use others	422	3-15 Years
Intangible assets under development	428	
<b>Total</b>	<b>8,592</b>	

### DETAILS OF SIGNIFICANT INTANGIBLE ASSETS

#### PTT GLOBAL CHEMICAL PUBLIC COMPANY LIMITED

##### CONCESSION FOR WATERWORKS BUSINESS

GC was granted a concession by the Ministry of Natural Resources and Environment to operate a waterworks business in Map Ta Phut Industrial Estate in Tambon Map Ta Phut, Amphoe Muang, Rayong, for a period of 15 years from March 13, 1990 to March 12, 2005, to be renewed by the Ministry of Natural Resources and Environment every five years. The current concession expired on March 12, 2020. The concession areas covered the sites of Olefins I-1 Plant and downstream product plants, namely TPC, TPE, and HMC.

##### RIGHTS TO USE PIPE RACKS

GC has been granted the right to charge right-of-use fees from users making a request to lay pipes on its pipe racks at the rate specified in the piperack agreement. The amount of the right-of-use fee charged to each user will depend on the value of GC's investment and the location where the user is laying pipes.

##### ELECTRICITY GENERATION LICENSES

(1) GC (Branch 2) was granted a license to operate an electricity generation business with a capacity of over 295 megawatts from the Energy Regulatory Commission on October 19, 2011. The license is valid for 13 years and will expire on December 2,

2024 (The license was first granted on December 3, 2009. Request for permission to expand the capacity was submitted on October 19, 2011.)

- (2) GC (Branch 6) was granted a license to operate an electricity generation business with an installed capacity of over 10 megawatts but not exceeding 150 megawatts from the Energy Regulatory Commission on October 19, 2011. The license is valid for 10 years and will expire on February 13, 2021.
- (3) GC was granted a power distribution system license to operate a distribution system from the Energy Regulatory Commission on October 19, 2011. The license is valid for 13 years and will expire on December 2, 2024.
- (4) GC was granted a power supplier license to operate a distribution system from the Energy Regulatory Commission on October 19, 2011. The license is valid for 13 years and will expire on December 2, 2024.

#### THAI TANK TERMINAL COMPANY LIMITED (GC'S SUBSIDIARY)

Thai Tank Terminal Company Limited has been granted a concession from the Industrial Estate Authority of Thailand to manage and operate a liquid product handling and storage business in Map Ta Phut Industrial Estate in Tambon Map Ta Phut, Amphoe Muang, Rayong. The concession period is 30 years from October 1, 1992 to September 30, 2022 and grants the rights to design, construct, develop, operate, manage, and maintain a jetty for liquid products.

## BOI INVESTMENT PROMOTION CERTIFICATES

GC and its subsidiaries have been granted investment promotion certificates from the Thailand Board of Investment (BOI), which offer tax privileges such as exemption from import duty on machinery and business taxes on imported machinery and equipment as well as exemption from corporate income taxes on net profit derived from business operation from the date on which income is first generated.

The details of the investment promotion certificates that BOI approved and awarded to GC and its subsidiaries and that were in effect as of December 31, 2020 as given below.

No.	Promoted Project	Date of Issuance	Product and Capacity	Expiration of Corporate Income Tax Privilege	Remark
1	Production of electricity and steam Certificate No. 2258(2)/Or./2554	October 19, 2011	Electricity production capacity of 38 megawatts and steam production capacity of 70 tons/hour	June 29, 2020	Transferred from PTTCH on October 19, 2011
2	Manufacture of petrochemicals Certificate No. 2264(2)/Or./2554	October 19, 2011	Production of approximately 97,937 tons of ethylene per year and 6,307 tons of pyrolysis gas per year	January 30, 2022	Transferred from PTTCH on October 19, 2011
3	Scientific laboratories Certificate No. 2265(4)/Or./2554	October 19, 2011	Provision of scientific laboratory services related to petrochemicals, petroleum, chemicals, polymers, water, and the environment; approximately 60,000 assignments per year	January 18, 2023	Transferred from PTTCH on October 19, 2011
4	Manufacture of petrochemicals Certificate No. 2266(2)/Or./2554	October 19, 2011	Production of approximately 75,000 tons of butadiene per year, approximately 40,000 tons of butene-1 per year, and approximately 95,000 tons of by-products, namely isobutene, isobutylene, n-butane, raffinate, C4 acetylene, and C5+	April 29, 2027	Transferred from PTTCH on October 19, 2011
5	Production of electricity and steam Certificate No. 2267(2)/Or./2554	October 19, 2011	Electricity production capacity of 112.5 megawatts and steam production capacity of 560 tons/hour	February 28, 2025	Transferred from PTTCH on October 19, 2011
6	Manufacture of petrochemicals Certificate No. 2272(2)/Or./2554	October 19, 2011	Products from Reformer Complex - Reformate: approximately 649,400 tons per year - Naphtha: approximately 1,387,066 tons per year - LPG: approximately 253,037 tons per year - Condensate residue: approximately 1,273,298 tons per year Products from Aromatic Complex - Paraxylene: approximately 681,300 tons per year - Benzene: approximately 371,938 tons per year - Heavy aromatics: approximately 93,978 tons per year	August 22, 2021	Transferred from PTTAR on October 19, 2011

No.	Promoted Project	Date of Issuance	Product and Capacity	Expiration of Corporate Income Tax Privilege	Remark
7	Manufacture of upstream petrochemicals Certificate No. 1936(2)/Or./2556	July 1, 2013	Production of approximately 1,124,450 tons of ethylene per year Approximately 31,700 tons of propylene per year Approximately 863,600 tons of polyethylene (PE) per year	November 25, 2022	Transferred from PTTPE on July 1, 2013
8	Manufacture of downstream petrochemicals Certificate No. 1937(2)/Or./2556	July 1, 2013	Production of approximately 300,600 tons of HDPE per year and transportation of approximately 138,528,000 liters of petroleum and petrochemicals via pipeline	December 3, 2022	Transferred from BPE on July 1, 2013
9	Manufacture of downstream petrochemicals Certificate No. 1938(2)/Or./2556	July 1, 2013	Production of approximately 16,000 tons of compound plastics	June 3, 2023	Transferred from BPE on July 1, 2013
10	Manufacture of petrochemicals Certificate No. 1616(2)/2556	May 8, 2013	Production of approximately 137,760 tons of paraxylene per year, approximately 73,800 tons of benzene per year, approximately 46,700 tons of toluene per year, and approximately 21,900 tons of othoxylene per year	December 22, 2028	
11	Manufacture of chemicals Certificate No. 1623(2)/2556	May 10, 2013	Production of approximately 154,176,000 cubic meters of purified hydrogen per year	January 30, 2030	
12	Manufacture of petrochemicals Certificate No. 1715(2)/2557	June 9, 2014	Production of approximately 55,000 tons of hexene-1 per year and approximately 4,000 tons of heavy polymers per year	May 29, 2031	
13	Manufacture of petrochemicals Certificate No. 2215(2)/2557	September 30, 2014	Production of approximately 400,000 tons of polyethylene (PE) per year	January 7, 2031	
14	Oil refinery Certificate No. 59-1495-1-07-1-0	November 17, 2016	Machinery adjustment for energy efficiency enhancement in the production of 50,000 barrels of various oil fuels per day	February 15, 2020	
15	Manufacture of petrochemicals Certificate No. 60-1300-0-00-1-0	November 20, 2017	Approximately 521,430 tons of ethylene per year Approximately 272,140 tons of propylene per year	13 years after income recognition	ORP Project
16	Production of electricity or electricity and steam from other energy Certificate No. 61-0182-1-04-1-0	February 15, 2018	Production efficiency enhancement to reduce environmental impact	February 15, 2021	
17	Utilities and basic services Certificate No. 61-0929-0-00-1-0	August 8, 2018	Capacity of electricity production from natural gas of 56 megawatts and steam production capacity of 140 tons/hour	13 years after income recognition	GTG-J Project

No.	Promoted Project	Date of Issuance	Product and Capacity	Expiration of Corporate Income Tax Privilege	Remark
18	Utilities and basic services Certificate No. 61-1336-0-00-1-0	November 15, 2018	Goods handling and marine vessels; oil and petroleum product handling capacity of approximately 3,000,000 tons per year	13 years after income recognition	Jetty 4 Project
<b>GLYCOL</b>					
19	Manufacture of petrochemicals Certificate No. 1761(2)/2550	August 3, 2007	Production of approximately 108,186 tons of MEG per year, approximately 10,337 tons of DEG per year, and approximately 438 tons of TEG per year	December 31, 2021	
20	Manufacture of other chemicals Certificate No. 2535(2)/Or./2555	October 12, 2012	Production of approximately 27,500 tons of MEA per year, approximately 27,500 tons of DEA per year, approximately 18,650 tons of TEA per year, and by-products, consisting of approximately 2,009 tons of amine per year and approximately 182 tons of crude DEA per year	August 25, 2022	Transferred from EA on October 12, 2012
21	Manufacture of other chemicals Certificate No. 2384(2)/Or./2557	October 31, 2014	Production of approximately 60,000 tons of purified ethylene oxide per year	December 4, 2028	
22	Manufacture of petrochemicals Certificate No. 61-0448-1-18-1-0	April 23, 2018	Approximately 3,1000 tons of TEG per year Approximately 1,600 tons of by-products, namely PEG, per year	13 years after income recognition	New TEG Project
<b>PPCL</b>					
23	Manufacture of petrochemicals Certificate No. 1938 (2)/2547	November 4, 2004	Production of approximately 273,000 tons of phenol per year, approximately 170,133 tons of acetone per year, approximately 368,550 tons of cumene per year, and by-products, consisting of approximately 864 tons of benzene & dips drag per year, approximately 1,675 tons of heavy aromatics per year, and approximately 14,969 tons of heavy residue per year	November 8, 2021	
24	Manufacture of petrochemicals Certificate No. 1609(2)/2551	June 16, 2008	Production of approximately 179,580 tons of bisphenol-A (BPA) per year and by-products, consisting approximately 7,008 tons of TAR per year and approximately 350 tons of purge light oil per year	January 7, 2024	



No.	Promoted Project	Date of Issuance	Product and Capacity	Expiration of Corporate Income Tax Privilege	Remark
25	Manufacture of petrochemicals Certificate No. 1126(2)/2556	January 30, 2013	Production of approximately 301,125 tons of phenol per year, approximately 186,700 tons of acetone per year, and by-products, consisting of approximately 2,285 tons of benzene & dips drag per year, approximately 2,520 tons of aromatics per year, approximately 13,190 tons of heavy residue per year, and approximately 11,620 tons of alpha-methylstyrene (AMS) per year.	April 24, 2029	
26	Manufacture of petrochemicals Certificate No. 1938 (2)/2547	4 November 2004	Production of approximately 273,000 tons of phenol per year, approximately 170,133 tons of acetone per year, approximately 368,550 tons of cumene per year, and by-products, consisting of approximately 864 tons of benzene & dips drag per year, approximately 1,675 tons of heavy aromatics per year, and approximately 14,969 tons of heavy residue per year	November 8, 2021	
<b>VENCOREX</b>					
29	Manufacture of chemical products for industries Certificate No. 1403(2)/2557	March 28, 2014	Production of approximately 18,000 tons of hexamethylene diisocyanate derivatives (HDI Derivatives) per year	April 6, 2029	
<b>GC OXIRANE</b>					
30	Manufacture of petrochemicals Certificate No. 60-0769-0-00-1-0	July 13, 2017	Approximately 228,000 tons of propylene oxide per year By-products consist of: Approximately 3,420 tons of fuel gas per year Approximately 33,288 tons of fuel oil per year	13 years after income recognition	
<b>GC POLYOLS</b>					
31	Manufacture of petrochemicals Certificate No. 60-0770-0-00-1-0	July 13, 2017	Approximately 198,000 tons of polyols per year, consisting of polyether polyols (PPG), polymer polyols (POP), and formulated polyols (PREMIX)	13 years after income recognition	
<b>ENVICCO</b>					
32	Manufacture of recycled plastic: rPET(FOOD GRADE) and rHDPE Certificate No. 63-1102-1-00-1-0	June 17, 2020	Production of approximately 35,040 tons of rPET(FOOD GRADE) per year, approximately 16,650 tons of rHDPE, and by-products, consisting of metal scraps, plastic scraps (excluding PET and HDPE), and scraps and waste from manufacturing	8 years after income recognition	



## POLICY ON INVESTMENTS IN SUBSIDIARIES, JOINT VENTURES, AFFILIATES, AND OTHERS

As a policy, GC invests in subsidiaries, joint ventures, affiliates, and others to support and promote business growth and ensures governance by appointing its Executives to the board of subsidiaries and assigning its representatives to serve as Directors in subsidiaries, ventures, affiliates, and others.

The presence of GC's representatives as Directors or Executives in subsidiaries, ventures, affiliates, and others enables it to participate in policymaking, stay informed, and periodically monitor performance. Any activity that may have a significant impact on GC must be approved by the Board of Directors first.

As of December 31, 2020, GC's investments in subsidiaries, joint ventures, affiliates, and others were as follows:

	Company	Abbreviation	Business Type	Registered Capital (Million Baht)	Paid-up Capital (Million Baht)	Ownership interest (%)
<b>SUBSIDIARIES</b>						
1	ENVICCO Co., Ltd.	ENVICCO <sup>1)</sup>	Manufacturing, distribution, and development of recycled polyethylene terephthalate and recycled high-density polyethylene	1,080	270 <sup>2)</sup>	70
2	PTTGC International Private Limited	GC Inter	Investing in overseas petrochemical business	304.2 million Singapore dollars /421.6 million US dollars/ 238.7 million euros	303.6 million Singapore dollars /421.6 million US dollars/ 238.7 million euros	100
3	GC Estate Co., Ltd.	GCEC	Land and property management	7,200	7,200	100
4	GC International Corporation	GCI	Investing in overseas petrochemical business	1 US dollar	1 US dollar	100 (via GC Inter)
5	PTTGC Innovation America Corporation	GCIA	Manufacturing and distribution of petrochemical products	200 US dollars	200 US dollars	100 (via GC Inter)
6	GC Logistics Solutions Co., Ltd.	GCL	Integrated logistics services	1,200	1,200	100 (99% direct interest held, 1% via Solution Creation)
7	GC Marketing Solutions Co., Ltd.	GCM	Distribution of GC Group's polymer products	40	40	100 (99% direct interest held, 1% via Solution Creation)
8	GC Maintenance and Engineering Co., Ltd.	GCME	Plant maintenance and engineering services	200	137	100
9	GC Oxirane Co., Ltd.	GCO	Manufacturing and distribution of petrochemical products	7,761 <sup>9)</sup>	7,136 <sup>9)</sup>	100
10	GC Polyols Co., Ltd.	GCP	Manufacturing and distribution of petrochemical products	4,002 <sup>3)</sup>	3,693 <sup>3)</sup>	82.1

	Company	Abbreviation	Business Type	Registered Capital (Million Baht)	Paid-up Capital (Million Baht)	Ownership interest (%)
11	GC Styrenics Co., Ltd.	GCS	Manufacturing and distribution of petrochemical products	190	190	100
12	GC Treasury Center Co., Ltd.	GCTC	Financial management services	10	10	100
13	GC Ventures Co., Ltd.	GCV	Investing in the form of corporate venture capital (CVC) domestically and overseas	628 <sup>5)</sup>	567 <sup>5)</sup>	100
14	GC Ventures America Corporation	GCVA	Investing in the form of CVC in the United States	1 US dollar	1 US dollar	100 (via GCV)
15	GC-M PTA Co., Ltd.	GC-M PTA	Manufacturing and distribution of petrochemical products	4,800	4,800	74 (49% direct interest held, 25% via Glycol)
16	Global Green Chemicals PLC	GGC	Manufacturing and distribution of oleochemical products	9,725	9,725	72.29
17	GC Glycol Co., Ltd.	Glycol	Manufacturing and distribution of petrochemical products	5,395	5,395	100
18	NPC Safety and Environmental Service Co., Ltd.	NPC S&E	Safety and environmental management and consulting services	165	165	100
19	NPC S&E Security Guard Co., Ltd.	NPCSG	Security services and consultancy	5	5	100 (via NPC S&E)
20	PTT Phenol Co., Ltd.	PPCL	Manufacturing and distribution of petrochemical products	11,851	11,851	100
21	PTTGC America Corporation	PTTGC America Corporation	Manufacturing and distribution of petrochemical products	1 US dollar	1 US dollar	100
22	PTTGC America LLC	PTTGC America LLC	Manufacturing and distribution of petrochemical products	138 million US dollars <sup>6)</sup>	138 million US dollars <sup>6)</sup>	100 (via PTTGC America Corporation)
23	PTTGC International (Netherlands) B.V.	PTTGC Netherlands	Investing in overseas petrochemicals business	18,000 euros	18,000 euros	100 (via GC Inter)
24	Solution Creation Co., Ltd.	Solution Creation	Manufacturing and distribution of petrochemical products	850 <sup>3)</sup>	826 <sup>3)</sup>	100

	Company	Abbreviation	Business Type	Registered Capital (Million Baht)	Paid-up Capital (Million Baht)	Ownership interest (%)
25	Thai PET Resin Co., Ltd.	TPRC	Manufacturing and distribution of petrochemical products	900	900	74 (44.4%, via Glycol and 40% via GC- M PTA)
26	Thai Tank Terminal Co., Ltd.	TTT	Services for the storage and handling of liquid chemicals, oil, and gas	900	900	51
27	Vencorex Holding	Vencorex	Manufacturing and distribution of petrochemical products	232 million euros	232 million euros	90.82 (via PTTGC Netherlands)
<b>JOINT VENTURES</b>						
28	Emery Oleochemicals (M) Sdn. Bhd.	EOM	Manufacturing and distribution of oleochemical products	500 million Malaysian ringgit	496 million Malaysian ringgit	50 (via GC Inter)
29	Emery Specialty Chemicals Sdn.Bhd.	ESC	Manufacturing and distribution of oleochemical products	120 million Malaysian ringgit	81 million Malaysian ringgit	50 (via GC Inter)
30	HMC Polymers Co., Ltd.	HMC	Manufacturing and distribution of plastic resins and primary plastic	3,790	3,790	41.44
31	NatureWorks LLC	NatureWorks	Manufacturing and distribution of bioplastic products	1,351 million US dollars	1,351 million US dollars	50 (via GCI)
32	PTT Asahi Chemical Co., Ltd.	PTTAC	Manufacturing and distribution of petrochemical products	13,819	13,819	50
33	PTT MCC Blochem Co., Ltd.	PTTMCC	Manufacturing and distribution of bioplastic products	1,860	1,860	50
34	Revolve Group Limited	RGL	Manufacturing and distribution of rotomolding compounds	63,839 pounds	63,839 pounds	49 (via Solution Creation)
<b>AFFILIATES</b>						
35	Eastern Fluid Transport Co., Ltd.	EFT	Oversight of petrochemical product transportation pipeline systems	10	10	22.65 (15% direct interest, 7.65% via)
36	Global Power Synergy PLC.	GPSC	Manufacturing and distribution of utilities	28,197	28,197	22.73
37	Kuraray GC Advanced Materials Co. Ltd.	KGC	Manufacturing and distribution of advanced engineering plastic products	5,600	4,203 <sup>7)</sup>	33.4
38	PTT Digital Solutions Co., Ltd.	PTT Digital	Information technology and communication services	150	150	40
39	PTT Energy Solutions Co., Ltd.	PTTES	Technical engineering consulting services	150	150	20

	Company	Abbreviation	Business Type	Registered Capital (Million Baht)	Paid-up Capital (Million Baht)	Ownership interest (%)
40	S. P. Petpack Inter Group Co., Ltd.	SPIG	Development of plastic packaging markets in the Republic of the Union of Myanmar	200	200	25 (via Solution Creation)
41	Vinythai PLC.	VNT	Manufacturing and distribution of petrochemical products	7,111	7,111	24.98
42	Dynachisso Thai Co. Ltd.	DYCT <sup>4)</sup>	Manufacturing and distribution of PP engineering plastic compound	120	120	41.5 (via Solution Creation)
<b>OTHERS</b>						
43	Business Services Alliance Co., Ltd.	BSA	Manpower and contractor services for PTT Group	2	2	25
44	Pracharath Rak Samakkee Rayong (Social Enterprise) Co., Ltd.	PRS RAYONG	Management consulting services	4	4	50
45	Sarn Palung Social Enterprise Co., Ltd.	SPSE	Operating businesses or producing, purchasing, and selling products and/or services that benefit society, communities, and the environment	10	10	15
46	TPBI & Myanmar Star Company Limited	TPBIMS	Development of plastic packaging markets in the Republic of the Union of Myanmar	6,726 million Myanmar kyat	6,726 million Myanmar kyat	10 (via Solution Creation)

#### Remarks

- As of February 3, 2020, ENVICCO was registered as a company, with GC holding 70% of the shares.
- As of March 3, 2020, GC paid for newly-issued shares in ENVICCO.
- As of July 30, 2020, GC increased the registered capital of Solution Creation and paid for the newly-issued shares.
- As of July 31, 2020, GC invested in DYCT via Solution Creation and held 41.5% of the shares.
- As of August 21, 2020, GC increased the registered capital of GCV and paid for the newly-issued shares.
- As of October 2, 2020, GC increased the registered capital of PTTGC America LLC and paid for the newly-issued shares.
- As of November 20, 2020, GC paid for newly-issued shares in KGC.
- As of December 8, 2020, GC increased the registered capital of GCP and paid for the newly-issued shares.
- As of December 15, 2020, GC increased the registered capital of GCO and paid for the newly-issued shares.

## DETAILS OF ASSET REVALUATION

- None -

# GC Policy and Practices of Corporate Governance and Business Code of Conduct

PTT Global Chemical Public Company Limited operates its business responsibly, transparently, accountably, fairly, ethically and with due regard to all of its stakeholders by adhering to the principles of good corporate governance. The Company recognizes that its adherence to the principles of good corporate governance will contribute to the operational and management efficiency of the Company and a company under GC. The Company also bolsters its credibility and fosters sustainable growth, not only for the Company itself but also for the society and the nation as a whole in order to achieve its vision “To Be a Leading Chemical Company for Better Living.”

In order to accomplish such goal, the Board of Directors has integrated the Corporate Governance Policy into the Company’s Business Operations Policy and has made the Corporate Governance and Business Code of Conduct Handbook. This handbook has been distributed throughout the Company since its establishment in order for

directors, executives and employees to adhere to code of conduct and all policies when performing their duties. To express intention to develop and improve our good corporate governance to be rated “Excellence” in accordance with international standard, the Company has reviewed and revised the handbook so as to keep them up-to-date, and to keep them abreast of any changes. This handbook must also be in line with business strategies and corporate governance principles, both domestically and internationally. This handbook has been comprehensively communicated to all Directors, Executives and Employees, who have acknowledged and understood it entirely, and are expected to stringently implement the handbook as a guideline for executing their duties. They are also required to inform individuals involved in GC Group’s businesses, namely trading partners, customers and joint-operators, both local and overseas, of our ethical business strategies in order for all concerned parties to understand and comply with these important practices.

In this regard, the full details of the Company’s policies and practices from the Corporate Governance and Business Code of Conduct Handbook can be found on the GC website:

🔍 [www.pttgcgroup.com](http://www.pttgcgroup.com) in the “Corporate Governance” menu on the topic of “Corporate Governance & Business Code of Conduct Handbook”



# Technical Terms & Abbreviations

Technical Terms & Abbreviations	
<b>Acrylonitrile (AN)</b>	AN, an intermediate product, is used for many applications such as acrylic fiber, automotive parts, and electric appliance parts.
<b>Aromatics</b>	A group of cyclic hydrocarbons containing one or more benzene rings of six carbon atoms characterized by single and double bonds, such as benzene, toluene, and xylene.
<b>Bio-based Polybutylene Succinate (Bio-PBS)</b>	Bio-PBS, a natural material made from bio-succinic acid and 1,4-butanediol, used in applications such as paper coating, compound injection, and packaging.
<b>Bisphenol A (BPA)</b>	BPA, an intermediate product produced from acetone and phenol, is used to produce polycarbonate or epoxy resins.
<b>Butadiene</b>	Butadiene, derived from the extraction of mixed-C4, is used in making synthetic rubber.
<b>Butene-1</b>	Butene-1, a byproduct of the cracking of petroleum (kerosene or gasoil) and naphtha distillation, or extraction of mixed-C4, is used as polymer feedstock.
<b>Carotenoid</b>	Carotenoid, a natural substance found in plants, vegetables, fruits, and microbes, consists of the carotene group and xantho group. Carotene, such as beta carotene and lycopene, is fats-soluble, whereas xantho, such as lutein and astaxanthin, is less fats-soluble.
<b>EO-Based Performance Product</b>	EO-based performance products refers to ethylene oxide derivatives such as ethylene oxide, ethylene glycol, ethanolamine products, and ethoxylate.
<b>Ethanolamine (EA)</b>	EA, obtained from the reaction between ethylene oxide and ammonia, is used in hair conditioner, fabric softener, cosmetics, and pharmaceuticals.
<b>Ethoxylate</b>	Ethoxylate, produced from ethylene oxide, is used as a surfactant in soap and detergent.
<b>Ethylene</b>	Ethylene, obtained from ethane, LPG, or naphtha, is feedstock for polyethylene, vinyl chloride monomer, styrene monomer, and ethylene oxide.
<b>Ethylene Glycol (EG)</b>	EG is synthesized from ethylene oxide reacting with water, producing mono ethylene glycol, diethylene glycol, triethylene glycol, and polyethylene glycol.
<b>Ethylene Oxide (EO)</b>	EO, obtained from the reaction between ethylene and oxygen, is a chemical intermediate of ethylene glycol, ethanolamine, and ethoxylate, and others.
<b>Fatty Alcohol</b>	Fatty alcohol, produced from methyl ester and hydrogen through hydrogenation, is used in personal care products.
<b>Glycerin</b>	Glycerin, a byproduct of methyl ester production, is used in pharmaceuticals, food, and personal care products.

### Technical Terms & Abbreviations

<b>Hexamethylene Diisocyanate (HDI)</b>	HDI, obtained from the reaction between hexamethylenediamine and phosgene, is used in polyurethane production.
<b>Hexene-1</b>	An organic compound primary is used as a comonomer in production of polyethylene.
<b>High Density Polyethylene (HDPE)</b>	Produced from ethylene monomers, HDPE is a very dense and crystallized thermoplastic used for containers, including plastic bags, bottles, fuel containers, tanks, and cartons.
<b>Hydrocracking</b>	Hydrocracking is a process of breaking up hydrocarbon molecules by breaking up carbon-carbon bonds with the use of hydrogen and catalysts.
<b>Linear Low Density Polyethylene (LLDPE)</b>	LLDPE, a branched thermoplastic with 65-80% crystallization and a byproduct produced from chemical reaction between ethylene and butene-1, is found in film and containers.
<b>Low Density Polyethylene (LDPE)</b>	LDPE is a branched type of thermoplastic with 65-75% crystallization. Obtained from chemical reaction of ethylene monomer coalescing, it is found in film and containers.
<b>Methylamines</b>	Methylamine, derived from methanol and ammonia, is found in shampoo, hair conditioner, fabric softener, cosmetics, and pharmaceuticals.
<b>Methyl Ester</b>	Methyl ester, derived from the reaction between crude plant/vegetable oil or animal fats and alcohols under esterification, is used for biodiesel production.
<b>Methyl Methacrylate (MMA)</b>	MMA is an intermediate product for polymethyl methacrylate (PMMA) used for LCD screen light guide panels, automotive parts, and billboards.
<b>Mixed C4</b>	Mixed C4, the byproducts produced from naphtha crackers for olefins production, can be isolated into butadiene, butane-1, and isobutene, and others.
<b>Mixed Xylenes</b>	Aromatics derived from naphtha undergoing a chemical reaction aided by catalysts. They consist of paraxylene, orthoxylene, and metaxylene, all capable of serving as reactants for higher-value aromatics and as industry solvents.
<b>Mono Ethylene Glycol (MEG)</b>	MEG, derived from the oxidation of ethylene produced by the reaction of ethylene oxide and water, can serve as an automobile antifreeze agent or a reactant with pure terephthalic acid to produce polyester, clear drinking-water bottles, film, and fiber.
<b>Naphtha</b>	Naphtha is a general term for low-boiling hydrocarbon fractions that is a product of crude oil refining or a condensate splitter. It serves as petrochemical feedstock and as a solvent.
<b>Olefins</b>	Olefins are unsaturated hydrocarbons with at least one carbon-carbon bond. The main olefins include ethylene, propylene, and butadiene.
<b>Oleochemicals</b>	Oleochemicals are natural chemicals derived from plant fats and animal fats, such as fatty alcohols, methyl ester, and glycerin.
<b>O-Xylene or Orthoxylene (OX)</b>	This aromatic compound with two methyl groups in the 1- and 2-positions of the benzene ring is used to produce phthalic anhydride, feedstock for plasticizers.



### Technical Terms & Abbreviations

<b>Polymers</b>	Chemicals with molecular weights of 5,000 or more, derived when certain individual monomers come together and link up. Examples are polyethylene, rubber, and cellulose.
<b>Polypropylene</b>	Polypropylene, a thermoplastic polymer derived from the reaction between propylene and catalysts, is used in containers, textiles, and injected plastics.
<b>Polyethylene Terephthalate (PET)</b>	PET is made by combining mono ethylene glycol and pure terephthalic acid. PET and mono ethylene glycol serve as feedstock for synthetic fiber, water bottles, audiotapes, adhesive tapes, film, food packaging, and others.
<b>Polyols</b>	Polyols is an intermediate petrochemical product, used as main feedstock to produce polyurethane.
<b>Polystyrene</b>	A thermoplastic made from styrene monomer.
<b>Polyurethane (PU)</b>	PU, a thermoplastic resulting from glycol and diisocyanate condensation, can be stiff, soft, or flexible, depending on the additives used. When blended with rubber, it provides shoe soles, heat insulators, windshield wipers, and others.
<b>Polyvinyl Chloride (PVC)</b>	PVC is a thermoplastic polymer produced from vinyl chloride monomers (VCM), and consists of unplasticized and plasticized PVC. It is used in water pipes, electric wire conduits, artificial leather, among others.
<b>PP Compound</b>	A polypropylene with additives added to reinforcing substances to enhance special features.
<b>Premix Polyols</b>	A mixture of various polyols and additives co-developed with customers to achieve desired properties.
<b>Propylene</b>	Propylene is an unsaturated hydrocarbon derived from propane, LPG, or naphtha. This feedstock of polypropylene is of three grades: refinery, chemical, and polymer, depending on the proportions of propylene and propane.
<b>Propylene Oxide (PO)</b>	PO is an intermediate petrochemical product derived from propylene, used as feedstock to produce polyols and propylene glycol.
<b>Purified Terephthalic Acid (PTA)</b>	PTA is a hydrocarbon compound resulting from paraxylene and is feedstock for polyester production.
<b>P-xylene or Paraxylene (PX)</b>	PX, feedstock for PTA, is an aromatic hydrocarbon with two methyl groups in the 1- and 4-positions of the benzene ring.
<b>Pyrolysis Gasoline</b>	Pyrolysis gasoline, a byproduct of naphtha distillation, can be blended with gasoline or used as feedstock for aromatics.
<b>Rotomolding Compound</b>	Rotomolding Compound, a byproduct produced from low-density polyethylene (LLDPE), is plastic powders which are processed through rotational moulding machine at suitable temperature. It is used to manufacture some products such as water tanks, chemical storage tanks, playground, kayaks and other common products.

### Technical Terms & Abbreviations

<b>Toluene</b>	Toluene, an aromatic hydrocarbon with one methyl group connected to the benzene ring, is feedstock for higher-valued aromatics, including benzene and xylene. It is used as a solvent in paints, adhesives, lacquer, thinner, and others.
<b>Toluene Diisocyanate</b>	This chemical derived from the reaction between toluene diamine and phosgene is used for polyurethane production.
<b>Vinyl Chloride Monomer (VCM)</b>	VCM is a hydrocarbon compound used as feedstock for PVC production. It is a colorless, sweet-smelling gas.



1,000 hardcopies (both Thai and English versions) of PTT Global Chemical Public Company Limited's Annual Registration Statements/Annual Report 2020 (Form 56-1 One Report) were certified with the carbon footprint label with the total emission amount of 5.13 kg CO<sub>2</sub>e/report.

GC achieved zero greenhouse gas emission from carbon offsetting project compensation, resulting in Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) Carbon neutral certification. This is part of GC's efforts to demonstrate our responsibility to the society and the environment.



Please scan the QR Code  
to view the Annual Registration Statements/  
Annual Report 2020  
(Form 56-1 One Report)



**PTT Global Chemical Public Company Limited**

555/1 Energy Complex, Building A, 14<sup>th</sup>-18<sup>th</sup> Floor,  
Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900 Thailand.

Tel : 66 (0) 2265-8400 Fax : 66 (0) 2265-8500

[www.pttgcgroup.com](http://www.pttgcgroup.com)



This report is certified with net-zero greenhouse gas emission  
by the Thailand Greenhouse Gas Management Organization (Public Organization),  
which is one of our environmental impact reduction goal.