



A SUSTAINABLE JOURNEY

ANNUAL REPORT 2016

PTT Global Chemical Public Company Limited



ROBECOSAM
Sustainability Award
Gold Class 2017

MEMBER OF
Dow Jones
Sustainability Indices
In Collaboration with RobecoSAM



Global Compact
LEAD
PARTICIPANT



IR
NETWORK





"HIS MAJESTY'S TREE" GROW-PROSPER-SUSTAIN

His Late Majesty King Bhumibol Adulyadej planted a Fire of Pakistan tree (*Phyllocarpus Septentrionalis*) as part of the opening ceremony for the Olefins plant of the National Petrochemical Company Limited, present day PTT Global Chemical Public Company Limited, and the Petrochemical Industry Group 1 on January 21st, 1992.

We, the directors, executive officers and employees of PTT Global Chemical Public Company Limited and its Subsidiaries, would like to express our gratitude towards His Late Majesty's unfathomable grace. We will draw inspiration from the wise words and teaching of His Late Majesty, which also serve as our guidance, steering us onto the path of honesty, sufficiency and thankfulness towards the land, over which His Late Majesty had ruled his subjects in peace and happiness. We will become like the tree that His Late Majesty planted, growing and prospering in a sustainable manner.



“...At present, Thailand is enriched with resources, both natural resources and human resources, which we can use to prosper the abundance and permanent stability of the country. Most importantly, we must learn how to utilize those resources wisely, which means not to exploit them ineffectively or unworthy. We must cautiously use these resources with theoretical consideration, reasonableness and appropriateness as well as emphasize on long-term benefits that the country will acquire, both at present and in the future...”

His Majesty King Bhumibol Adulyadej's Speech

Given on the Occasion of the Royal Birthday Anniversary

On 5 December 1978

Among the many aspirations of PTT Global Chemical Public Company Limited lies our dedication to the adoption of the wise words of His Late Majesty King Bhumibol Adulyadej. We have adopted the principles of the Philosophy of Sufficiency Economy in our operations. His Late Majesty's philosophy is guidance for the people of Thailand regardless of their social standing. It steers us towards the middle path, the path of sufficiency, which is comprised of moderation, reasonableness and self-immunity based on conditions of knowledge and virtue.

Constant
self-improvement
and perseverance

MODERATION

REASONABLENESS

SELF-IMMUNITY

Continuous
optimization of
natural resource usages
has made PTTGC who
we are today

Risk Management,
quality improvement
and increase resilient to
continuously maintaining
profitability.

KNOWLEDGE

ETHICS

WE HAVE BECOME A ROBUST ORGANIZATION

GC SPIRIT / CORE BEHAVIORS CULTURE



Moderation

Economic

The Company has defined medium- and long-term plan in management and operation to sustain company's operational excellence. PTTGC also places great emphasis on risk management to ensure that PTTGC operation will not be affected by any uncertainties.

PTTGC understands growing significance in sustainable investment, which is in accordance with company's vision. Additionally, we are committed to align and conform to DJSI guidelines, while giving respect on environmental, social, and governance aspects.

Social

We highly value our stakeholders' opinions and expectations that may involve in our operations. We also conduct social satisfaction survey to serve as channel to listen to stakeholders' needs.

Environment

Responding current concern of climate change, PTTGC is committed to GHG reduction, operational eco-efficiency, and 3Rs. We conduct Life Cycle Assessment in our key product lines in our green process and product initiative. With our responsible care, our procurement process is environmentally friendly under the "Green Procurement Scheme".

Reasonableness

Economic

To strengthen PTTGC financial performance, we initiate core uplift program to increase company's capacity. We have set long-term vision of growth through our defined strategic expansion in line with organic growth.

Social

Through our business success, we aim to continuously contribute to national socio-economic development, especially in the Thai petrochemical industry for over 6%.

Environment

We achieved being in the 1st quartile performance of operational excellence, especially energy efficiency. We have a clearly defined Green Strategy in our chemical products derived from plant and animal fats, including Bioplastic, the innovative products that are environmental friendly and biodiesel as alternative chemicals.

Self-Immunity

Economic

To avoid risk in business disruption due to any unexpected risks, PTTGC has put in place a defined Business Continuity Plan (BCP) to prevent, recover, and deal with potential threats to the company reflecting our preparedness and capacity in crisis management.

Social

PTTGC is committed to the United Nations Global Compact principles and United Nations Environmental Program principles to continuously foster our sustainability excellence. With our dedicated staffs, our employees volunteer for community development activity as well as stakeholder engagement to ensure community's acceptance as well as to gain license to operate.

Environment

PTTGC continuously fosters innovation, environment and technology that help mitigate impact from climate change, i.e., Clean Development Mechanism. We publicly communicate and ensure transparency to our stakeholders in our environmental performance by participating in Carbon Disclosure Project.

To realize all of this, there are fundamental requirements, which are knowledge and virtue. We can never stop learning, gaining more experience. We also need to foster an organizational culture of sharing, transparency and commitment to the greater good.

SUSTAINABLE DEVELOPMENT GOALS

TRANSFORMING OUR WORLD TOWARD A BETTER FUTURE

PTT Global Chemical Public Company Limited is committed to becoming a role-model organization of sustainable development. We are committed to taking part in the change that is founded on equality and sustainability from within. We are dedicated to the creation of a balance between business growth and improved quality of life. By paying attention to and caring for society, communities and the environment, we aspire to create value and foster sustainable growth.

PLANET

- We conduct business responsibly, in terms of safety, occupational health and the environment. We deliver quality products to our customers. We have effective environmental management and energy consumption. We help maintain biodiversity through our environmental and safety excellence, as well as eco-friendly products. Thanks to all of this, we shall be able to create value and foster sustainable growth.



PEOPLE

- We conform to the UN Global Compact LEAD Level charter, which governs various aspects of societal responsibility, including education, occupations and community enterprises. We have initiated projects for community-level economic development, local job creation, creating sustainably strong communities.

PROSPERITY

- Innovations have been implemented in our production of chemical innovations with optimum effectiveness for future well-being and sustainability. At the same time, we operate ethically and transparently in everything that we do.



ROBECOSAM
Sustainability Award
Gold Class 2017

MEMBER OF
Dow Jones
Sustainability Indices
In Collaboration with RobecoSAM

PTTGC is the only chemical company from Thailand and ASEAN that has obtained the Gold Class distinction from RobecoSAM, one of the world's most trusted and accepted sustainability rating agencies. The distinction confirmed that PTTGC is integrating sustainability performances across the value chain and at the global level. Additionally, the annual assessment of companies' sustainability by RobecoSAM is also used for selecting component of DJSI inclusion. The result of the 2016 assessment confirmed the second place of PTTGC in the DJSI chemical sector for the fourth consecutive year with score equivalent to Industry Best.

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"Investor may search for more detail of Company information in Form 56-1 available at www.sec.or.th or Company website www.pttgcgroup.com"



Vision

To be a leading chemical company for better living.

Mission

- We deliver the best business performance through trust worthiness to create fair and sustainable value for shareholders.
- We engage and integrate social and environment to our business with responsibility and care for sustainable development.
- We provide superior solutions from innovative products and services to be the best choice for our business partners.
- We create a learning organization and a happy workplace to cultivate proficient workforces with profound engagement and commitment to professional excellence.

Objectives and Goals

PTT Global Chemical Public Company Limited (PTTGC) systematically reviews our corporate vision, mission and direction annually to ensure their alignment with the current context and future business trends. PTTGC aspired to become a leader in the following three aspects in 2016:



Business growth

PTTGC is committed to being a petrochemical and chemical manufacturer with integrated production lines, fostering growth and yielding profits in a sustainable and uninterrupted manner.



Return on Investment

PTTGC is committed to achieving a return on investment that would place us on the top quartile of industrial players in the Asia Pacific region.



Sustainability

PTTGC is committed to operating our business under the framework of sustainability with an aim of being continuously accepted and recognized as a leading organization of sustainable development by the DJSI.



Corporate Strategies



According to our corporate direction and strategies, PTTGC has focused on maintaining our competitiveness and sustainable growth. Meanwhile, we have made various preparations to support future growth. PTTGC has employed this strategic plan as a framework for our operations. We have also regularly monitored its progress to ensure the achievement of short- and long-term goals. Our current operations are based on the following four strategic pillars:

1. Sustain Core

To sustain the competitiveness of our production bases amidst the many challenges and ever-changing conditions, PTTGC follows the following three strategies:

- **Business Competitiveness:** We will continue to develop and improve our operational efficiency with a goal of augmenting our competitiveness. Through Project MAX, we shall maximize our performance and operational efficiency. We shall also put further efforts into improving our operational and marketing excellence.
- **Map Ta Phut Retrofit:** We will enhance the flexibility of our current assets, including our plants and infrastructure, to support a wider variety of feedstock, as well as make other necessary efforts to foster long-term stability of feedstock.
- **Maximize Integration and Utilization:** We will achieve the utmost benefit from our current production bases and products through management of our supply chain, infrastructure, public assistance and value-chain integration, as well as through the expansion of our production capacity.

2. Accelerate Growth Levers

PTTGC always seeks investment opportunities and operates our existing and new businesses both at home and abroad. We always aim for growth and good returns on investment through investing with business partners and enhancing all of our competencies. There are three parallel focus areas:

- We shall expand the production bases of our businesses and products in which we have an expertise to countries where there is potential for market growth and where there is feedstock that can strengthen our competitiveness.
- We shall invest in downstream diversified performance chemical businesses that are consistent with the growth of the target downstream industry and that meet the demand of the market in Thailand, as well as other potential markets in the region, such as ASEAN and China.
- We shall expand our green chemical business to meet the sustainable development demand of the downstream industry.

3. Balance Business with Sustainability

PTTGC is committed to becoming a model organization of sustainable growth. Through the balance of the economy, society and the environment, we shall create value-added to our organization.

4. Strengthen Enablers

We focus on strengthening internal enablers and supporting the efficient implementation of our strategic plan. We put an emphasis on developing our organizational competencies and fostering all-around business excellence in response to our own organizational direction and the ever-changing business context. These competencies include research, development and innovation; finance and accounting; production and distribution; and sundry other aspects. Furthermore, PTTGC also has plans in place to ready our business, organization and human resources for our long-term goals.



FINANCIAL HIGHLIGHTS

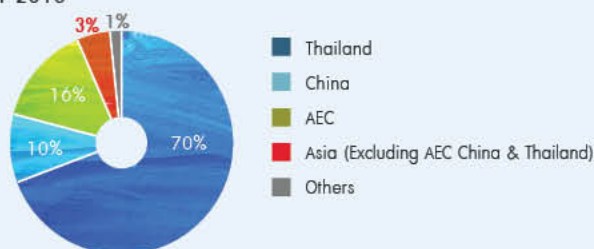
+ Sales Revenue

Unit : Million THB



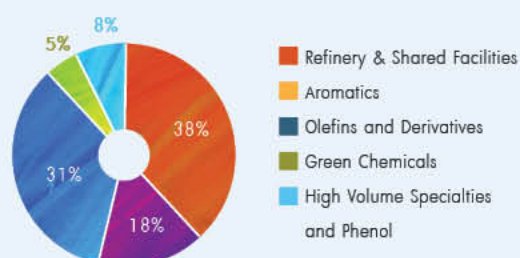
+ Sales Revenue of Main Products Breakdown by Geography

Year 2016



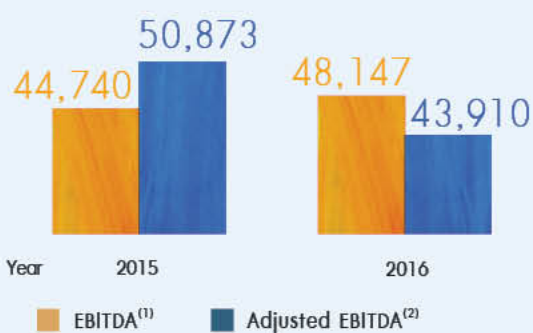
+ Sales Revenue Breakdown by Business

Year 2016 : 345,762 Million THB



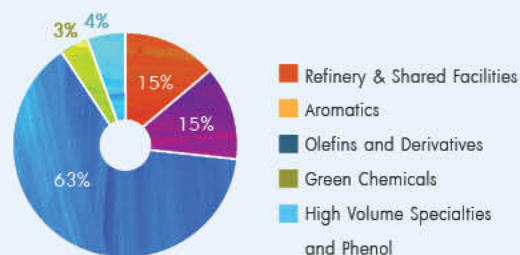
+ EBITDA⁽¹⁾

Unit : Million THB



+ Adjusted EBITDA⁽²⁾ Breakdown by Business

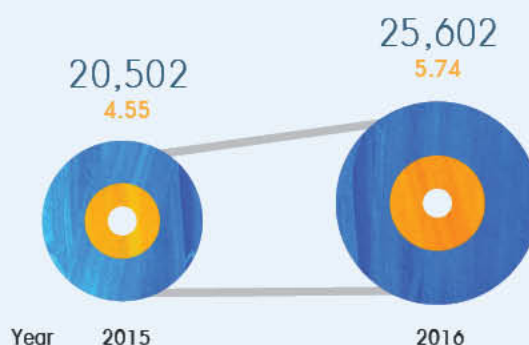
Year 2016 : 43,910 Million THB



+ Net Profit

Net Profit (Million THB)

Earning Per Share (Baht/Share)



Statement of Financial Position (Unit : Million THB)	2014 ⁽³⁾	2015	2016
Total Assets	381,443	377,545	393,166
Cash and Cash Equivalents + Short-term Investment	45,788	47,741	45,312
Current Assets	77,343	70,160	82,201
Property, Plant and Equipment	219,345	220,213	221,514
Non-current Assets	38,967	39,431	44,139
Total Liabilities	152,993	143,280	144,497
Loan	113,142	105,847	96,143
Other Liabilities	39,851	37,433	48,354
Total Equity	228,450	234,265	248,669

Statement of Financial Position	2014 ⁽³⁾	2015	2016
Current Ratio (times)	2.19	2.86	2.39
EBITDA to Total Revenues (%)	6.21	11.18	13.93
Net Profit on Total Revenues (%)	2.79	5.12	7.40
Return on Total Assets (%)	5.09	7.36	8.45
Return on Equity (%)	6.86	8.99	10.72
Interest Bearing Debt to Equity (times)	0.50	0.45	0.39
Net Interest Bearing Debt to Equity (times)	0.29	0.25	0.20
Net Interest Bearing Debt to EBITDA (times)	1.97	1.30	1.06

Dividend Paid (Baht/Share)				Earning per Share (Baht/Share)	Dividend Payout Ratio (%)
Year	1 st Half	2 nd Half	Full year		
2016 ⁽⁴⁾	1.05	1.80	2.85	5.74	50%
2015	1.50	1.30	2.80	4.55	61%
2014 ⁽³⁾	1.37	1.00	2.37	3.41	70%

Note :

- (1) EBITDA is Earnings Before Interest, Taxes, Depreciation and Amortization.
- (2) Adjusted EBITDA refers to EBITDA excluding impact of inventory value (excludes Inventory and NRV) and extraordinary items.
- (3) Restated FY 2013 and FY 2014 Financial Statements from the implementation of Thai Financial Reporting standards (TFRS) no.10 regarding consolidated financial statements and no.11 regarding joint arrangements.
- (4) The Board of Directors at its meeting No.3/2016 held on February 20th, 2017 has approved the proposal to propose at the 2017 Annual General Meeting of Shareholders to consider and approve on the dividend payment for the year 2016 operating performance of Baht 2.85 per share or 50% of the net profit, of which Baht 1.05 per share was paid as an interim dividend on September 20th, 2016. The final dividend payment will be Baht 1.80 per share, but the right to receive dividend is subject to the approval of Shareholders at the 2017 Annual General Meeting.

AWARDS AND RECOGNITIONS

The commitments to operate our business with sustainability can be demonstrated through the awards and success we received both nationally and internationally. Our pride from the awards and recognitions has been motivating us in striving for better.



Global Compact
LEAD
PARTICIPANT

UN GLOBAL COMPACT LEAD LEVEL

PTTGC is the first company in Thailand to join UN Global Compact at the highest level, LEAD. PTTGC prepared the Communication on Progress in accordance with ten guiding principles and 21 principles of UN Global Compact LEAD

ECONOMIC

SOCIAL



+ SET SUSTAINABILITY AWARDS

PTTGC was selected by Stock Exchange of Thailand to be the Best organization that strives toward all dimensions of sustainable development



+ INVESTORS' CHOICE AWARD 2016

For the fifth consecutive year, PTTGC received full score from AGM effectiveness evaluation, which was granted by Investors' Choice Award 2016. The award reflects the importance of disclosure and priority of shareholders.



FTSE4Good

+ FTSE4GOOD INDEX

This is a world class corporate sustainability evaluation index. It focuses on organizations with environmental and social responsibility as well as good governance, which create trust among international investors. PTTGC's evaluation score is 84 percent



+ SUSTAINALYTICS

Channel NewsAsia Sustainability Ranking 2016 has ranked PTTGC as 14th from 100 companies in Asia.



+ CSR-DIW 2016

14 plants of PTTGC group won the CSR-DIW Continuous Awards 2016, reflecting efficient Corporate Social Responsibility.



+ EMPLOYER OF CHOICE 2016

PTTGC became the employer of choice in Chemical Product Industry. The survey was conducted by Qualifiles on new graduates who wish to work with leading organization.



+ INTERNATIONAL SAFETY AWARD 2016

PTTGC has received the International Safety Award 2016 from the British Safety Council as an organization that cares about the health and well-being of employees.



+ EXCELLENCE IN LABOUR CONDITIONS AND SAFETY, OCCUPATIONAL HEALTH AND WORK ENVIRONMENT AWARD 2016

PTTGC received Excellence in Labour Conditions and Safety, Occupational Health and Work Environment Award 2016 from Ministry of Labour.

MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM

DOW JONES SUSTAINABILITY INDICES

In 2016, PTTGC is able to maintain our Top 10 position in DJSI world members for the fourth consecutive year. Our score is equivalent to Industry Best score and recognized in Gold Class.

ENVIRONMENT



+ THE PRIME MINISTER'S INDUSTRY AWARD 2016

From our intention to develop business to the international level and environmentally-friendly processes, PTTGC was granted with seven awards from The Prime Minister's Industry Award 2016. The award was organized by Ministry of Industry.



+ THAILAND QUALITY CLASS (TQC) 2016

Polymers Business Unit received Thailand Quality Class 2016 (TQC) in Management Excellence from Office of Thailand Quality Award.



+ INVENTION AWARD 2016

PTTGC's innovative products "Nursery Bio-Degradable Bags", which made from bioplastic (PLA) received Invention Award 2016.



+ CLIMATE DISCLOSURE LEADER

PTTGC was recognized by the CDP as a Climate Disclosure Leader for the fourth consecutive year. CDP is a widely accepted organization that assesses environmental management of companies worldwide.



+ GREEN INDUSTRY 5

PTTGC has been certified with Green Industry at the highest level. The awards recognized our intention to cascade 2E1S awareness to our stakeholders.



+ ECOVADIS

PTTGC has won gold-level recognition for its ESG programs, assessed by EcoVadis. The assessment ranks PTTGC at the top one percent performers.

MAJOR EVENTS AND ACTIVITIES IN 2016



3 March 2016

March 3rd, 2016: Presentation of InnoPlus water-storage tanks to HRH Princess Maha Chakri Sirindhorn

PTTGC Group presented 1,500-liter of InnoPlus water-storage tanks along with the funding for the construction of their concrete bases, to Her Royal Highness Princess Maha Chakri Sirindhorn. This donation went to support a project to help store clean water for consumption during both dry and rainy seasons, as well as to provide relief for disaster victims and students in rural areas. In addition, we donated InnoPlus water-storage tanks to government agencies, including the 5 Provinces Forest Foundation, Ministry of Energy, to help alleviate drought situations throughout Thailand.

June 13th, 2016: Olefins Unit 3's Shutdown

PTTGC had shutdown Olefins Unit 3 to repair the furnace coil due to the lead time for equipment, this effected the olefins utilization in Q2/2016 and Q3/2016 at 84% and 92% respectively.

June 24th, 2016: MOU for R&D Collaboration

PTTGC signed MOU for scientific and technological research among PTT Group and the Vidyasirimedhi Institute of Science and Technology (VISTEC). This collaboration will enhance PTT group's in scientific and technological capabilities while ensuring future research excellence.

July 1st, 2016: Donations to Underprivileged Patients at Siriraj Hospital

PTTGC and its shareholders donated to Siriraj Hospital's fund for underprivileged patients. Bio-plastic products were given to shareholders, who registered for PTTGC annual general meeting.

August 3rd, 2016: MOU for Packaging Market Development in Myanmar

PTTGC signed MOU with SP Pet Pack Co., Ltd. to jointly develop Myanmar packaging market, focusing on strengthening and preparing entrepreneurs in plastic packaging industry which will expand their businesses in CLMV (Cambodia, Laos, Myanmar, Vietnam) markets.



24 June 2016



1 July 2016



3 August 2016

■ **August 11th, 2016: Launch of PTTGC Fish Aggregating Devices**

PTTGC, together with the Province of Rayong, the Marine and Coastal Resource Management office 1, Rayong Fishery Office, experts, seaside communities and 30 groups from the Association of Local Fishery of Rayong from the Mueang, Klang, and Ban Chang made 70 fish aggregating devices from rope. These devices help conserve marine resources and ecosystems in the bay. They act as habitats for small marine animals along the coastline of Rayong. These are part of an initiative to revive the marine ecosystem along 120 km of Rayong coastline.

■ **September 13th, 2016: HOA to Develop Performance Chemicals**

PTTGC signed HOA with Kuraray, a Japanese world leading performance chemical company, and Sumitomo Corporation, a Japanese trading company with worldwide network, to do detail feasibility study and perform Front-end Engineering Design (FEED) for the development of manufacturing and sales of super Engineering plastic : High-Heat Resistant Polyimide-9T (PA9T) and Hydrogenated Styrenic Block Copolymer (HSBC) products in Thailand.

■ **September 22nd - 24th, 2016: PROPAK MYANMAR 2016 for CLMV Market Penetration**

PTTGC participated in a business matching activity between customers in plastic industry and Myanmar traders at PROPAK MYANMAR 2016, with an aim to penetrate CLMV markets and gain a market share of 30 % within five years.

■ **October 5th, 2016: IPO of Global Green Chemical (GGC)**

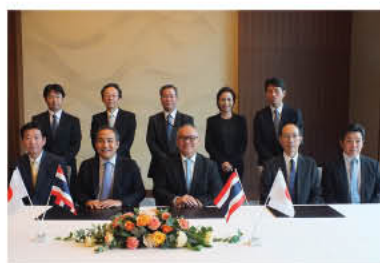
Global Green Chemical Public Company Limited, subsidiary of PTTGC, submitted an IPO application with information disclosure and invitation draft to the Securities and Exchange Commission and also submitted a request to trade common shares on the stock market to The Stock Exchange of Thailand. PTTGC remained a major shareholder of GGC after the IPO.

■ **October 17th, 2016: Establishment of Pacharath Rak Samakkee Rayong (Social Enterprise) Co.,Ltd.**

PTTGC established the joint venture of Pacharath Rak Samakkee Rayong (Social Enterprise) Co.,Ltd. with the objective to promote better economy and strengthen Rayong community with cooperation from public, academic, social and private sectors.



11 August 2016



13 September 2016



22-24 September 2016



MESSAGE FROM THE CHAIRMAN

Dear Shareholders,

The petrochemical industry plays a crucial role in Thailand's economy. At least one trillion Baht has been invested in the development of this business and its infrastructure in the Eastern Seaboard. It generates at least 400 Billion Baht per year for Thailand, or an equivalent of 6 percent of our GDP, and contributes to our nation's economic stability.

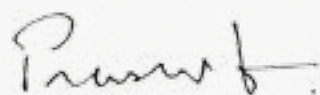
Although Thailand's macroeconomy in 2016 appeared to begin flourishing once again thanks to the government's economic stimulus policy, the rise in farmers' income and the expansion of the export sector in the second half of the year, petrochemical products continued to be volatile. Production uncertainties also affected us. Despite these challenges, the Board of Directors systematically monitored the progress of our operation throughout the year to drive our corporate strategies forward, supporting our growth and long-term direction by adapting and adopting corporate strategies that best suit our goals as determined by our KPIs. The Board also efficiently managed situations, such as enhancing our productivity and sales, controlling expenses, to improve performance and efficiency through "the Max Project": **All of this contributed to our operational excellence and helped us generate satisfactory earnings in 2016 with a net profit of 25,602 Million Baht or an equivalent of 5.74 Baht per share.**

As for our future endeavors, we plan on fine tuning our direction and strategies by focusing on sustainable business growth based on four strategic pillars: Sustain Core, Accelerate Growth Levers, Balance Business with Sustainability and Strengthen Enablers. Furthermore, PTTGC has focused on organizational potential development as well as readiness preparation in order to promptly response to business opportunity such as emphasizing on innovation to meet customer requirements, continuously expand market and business network in target high potential markets and also align our business strategies with the government's Eastern Economic Corridor Development (EEC) which PTTGC is the crucial part in driving the project for the nation economic sustainable growth in the future.

In addition to our business excellence, PTTGC has adopted the Philosophy of the Sufficiency Economy as guiding principles for our business, which clearly has connections to the framework of sustainability that we have developed based on international practices. These connections include our **moderation** in the mindful use of natural resources that creates value-added, **reasonableness** in our business conduct for the utmost benefit of shareholders and stakeholders and **self-immunity** through the adherence to good corporate governance. All of this serves as the mold for our corporate social responsibility programs, including our natural resource conservation efforts. For instance, we have made efforts to reforest the Khao Huai Mahat area, which is key to water conservation and to a complete ecosystem. We have also contributed to the construction of a sea-animal nursery and a project to preserve and revive the marine ecosystem through our PTTGC Fish Aggregating Devices Project.

In addition, PTTGC has played a crucial role in driving Thailand's economy forward by taking part in the strategic planning of one of the Pracharath projects aimed at reducing inequality, enhancing competitiveness and people development. These projects' collective goal is to ensure a sustainable future in which Thailand is stable and prosperous. Our economic, social and environmental balance, in accordance with our framework of sustainability, has brought about praise and recognition to PTTGC both at home and in the international arena. These include a top score in the Dow Jones Sustainability Indices (DJSI), the Gold Class award in the Chemical Sector and being named a world-class role model for sustainable organizations for the fourth consecutive year. These accolades have brought pride to our organization.

PTTGC stands strong today as a world-class organization by Thai people for Thai people. We will continue to operate under good corporate governance and aim to strike a balance between our own benefits and the benefits of all groups of stakeholders in conformity to the framework of sustainability. With the realization that our resources are valuable, we are committed to making progress for the utmost benefit of every Thai citizen and of the nation as a whole.



(Mr. Prasert Bunsumpun)

Chairman



“...If you have an **opportunity** and work to do, you should willing to do it without any conditions or terms to be an obstacle. Those with intention to work can do anything, no matter how hard it is. They will always finish the task. The more **carefulness**, **perseverance**, and **honesty**, the more success in your career...”

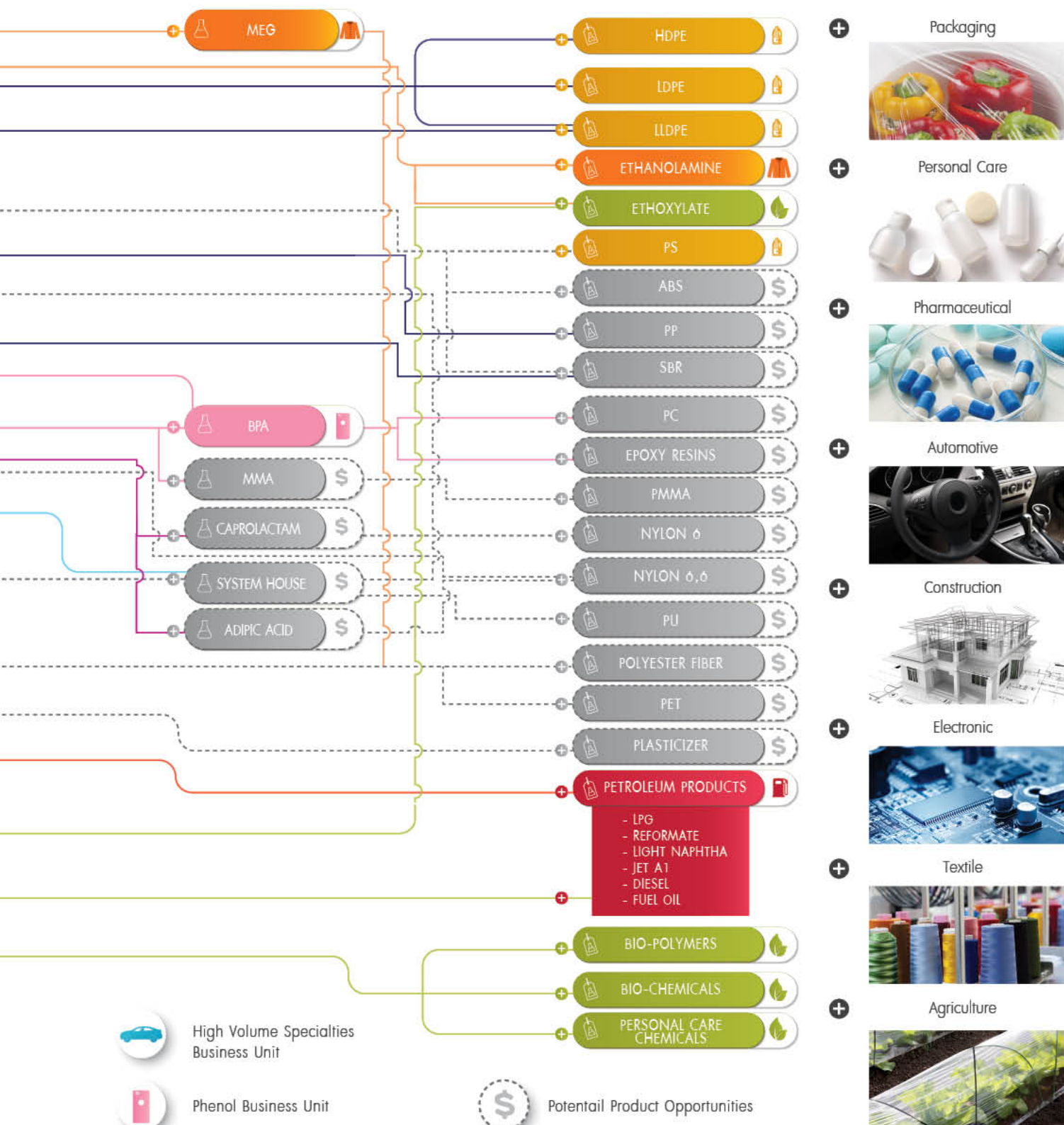
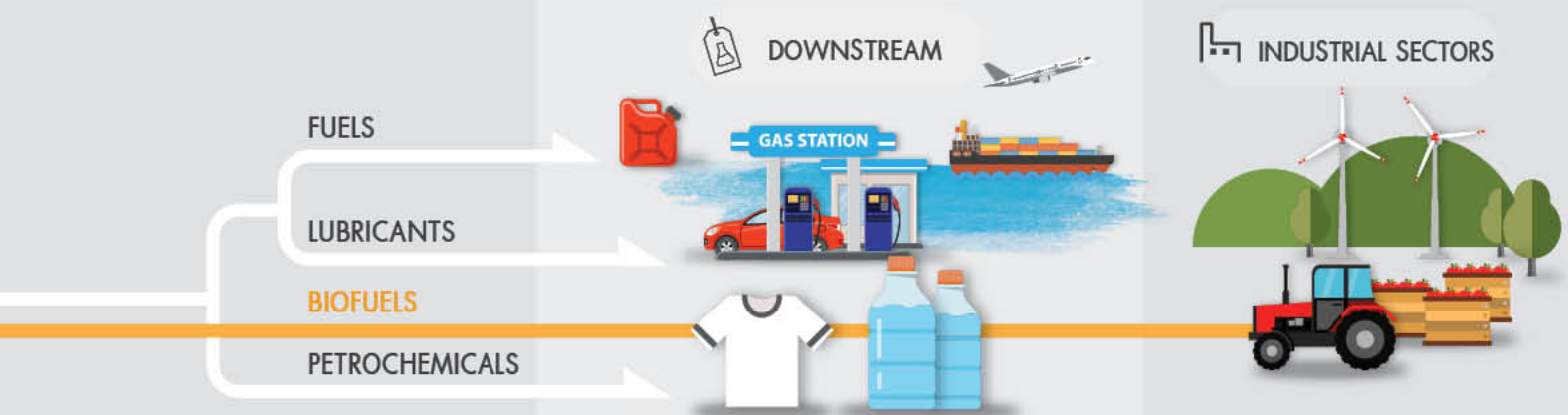
His Majesty King Bhumibol Adulyadej's Address

Given at the Graduation Ceremony of Technological
and Vocational Education Colleges of Thailand

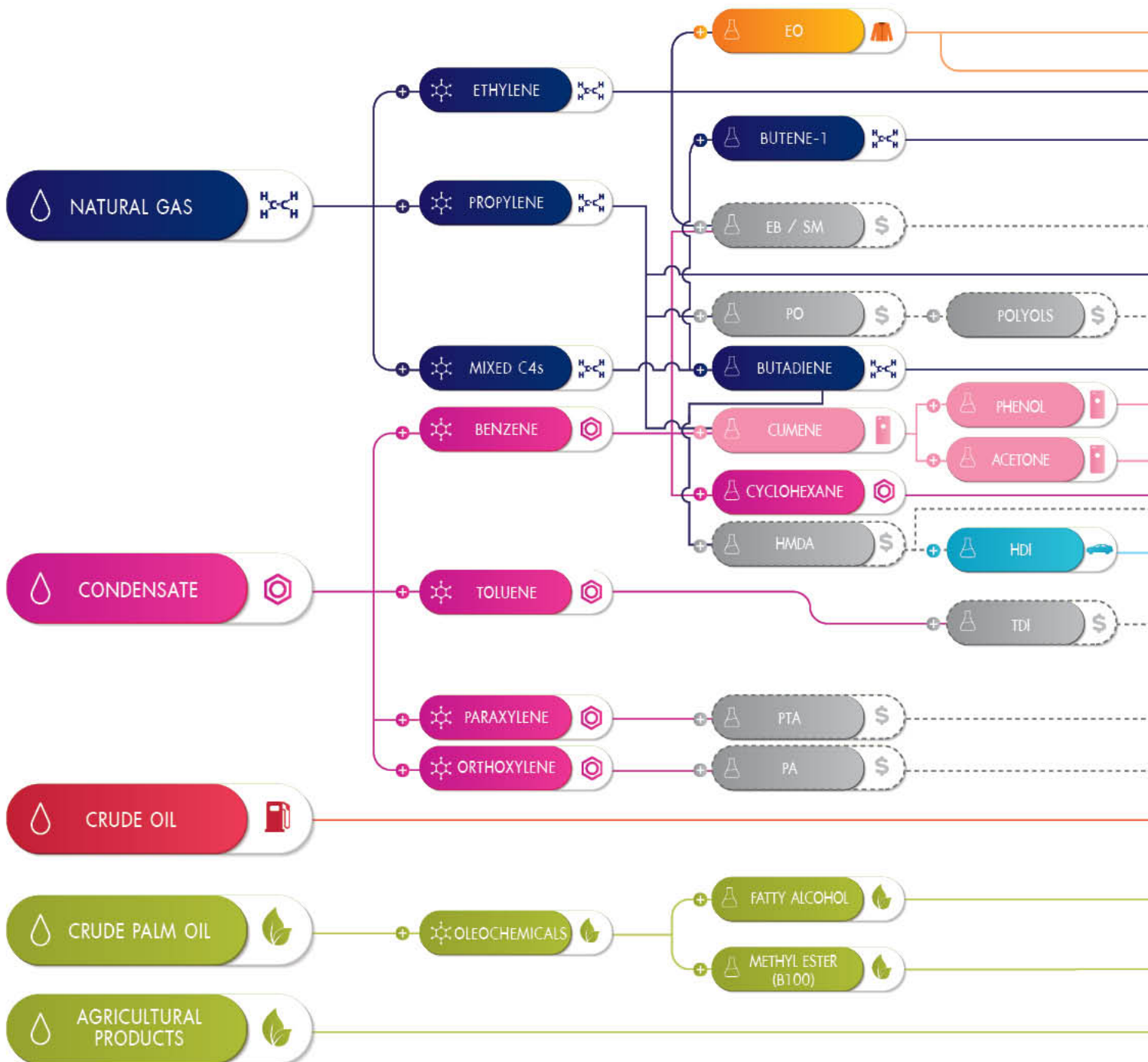
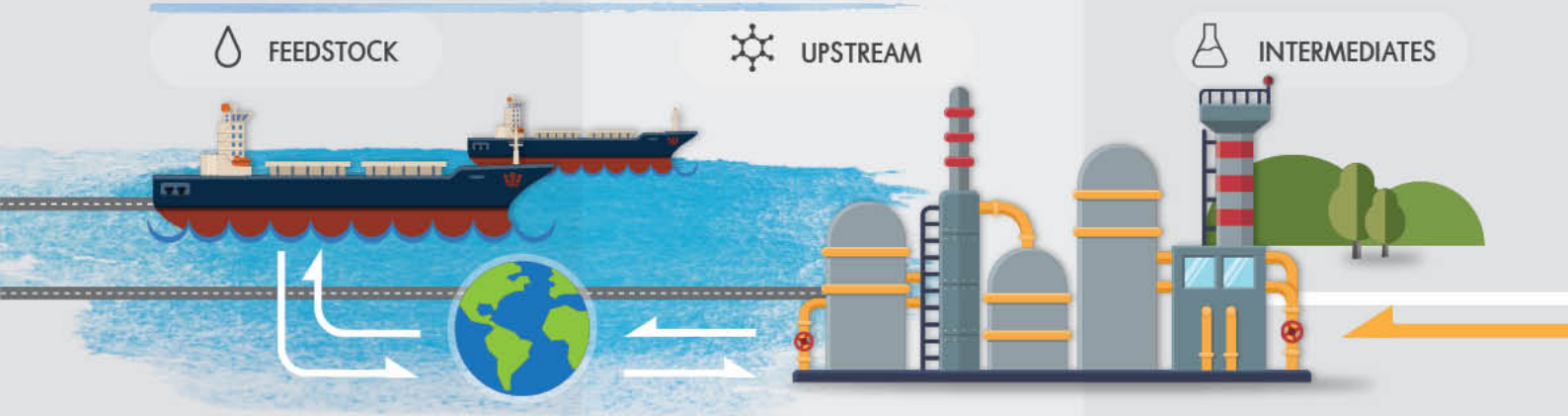
On 8 July 1987



Business Highlights



BUSINESS VALUE CHAIN



Group Performance Center-Refinery & Shared Facilities



Group Performance Center-Olefins



EO-Based Performance Business Unit



Group Performance Center-Aromatics



Polymers Business Unit



Green Chemicals Business Unit

PTT Global Chemical Public Company Limited (PTTGC), as a Chemical Flagship of PTT Group with a combined chemical / petrochemical capacity of 9.25 million tons per year and crude oil / condensate distillation capacity of 280,000 barrels per day. PTTGC consists of 8 business groups.



MAIN PRODUCTS

- ⊕ ETHYLENE GLYCOL
- ⊕ ETHANOLAMINE

CAPACITY*

- ⊕ 473 KTA

OPERATED BY

- ⊕ TOCGC

MAIN PRODUCTS

- ⊕ METHYL ESTER
- ⊕ FATTY ACID
- ⊕ FATTY ALCOHOL
- ⊕ GLYCERIN SPECIALTY
- ⊕ OLEOCHEMICALS
- ⊕ BIOPLASTICS
- ⊕ ETHOXYLATE

CAPACITY*

- ⊕ 757 KTA

OPERATED BY

- ⊕ GGC**
- ⊕ TFA
- ⊕ EMERY
- ⊕ NATUREWORKS
- ⊕ TEX

MAIN PRODUCTS

- ⊕ HEXAMETHYLENE DISOCYANATE AND DERIVATIVES

CAPACITY*

- ⊕ 108 KTA

OPERATED BY

- ⊕ VENCOREX

MAIN PRODUCTS

- ⊕ PHENOL
- ⊕ BISPHENOL A
- ⊕ ACETONE

CAPACITY*

- ⊕ 910 KTA

OPERATED BY

- ⊕ PPCL

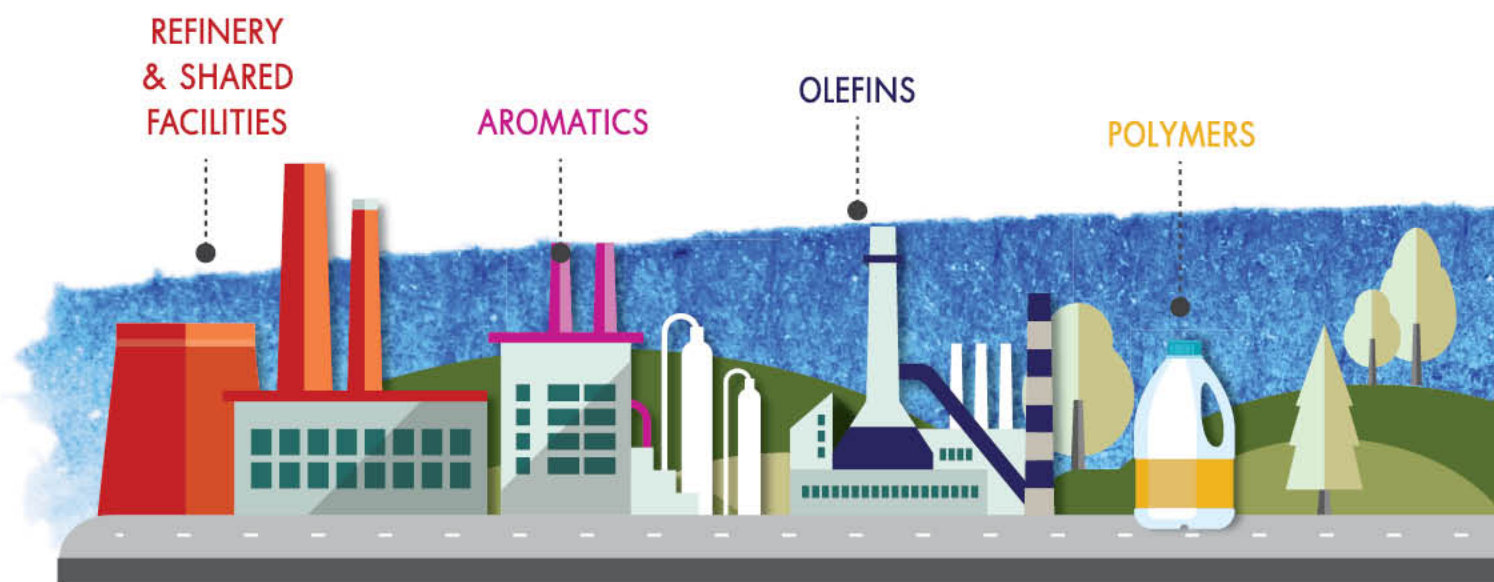
Remarks :

- * Only capacity that PTTGC hold equal to or more than 50% share and calculate proportionate by percent share
- ** Thai Oleochemical Company Limited (TOL) is registered as a Public Company and Changed the registered name to Global Green Chemicals Public Company Limited (GGC) on February 18th 2016

- ⊕ Labor outsourcing services
- ⊕ Marketing and sales for health and nutrition products
- ⊕ Polymer sales and marketing services
- ⊕ Logistics services
- ⊕ Social Enterprise

Operated by BSA
Operated by Solution Creation
Operated by PTTPM, ITT
Operated by PTTPL
Operated by PRS RAYONG

BUSINESS STRUCTURE



MAIN PRODUCTS

- ⊙ LPG
- ⊙ LIGHT NAPHTHA
- ⊙ REFORMATE
- ⊙ JET A1
- ⊙ DIESEL
- ⊙ FUEL OIL

CAPACITY*

- ⊙ CRUDE OIL DISTILLATION 145,000 BARRELS/DAY

OPERATED BY

- ⊙ PTTGC

MAIN PRODUCTS

- ⊙ BENZENE
- ⊙ TOLUENE
- ⊙ PARAXYLENE
- ⊙ ORTHOXYLENE
- ⊙ MIXED XYLENES
- ⊙ CYCLOHEXANE

CAPACITY*

- ⊙ CONDENSATE DISTILLATION 135,000 BARRELS/DAY
- ⊙ AROMATICS 2,419 KTA

OPERATED BY

- ⊙ PTTGC

MAIN PRODUCTS

- ⊙ ETHYLENE
- ⊙ PROPYLENE
- ⊙ BUTADIENE
- ⊙ BUTENE-1

CAPACITY*

- ⊙ ETHYLENE/PROPYLENE 2,888 KTA
- ⊙ BUTADIENE/BUTENE-1 100 KTA

OPERATED BY

- ⊙ PTTGC

MAIN PRODUCTS

- ⊙ HDPE
- ⊙ LDPE
- ⊙ LLDPE
- ⊙ PS

CAPACITY*

- ⊙ POLYETHYLENE 1,500 KTA
- ⊙ POLYSTYLENE 90 KTA

OPERATED BY

- ⊙ PTTGC
- ⊙ TSCL

SERVICES AND OTHERS

- ⊙ Jetty and chemical tank farms
- ⊙ Utility businesses
- ⊙ Plant maintenance and engineering design services
- ⊙ Safety, occupational health, and environmental services
- ⊙ Pipeline infrastructural services
- ⊙ Information technology services

Operated by TTT
 Operated by GPSC
 Operated by PTTME and PTES
 Operated by NPC S&E and NPCSG
 Operated by EFT
 Operated by PTTICT

NATURE OF BUSINESS AND PERFORMANCE



GROUP PERFORMANCE CENTER - REFINERY AND SHARED FACILITIES

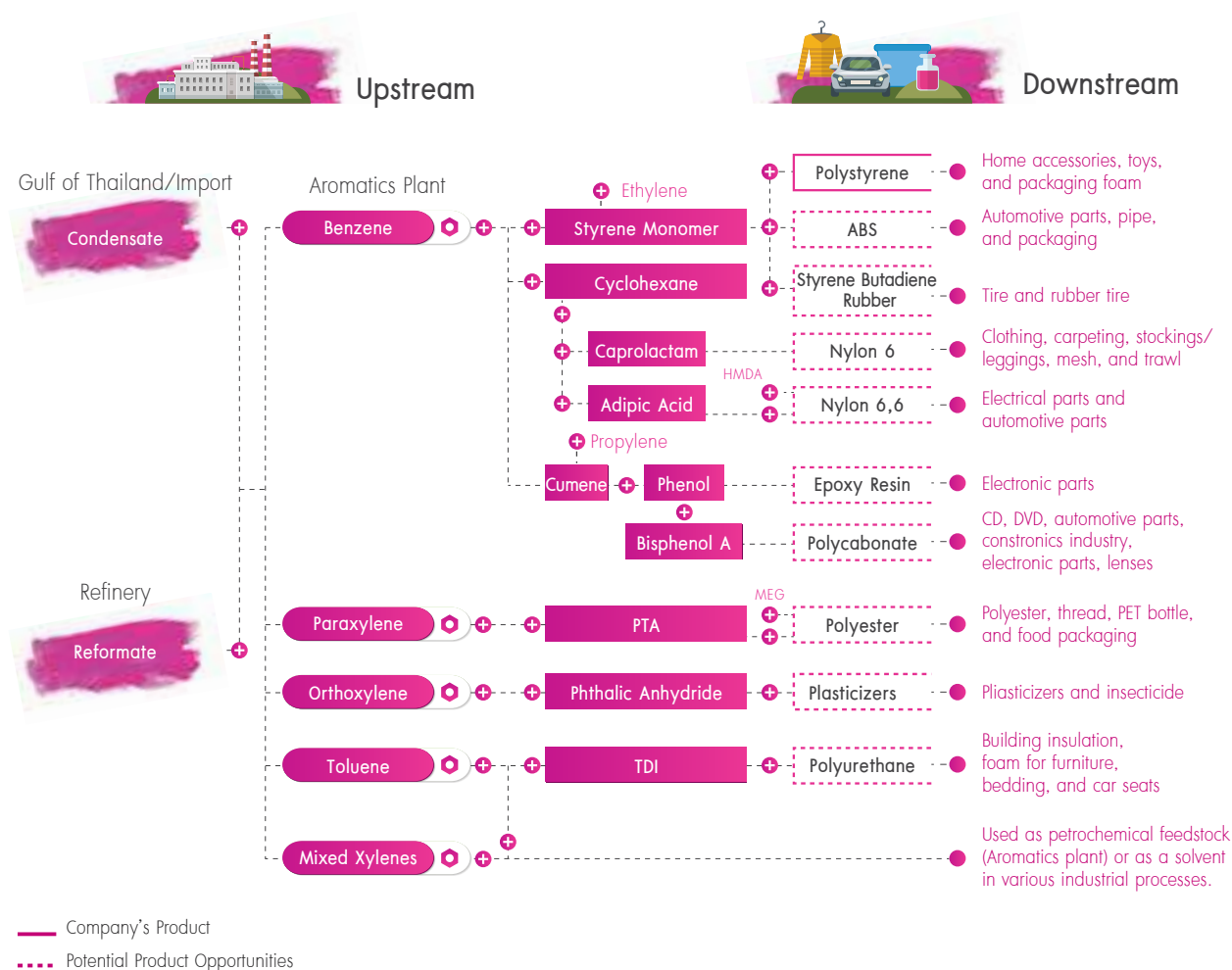
PTTGC is Thailand's leading refinery and distributor of petroleum products. PTTGC owns and operates a modern refinery complex which is capable of converting low-value fuel oil to more valuable middle distillate products. Refining capabilities stand strong at 145,000 barrels per day. Additionally, PTTGC refinery is flexible; its production capacity can be adjusted to accommodate customer demands, as well as any volatility in the market. The following is a summary of PTTGC's petroleum production capabilities and their usages:

Petroleum Products		Usages
Light Distillates	Liquefied Petroleum Gas or LPG	- Fuel - Petrochemical feedstock (Olefins plants)
	Light Naphtha	- Gasoline blending component - Petrochemical feedstock (Olefins plants)
	Reformate	- Gasoline blending component - Petrochemical feedstock (Aromatics plants)
Middle Distillates	Jet Fuel	- Aviation fuel
	Diesel	- Industry fuel and automotive fuel
Heavy Distillates	Fuel Oil	- Industry fuel and maritime transportation fuel

As of 2016, PTTGC has a domestic market share of approximately 17% for middle distillates.

GROUP PERFORMANCE CENTER - AROMATICS

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



Aside from the products listed above, PTTGC's aromatics plants also produce a multi by-products, including liquefied petroleum gas (LPG) and light naphtha, which are used as feedstock at PTTGC's olefins plants. Furthermore, condensate residue are used as feedstock in its refinery operations to make jet, diesel, and fuel oil.

PTTGC currently operates two aromatics plants with combined capacity of 2,419 thousand tons per year. The table below shows the production capacity of each product in details:

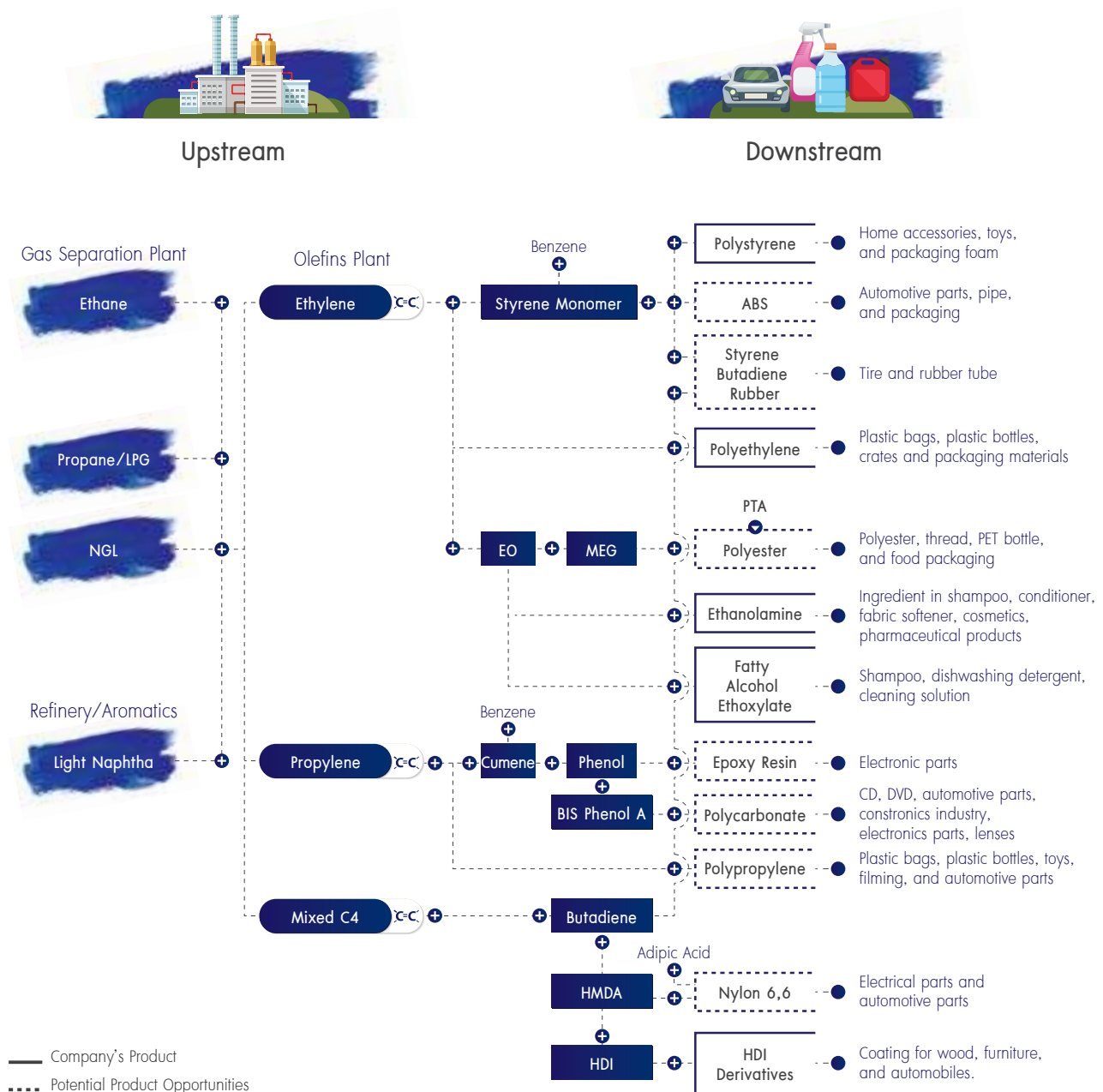
Company	Products	Capacity (Thousand Tons per Year)
PTTGC	Benzene	697
	Toluene*	50
	Paraxylene	1,310
	Orthoxylene	86
	Mixed Xylene*	76
	Cyclohexane	200

* Toluene and Mixed Xylene currently used as feedstock in Aromatics plants.

As of 2016, the Company has a domestic market share of 59% for aromatics products.

GROUP PERFORMANCE CENTER - OLEFINS

PTTGC's olefins plants are capable of producing olefins, such as ethylene and propylene. The chart below shows the feedstock used in production, their sources, intermediate and downstream products:



PTTGC's olefins plants also yield various by-products, such as pyrolysis gasoline, mixed C4, tail gas, cracker bottom and hydrogen. The Company creates added values to these by-products through synergy at its refinery and aromatics plants. For example, pyrolysis gasoline is turned into aromatics products; cracker bottom is distilled into petroleum products; hydrogen is used in the refinery as a substitute for hydrogen produced by the Hydrogen

Manufacturing Unit (HMU), which has higher production costs, and mixed C4 is turned into butadiene and butene-1 via by product value added plant.

PTTGC has four olefins plants, producing 2,988 thousand tons a year of ethylene, propylene, butadiene and butane-1. The table below shows the breakdown of their capacities:

Company	Products	Capacity (Thousand Tons per Year)
PTTGC	Ethylene	2,376
	Propylene	512
	Butadiene	75
	Butene-1	25

As of 2016, PTTGC has a domestic market share of 55% and 15% for ethylene and propylene, respectively.

POLYMERS BUSINESS UNIT

Polymers are downstream petrochemical products primarily used as raw material in manufacturing everyday plastic products. They are commonly used in the molding of plastic containers such as bag, bottle, engine lubricant container, bucket and crate. They are also used as feedstock in other downstream industries, such as electric appliance production, fishery, agriculture, and construction business. The following is a list of important PTTGC's polymer-based products:

- High density polyethylene (HDPE) plastic pellets
- Linear low density polyethylene (LLDPE) plastic pellets
- Low density polyethylene (LDPE) plastic pellets
- Polystyrene (PS) plastic pellets

Polyethylene plastic pellets are produced by the Company and sold under the trademark InnoPlus, while polystyrene plastic pellets, available as general purpose polystyrene (GPPS) and high impact polystyrene (HIPS), are produced by Thai Strynics Co., Ltd. (TSCL), which operates under the supervision of the PTTGC Polymers Business Unit. Polystyrene plastic pellets are sold under the trademark DIAREX.

PTTGC currently operates a total of five commercial polymer plants. They are located at the Map Ta Phut Industrial Estate and the Pa Daeng Industrial Estate, Rayong. Their production capacities are summarized in the table below.

Company	Products	Capacity (Thousand Tons per Year)
PTTGC	HDPE	800
	LLDPE	400
	LDPE	300
TSCL	PS	90

As of 2016, the Company has a domestic market share of 44% for polyethylene plastic pellet.

EO-BASED PERFORMANCE BUSINESS UNIT

PTTGC has expanded its business to cover the production of EO-based performance products for a number of reasons. They increase the value of olefins products and meet rising industrial and consumer needs. EO-based performance products also fulfill the domestic demand normally met by imports. Additionally, their production raises the competitiveness of Thailand's petrochemical industry in the global market. PTTGC's EO-based performance products and their intended uses can be described as follows.

Ethylene Oxide (EO) and Ethylene Glycol (EG)

EO is a downstream product of ethylene, which serves as feedstock in the production of EG and other downstream products. EG-based products include mono ethylene glycol (MEG), diethylene glycol (DEG), triethylene glycol (TEG), and polyethylene glycol (PEG). Among these, the

key product is MEG, which is mainly used as feedstock, together with purified terephthalic acid (PTA), in the production of polyester which is used in the textile industry and in the production of PET bottles.

Ethanolamine (EA)

EA is produced from EO and primarily comes in the forms of monoethanolamine (MEA), diethanolamine (DEA), and triethanolamine (TEA). EA is used as an ingredient in the production of shampoos, conditioners, fabric softeners, cosmetics, pharmaceutical products, cement, and others.

In 2016, the EO-Based Performance Business Unit commercially operates two plants, which are located in the Hemaraj Eastern Industrial Estate, Rayong. The breakdown of its production capacity is shown in the table below.

Company	Products	Capacity (Thousand Tons per Year)
TOCGC	MEG	423
	EA	50

GREEN CHEMICALS BUSINESS UNIT

Green chemicals are products created from natural feedstock such as palm oil, palm kernel oil, vegetable oil, animal fat, corn, sugar from sugarcane, and cassava. These green chemical products can be made into other downstream products in a variety of industries, such as personal hygiene, pharmaceutical, and bioplastic. PTTGC's green chemical products can be divided into two categories:

Value Added Oleochemicals (VAO)

● **Methyl ester** or B100 is a basic oleochemical product. It can be used in combination with diesel to make biodiesel that meets EN14214 European standards. Methyl ester

helps augment the efficiency of diesel, both in terms of lubrication and combustion. It also increases an engine's lifespan and minimizes environmental impact.

● **Fatty alcohol** is a basic oleochemical product used as a reactant in a number of different processes in the personal care industry.

● **Fatty alcohol ethoxylate** is a downstream product of EO and fatty alcohol. It is used as feedstock in the production of home products, such as shampoo, dish soap, cleaning solutions. In addition, it is used in the textile industry as a scouring agent in the preparation process and a softener in the last step of fiber preparation.

- **Glycerin** is a by-product from the production of methyl ester and fatty alcohol. It is used in the pharmaceutical, food, and personal care industries.

- **Fatty acid** is a basic oleochemical product used in the production of soaps and cosmetics. It is also used as a reactant in downstream production of specialty oleochemicals.

- **Specialty oleochemicals** are made from basic oleochemical substances in a downstream process. These specialty products are used in an extensive range of industries, including cleaning products, personal care products, plastic additives, construction, and oil drills. Examples of specialty oleochemicals include ozone acid, bio-lubricants, green polymer additives, agro-green solutions, and eco-friendly polyols.

Bioplastics/Biochemicals

Bioplastics and bio-based chemicals are produced from natural feedstock such as sugar from sugarcane, cassava, and corn are turned into reactants, in lactic and succinic acids production which are then used in the production of bioplastics such as polylactic acid (PLA), and polyesters such as 1,4-butanediol.

PTTGC produces these value added oleochemicals (VAO) through Global Green Chemical Public Company Limited (GGC), Thai Fatty Alcohol Company Limited (TFA), Thailand's only Fatty alcohol producer and

Thai Ethoxylate Company Limited (TEX). In addition, PTTGC has a joint-venture with Malaysia's Sime Darby Plantation (M) Sdn. Bhd. in Emery Oleochemicals (M) Sdn. Bhd. (EOM) and Emery Specialty Chemicals Sdn. Bhd. (ESC). Emery is the producer and distributor of oleochemical product with product position at global level. It has headquarter in Malaysia and production plants in key regions around the world such as Malaysia, Germany, and the US. Moreover, it has a global distribution and marketing network through its subsidiaries and distributors around the world.

PTTGC runs bioplastics and biochemicals business through NatureWorks LLC, the joint venture company with Cargill Inc., USA. NatureWorks is the proprietor of polylactic acid (PLA) production technology. It has commercial production capacity at 150,000 tons a year. The other company is Myriant Corporation, USA, which is a biotechnology developer and is a proprietor of relevant intellectual properties regarding the succinic acid production. The prototype plant locates at Lake Providence, Louisiana.

The Green Chemicals Business Unit has a number of commercial production plants both in Thailand and overseas. Their capacities are shown in the table below.

Company	Products	Capacity (Thousand Tons per Year)
GGC/TFA	Methyl Ester	200
	Glycerin	31
	Fatty Alcohol	100
TEX	Fatty Alcohol Ethoxylate	66
Emery	Basic Oleochemicals in US	271
	Basic Oleochemicals in Asia	227
	Specialty Oleochemicals in US	53
	Specialty Oleochemicals in Asia	53
	Specialty Oleochemicals in EU	32
NatureWorks	Polylactic acid (PLA)	150

The main feedstock for VAO is either oil from plants or animal, depending on which is available in the region. For instance, the primary feedstock in the US is animal fat, whereas in Asia, the primary feedstock is palm oil. The main feedstock for the production of methyl ester, fatty alcohol and glycerin at GGC and TFA is palm oil and palm kernel oil. They are usually procured from domestic sources to help generate

income for Thai farmers and promote the country's domestic supply chains.

If the palm kernel oil supply in domestic market is shortage, it might have some occasionally import from Malaysia and Indonesia as the company have policy to source from Thailand firstly.

HIGH-VOLUME SPECIALTIES BUSINESS UNIT

High-volume specialties are used as components in a variety of high-potential industries, including automotive, construction, and engineering plastic. PTTGC group produces Hexamethylene Diisocyanate or HDI and HDI derivatives.

HDI is intermediate petrochemical product used in PU coating production, which are vital in the

construction and automotive industries. Applying it on the surface of wood, furniture, and automobiles makes them more scratch resistant. PTTGC produces HDI and HDI derivatives, through Vencorex Holding France (Vencorex). In 2016 Vencorex has production plants in industrial zones in France, US and Thailand. Their production capacities are detailed below.

Company	Products	Capacity (Thousand Tons per Year)
Vencorex	Hexamethylene diisocyanate (HDI) and its derivatives	127

PHENOL BUSINESS UNIT

PTTGC has expanded its phenol business through an investment in a subsidiary called PTT Phenol Co. Ltd. (PPCL) to create added values to upstream products and to support the growth of other downstream industries, including automotive, electric appliance - electronics and construction industries. PPCL's key products are listed below:

Phenol

Phenol is an intermediate petrochemical product made from benzene and propylene. It is a key reactant in the production of Bisphenol A or BPA, phenolic resin and various derivatives used in plastic, pharmaceutical and chemical industries.

Acetone

The production of phenol also yields acetone, which is a solvent widely used in industries such as chemical, cosmetics or medical. In addition, acetone is a reactant in the production of bisphenol A and methyl methacrylate which is used in plastic and coating industries, etc.

Bisphenol A

Bisphenol A, an intermediate petrochemical product, serves as feedstock in the production of polycarbonate (PC), which is an engineering plastic that is used in automotive, electric appliance - electronics and construction industries, etc. Additionally, bisphenol A is also the feedstock in epoxy resin production which is used as composite material, coating and in paint industry, etc.

PPCL operates three commercial plants located at the Hemaraj Eastern Industrial Estate in Rayong. Their production capacities are detailed in the table below.

Company	Products	Capacity (Thousand Tons per Year)
PPCL	Phenol	470
	Acetone	290
	Bisphenol A	150

As of 2016, PTTGC's domestic market shares for Phenol and Bisphenol A are 49% and 10%, respectively.

SERVICES AND OTHERS

Apart from the eight previously mentioned business units, PTTGC also focuses on activities that promote stability and completeness of its main businesses. These various activities are listed below:

1. Jetty and Chemical Tank Farm

Thai Tank Terminal Limited (TTT) provides jetty and storage tank for liquid chemicals, as a concession, to industrial organizations located within Map Ta Phut Industrial Estate.

2. Utility Business

Global Power Synergy Public Company Limited (GPSC) is responsible for the production and sale of industrial electricity, steam and water to PTT Group's companies and other plants.

3. Plant Management and Engineering Design Services

PTT Maintenance and Engineering Co. Ltd. (PTTME) offers a variety of services, including plant maintenance, design and engineering, construction, pipe work, procurement, material work, and production administration for petroleum and petrochemical companies in Map Ta Phut Industrial Estate. Services extend to other organizations located throughout Thailand and in neighboring Asian countries. Additionally, PTTGC, together with other companies in the PTT Group, has invested in PTT Energy Solutions Co., Ltd. (PTTES), a company responsible for providing technical engineering consultations.

4. Safety, Occupational Health, Environmental and Securities Services

NPC Safety and Environmental Services Co., Ltd. (NPC-S&E) provides every safety, occupational health, and environmental training services. It also provides design and installation fire protection systems. Additionally, it provides consultation on implementation the international management system standards such as quality, safety, occupational health, and environmental systems. Its subsidiary, NPC-S&E Security Guard Co., Ltd. (NPCSG) provides security service and training.

5. Pipeline Infrastructure Services

Eastern Fluid Transport Co., Ltd. (EFT) provides the pipeline infrastructure for petroleum and petrochemical enterprises located within the Map Ta Phut Industrial Estate and nearby areas.

6. Information Technology Services

PTT ICT Solutions Co., Ltd. (PTT ICT) offers comprehensive information technology and communications services, including the design, development, and maintenance IT system that meet the business demands.

7. Outsourcing Services

Business Services Alliances Co., Ltd. (BSA) supplies manpower and contractors for PTT and PTT Group.

8. Marketing and Sales of Methyl Amine Derivatives, Plastic Compound Products, Specialty Products, and Health and Nutrition Products

Solution Creation Co., Ltd. serves as PTTGC's marketing arm in the sales of PTTGC's products and finds marketing opportunities in niche markets. It also helps in product development to create added values to products that meet the demand of various industries, such as packaging, household chemicals, electronics, textile, food, and supplement dietary.

9. Polymer Sale and Marketing Services

PTT Polymer Marketing Co., Ltd. (PTTPM) is responsible for marketing and sales of PTT's polymer-based products. It has a far-reaching network of authorized

dealers in Thailand and in all regions of the world. Additionally, the Company's joint-venture company, PT Indo Thai Trading (ITT) in Jakarta sell polymer-based and petrochemical products in Indonesia in order to increase marketing channel in the future.

10. Logistics Services

PTT Polymer Logistics Co., Ltd. (PTTPL) offers comprehensive logistics services to producers of polymers within the PTT Group.

11. Social Enterprise

Pracharath Rak Samakkee Rayong (Social Enterprise) Co.,Ltd. (PRS RAYONG) has an objective to provide management and agricultural consultancy services.



INDUSTRY OVERVIEW IN 2016 AND OUTLOOK ON 2017

PETROLEUM AND PETROCHEMICAL MARKETS IN 2016

Petroleum

The crude-oil market was oversupplied in 2016 as both OPEC and non-OPEC producers continued to increase their output. Negotiation efforts were made to set a limit on oil producers' output to improve price stability. At a conference in Vienna in November of 2016, OPEC agreed to lower their crude-oil production by 1.2 million barrels per day, while non-OPEC countries agreed to lower theirs by 0.59 million barrels per day. Another factor that affected the stability of crude-oil prices throughout 2016 was the volatility of the global financial market, which was directly attributed to some financial policies and economic uncertainty, including the outcome of the referendum on the United Kingdom's separation from the European Union (Brexit), the anticipated interest-rate increase by the US Federal Reserve System (Fed) and the unpredictable nature of the energy and economic policies under the administration of the new president Donald Trump. Consequently, the Dubai crude-oil price fluctuated between 22-55 US dollars per barrel in 2016, or an average of 41.3 US dollars per barrel, a downturn of 18.9 percent from 2015.

Aromatics

The 2016 global demand for paraxylene was 40 million tons, a growth of 1.2 million tons. Most of the demand came from Asia, where the market saw an increase of 1.1 million tons in demand from new purified terephthalic acid (PTA) plants in China and India. In terms of supply, the collective global production capacity of paraxylene grew to 48.2 million tons per year, slightly higher than the 2015 figure, thanks to new production bases in India and Saudi Arabia whose plan was to commence operations in the first half of the year but was postponed to the end of 2016 and 2017, respectively. From these factors, the spread between paraxylene and naphtha rose to 376 US dollars per ton, an increase of about 38 US dollars per ton in comparison with 2015.

The global demand for benzene went up to 44.4 million tons, an upward trend of 0.5 million tons. Most of the demand also came from Asia, particularly from China, where new styrene monomer and phenol manufacturers came into play. In terms of supply, the global production capacity of benzene rose to 62.9 million tons per year, an increase of 0.5 million tons per year due to new expansions in Asia and the Middle East, such as China, India, South Korea and Saudi Arabia. As a result of these factors, the spread between benzene and naphtha in 2016 hiked up to 242 US dollars per ton, a rise of 47 US dollars per ton from the previous year.

Olefins

In 2016 the ethylene market was affected by the volatility of crude oil prices, which began back in 2015. Shell Chemical's cracker complex in Singapore also reopened after an emergency shut down in December 2015. New manufacturers in China and India also contributed to the global output. There was also an increase in ethylene export in Asia from Iran after the sanction on the country was lifted. Nonetheless, in the first half of 2016, the supply was rather tight since a number of olefins plants across the region, whether in China, Japan, Singapore or Thailand, either reduce their production or were shut down for annual maintenance. In addition, there were also some production problems. Consequently, the ethylene/naphtha spread pricing remained high. The 2016 average price of ethylene in Southeast Asia went down to 1,037 US dollars per ton, a drop of about 67 US dollars per ton from 2015. The spread between ethylene and naphtha shot up to 638 US dollars per ton, an increase of about 25 US dollars per ton from 2015.

The propylene market headed in a similar direction. The price of propylene climbed in the second quarter due to positive factors, such as the surge in oil and naphtha prices, as well as the shutdown of olefins and on-purpose propylene plants across Asia due to production problems. Nevertheless, the market became oversupplied once

again in the second half of the year. Moreover, 2016 also welcomed new olefins plants and on-purpose propylene manufacturers, namely Propane Dehydrogenation (PDH) methanol-to-olefins (MTO) and coal-to-olefins (CTO) plants in China, South Korea and India. Plants in the Middle East were also finally able to commence operation. All in all, the price of propylene in Southeast Asia went down in 2016 from the previous year to about 704 US dollars per ton, a decrease of about 69 US dollars per ton from 2015. The spread between propylene and naphtha, however, took a hike of about 23 US dollars per ton, rising to 306 US dollars per ton.

Polymers

Overall, the polyethylene industry continued to growth in comparison with 2015. The price of polyethylene fluctuated throughout 2016, depending on the price of crude oil. New plants in North America and the Middle East began operation. The average prices of HDPE, LLDPE and LDPE in Southeast Asia in 2016 fell to 1,132, 1,170 and 1,182 US dollars per ton, respectively, a decline of 105, 64 and 66 US dollars per ton from 2015, respectively. However, the average spread between polyethylene products and naphtha went up to 763 US dollars per ton in 2016, a climb of about 14 US dollars per ton from 2015.

The world's polystyrene market grew slightly with a global demand of 10.4 million tons per year and a global supply of 15.6 million tons per year. The average price in 2016 went down, however, compared to 2015, following the decrease in crude oil prices. Nevertheless, the spread between GPPS and SM in 2016 remained quite close to the 2015's figure at about 130 US dollars per ton.

Ethylene Oxides

MEG is a commodity product and main raw material for the production of polyester, which is used in its downstream for textile and clear plastic bottle production. Therefore, the demand for MEG generally goes in the same direction as the polyester industry. The overall market in 2016, despite the growth of MEG demand in the polyester industry, the volatility of crude oil prices, the fluctuation of the Chinese yuan and the high MEG stock in China led to a drop in

the average price of MEG in the Asia Spot Price (ASP) in 2016 about 119 US dollars per ton or 15 percent to 645 US dollars per ton.

EA overall demand is quite stable while the supply increased. Raw material price declined effected the average EA price in China market in 2016 decreased from 2015 about 87 dollars per ton or an equivalent of 8 percent to 956 US dollars per ton.

Green Chemicals

In 2016 the methyl ester market effected from the requirement for biodiesel B7 reduced to biodiesel B5 in July and to biodiesel B3 in August because the output of palm oil during those periods was much lower than anticipated, which effected a temporary rise in the price of palm oil. When the stock of 100% palm oil or B100 reached 2.9-3 hundred thousand tons from the original figure of 2 hundred thousand tons, the government made a switch from biodiesel B3 to B5 on November 25th, 2016. Consequently, the demand for methyl ester in 2016 was approximately 1.06 million tons per year, a similar figure to 2015. The yearly average of methyl ester price increased to 1,151 US dollars per ton, a rise of about 61 US dollars per ton from 2015, reflective of the climb in the price of palm oil. Moreover, the government issued a number of stimulus policies from early on in the year to encourage the use of biodiesel, including lower tax rates for eco-cars that could handle fuel with a higher ratio of methyl ester and fixed competitive prices for retail of diesel. According to the alternative Energy Plan 2015, the government estimated that methyl ester consumption could high as 14.0 million liters per day in 2036.

Market situation of Basic Oleo-chemicals products; Fatty Acid, Fatty Alcohol and Glycerine, is decelerated resulting from concerning in China economic situation. The lower price of crude oil led to the oleochemical producer from petroleum increasing entered to the market. Fatty alcohol average price (C1214 grade in SEA market) of 2016 is 1,733 US dollars per ton, higher than 2015 about 537 US dollars per ton varied by palm kernel oil price.

High-volume Specialties

In 2016 the demand for HDI products continued to grow at a constant rate, thanks to the recovery of the North American and European economies. Nonetheless, the average price of HDI went down to 6,086 US dollars per ton, a decrease of 297 US dollars per ton from 2015. This was a consequence of higher market competition attributed to the enhanced production capacities of Wanhua and BASF in Asia.

Phenols

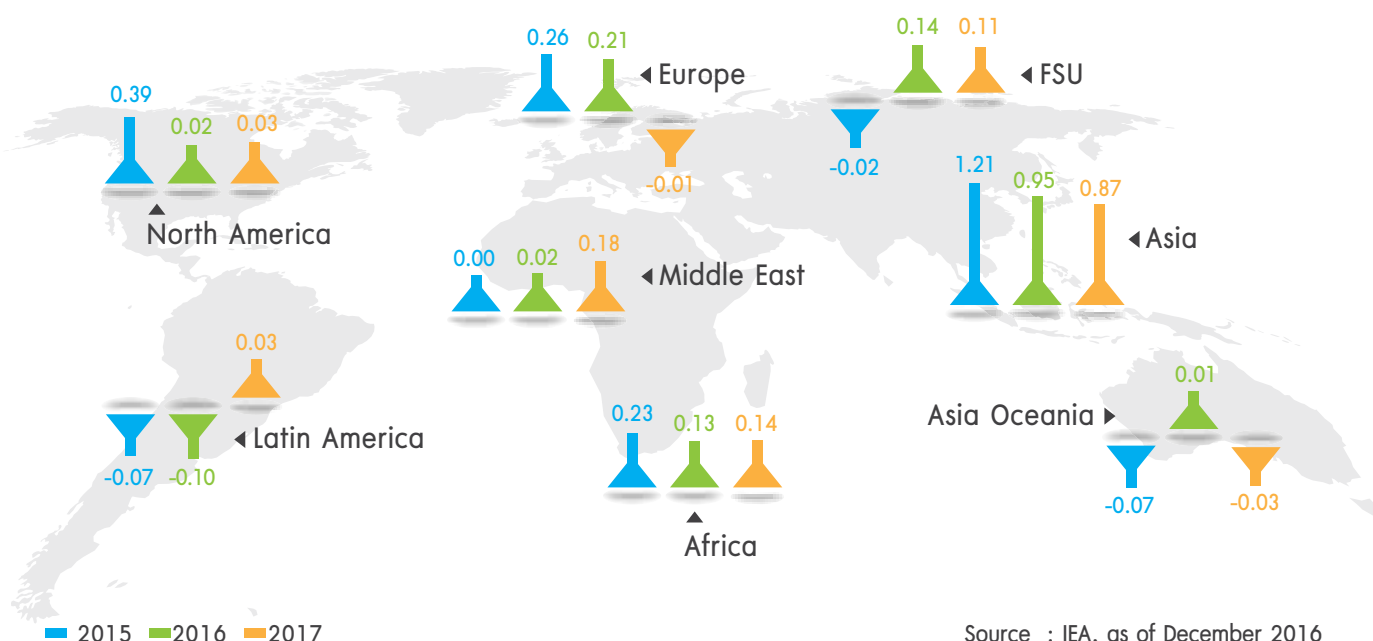
The phenol market remained quite stagnant in comparison with 2015 because of an additional supply of 550,000 tons from the Phenol 2 plant in Thailand and from the Kumho plant in South Korea. The spread between the product and its feedstock in 2016 climbed from 263 to 289 US dollars per ton. The main factor was the heightened demand in Taiwan (CPDC) from a cyclohexanone plant that switched from using cyclohexene as feedstock to using phenol instead and plants shut down for maintenance and turnaround to reduce emissions as a result of G20 Summit.

The bisphenol A market took a slight hit in 2016. The spread between the product and its feedstock dropped from 214 US dollars per ton to 203 US dollars per ton due to a new supply from China. Demand was also lower due to the control on the total output of polycarbonate and epoxy resin as a result of the economic downturn.

OUTLOOK ON 2017

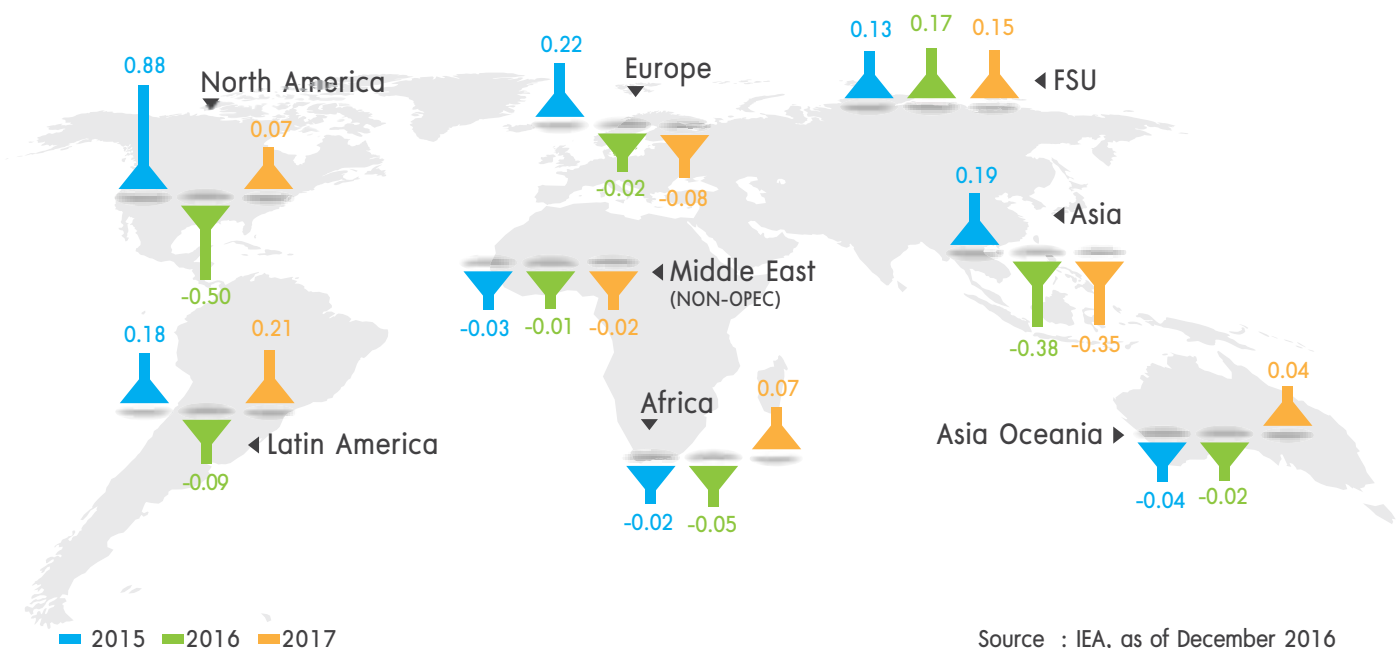
The International Energy Agency (IEA) has anticipated that the demand for oil in 2017 will climb to 97.7 million barrels per day, an increase of about 1.3 million barrels per day in comparison with 2016. The IEA has expected this heightened need to be from countries in Asia, especially China and India, whose demand for oil has continued to enjoy tremendous growth due to supporting factors, such as lower oil prices and economic recovery. Furthermore, as a result of the conference during which OPEC agreed to reduce their output by 1.2 million barrels per day and non-OPEC producers committed to a reduction of 0.59 million barrels per day, the IEA has anticipated an equilibrium in the oil market in the event that these oil producers follow through with the agreement. The IEA has further speculated that the world might experience an oil deficit in the first half of 2017, resulting in a rise in global the crude-oil prices.

Global Oil Demand Growth 2015/2016/2017 (Million Barrels Per Day)



Source : IEA, as of December 2016

Non-OPEC Oil Supply Growth 2015/2016/2017 (Million Barrels Per Day)



Source : IEA, as of December 2016

Nonetheless, the oil market will remain volatile due to a number of uncertainties. For instance, the concern over the practicality of the agreement to reduce crude oil production between OPEC and non-OPEC nations, as well as the six months' duration of this agreed output reduction, has led to an unpredictable nature of production in the latter half of 2017. Moreover, since the crude oil price has hovered over 50 US dollars per barrel, shale oil producers may decide to increase their output, which would affect the market equilibrium again.

Looking at refined products in Asia, 2017 has already seen an increase of 0.66 million barrels per day from new production, mostly in East Asia, especially China. Therefore, it is expected to see more refined products coming out of China in 2017. Nevertheless, this new supply will simply replace Japan's supply since the island nation has planned on a shutdown during the first half of the year. Overall, the gross refinery margin (GRM) of the region is expected to stay at the same level or be slightly weakened when compared with 2016.

In terms of aromatics products, the stability of the spread between aromatics (paraxylene and benzene) and naphtha is expected to continue, supported by the demand from downstream derivative industries that have

enjoyed continuous prosperity. The global demand for paraxylene and benzene is expected to grow by 2.2 and 1.1 million tons per year, respectively. The global supply is similarly increased by 2.4 and 1.1 million tons per year. Most of this growth is attributed to new outputs from India, Saudi Arabia, South Korea, Vietnam and China.

As for olefins and its derivative products, it is anticipated that the differences in prices between olefins and naphtha in 2017 will drop in comparison with 2016 due to a number of factors, such as the operation of new plants in Asia, especially in China (Olefins, Coal-to-Olefins and On-Purpose plants), the U.S. (Shale gas feedstock), India and the Middle East, whose collective output of ethylene and propylene amount to 8.3 million tons per year and 5.9 million tons per year, respectively which higher than additional demand in 2016. However, some olefins plants in Asia have planned for turnaround, which will result in a significant deficit of ethylene in the market compared to 2016. Furthermore, the rise of market demand following the gradual global economic recovery appears to steer the Asian olefins market towards an equilibrium. Meanwhile, polymer prices are expected to remain unstable due to an increase in supply, economic uncertainties in the European Union market and China's policy to focus on domestic consumption.

MANAGEMENT'S DISCUSSION AND ANALYSIS

EXECUTIVE SUMMARY

In 2016, PTT Global Chemicals Public Company Limited (“the Company”) reported net profit of Baht 25,602 million (Baht 5.74 earnings per share), increased 25% from 2015 which had net profit of Baht 20,502 million (Baht 4.55 earnings per share)

Table : Performance Summary

(Unit: Million Baht)	2015	2016	YoY % +/-(-)
Sales Revenue	400,128	345,762	-14%
EBITDA	44,740	48,147	8%
EBITDA Margin (%)	11%	14%	3%
Net Profit	20,502	25,602	25%
EPS (Baht/Share)	4.55	5.74	26%
Adjusted EBITDA*	50,873	43,910	-14%
Adjusted EBITDA Margin (%)	13%	13%	0%

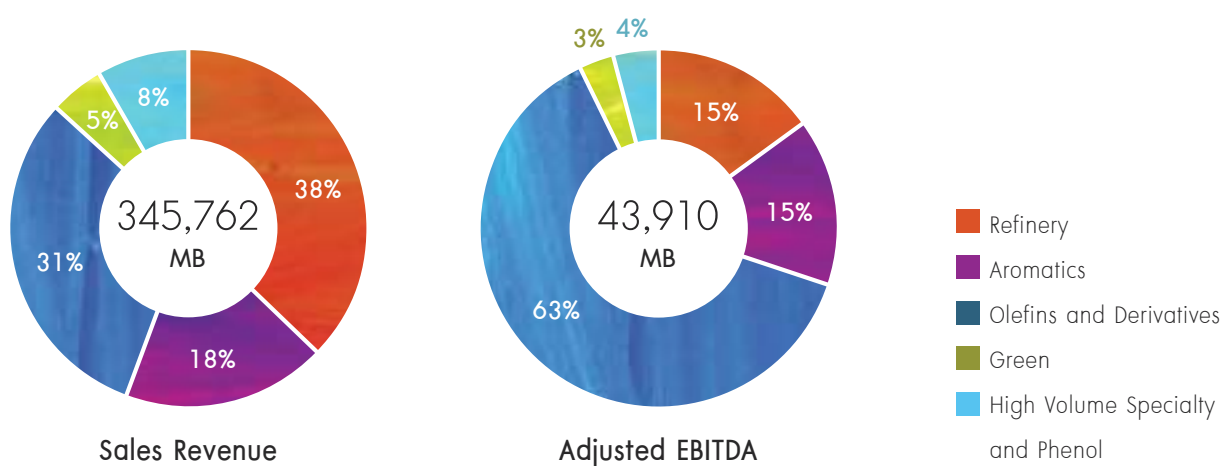
Note: * Adjusted EBITDA refers to EBITDA excluding impact of oil stock value.

The Company reported net profit at Baht 25,602 million in this year (Baht 5.74 earnings per share), rose by 25% from net profit of Baht 20,502 million (Baht 4.55 earnings per share) in 2015 due to higher crude oil price and stock gain realization. Moreover, the Company also realized profit from Project MAX which is the efficiency improvement project around Baht 277 million, added up with insurance claim from Olefins unit 3's incident around

Baht 1,155 million, while 2015, the Company reported stock loss. However, Adjusted EBITDA in 2016 that excluded stock gain/loss and extra item such as asset impairment, dropped to Baht 43,910 million or 14% from previous year, resulted from maintenance shutdown of Olefins and Refinery units in H1/16. However, Adjusted EBITDA margin remained stable at 13%.

Table : Adjusted EBITDA Margin

% Adj. EBITDA Margin	2015	2016
Business Unit :		
Refinery	8	5
Aromatics	9	11
Olefins and Derivatives	24	25
Green	6	8
HVS	7	6
Average	13	13



REFINERY BUSINESS UNIT

Table : Crude Price and Petroleum Product Spreads

(Unit: USD/bbl)	2015	2016	YoY % +/-
Dubai Crude Oil	50.91	41.27	-19%
Gasoline-Dubai	18.28	14.85	-19%
Jet-Dubai	13.88	11.56	-17%
Diesel-Dubai	13.66	10.78	-21%
Fuel Oil-Dubai	-5.02	-4.97	1%

Crude oil price in 2016 was averaged at 41.27 USD/bbl, dropped from 2015 by 9.6 USD/bbl or 19% which mainly due to glut supply from Shale Oil in the United States and OPEC that ramped up its production to maintained market share. For petroleum product price, declined follow crude oil price trend. In 2016, spread of Gasoline over Dubai crude oil was dropped by 3.4 USD/bbl from 2015 to 14.85 USD/bbl as almost of Refinery converted production portion by increasing Gasoline portion to gain

benefit from high spread since 2015, affected to higher Gasoline stock volume in the world, entirely it pressured Gasoline spread to drop in this year. Moreover, higher production also had an impact on an increment of Diesel and Jet volume that forced spread to decline because demand still remain the same. Spread of Diesel over Dubai crude oil dropped by 2.88 USD/bbl to 10.78 USD/bbl in 2016, similar to Jet spread in 2016 that decreased by 2.32 USD/bbl to 11.56 USD/bbl.

Table : Refinery Intake

	2015	2016	YoY % +/-
Crude (M.BBL)	53.04	44.24	-17%
(KBD)	145.31	120.87	-17%
Condensate Residue (M.BBL)	10.26	10.51	3%
(KBD)	28.10	28.73	2%
Total Intake (M.BBL)	63.29	54.75	-13%
(KBD)	173.41	149.60	-14%
CDU Utilization Rate	100%	83%	

Performance of Refinery business in 2016 soften, compared to 2015 which mainly from planned maintenance shutdown for 2 months in Q2/2016, affected

to a declining in utilization rate to 83% in 2016 from 100% in 2015 as same as production and sales volume that dropped from last year.

Table : Gross Refinery Margin

Unit: USD/bbl	2015	2016	YoY % +/-(-)
Market GRM	6.42	5.32	-17%
CDU GRM	6.87	5.64	-18%
CRS GRM	4.08	3.94	-3%
Hedging Gain/(Loss)	1.10	-0.61	-156%
Stock Gain/(Loss) Net NRV	-1.48	1.19	180%
Accounting GRM	6.04	5.89	-3%

Soften products spread included Gasoline and Diesel spread which declined by 19% and 21% respectively, only Fuel oil spread had increased by 1%. Therefore, the Company reported Market GRM in 2016 at 5.32 USD/bbl, dropped from previous year at 6.42 USD/bbl. Nonetheless, the Company realized stock gain at

1.19 USD/bbl or Baht 2,143 million but had loss from Commodity Hedging at 0.61 USD/bbl that affected to lower Accounting GRM at 5.89 USD/bbl in this year, declined from 2015 at 6.04 USD/bbl. For Adjusted EBITDA of Petroleum business was recorded at Bath 6,445 million, dropped by 53% from 2015.

AROMATICS BUSINESS UNIT

Table : Aromatics Product Prices and Spreads over Condensate

Unit: USD/bbl	2015	2016	YoY % +/-(-)
Condensate	447	379	-15%
Paraxylene (FECF)	829	774	-7%
Paraxylene-Condensate	383	395	3%
Benzene (Spot Korea)	685	640	-7%
Benzene-Condensate	238	262	10%
Naphtha-Condensate	44	19	-56%

Paraxylene

For spread of Paraxylene over Condensate in 2016, increased by 3% from 2015 to 395 USD/ton due to healthier demand of Paraxylene product as new PTA plants in China and India has been started, supported with expanded Polyester market since Q1-Q3/2016. While supply was tight as there had Aromatics planned shutdown in China and discovered production issue in Middle East.

Benzene

Spread of Benzene over Condensate price in 2016 has increased by 10% from 2015 to 262 USD/ton ,resulted from a starting of downstream plant in Q3/2016 and able to maximize utilization rate in Q4/2016, besides synthetic rubber market which is styrene's downstream product was better, positively impacted to an increase in Benzene spread.

Table : Aromatics Intake and Productions

(Unit: '000 tons)	2015	2016	YoY % +/-(-)
Condensate	4,697	5,208	11%
Other Intake	517	668	29%
Total Intake	5,214	5,876	13%
BTX Production	1,720	2,103	22%
BTX Utilization Rate*	74%	82%	

* Aromatics capacity added up to 2.419 Mton/year starting from Q1/2016 (was 2.259 Mton/year)

Table : Aromatics Market P2F

(Unit: USD/ton)	2015	2016	YoY % +/-(-)
Market P2F	217	185	-15%
NRV	24.4	0.0	-100%
Hedging Gain/(Loss)	0.6	0.1	-83%
Stock Gain/(Loss)	-33.0	33.3	201%
Accounting P2F	209	218	4%

For performance in 2016, BTX utilization rate was at 82% increased from 74% in 2015 as there had maintenance shutdown of Aromatics II in H2/2015. Moving to products spread over Condensate in 2016, Paraxylene spread and Benzene spread both increased by 3% and 10% respectively, contrast with Naphtha spread that sharply dropped by 56% and it accounted for 29% out of total sales volume, thus it had an impact on a declining of

Market P2F per BTX ton to 185 USD/ton or 15% from previous year. According to higher sales volume in 2016 by 18%, it supported Adjusted EBITDA to rise by 20% to Baht 6,742 million. The Company also realized stock gain from Aromatics business at amount of Baht 2,461 million or 33.3 USD/ton and recorded Hedging gain at 0.10 USD/ton that affected to an increment of Accounting P2F to 218 USD/ton or 4% increased.

OLEFINS AND DERIVATIVES BUSINESS UNIT

Table : Prices and Spreads of Olefins and Derivatives

(Unit: USD/ton)	2015	2016	YoY % +/-(-)
Naphtha (MOPJ)	491	398	-19%
Ethylene (SEA)	1,104	1,037	-6%
HDPE	1,237	1,132	-9%
HDPE- Naphtha	747	734	-2%
LLDPE	1,234	1,170	-5%
LDPE	1,249	1,182	-5%
MEG (ACP)	948	783	-17%
MEG-0.65 Ethylene	230	109	-53%

Ethylene price in 2016 was averaged at 1,037 USD/ton, dropped by 67 USD/ton or 6% from 2015, followed crude oil and naphtha price, along with starting of new Olefins plants in China and India with Ethylene capacity around 2.2 million tons per year. Ethylene price in Q4/2016 was averaged at 978 USD/ton declined from Q3/2016 by 79 USD/tons or 7% as a result of lower demand from planned shutdown of downstream plant in Taiwan, and there had Arbitrage from Saudi Arabia, Europe and the United States to Asia in Q4/2016.

HDPE (SEA) price in 2016 was averaged at 1,132 USD/ton, decreased by 105 USD/ton or 9% from 2015. LLDPE price dropped by 64 USD/ton or 5% from previous year to 1,170 USD/ton in 2016 and LDPE price also declined by 67 USD/ton or 5% to 1,182 USD/ton in this year as

naphtha price was dropped. For spread of HDPE over Naphtha was averaged at 734 USD/ton lower than 2015 around 13 USD/ton or 2% from volatility of Polyethylene and Naphtha price during the year.

MEG (ACP) price was averaged at 783 USD/ton in 2016, declined by 17% from 2015 while Ethylene price dropped less than MEG price, thus spread of MEG over Ethylene was narrowed down from 230 USD/ton in 2015 to 109 USD/ton in 2016, as a result of higher supply from new MEG plant in China that start its production at the beginning of 2016. Although spread was dropped from previous year, but MEG market was better impacted to higher spread to state at 128 USD/ton in H2/2016, compared to H1/2016 at 90 USD/ton which influenced by demand from Polyester market.

Table : Sale Volume and Utilization Rate of Olefins and Derivatives

(Unit: '000 tons)	2015	2016	YoY % +/-(-)
Olefins			
Sales Volume*	760	622	-18%
Utilization Rate	94%	90%	-4%
Polyethylene			
Sales Volume	1,566	1,524	-3%
Utilization Rate	104%	102%	-2%
MEG			
Sales Volume	420	424	1%
Utilization Rate	96%	95%	-1%

* Sales Volume of Olefins is external volume

The performance of Olefins and Derivatives in 2016 was softening from 2015 because of lower utilization rate which was a consequence of Olefins' planned shutdown for 39 days in 2016. Furthermore, there had unplanned shutdown of Olefins unit 3 from power outage issue since the middle of May, 2016 and restart some units in June, 2016 and back to normal in August, 2016, all affected to a decrease in Olefins utilization rate to 90% from 94% in 2015. Moving to Polymers and MEG production, also

had planned shutdown and unplanned as a result of Olefins unit 3 incident as Olefins plant unable to transfer feedstock to produce Polyethylene, therefore, its utilization rate was dropped to 102% from 104% in 2015. MEG utilization rate also decreased to 95% from 96% in 2015 however the Company has managed inventory volume during that period, thus sales volume of downstream product just slightly dropped.

Table : Adjusted EBITDA of Olefins and Derivatives

(Unit: Million Baht)	2015	2016*	YoY % +/-(-)
Adj. EBITDA	28,032	27,534	-2%
Adj. EBITDA Margin	24%	25%	1%

* Included income from insurance claim for Olefins Unit# 3 incident

For product price, almost was declined, start with Ethylene price that decreased by 6% to 1,037 USD/ton in 2016, similar to HDPE, LLDPE and LDPE that dropped 6% from 2015 to average at 1,161 USD/ton in this year, and MEG price which decreased by 17% from previous year. In contrary, by product price as Butadiene was significantly increased by 29% from 2015 to 1,126 USD/ton in 2016.

According to a decrease in production volume and almost of product price mentioned above, provided an impact on a decline of Adjusted EBITDA in 2016 by 2% to Baht 27,534 million. However, the Company realized income from insurance claim for Olefins Unit# 3 incident in Q3/2016 that helped maintain Adjusted EBITDA. For Adjusted EBITDA margin in 2016 increased from previous year at 24% to 25%, resulted from a decrease in LPG and Naphtha price, followed crude oil price.

OPERATING PERFORMANCE

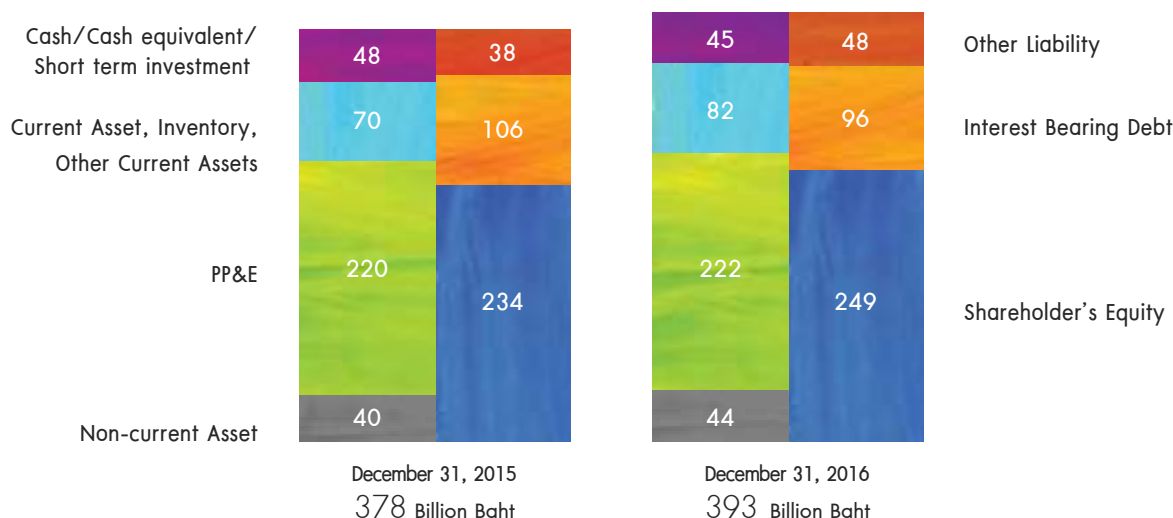
Unit : MB

		2015	2016	YoY % +/-(-)
	Sales Revenue	400,128	345,762	-14%
	Feedstock Cost	(304,672)	(254,854)	-16%
	Product to Feed Margin	95,456	90,908	-5%
1	Variable Cost	(25,753)	(24,317)	-6%
2	Fixed Cost	(16,826)	(16,483)	-2%
3	Stock Gain/(Loss) & NRV	(3,602)	4,893	236%
4	Gain/(Loss) Commodity Hedging	2,645	(1,203)	-145%
5	Other Income	5,707	5,542	-3%
6	SG&A	(10,356)	(10,537)	2%
7	Extra Item	(2,531)	(656)	-74%
	EBITDA	44,740	48,147	8%
	Depreciation & Amortization	(16,382)	(17,356)	6%
	EBIT	28,358	30,791	9%
8	Finance Cost	(3,967)	(3,395)	-14%
9	FX Gain/(Loss)	(2,339)	876	137%
10	Shares of profit/(loss) from investments	713	633	-11%
11	Income Tax Expense	(1,984)	(3,025)	52%
12	Net Profit	20,781	25,880	25%
	Profit/(loss) attributable to:			
13	Owners of the Company	20,502	25,602	25%
14	Non-controlling interests	278	278	0%
15	Adjusted EBITDA*	50,873	43,910	-14%

Note: * Adjusted EBITDA refers to EBITDA excluding impact of inventory value (excludes Inventory gain/(loss) and NRV).

STATEMENT OF FINANCIAL POSITION

Unit: Billion Baht



Asset

As of December 31, 2016, the Company had total asset of Baht 393,166 million, increased by Baht 15,621 million from December 31, 2015 which mainly from an increment of both current asset by Baht 9,612 million or 8% and non-current asset of Baht 6,009 million or 2%.

1) Current asset increased by Baht 9,612 million as the following reasons;

- Cash and cash equivalents and current investments decreased by Baht 2,429 million or 5% as the Company had cash paid for repayment loan, purchasing asset and investment projects. Even the Company received cash from operation at amount Baht 44,490 million but was offset by transaction above.
- Account receivable increased by Baht 8,835 million or 27% due to higher product price, followed crude oil price. Additionally, it also increased from Phenol business as Phenol II already started commercial operation since the middle of 2016, affected an increase in production volume, compared to the end of 2015.
- Inventory increased by Baht 5,824 million or 19%, mainly from inventory of Petroleum product because crude oil price moved up at the end of this year that supported an increment of

inventory value. There also had increased inventory from stocking feedstock of Green business as it forecast to have flood in 2017, thus affected to feedstock price and freight cost. Moreover, the Company reported an increased inventory from Phenol business as Phenol II already started commercial operation.

- Other current assets decreased by Baht 2,618 million or 32%, primarily due to cash receivable from Commodity Hedging.

2) Non-current asset increased by Baht 6,009 million or 2% which mainly due to

- Property, plant and equipment increased by Baht 1,301 million from purchasing new assets and building assets of projects, such as LLDPE Expansion, Aromatics II Debottlenecking & Expansion, Phenol II, and Vencorex Thailand during the year, also included plant turnaround expense in portion that able to realize as asset, along with depreciation cost that occurred in this period.
- Other non-current asset increased by Baht 5,027 million, mainly from investment in Bond since September, 2016 to inquired better return, thus it affected to an increase in investments in securities available for sale.

Liability

As of December 31, 2016, the Company had total liability of Baht 144,497 million, increased from December 31, 2015 by Baht 1,217 million or 1%.

- Accounts payable increased by Baht 8,004 million or 41%, in line with an increase of inventory mentioned above.
- Current Liabilities increased by Baht 2,714 million or 23% as at the end of 2016, the Company recorded Accounts payable from Commodity Hedging, added with higher corporate income tax from improved performance in H2/2016 that significantly increased from 2015.
- Interest bearing debt decreased by Baht 9,704 million or 9% mainly from repayment PTTGC's loan and debenture during the period around Baht 20,115 million and subsidiary's repayment around Baht 2,911 million. Additionally, USD loan and USD debenture of the Company decreased around Baht 251 million from appreciation of Thai Baht at 0.25 Baht/USD compared to the end of 2015 (referenced BOT averaged selling rate as of December 31, 2016 at 36.00 Baht/USD and December 31, 2015 at 36.25 Baht/USD). Nevertheless, the Company had withdrawn Long term loan from Bank during the period around Baht 7,050 million as well as subsidiary company with amount around Baht 7,830 million.

Shareholder's Equity

As of December 31, 2016, the Company reported total shareholders' of Baht 248,669 million, increased by Baht 14,404 million or 6% from December 31, 2015.

- Shareholder's Equity in 2016, included Net profit at amount of Baht 25,602 million. However, shareholder's portion decreased due to dividend paid, total at Baht 10,481 million and treasury stock at amount of Baht 298 million. Moreover, the Company recorded loss from changing other components of shareholder portion around Baht 359 million that was from financial statement's translation, change in the fair value for preventing cash flow's risk (Hedge

Accounting), also realized loss from Associates Company and Joint Venture Company through Statement of comprehensive income.

STATEMENT OF CASH FLOWS

For 2016, the Company had net cash from operating activities of Baht 44,490 million, net cash used in investment activities of Baht 111 million. Moreover, the Company had cash received from current investment of Baht 23,643 million, interest and dividend revenue of Baht 1,951 million but had cash paid for purchasing property, plant and equipment included intangible assets at amount of Baht 18,475 million, such as Aromatics II Debottlenecking & Expansion, Phenol II, LLDPE Expansion and Vencorex Thailand. The Company also had cash paid in securities available for sale investment (Private Fund) at Baht 6,014 million and cash paid from financing activities of Baht 24,584 million which mainly from loan and debenture repayment, purchasing treasury stock and dividend paid. When including cash from transactions above with cash and cash equivalent as of the beginning of period at Baht 11,483 million, the Company recorded cash and cash equivalent as of the ending of 2016 at Baht 31,143 million. While added current investment, the Company had cash and cash equivalent and current investment, total at Baht 45,312 million.



KEY FINANCIAL RATIOS

Financial Ratios	2015	2016
Current Ratio (Times)	2.86	2.39
EBITDA to sales revenue (%)	11.18%	13.93%
Net Profits to sales revenues (%)	5.12%	7.40%
Return on total assets (%)	7.36%	8.45%
Return on equity (%)	8.99%	10.72%
Interest Bearing Debt to equity (Times)	0.45	0.39
Net interest bearing debt to equity (Times)	0.25	0.20
Net interest bearing debt to EBITDA (Times)	1.30	1.06

Note:

Current ratio	=	Current assets divided by current liabilities
EBITDA to sales revenue	=	EBITDA divided by sales revenue (for the last 4 quarters)
Net profit on sale revenue	=	Net profit divided by sales revenue (for the last 4 quarters)
Return on total assets	=	Net profit/(Loss) divided by average total assets
Return on equity	=	Net profit (for the last 4 quarters) divided by average total shareholder's equity
Interest Bearing Debt to Shareholders' Equity	=	Interest Bearing Debt divided by shareholder's equity
Net Interest Bearing Debt to Shareholders' Equity	=	Interest Bearing Debt net from cash and cash equivalent and current investments divided by shareholder's equity
Net Interest Bearing Debt to EBITDA	=	Interest Bearing Debt net from cash and cash equivalent and current investments divided by EBITDA (for the last 4 quarters)

PROJECTS PROGRESS

In 2016, the Company had projects on progress and projects under studying are as follow;

m-LLDPE Project

m-LLDPE project consists of LLDPE plant with capacity of 400,000 ton per year and Comonomer plant with Hexene-1 capacity of 34,000 ton per year (Hexene-1 has been used in LLDPE production). This project is value added of ethylene chain. Currently, the plant is under construction which has progress about 64%, investment cost around Baht 5,800 million and plans to start commercial operation in 2018.

MAX Project

MAX Project is an efficiency enhancement project in the organization which has main target to improve performance by increase production effectiveness, lift up profit, develop operation and reduce expense. Currently, the Company already deployed this project and realized profit in Q4/2016 at amount of Baht 246 million.

Map Ta Phut Retrofit - Olefins Reconfiguration (MTPR) Project

Olefins Reconfiguration Project helps increase flexibility in feedstock using and increasing production capability of Olefins business. This project will has higher Olefins product volume at 761,000 tons per year by using Naphtha from Refinery and Aromatics as feedstock. At this time, the project still under study process and tend to have conclusion in Q1/2017 and plan to start commercial operation in 2020.

Asset Injection Project

Asset Injection Project is shareholding restructure of Petrochemical business in propylene chain, biochemical and related services with PTT Public Company Limited to enhance management efficiency and increase opportunity in doing business, also add value for future move. As of February 14, 2017, Board of Directors has approved to operate this project, followed approved instruction. However, as this restructuring project is connected transaction between the Company and PTT

Public Company Limited who is the major shareholder of the Company and size of transaction is under requirement to have an approval from shareholder.

PO/Polyols Project

Purpose of PO/Polyols Project is expanding downstream business to Polyurethane product that is high value product with high demand from automobile, furniture, bedding, construction, electronic and electrical industries, etc. Propylene Oxide (PO) project, the Company collaborates with Toyota Tsusho and Polyols project, the Company collaborates with Toyota Tsusho and Sanyo Chemical to study investment. At this time, these projects are under study process and will have more obviously investment plan around middle of 2017, plan to start commercial operation in 2019.

US Petrochemical Complex Project

US Petrochemical Complex Project is under study project that seeks potential partners to invest in Petrochemical Complex which use Ethane from Shale Gas with Ethylene capacity of 1 million tons per year, HDPE 700,000 tons per year, MEG 500,000 tons per year and EO 100,000 tons per year. Location of this project is at Marcellus, Ohio state, the United States. This project tends to have investment conclusion in H2/2017.

MARKET AND BUSINESS OUTLOOK 2017

In 2017, the Company forecasts that crude oil price might increase in the range of 52-55 USD/bbl, due to an increment of crude oil demand. International Energy Agency (IEA) estimates that crude oil demand tends to increase around 1.3 Mbbl per day to 97.7 Mbbl per day, compare to 2016. Higher demand is mainly from countries in Asia especially China and India, support with result from OPEC meeting that agreed to cut production volume around 1.2 Mbbl per day which likely affect to balance market or even tight supply in the H1/2017, the factor that drive crude oil price.

For Petroleum market outlook in 2017, the Company believes that spread of Diesel over Dubai crude oil will increase slightly to 11.5 USD/bbl in line with Gasoline spread, may increase to 15.7 USD/bbl from healthier demand in Asia. For Fuel oil spread over Dubai crude oil tends to remain at 4.2 USD/bbl. Refer to spread mentioned above, the Company estimates GRM at 5.9 USD/bbl. Moreover, production and sales volume are going to increase as Refinery able to run at maximum rate 100% in 2017, increase from 2016 that had planned turnaround.

Aromatics business in 2017, spread of Paraxylene over Condensate will remain stable at 413 USD/ton. Although there has large amount of new capacity from India and Middle East countries but offset by volume loss from some plants shutdown, support with better Polyester market that help balance the market. Moving to spread of Benzene over Condensate, it probably increase to 353 USD/ton from stronger demand of Phenol and SM, therefore, the Company forecasts Market P2F at 232 USD/ton. BTX utilization rate in 2017 will maintain at 82% as Aromatics II has planned maintenance shutdown around 45 days from June to July. In 2016, Refinery plant was shutdown that affected to production and sales of Aromatics business.

Olefins and Derivatives business outlook in 2017, estimates that Polymer market has been pressured by new capacity from North America, along with higher exported Polyethylene volume from Iran and Chinese economy uncertainty, thus Polyethylene price will be forecasted to maintain at the same level with 2016 around 1,153 USD/ton. Nonetheless, performance tends to increase, support by Butadiene price that significantly moved up to 1,900 USD/ton and MEG price, also increase to 888 USD/ton. For operation part, the Company forecasts higher utilization rate of Olefins at 94% even has planned shutdown of Olefins unit 2/1. Polyethylene and MEG plants estimate to have utilization rate at 110% and 95% respectively.

RISK MANAGEMENT AND RISK FACTORS

RISK MANAGEMENT

PTT Global Chemical Public Company Limited (PTTGC) highly values the importance of risk management and continuously makes improvement so as to be able to handle the rapidly changing and uncertain situations in order to reduce risks or decrease the impact of risks and/or maximize the realization of opportunities. This is evident from our achievement in 2016, PTTGC was ranked among the top 10 global chemical companies for the fourth consecutive year by the Dow Jones Sustainability Index (DJSI) and, under the topic of Risk and Crisis Management, PTTGC obtained full scores (100 points), which signifies that the company's standards of Risk and Crisis Management is on par with international standards.

Risk Management Standards

PTTGC adopted the international risk management standard from COSO (The Committee of Sponsoring Organizations of the Treadway Commission) and the ISO 31000 (International Organization for Standardization) and applied them to Enterprise Risk Management system, together with the Corporate Governance Code and anti-corruption principles. These were also applied to PTTGC policies, objectives, framework and enterprise-wide structure of risk management.

Risk Management Structure

The Risk Management Committee (RMC) is appointed by the Board of Directors and is entrusted with duties such as the prescription of the risk management policy and frameworks as well as the monitoring, reviewing and providing recommendations on Corporate Risk Management. Additionally, PTTGC also has the Enterprise Risk Management Committee (ERMC) that closely monitors risk management on monthly basis.

For the product price risks and foreign exchange risk that are highly volatile, PTTGC established the Value Chain Management Committee (VCM) to closely monitor on a weekly basis the market situations and other

activities such as hedging via instruments in the market e.g. derivatives and/or forward contracts. This would ensure that PTTGC is abreast with the rapid changes in the market and economics. This has been implemented under the risk management framework approved by the RMC.

At the business unit level and at plant operations or the subsidiaries level, corporate risk management has been applied and has made the entire system aligned as one process.

Risk Management Tools

To efficiently and effectively perform risk management, PTTGC has implemented various tools for the analysis and assessment of risks that may impact PTTGC's business targets and investment in the forms of a Risk Map, Mitigation Plan and Key Risk Indicator (KRI). Moreover, PTTGC has also applied the Monte Carlo Simulation technique to evaluate of the Value at Risk (VaR) to identify the potential impact from the volatility of key risk factors on business performance at different levels of possibilities of business assumptions. Furthermore, the Early Warning System (EWS) has also been put to use in the monitoring of scenario changes to identify risks and business opportunities as well as monitoring Emerging Risks that may arise so adequate pro-active mitigation measures can be established and implemented.

Risk Management Culture

PTTGC has continuously strived to promote a risk culture at all levels of the company to enable PTTGC to be able to grow and move forward in a stable and sustainable way, and for which the followings were carried out:

- Establish guidelines for risk management by the Board of Directors and Executives through policies, objectives and the risk management framework.
- Continually implement and follow up on the progress of risk management at all levels from the Board of Directors, Executives and Operational levels.

- Review roles, duties and responsibilities of all risks related parties for alignment with their assigned responsibilities
- Communicate and promote a better understanding of risk management via several channels e.g. E-learning system, monthly newsletter and training.

In 2016, PTTGC carried out an internal survey on Organizational Health Index, of which Risk Management was one topic in the survey and results of this topic was in the Top Quartile when compared with results from other Asia Pacific countries. This confirms that our employees do recognize the importance of risk management.

RISK FACTORS

PTTGC has undertaken the analysis of the business environment, relevant internal and external factors, and also the close monitoring of important global events, trends in economics, society, politics, technology, industries, and competitors, including global top risk from external experts. All of these have been factored into the assessment of key corporate risk factors that PTTGC has to manage and monitor as follows:

Operation and Safety Risk

PTTGC gives precedence to our production plants and their ability to be able to operate continuously with utmost safety. PTTGC has applied Operational Excellence Management System (OEMS) and Process Safety Management (PSM) to the management of production facilities and also strictly comply with the policy of Safety, Security, Health and Environment (SSHE). Moreover, PTTGC's executives meet quarterly for the Rayong Integration Monitoring meeting, to ensure that all the above systems work efficiently and effectively and also put in place other measures of assurance as follows:

Mitigation Measures

- Last year many external and internal factors affected PTTGC's operation, some plants were not able to operate continuously which, in turn, disturbed product delivery to their customers. The plant anomalies include electrical problems (power outage, short-circuit and power system interruption), High Pressure

Steam interruption and unreliability of production equipment. To prevent these problems from recurring, PTTGC intensified measures to manage and assure reliability and integrity of the machines to all plants and also setup an equipment effectiveness assessment by external experts using the Asset Integrity Assessment (AIA) program. Additionally, reliability and integrity effectiveness assessment of power and stream suppliers' machines have been done by PTTGC's experienced employee in order to understand production process and share experiences. This leads to prevent and reduce risk in the operation.

- PTTGC has been set up Reliability Improvement Team (RIT) to analyze occurred incident retroact 2 years and define mitigation measure to improve reliability and integrity of the machines covering all possible factors. In the meantime, to ensure the OEMS still efficiency and effectiveness, the Company has been engaged expert within PTT Group to assess the OEMS by using Pre-Maturity Assessment (Pre-MA) program at Aromatic plant. Preparations are being made to escalate this assessment to other plant also.
- In 2017, PTTGC plan to conduct Process Safety Management (PSM) and Reliability and Integrity Management effectiveness assessment by accredited international experts and also to perform a PSM benchmarking with peers so as to be able to improve our PSM level as well as reliability and integrity management to the global standard.
- Further develop Operations and Safety employees to enhance their knowledge, capabilities and awareness of safety to reduce risk together with learning from lessons learned via the Incident-based Learning system. This would support to define proactive measures and prevent recurring events.
- Apply new technology and innovation tools e.g. Big Data Management with our production process by applying Intelligence Monitoring and Advance Advisory System to analyze operating condition and provide preventive recommendation to solve problems and improve the machine reliability to increase production capability and lower business opportunity loss.

- PTTGC has applied the Business Continuity Management (BCM) system to use, to provide additional assurances that should any business interrupting event take place that PTTGC shall be able to mitigate consequences, curtail the duration of the event or reduce subsequent damages that may occur, from the interruption or event. PTTGC has carried out test runs of the Business Continuity Plans covering all plants in order to be prepared for any unlikely event that, should they occur, will have severe consequences and impact to our business.
- PTTGC has taken out an All Risk Insurance policy, a Business Interruption policy, and a Third Party Liability Insurance in order to lower the financial loss to the Company and its subsidiaries to an acceptable level should any accident occur.

Strategy Execution Risk

Successfully driving formulated strategies is critical towards achieving long-term goals of the organization, especially under pressure and in face of rapid changes in the business environment that may impact the strategies - both as opportunities and as risks - being driven. Therefore, PTTGC has put the following measures in place.

Mitigation Measures

- Driving PTTGC on the Transformation Pathway towards being an international Performance Chemical Business in the future in accordance with the appropriate business structure proportion as per the Optimized Portfolio Structure that may help reduce the impact of fluctuations of Commodity Petrochemical product prices by utilizing developments/findings from our research, development, and innovation.
- Capturing Opportunities: in 2016, the Company was included into the working group and also the Public - Private Committee to support the initiatives of the government in driving economic and social development of the country in the long run. Committees in which PTTGC participated are New S-Curve and Eastern Economic Corridor (EEC) which provided ideal opportunities to exchange knowledge and information, as well as establishing an academic

network with leading corporate agencies of the country to foster further collaboration in investment.

- Develop systems and tools for use in analyzing and monitoring of the achievements in accordance with the strategic plan, as follows:
 - Develop a system to track and stimulate the undertakings of each Initiative of the strategic plan, to ensure that they achieve their objectives.
 - Develop an Early Warning System (EWS) to track and analyze the internal and external factors that may have an impact on driving the strategic plan of PTTGC, both opportunities and risks, so adequate measures can be prepared in time.
 - Establish Back Up Plans, should any critical strategic plan be unattainable.

People and Organization Capability Risk

From strategic plans and business expansion both domestic and abroad to meet PTTGC's target, PTTGC requires the availability and sufficiency of human resources knowledge and abilities, as well as an organizational structure that is conducive to supporting the strategic drive, are all critical parts that will support the Company to steadily grow in the long term.

Mitigation Measures

- PTTGC has put in place a Shift Mindset & Culture project that is focused on adapting the concepts and working methods of employees to cope with an environment of uncertainty, volatility and complexity. This is principle to support PTTGC to sustain growth in the long run.
- PTTGC has a conceptual plan to restructure the organization to be able to best respond to the business in the long term.
- Building people's specific competency in professional areas such as engineers, researchers, marketers, etc., to drive strategic marketing.
- Initiate a successor program for various job positions - especially the ones whose incumbents are approaching retirement - in order to facilitate a smooth job handover so as not to hinder any part of the PTTGC's business operations.

- Develop employees to be ready-to-work-abroad by planning together with the project team owners before due time, as well as setting up an internal Talent Pool database so as to be able to match the qualified employees immediately with the required posts.

Innovation Risk

PTTGC places great importance upon research findings that are commercially viable and can readily be developed for further added-value in less time to respond to market demands, fortify business competitiveness and to be able to grow with stability and sustainability. Thus, Innovative measures were taken as follows:

Mitigation Measures

- PTTGC focuses upon the development of human resources, the recruitment of experienced persons, including the exchange of personnel between PTTGC and overseas venture partner companies in the fields of Research & Development and Innovation, to support the drive of the Company's strategy to increase revenue and the proportion of products with higher added value. In 2017, PTTGC will focus upon the immediately-required key competencies in Material Sciences, Analytics Biotech, and Process Technology.
- Building partnerships with affiliate networks both inside and outside of the PTT group, coupled with the continuing cooperation with various organizations; public and private - domestic and overseas, as well as with venture capital investments, to drive research and development and innovation for faster access to the commercial markets and faster response to market demands.
- Sourcing of required equipment for Pilot Facilities to facilitate and sustain research and development so as to reduce technical risks and shorten the duration of the product tests with industrial operators.
- Introduce digital tools and programs for use in research and development works, such as a program to enhance search and analysis of Big Data, predictive programs on products behavior or properties, etc., to help speed up and enhance the efficiency of Research & Development works.

- Implement the comments and recommendations from leading experts both in academic and industries from the meetings of the International Innovation Advisory Board (IIAB), to develop the Research, Development & Innovation Program of the Company. In 2017, meetings will focus on recommendations in research and innovation to drive the strategic plan in accordance with the directions and targets of the company.
- Implement a procedure to evaluate and prevent abuse and violations of intellectual property for which the international standard IP Code of Practice was adopted as a guideline of practice.

PTTGC believes that the implementation of these measures will further strengthen the Company and enable an effective and efficient implementation of Research, Development & Innovations works and leading the Company to sustainable growth in the future.

Investment Risk

PTTGC has setup strategies including growth investment plans to maintain and further enhance our competitiveness. Thus, much stress is accorded to the major investment projects with very high capital investment with an investment period of 3-5 years, during which many uncertainties may arise. Thus, PTTGC must very prudently and diligently scrutinize these major projects with all due care so that investments progress as planned and for which the following measure have been put in place:

Mitigation Measures

- PTTGC has implemented a Stage Gate Process to prudently and concisely cover and govern opportunity seeking until investment approval. In each stage, responsible executives and experts scrutinize investment projects in all aspects. For the high capital investment projects, the Risk Management Committee (RMC) is also involved in the consideration of the adequacy of risk assessment and mitigation measures.

- For the high capital investment projects, PTTGC has also established a Steering Committee, which consists of related Executives, to closely manage and monitor mitigation measures as planned throughout all stages of consideration of major investment projects.
- PTTGC has a Look Back process to monitor and evaluate the completed projects. This would continuously improve investment process and increase the success of future investment projects.
- PTTGC has allocated required resources e.g. capital and human resources to support and drive investment project towards their goals.

With the implementation of the above measures, the Company trusts it shall be able to efficiently manage investment projects and achieve growth goals as planned.

Long-Term Feedstock Risk

The trend in decrease of the volume of natural gas and condensate from the Gulf of Thailand together with uncertainties of government law and/or regulation changes in regard to Petroleum Concession may cause the Company to lose competitiveness and for which the following measures have been put in place:

Mitigation Measures

- Presently, PTTGC completed the design and cost estimation of the Olefins Plant Reconfiguration Project and expects to make a final decision on investment by 2017. This project would increase PTTGC's flexibility in feedstock selection, reduce reliance on natural gas from the Gulf of Thailand, and increase the utilization of our internal feedstock e.g., Naphtha and LPG or resort to import of economically-viable feedstock. Moreover, this project will further add value to PTTGC products and is expected to be completed before the natural gas volumes in the Gulf of Thailand are not sufficient for usage.
- In 2017, although the effects of decreasing condensate volume from the Gulf of Thailand is not high, PTTGC has also considered the Aromatics production process improvement to increase flexibility to maintain our competitiveness by improving our

Aromatics Plant and make them able to use condensate from sources that are more economic and offering more specifications and qualities as well as not posing any detrimental effects on significant equipment or operating machine.

These mitigation measures have been prepared in advance so as to ensure that when the time comes, PTTGC shall be able to cope with the situation and also be able to maintain its competitiveness.

Water Management Risk

In 2016, Thailand was confronted with severe drought in many areas, with the agricultural sector taking the hardest hit as a result of climate change and the higher trends in water consumption demand in agriculture, in communities and by the industry sector. With the oncoming of the Eastern Economic Corridor (EEC) project – PTTGC, in full recognition of the importance of water, the required effective and sustainable management of water resources, has put in place an optimization plan for water usage and also to decrease the dependency on natural water sources through the following mitigation measures :

Mitigation Measures

- The 3R (Reduce, Reuse and Recycle) principles have been continuously applied as a water consumption reduction measure.
 - Reduce : reduce water loss from cooling water system by adjusting drift eliminators from 0.2% to 0.01%. This has resulted in the reduction of water consumption by about 400 cubic meters per hour and preparations are being made to escalate this measure to other systems.
 - Reuse : Increase the cycle of water circulation in the cooling water system from 3-5 cycles to 4-6 cycles. This has resulted in the reduction of water consumption by about 300 cubic meters per hour or 2.6 million cubic meters per year. Preparations are being made to escalate this measure to other systems also.

- Recycle : in 2016, PTTGC installed and improved the efficiency of the Reverse Osmosis Water Treatment system to recycle spent water back into the process and was able to recycle about 37.4% more of the spent water that is approximately equal to 0.86 million cubic meters per year. Preparations are being made to escalate this measure to other production plants.
- Efficiently utilize the water supply from the Seawater Reverse Osmosis plant (SWRO). In 2016, PTTGC was able to produce about 10% of the total raw water consumption or approximately 3.30 million cubic meters per year and expansion plans are in place for 2017 as well as readying the raw water transmission system from PTTGC's reservoir for immediate use should a water shortage crisis occur.
- Carry out feasibility studies on the expansion of the Seawater Reverse Osmosis plant (SWRO), the project which use chill from the Liquefied Natural Gas (LNG) and the Zero Water Discharge system.
- The Sustainable Water Management Working Team and related functions support and enforce water management projects and water sources development with external organizations.

With the implementation of the above measures, PTTGC is confident in its preparedness to manage the water shortage situation to ensure that there is no impact to other water users or sectors.

Sales & Market Risk

The global economy is still recovering, crude oil prices are still low and continue to fluctuate and with the new incoming production in the future, a supply surplus is a big possibility - especially among the polyolefins producers, ethylene glycol producers, and the para-xylene producers. Therefore, the marketing plan in the future for the products as well as new products will face an unavoidable challenge. PTTGC has mitigation plans in place as follows :

Mitigation Measures

- PTTGC focus on enhance Product Portfolio Structure from commodity base as current to High Value Products (HVP) and provide product for specific group of customers.
- Maintain the domestic customer base as well as expanding the domestic markets by substituting imports and expanding export markets by focusing on key markets especially in the CLMV countries which have high growth potentials and whose production base are close to Thailand.
- Expand the downstream petrochemical products variety and ensure alignment with End-Used Market Platforms which include the automotive industry, electronics industry, construction industry, packaging industry and home and personal care industry.
- Focus on collaboration with partners who are also Brand Owners in the ways of Key Account Management, to develop new products together.

Policy & Regulatory Change Risk

PTTGC has given this matter a high degree of importance and has been preparing for the changes in policies, Government regulations or the related laws and regulations such as the Oil Fund Act, New Petroleum Concession Policy, Public Private Partnership Law (PPP), Investment Promotion Act (BOI), Land and Building Tax Act, EEC Act, and the Act related to CO₂ emissions, all of which may affect PTTGC's business both as an opportunity and as a risk. The company has put in place the following mitigation measures :

Mitigation Measures

- PTTGC provides observations and suggestions that benefit the nation and industries to the related governmental organizations as basic information needed in the preparation of draft laws, regulations, policies and other benefits.
- PTTGC closely monitors for important news and information related to the government's policies, law and regulations affecting PTTGC's business and notifies the related departments within PTTGC and request for their consideration, comments, and feedback on the draft policies, laws and

regulations, etc., and sends them to the related governmental agencies or ministries for consideration before adoption, and after they are adopted, PTTGC shall inform all related departments and advise them on the proper practice and adhering to those policies, laws, and regulations.

- PTTGC studies and considers the changes in the government's laws and regulations and includes them in the evaluation of the economic value of investment projects for decision making by PTTGC.
- In 2016, PTTGC has declared its firm intention to fight against corruption as stipulated in the Prevention and Suppression of Corruption Act (3rd edition) and joined the Collective Action Coalition (CAC) - which is Thailand's Private Sector movement against corruption - as well as assessing the risk of corruption within PTTGC in interactions with governmental agencies and identifying potential points of corruption and instated an internal control system to monitor and control the undertakings of PTTGC to ensure that PTTGC's and Affiliate Companies' assets are protected from the directors or executive management members' misuse, abuse, or use with wrongful intentions. Furthermore, the Company has also included Anti-Corruption into the risk management policy.

Cyber Security Risk

The operations of PTTGC rely on the use of information technology systems that is linked across the enterprise. The threats of cyber-attacks are becoming more intense and come in more diverse forms today. This issue demands a very high degree

of attention in protecting PTTGC from impact on the business and reliability of PTTGC. PTTGC has given this matter a very high degree of importance and has instated proactive measures to reduce the likelihood of such threats as follows :

Mitigation Measures

- PTTGC has installed systems and equipment for the surveillance of potential threats and regularly test and evaluate the system to ensure that the system can defend against and prevent active threats effectively.
- Audits are performed, improvements and upgrades are implemented as prescribed by international standards adhered to by other world-class companies. (refer to the report "Navigating Technology's Top 10 Risks of the IIA Research Foundation").
- Tests are held on the plans to manage the threat of cyber-attacks. Practice runs are held annually to assure that the Emergency Back-Up System Recovery measures and procedures are effective and efficient and are able to handle the situation promptly and reduce damage to the system and data of the Company that may occur.
- Promoting awareness of cyber security to employees at all levels continually; informing employees of potential threats, their prevention, and also keeping employees informed of related new IT laws through internal communication channels within PTTGC, as well as holding mandatory training courses for new employees and promoting the E-learning system so that employees can learn at any time.



INTERNAL CONTROL

INTERNAL CONTROL

PTT Global Chemical Public Company Limited values the importance of the Internal Control System which has been designed in accordance with the international standard of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to achieve the objectives relating to operations, reporting, and compliance.

During the Board of Directors' Meeting No. 2/2017 held on February 14th, 2017, PTTGC's Internal Control System was evaluated based on the internal control assessment report prepared by the Management which follows the guidelines of the Securities and Exchange Commission (SEC), together with the result of the Audit Committee's internal control review. The Board viewed that PTTGC's Internal Control System has been functioning properly in an adequate and effective manner. The operation has been efficiently managed with sufficient number of qualified and competent personnel. In addition, PTTGC has implemented a monitoring system to ensure safeguarding of PTTGC Group's assets against misuse or unauthorized use by the Board or the Management.

PTTGC's Internal Control System can be summarized as follows;

Control Environment

The Board and Management strive to promote a corporate culture that focuses on integrity and ethics. They also provide supervision of PTTGC's operations to ensure compliance with the organizational vision and missions and to ensure that PTTGC's control environment is appropriate and effective, as detailed below;

- The Board and Management have established Corporate Governance Policy, Business Code of Conduct, Corporate Compliance Policy, Internal Control System Policy and Anti-Corruption Guidelines which provide preferred practices for all Directors, the Management and Employees. All Employees are accountable for their internal control activities and for maintaining an effective internal control system. These

policies have regularly been communicated and promoted to all employee through training courses and activities.

- The Board is independent from the Management and is responsible for supervising the overall operations of PTTGC as well as expressing views on the directions and strategies of PTTGC which will be used as guidelines to formulate business and operating plans. Furthermore, the Board regularly monitors the performance of PTTGC and its Sub-committees to ensure achievement of PTTGC's objectives and goals.
- PTTGC's corporate structure has been grouped into business units and functions in a way to best support its business operations in an efficient manner and with good governance. This structure comes with a system of checks and balances which delegates duties and responsibilities appropriately.
- PTTGC has specified qualifications for all positions. These qualifications form the basis for recruitment and personnel development. PTTGC has also put in place succession plans for important management positions to ensure business continuity. Furthermore, it has established a performance management and fair rewarding system as incentives to motivate efficiency by employees. In 2016, PTTGC initiated the Employee Referral Program in order to motivate employees to introduce qualified candidates for open job positions. E-Recruitment System has also been implemented to enhance the recruitment process in connection with checking the recruiting status and candidates' profiles through the system.
- PTTGC organized the 'Say No to Corruption' exhibition to raise awareness of fraud risks and impact and also provided related governance guidance to the Management and Employee.

Risk Assessment

The Board and Management recognize the significance of Risk Management as an enabler for PTTGC in order to achieve its short-term and long-term goals. The Risk Management Committee appointed by the Board, along

with Enterprise Risk Management Committee appointed by President and Chief Executive Officer, are collectively responsible for overseeing PTTGC's Risk Management and ensuring that they are managed in an appropriate, effective and efficient manner;

- PTTGC's Risk Management Framework has been set up in accordance with the international standards of ISO 31000 - Risk Management and COSO Enterprise Risk Management. Furthermore, the Risk Management Policy has been drawn up and will act as a guideline for managing risks that might have an impact on business operations or PTTGC's strategic direction.
- PTTGC's Risk Management has been applied entity-wide and includes:
 - (1) Enterprise Risk Management which develops risk profiles at corporate level, business unit level and department level
 - (2) Investment Risk Management
 - (3) Business process level Risk Management
 PTTGC takes into consideration the changes within internal and external factors and the potential of fraud and corruption, in assessing risks against the achievement of objectives. Mitigation Plans are drawn up to manage those risks. Risks and mitigation plans are reviewed and monitored on a monthly basis. All department are responsible for managing risks to maintain an acceptable level.
- PTTGC has developed Key Risk Indicators (KRI) to monitor changes in risks factors so that those risks are managed efficiently and in a timely manner.

Control Activities

PTTGC has developed efficient and effective control activities that contribute to the mitigation of risks against the achievement of objectives, to acceptable levels. They include;

- PTTGC has designed its control activities in accordance with internal control principles. These include the segregation of duties, policies and good practices for conflicts of interest transactions. In addition, business is operated in a transparent, fair and auditable manner. There is a transparent

transaction approval process which takes into account the utmost benefit of the organization.

- PTTGC has in place rules, regulations, policies, and procedures in which clear boundaries of authorization have been drawn up to limit the power and authority of President and Chief Executive Officer, the Management, as well as all levels of Employees. Furthermore, operations are reviewed regularly to ensure their compliance with those rules, regulations, policies, and procedures.
- PTTGC has implemented the automated control of crucial processes. For example, SAP GRC - Access Control System has been in place to ensure that access rights in SAP operating system is in accordance with good practices in segregation of duties. In 2016, PTTGC implemented the "Continuous Control Monitoring System (CCMS)" to notify responsible persons for correcting exceptional transactions in a timely manner.
- PTTGC has in place an Information Technology Security Policy in accordance with the ISO27001 - Information Security Management Standard, and the Control Objectives for Information and Related Technologies (COBIT) to ensure efficiency and effectiveness of PTTGC's information technology security. Furthermore, Cyber Threat Prevention news and trainings are provided to all employees on a regular basis.
- PTTGC has guidelines to govern and manage companies invested in by PTTGC. This is to ensure that these companies align with PTTGC in terms of operating direction as well as comply with PTTGC's policies, procedures and strategic direction. Operations of these companies are monitored regularly and continuously.

Information and Communication

PTTGC recognizes the criticality of the quality of Information & Communication that supports the effectiveness of PTTGC's Internal Control System, as detailed below;

- PTTGC has set up information classification, instructions for filing important documents and controlled documents. This includes information from both internal and external sources. This process is intended to ensure that important information concerning PTTGC and its business operations are accurate, complete, adequate and timely.
- PTTGC has appropriately communicated the relevant information to the Board, the Management, Employees and Stakeholders. Crucial information relevant to PTTGC's performance will be delivered to Directors prior to the Board of Directors meetings in order that they will have sufficient time to study, review and make decisions. When necessary, the Board may request additional information from relevant specific departments or personnel.
- PTTGC has set up several internal communication channels, for example, Town Hall activities for facilitating communication from Senior Managements to Employees, the organization's intranet, e-mail, etc. In addition, new employees receive important information through orientation. Employees can access useful information through Knowledge Based System and E-Learning System.
- PTTGC has set up external communication channels to communicate with external stakeholders, such as PTTGC website, e-mail, Facebook and Twitter. In addition, assigned departments are responsible for the disclosure of important information to all stakeholders regularly.
- PTTGC has established an open communication channel managed by Whistleblower System. This allows employees and external individuals to be confident that the complaints will be handled with transparency, fairness and confidentiality in timely manner.
- PTTGC has established STS E-Dataroom to effectively maintain the key external factors information for strategic plans preparation purpose. In addition, E-Initiative Charter system has been also established to systematically maintain strategic plan of each business unit which are in line with the Company's strategies.

Monitoring Activities

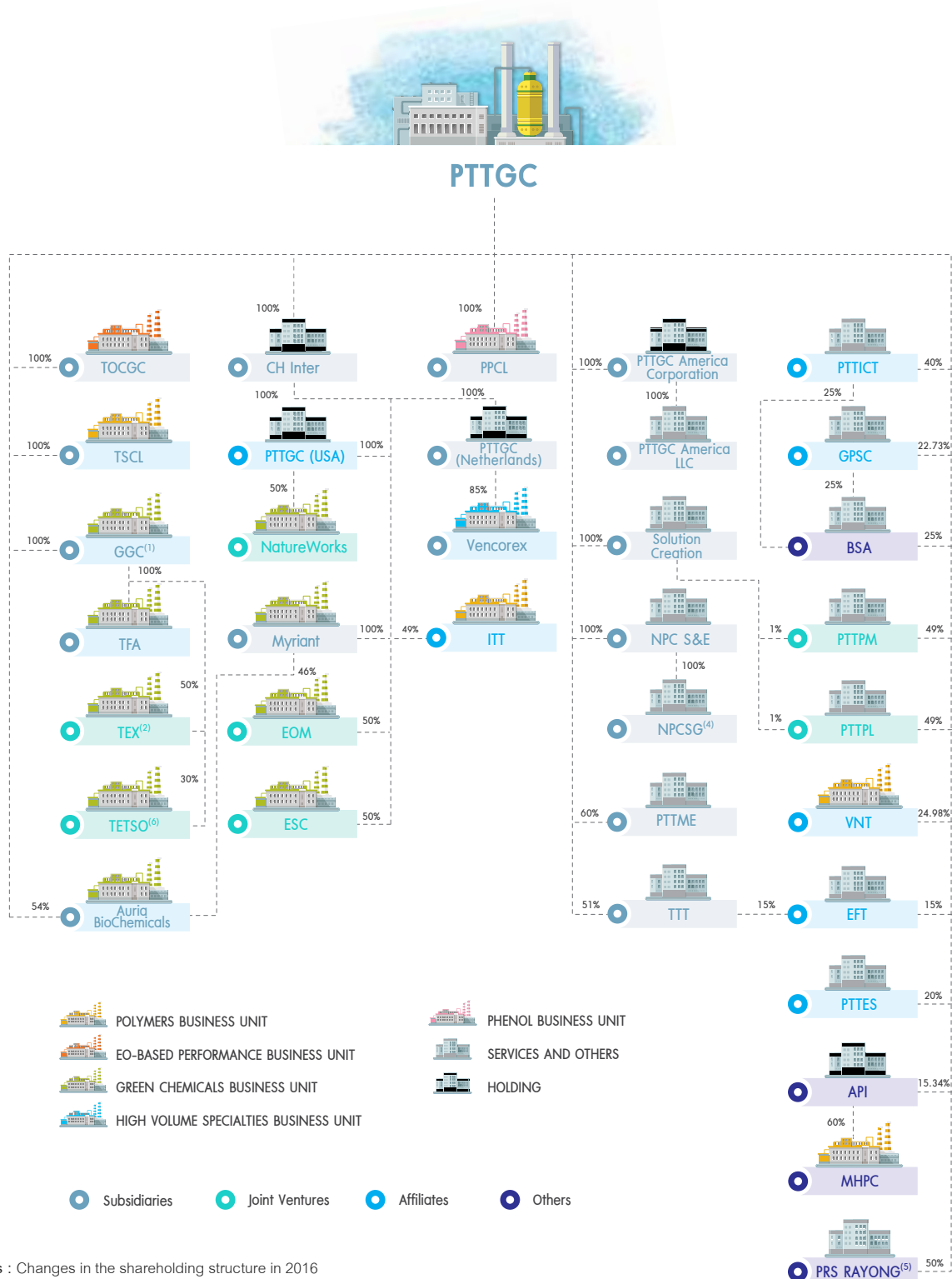
PTTGC continuously monitors and evaluates the adequacy of its internal control system. Development and improvement processes have also been in place to ensure the efficiency and effectiveness of PTTGC's Internal Control System, and includes:

- PTTGC evaluates the adequacy of the corporate internal control system on an annual basis. In addition, PTTGC has implemented Control Self-Assessment (CSA) for process owners to evaluate internal control mechanisms at the process level. The adequacy and appropriateness of CSA results will be verified by the Internal Control System Division, which also provides recommendations for improvement on internal control deficiencies, if any. A reporting and monitoring process is also in place to report deficiencies to the Management and track remediation progress on a timely basis.
- The Internal Audit Department, which is an independent unit reporting directly to the Audit Committee, examines and evaluates the effectiveness of internal control activities according to the audit plan approved by the Audit Committee. Deficiencies and recommendations are communicated to parties responsible for implementation. The audit reports and findings are presented to the Audit Committee on a quarterly basis.

In 2016, the Audit Report did not find any significant issues related to conflicts of interest, fraudulent activities, or any other significant deficiencies in the Internal Control System materially in affect PTTGC's objectives. Furthermore, no violations of SEC and SET rules and regulations or other laws related to PTTGC were found.



SHAREHOLDING STRUCTURE IN SUBSIDIARIES AND AFFILIATES



Remarks : Changes in the shareholding structure in 2016

- February 18th, 2016 : Thai Oleochemicals Company Limited was registered as a Public Limited Company with a change of company name to Global Green Chemicals Public Company Limited.
- March 31st, 2016: GGC acquired 50% share in TEX from PTTGC. As a result, GGC now holds 50% of the shares in TEX.
- March 31st, 2016: Bio Spectrum was registered for a company dissolution.
- May 3rd, 2016: NPC Security Guard Company Limited was established. As a result, NPC S&E now holds 100% of the shares in NPCSG.
- September 23rd, 2016: Pracharath Rak Samakkee Rayong (Social Enterprise) Company Limited was established. As a result, PTTGC now holds 50% of the shares in PRS RAYONG.
- October 6th, 2016: GGC enters into Joint Venture in Thai Eastern Top Seeds Oil Company Limited. As a result, GGC now holds 30% of the shares in TETSO.
- November 30th, 2016: AP ROH was registered for a company dissolution.

SUBSIDIARIES

TOCGC	TOC Glycol Company Limited
PPCL	PTT Phenol Company Limited
GGC	Global Green Chemicals Public Company Limited
TFA	Thai Fatty Alcohol Company Limited
TSCL	Thai Styrenics Company Limited
Solution Creation	Solution Creation Company Limited
NPC S&E	NPC Safety and Environmental Service Company Limited
NPCSG	NPC S&E Security Guard Company Limited
CH Inter	PTT Chemical International Private Limited
PTTGC (Netherlands)	PTTGC International (Netherlands) B.V.
PTTGC (USA)	PTTGC International (USA) Inc.
PTTGC America Corporation	PTTGC America Corporation
PTTGC America LLC	PTTGC America LLC
Myriant	Myriant Corporation
PTTME	PTT Maintenance and Engineering Company Limited
Auria BioChemicals	Auria BioChemicals Company Limited
TTT	Thai Tank Terminal Limited
Vencorex	Vencorex Holding

JOINT VENTURES

NatureWorks	NatureWorks LLC
EOM	Emery Oleochemicals (M) Sdn. Bhd.
ESC	Emery Specialty Chemicals Sdn. Bhd.
PTTPM	PTT Polymer Marketing Company Limited
PTTPL	PTT Polymer Logistics Company Limited
TEX	Thai Ethoxylate Company Limited

AFFILIATES

ITT	PT Indo Thai Trading
PTTICT	PTT ICT Solutions Company Limited
GPSC	Global Power Synergy Public Company Limited
VNT	Vinythai Public Company Limited
EFT	Eastern Fluid Transport Company Limited
PTTES	PTT Energy Solutions Company Limited
TETSO	Thai Eastern Top Seeds Oil Company Limited

OTHERS

PRS RAYONG	Pracharath Rak Samakkee Rayong (Social Enterprise) Company Limited
BSA	Business Services Alliance Company Limited
API	Alliance Petrochemical Investment (Singapore) Private Limited
MHPC	Mehr Petrochemical Company

REVENUE STRUCTURE

Business Unit	Restated 2014*		Restated 2015		Restated 2016	
	Revenue (Million THB)	%	Revenue (Million THB)	%	Revenue (Million THB)	%
1. Refinery and Shared Facilities						
1 Sales revenue from Light Naphtha	14,460	2.6	8,829	2.2	2,819	0.8
2 Sales revenue from Reformate	19,027	3.4	16,163	4.0	8,302	2.4
3 Sales revenue from Jet Fuel	40,810	7.4	24,133	6.0	17,673	5.1
4 Sales revenue from Diesel	149,336	26.9	109,049	27.0	84,360	24.2
5 Sales revenue from Fuel Oil	34,236	6.2	19,719	4.9	13,569	3.9
6 Others	4,537	0.8	3,262	0.8	3,054	0.9
Total	262,406	47.3	181,155	44.9	129,777	37.3
2. Aromatics						
1 Sales revenue from Benzene	13,876	2.5	5,977	1.5	5,847	1.7
2 Sales revenue from Paraxylene	43,614	7.9	27,982	6.9	32,522	9.3
3 Sales revenue from Cyclohexane	7,215	1.3	4,183	1.0	4,091	1.2
4 Sales revenue from Light and Heavy Naphtha	26,764	4.8	13,759	3.4	14,392	4.1
5 Sales revenue from Condensate Residue	-	-	-	-	2,107	0.6
6 Others	10,904	2.0	7,733	2.0	4,259	1.2
Total	102,373	18.5	59,634	14.8	63,218	18.1
3. Olefins						
1 Sales revenue from Ethylene	16,718	3.0	16,690	4.1	13,054	3.7
2 Sales revenue from Propylene	12,402	2.2	7,963	2.0	6,242	1.8
3 Sales revenue from Derivatives	4,617	0.8	5,348	1.3	5,574	1.6
4 Others	4,246	0.8	5,330	1.3	4,554	1.3
Total	37,983	6.8	35,331	8.7	29,424	8.4
4. Polymers						
1 Sales revenue from Polyethylene	80,242	14.5	66,680	16.5	63,606	18.2
2 Sales revenue from Polystyrene	2,720	0.5	2,129	0.5	2,214	0.6
Total	82,962	15.0	68,809	17.0	65,820	18.8
5. EO-Based Performance						
1 Sales revenue from EO/EG	14,090	2.5	12,913	3.2	11,949	3.4
2 Sales revenue from EO Derivatives	1,734	0.3	1,551	0.4	1,204	0.3
Total	15,824	2.8	14,464	3.6	13,153	3.7

Business Unit	Restated 2014*		Restated 2015		Restated 2016	
	Revenue (Million THB)	%	Revenue (Million THB)	%	Revenue (Million THB)	%
6. Green Chemicals						
1 Sales revenue from ME/FA	14,814	2.7	13,775	3.4	16,252	4.7
2 Others	34	0.0	35	0.0	37	0.0
Total	14,848	2.7	13,810	3.4	16,289	4.7
7. High-Volume Specialties						
1 Sales revenue from Phenol	5,223	0.9	3,912	1.0	7,333	2.1
2 Sales revenue from Acetone and Derivatives	4,272	0.8	2,458	0.6	4,280	1.2
3 Sales revenue from Bis Phenol A	8,512	1.5	6,120	1.5	5,870	1.7
4 Sales revenue from HDI / TDI	16,665	3.0	14,510	3.6	10,796	3.1
5 Others	1,113	0.2	1,044	0.3	739	0.2
Total	35,785	6.4	28,044	7.0	29,018	8.3
8. Services & Others						
1 Services & Others	2,514	0.5	2,193	0.6	2,402	0.7
Total	2,514	0.5	2,193	0.6	2,402	0.7
Net Total after deduction from connected transaction	554,695	100	403,440	100	349,101	100

* Restated from the implementation of new Thai Financial Reporting Standard no. 10 regarding "Consolidation of Financial Statements" and no. 11 regarding "Joint Arrangements"



CONNECTED TRANSACTIONS

CONNECTED TRANSACTION BETWEEN RELATED COMPANIES

For the 2016 accounting period, PTTGC 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 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
1. PTT Public Company Limited (PTT)	- Major shareholder holding 48.89% of the shares in PTTGC - Common Directors : - Mr. Prasert Bunsumpun - Mr. Don Wasantapruek - Directors who are PTT Executives: - Mr. Sarun Rungkasiri - Mr. Auttapol Rerkpiboon - Mrs. Boobpha Amornkiatkajorn - Mr. Supattanapong Punmeechaow - Common management: - Mr. Supattanapong Punmeechaow - Miss Duangkamol Settang - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	198,065	124,317	115,114
		Purchases of goods or receiving of services	380,555	235,823	191,566
		Other incomes	102	89	85
		Other expenses	303	112	87
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	8,856	6,095	12,161
		Other accounts receivable - related parties	1,002	448	411
		Trade accounts payable - related parties	15,380	13,363	20,610
		Other accounts payable - related parties	203	46	971
		Payables to contractor - related parties	3	7	1
2. PTT Maintenance and Engineering Company Limited (PTTME)	- Subsidiary company (PTTGC holds 60% of the shares) - Major shareholder (PTT) holds 40% of the shares - Executive who is Director of PTTME : Mr. Varit Namwong - Services transaction	Statements of Income Transactions			
		Purchases of goods or services	915	661	736
		Other incomes	126	99	79
		Other expenses	20	38	31
		Statements of Financial Position Balances			
		Other accounts receivable - related parties	43	28	18
		Other accounts payable - related parties	151	169	149
		Payables to contractors - related parties	691	593	391

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
3. PTT Polymer Marketing Company Limited (PTTPM)	- Joint venture company (PTTGC holds 50% of the shares) - Major shareholder (PTT) holds 50% of the shares - Common Director : Mrs. Boobpha Amornkiatkajorn - Executive who is Director of PTTPM: Mr. Patiparn Sukorndhaman - Sales/Purchase transaction of products	Statements of Income Transactions			
		Sales of goods or rendering of services	82,960	68,806	65,798
		Purchases of goods or services	1	1	3
		Other incomes	14	24	26
		Other expenses	13	12	6
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	6,919	6,252	7,490
		Other accounts receivable - related parties	5	12	9
		Other accounts payable - related parties	1	1	1
4. PTT Polymer Logistic Company Limited (PTTPL)	- Joint venture company (PTTGC holds 50% of the shares) - Major shareholder (PTT) holds 50% of the shares - Services transaction	Statements of Income Transactions			
		Sales of goods or rendering of services	9	5	177
		Purchases of goods or services	632	912	617
		Other incomes	3	5	21
		Other expenses	245	204	743
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	1	3	70
		Other accounts receivable - related parties	-	2	5
		Trade accounts payable - related parties	1	-	-
		Other accounts payable - related parties	231	178	298
5. Global Power Synergy Public Company Limited (GPSC)	- Associate company (PTTGC holds 22.73% of the shares) - Major shareholder (PTT) holds 22.58% of the shares - Common Director : Mr. Supattanapong Punmeechaow - Executive who is Director of GPSC: Mr. Patiparn Sukorndhaman - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	65	55	49
		Purchases of goods or services	8,586	7,688	8,263
		Other incomes	15	22	17
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	16	11	10
		Other accounts receivable - related parties	193	90	20
		Trade accounts payable - related parties	783	844	752
		Other accounts payable - related parties	1	2	1
		Payables to contractors - related parties	-	-	18

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016		
Baht (Million)							
6. PTT Energy Solutions Company Limited (PTTES)	- Associate company (PTTGC holds 20% of the shares) - Major shareholder (PTT) holds 40% of the shares - Executive who is Director of PTTES : Mr. Varit Namwong - Services transaction	Statements of Income Transactions					
		Sales of goods or rendering of services	9	8	-		
		Purchases of goods or services	168	133	138		
		Other incomes	3	1	-		
		Statements of Financial Position Balances					
		Trade accounts receivable - related parties	4	2	-		
		Other accounts receivable - related parties	28	26	1		
		Other accounts payable - related parties	29	27	42		
		7. PTT ICT Solutions Company Limited (PTTICT)	- Associate company (PTTGC holds 40% of the shares) - Major shareholder (PTT) holds 20% of the shares - Services transaction	Statements of Income Transactions			
Purchases of goods or services	13			15	-		
Other incomes	48			43	42		
Other expenses	351			347	323		
Statements of Financial Position Balances							
Other accounts receivable - related parties	25			20	18		
Other accounts payable - related parties	54			46	42		
Payables to contractors - related parties	67			39	54		
8. TOP Solvent Company Limited (TS)	- Subsidiary of TOP - Sales/Purchase transaction of products			Statements of Income Transactions			
		Sales of goods or rendering of services	-	108	162		
		Purchases of goods or services	-	65	102		
		Statements of Financial Position Balances					
		Trade accounts receivable - related parties	-	9	12		
		Trade accounts payable - related parties	-	9	7		
		Other accounts payable - related parties	-	2	-		
		9. Thai Petroleum Pipeline Company Limited (THAPPLINE)	- Major shareholder (PTT) holds 40.4% of the shares - Services transaction	Statements of Income Transactions			
				Sales of goods or rendering of services	2	1	-

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
10. Dhipaya Insurance Public Company Limited (DHIPAYA)	- Major shareholder (PTT) holds 13.33% of the shares - Services transaction	Statements of Income Transactions			
		Purchases of goods or services	1,029	1,121	1,017
		Other incomes	233	702	1,169
		Other expenses	19	18	20
		Statements of Financial Position Balances			
		Other accounts receivable - related parties	1,119	1,273	1,425
		Other accounts payable - related parties	38	40	19
		Payables to contractor - related parties	-	2	-
11. Thai Paraxylene Company Limited (TPX)	- Subsidiary of TOP - Sales/Purchase transaction of products	Statements of Income Transactions			
		Sales of goods or rendering of services	-	543	-
		Statements of Financial Position Balances			
12. Thai Oil Public Company Limited (TOP)	- Major shareholder (PTT) holds 49.10% of the shares - Common Director : Mr. Sarun Rungkasiri - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	605	1,366	1,000
		Purchases of goods or services	6	574	1
		Other incomes	5	2	2
		Other expenses	-	-	4
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	44	47	50
		Other accounts receivable - related parties	1	-	-
		Other accounts payable - related parties	1	1	1
		Statements of Income Transactions			
13. Business Services Alliance Company Limited (BSA)	- PTTGC holds 25% of the preference shares - Major shareholder (PTT) holds 100% of the shares - Services transaction	Purchases of goods or services	178	262	230
		Other expenses	139	123	96
		Statements of Financial Position Balances			
		Trade accounts payable - related parties	16	21	12
		Other accounts payable - related parties	74	58	64
		Payables to contractor - related parties	10	15	4
		Statements of Income Transactions			
14. PTTEP Siam Limited (PTTEPS)	- Subsidiary of PTTEP - Sales/Purchase transaction of products and services	Sales of goods or rendering of services	77	69	68
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	5	5	6

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
15. PTTEP International Limited (PTTEPI)	- Subsidiary of PTTEP - Services transaction	Statements of Income Transactions			
		Sales of goods or rendering of services	4	6	-
16. PTT Exploration and Production Public Company Limited (PTTEP)	- Major shareholder (PTT) holds 65.29% of the shares - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	21	20	19
		Other incomes	1	-	-
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	3	2	2
17. PTT Tank Terminal Company Limited (PTT TANK)	- Major shareholder (PTT) holds 100% of the shares - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	431	60	51
		Purchases of goods or services	-	-	16
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	185	56	50
18. PTT Asahi Chemical Company Limited (PTTAC)	- Major shareholder (PTT) holds 50% of the shares - Common Director : Mr. Sarun Rungkasiri - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	1,635	1,052	1,027
		Purchases of goods or services	162	161	118
		Other incomes	5	-	2
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	132	72	146
		Other accounts receivable - related parties	-	-	1
		Trade accounts payable - related parties	20	17	10
19. PTT International Trading Private Limited (PTTT)	- Major shareholder (PTT) holds 100% of the shares - Sales/Purchase transaction of products	Statements of Income Transactions			
		Sales of goods or rendering of services	50,391	30,553	13,162
		Purchases of goods or services	250	223	93
		Other expenses	12	15	20
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	4,272	2,408	1,055
		Other accounts receivable - related parties	-	-	47
		Other accounts payable - related parties	6	10	118

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
20. PTT Energy Resources Company Limited (PTTER)	- Major shareholder (PTT) holds 100% of the shares - Services transaction	Statements of Income Transactions			
		Other expense	1	-	-
		Statements of Financial Position Balances			
		Other accounts payable - related parties	1	-	-
21. PTT MCC Biochem Company Limited (PTTMCC)	- Major shareholder (PTT) holds 50% of the shares - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	4	22	7
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	1	7	-
22. PTT LNG Company Limited (PTTLNG)	- Major shareholder (PTT) holds 100% of the shares - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	2	9	3
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	1	2	1
23. PTTEP Services Limited (PTTEP Services)	- Subsidiary of PTTEP - Services transaction	Statements of Income Transactions			
		Other expenses	-	1	3
24. Rayong Olefins Company Limited (ROC)	- HMC (Major shareholder (PTT) holds 41.44% of the shares) holds 14.27% of the shares - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Purchases of goods or rendering of services	71	48	64
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	3	3	-
25. Labix Company Limited (LABIX)	- Subsidiary of TOP - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	-	-	22
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	-	-	2
26. Sakchaisit Co., Ltd. (SAKC)	- Subsidiary of TOP - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	-	-	1,581
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	-	-	150
27. Amata Natural Gas Distribution Company Limited (Amata NGD)	- Subsidiary of PTT Natural Gas Distribution Company Limited (PTTNGD) - Services transaction	Statements of Income Transactions			
		Sales of goods or rendering of services	-	5	-
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	-	5	-

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
28. HMC Polymers Company Limited (HMC)	- Major shareholder (PTT) holds 41.44% of the shares - Shareholder of PTTGC with 1.85% of the shares - Executive who is Director of HMC : Mr.Suvit Tinnachote (Retired) - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	5,295	5,010	4,962
		Purchases of goods or services	450	291	270
		Other incomes	-	-	1
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	444	513	503
		Trade accounts payable - related parties	40	37	33
		Other accounts payable - related parties	-	-	1
29. Energy Complex Company Limited (ENCO)	- Major shareholder (PTT) holds 50% of the shares - Services transaction	Statements of Income Transactions			
		Sales of goods or rendering of services	-	-	30
		Purchases of goods or services	2	-	-
		Other expenses	139	157	161
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	-	-	11
		Other accounts receivable - related parties	32	-	-
		Other accounts payable - related parties	2	2	3
30. IRPC Polyol Company Limited (IRPCP)	- Subsidiary of IRPC - Sales/Purchase transaction of products	Statements of Income Transactions			
		Sales of goods or rendering of services	9	32	33
		Statements of Financial Position Balances			
31. IRPC Public Company Limited (IRPC)	- Major shareholder (PTT) holds 38.51% of the shares - Sales/Purchase transaction of products and services	Statements of Income Transactions			
		Sales of goods or rendering of services	28,926	20,166	13,614
		Purchases of goods or services	20,066	14,345	9,782
		Other incomes	36	74	9
		Other expenses	-	1	-
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	2,161	1,672	1,517
		Other accounts receivable - related parties	-	6	6
		Trade accounts payable - related parties	1,567	1,031	1,421
		Other accounts payable - related parties	-	1	1

Company	Relationship As at 31 st December 2016	Connected Transaction	2014	2015	2016
Baht (Million)					
32. PTTEP SP Limited (PTTEP SP)	- Subsidiary of PTTEP - Services transaction	Statements of Income Transactions			
		Sales of goods or rendering of services	-	1	-
33. PTT International Trading DMCC	- Subsidiary of PTTT - Services transaction	Statements of Income Transactions			
		Sales of goods or rendering of services	437	1,029	321
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	-	-	322
34. TOP Solvent (Vietnam) LLC. (TSV)	- Subsidiary of TOP - Sales/Purchase transaction of products	Statements of Income Transactions			
		Sales of goods or rendering of services	-	27	108
		Statements of Financial Position Balances			
		Trade accounts receivable - related parties	-	4	15

MEASURE AND PROCEDURE FOR APPROVAL OF CONNECTED TRANSACTION

The Company's Articles of Association stated that a Director can acquire or dispose of PTTGC assets or perform any business transaction involving PTTGC either by himself or herself or on behalf of others only with the approval from the Board of Director. Any Director who personally gains from any acquisition or disposal of PTTGC asset or any transaction of PTTGC is not allowed to vote on that matter. After receiving approval from the Board of Directors, PTTGC can perform any business transaction or acquire or dispose of major assets in line with the announcement of the Stock Exchange of Thailand (SET). This also applies to PTTGC's subsidiaries in the SET announcement concerning connected transaction of listed companies as well as the buying and selling of registered company assets.

NEED AND JUSTIFICATION OF CONNECTED TRANSACTION

The sales of products by PTTGC 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 PTTGC. Prices of products trading or services are as agreed by PTTGC and connected companies without any undue transfer of interests or extraordinary items. In addition, PTTGC is required to purchase feedstock from connected companies because the capacity and quality of such feedstock meet its needs. PTTGC also saves on transportation expenses since the feedstock can be transferred safely by PTTGC'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 PTTGC 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 PTTGC 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 PTTGC and connected companies will, as a rule, be linked to market prices. Disclosure of the Company's connected transaction is to comply with the rules and regulations of the Securities and Exchange Commission (SEC) and the Stock Exchange of Thailand (SET). The audit standards for connected parties will be as specified by the Federation of Accounting Professions and Office of the Auditor General.



SHAREHOLDING STRUCTURE

- List of Top Ten Major Shareholders (register book closing date on September 6, 2016)

No.	Shareholders	Shares	(%)
1.	PTT Public Company Limited ⁽¹⁾	2,204,318,915	48.89
2.	Thai NVDR Company Limited ⁽²⁾	440,148,316	9.76
3.	STATE STREET BANK EUROPE LIMITED	105,830,229	2.35
4.	CHASE NOMINEES LIMITED	94,071,533	2.09
5.	NORTRUST NOMINEES LTD-CL AC	89,590,465	1.99
6.	HMC Polymers Company Limited	83,427,636	1.85
7.	The Siam Cement Public Company Limited ⁽³⁾	67,089,975	1.49
8.	THE BANK OF NEW YORK MELLON	63,359,790	1.41
9.	PTT Global Chemical Public Company Limited ⁽⁴⁾	48,553,000	1.08
10.	Social Security Office	45,951,951	1.02

Remarks:

- (1) PTT Group Shareholders includes:
 1. PTT Public Company Limited
 2. HMC Polymers Company Limited (PTT Plc. holds 41.44% of the shares)
- (2) Shareholders of Thai NVDR Company Limited holding Non-Voting Depository Receipt: NVDR, are ineligible for voting at shareholder's meeting except when exercising their voting rights on delisting the shares from SET.
- (3) The Siam Cement Group Shareholders includes:
 1. The Siam Cement Public Company Limited
Number of Shares holding in PTTGC : 67,089,975 shares
 2. Bangkok Synthetics Company Limited (SCC Plc. Holds 48.84% of the shares)
Number of Shares holding in PTTGC: 43,420,625 shares
 3. Thai Plastic and Chemicals Public Company Limited (SCC Plc. and its subsidiaries hold 91.00% of the shares)
Number of Shares holding in PTTGC: 8,541,081 shares
- (4) PTT Global Chemical Public Company Limited's share repurchase program for financial management purpose which was ended on March 7, 2016. Total number of share repurchased is 48,553,000 or equal to 1.077% of paid-up capital.

- In practice the major shareholders with significant influence on the establishment of PTTGC's policy and strategy is PTT Group Shareholders, which in total holds 49.42% in PTTGC.
- Foreign Shareholders
As of December 30, 2016; there are 21 foreign shareholders, holding a combined of 910,939,886 shares (20.20% of paid-up capital)

PTTGC has foreign shareholding limitation as specified in Article 8 of the Article of Association that "PTTGC'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."

DIVIDEND PAYMENT POLICY

PTT Global Chemical Public Company Limited

The Board of Directors Meeting No. 1/2011, held in October 19th, 2011, resolved that the dividend payment policy of PTTGC is to pay dividend at a rate of no less than 30% of net profit after tax and allocation to all reserve funds of PTTGC. 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 PTTGC'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.

“...**Being moderate**

means acknowledging and accepting own intelligence and talent and knowing what kinds of jobs that are suitable. Once being moderate, one will appropriately use knowledge and talent in doing jobs, rendering utmost effectiveness, while searching and **accumulating knowledge** and **experiences** in order to improve the existing **capability...**”

His Majesty King Bhumibol Adulyadej's Address

Giving at the graduation ceremony of Chulalongkorn University

On 18 July 1998

Organization Structure

PTTGC BOARD OF DIRECTORS



Mr. Prasert Bunsumpun

Chairman

Chairman of Independent Directors

Age 65

Appointed : October 19th, 2011 / April 8th, 2014 (re-elected)

Education / Training

- Honorary Doctoral of Arts (Innovation and Management) Faculty of Humanities and Social Sciences, Suan Sunandha Rajabhat University
- Honorary Doctoral of Management, Mahasarakham University
- Honorary Doctoral in Management Science, Phetchaburi Rajabhat University
- Honorary Doctoral in Management, National Institute of Development Administration (NIDA)
- Honorary Doctoral in Engineering, Chulalongkorn University
- M.B.A., Utah State University, U.S.A.
- B.Eng. (Civil Engineering), Chulalongkorn University
- Diploma, National Defence Course for the Joint State-Private Sector, Class 10, The National Defence College
- Certificate in Advance Management Program (Class 155), Harvard Business School, U.S.A.
- Advanced Certificate Course in Politics and Governance in Democratic System for Executives, Class 6, King Prajadhipok's Institute
- Capital Market Academy Leadership Program, Class 3, Capital Market Academy
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 3, Thailand Energy Academy

Director Training

- Director Accreditation Program (DAP) Class 26/2004 and Role of the Chairman Program (RCP) Class 28/2012, Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 4

- Chairman and Chairman of Independent Directors, PTT Global Chemical Public Company Limited
- Chairman and Chairman of the Executive Board of Directors, Thoresen Thai Agencies Public Company Limited
- Independent Director / Chairman of the Nomination and Governance Committee / Member of the Leadership Development and Compensation Committee / Member of the Strategic and Organizational Review Committee, Intouch Holdings Public Company Limited
- Independent Director and Chairman of the Executive Committee, Thaicom Public Company Limited

Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 1

- Chairman and Non-Executive Chairman, Mermaid Maritime Public Company Limited

Position in Other Organizations / Institutions : 5

- Member of the National Legislative Assembly of Thailand
- Chairman, Thailand Business Council for Sustainable Development (TBCSD)
- Chairman, Small and Micro Community Enterprise
- Distinguished Member of Chulalongkorn University Council
- Distinguished Member of the Suranaree University of Technology Council Office

Work Experiences (5-years Past Experiences)

- 2013 - 2017 Independent Director / Chairman of the Remuneration Committee and Member of the Enterprise Risk Management Committee, PTT Public Company Limited
- 2003 - 2011 President and Chief Executive Officer / Director and Secretary to the Board of Directors, PTT Public Company Limited
- 2011 - 2015 Independent Director /
- 2014 - 2015 Chairman of the Board of Executive Directors, Krung Thai Bank Public Company Limited
- 2012 - 2013 Chairman and Chairman of the Executive Board of Directors, IRPC Public Company Limited
- 2005 - 2013 Chairman, Thai Lube Base Public Company Limited
- 2000 - 2011 Chairman / Director, PTT Exploration and Production Public Company Limited
- 2007 - 2011 Director, PTT Aromatics and Refining Public Company Limited
- 2003 - 2011 Chairman, Independent Power of Thailand Company Limited
- 2003 - 2011 Chairman / Director, Thai Oil Power Company Limited

Shareholding : Spouse 271,142 shares (0.006014%) as of December 31st, 2016

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mr. Somchai Kuvijitsuwan
Independent Director
Chairman of the Audit Committee
Age 65

Appointed : October 19th, 2011 / April 2nd, 2012 (1st re-elected) / April 1st, 2015 (2nd re-elected)

Education / Training

- LL.B., Ramkhamhaeng University Class 1
- Barrister at Law, Class 27, Institute of Thai Bar Association
- Master of Political Science, National Institute of Development Administration
- Provincial Public Prosecutor Program, Class 9/1987
- Capital Market Academy Leadership Program, Class 9, Capital Market Academy
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 2, Thailand Energy Academy

Director Training

- Director Accreditation Program (DAP) Class 56/2006
- Director Certification Program (DCP) Class 76/2006
- Understanding the Fundamental of Financial Statement (UFS) Class 3/2006 and Role of the Chairman Program (RCP) Class 28/2012, Thai Institute of Directors Association (IOD)
- PTT Group AC Forum 2016 "Audit Committee : Yesterday Today and Tomorrow" by PTT Public Company Limited
- Audit Committee Seminar - AC Hot Update Federation of Accounting Professions under the Royal Patronage of his Majesty the King

Board member / Management in Listed Company - The Stock Exchange of Thailand : 3

- Independent Director and Chairman of the Audit Committee, PTT Global Chemical Public Company Limited
- Independent Director and Chairman, AQ Estate Public Company Limited
- Independent Director, WP Energy Public Company Limited

Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 3

- Independent Director and Chairman of the Audit Committee, Thonburi Health Group Public Company Limited
- Independent Director and Chairman of the Audit Committee, Eastern Power Group Public Company Limited
- Independent Director and Director to the Audit Committee, Prima Marine Company Limited

Position in Other Organization / Institution : None

Work Experiences (5-years Past Experiences)

- 2009 - 2016 Commissioner in the Customs Appeal Committee
- 2009 - 2016 Commissioner / Chairman of the Audit Committee and Chairman of the Board of Appeals Office of the Securities and Exchange Commission, Thailand
- 2013 - 2015 Director-General, Department of Economic Crime Litigation
- 2011 - 2014 Director / Chairman of Corporate Governance and Social Responsibility Committee and Chairman of Risk Management and Internal Control Committee, Provincial Electricity Authority
- 2011 - 2013 Director-General, Department of Public Prosecutor Commission, Office of the Attorney General
- 2001 - 2013 Chairman, Krungthai Laws Company Limited

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Vasin Teeravechyan
Independent Director
Chairman of the Nomination and Remuneration Committee
Age 68



Appointed : October 19th, 2011 / April 2nd, 2012 (1st re-elected) / April 1st, 2015 (2nd re-elected)

Education / Training

- M.A. (Law), Chulalongkorn University
- B.A. (Law), Chulalongkorn University
- Barrister at Law, Thailand, 1972
- The National Defence College of Thailand, Class 40

Director Training

- Director Accreditation Program (DAP) Class 94/2012
- Director Certification Program (DCP) Class 155/2012
- Role of the Nomination and Governance Committee (RNG) Class 5/2013 and Seminar on Directors' Compensation Survey 2016 and "Non-Executive Directors' Compensation - Global Practices and Trends", Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 1

- 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 : 8

- Advisor, Ministry of Foreign Affairs
- Chairman (Thailand), Thai - Malaysia Land Boundary Committee
- Member of the Special Committee for the Consideration of Treaties, Ministry of Foreign Affairs
- Vice Chairman (Thailand), Thai - Laos Land Boundary Committee
- Vice Chairman (Thailand), Thai - Myanmar Joint Committee on Demarcation for Land Boundary
- Vice Chairman, Thai - Korean Friendship Association
- Member of the Sub-Committee for Appeal Consideration, Bank for Agriculture and Agricultural Co-Operatives
- Advisor, Mitr Phol Sugar Corp. Ltd.

Work Experiences (5-years Past Experiences)

- 2009 - 2014 Vice-Chairman (Thailand), Thai - Cambodia Joint Technical Committee (Delimitation of Sea Boundary)
- 2008 - 2014 Chairman (Thailand), Thai - Myanmar Joint Committee on Demarcation for Land Boundary Chairman (Thailand), Senior Officials' Meeting of the Thai-Laos Land Boundary Committee

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Professor Surapon Nitikraipot
Independent Director
Chairman of the Corporate
Governance Committee
Director to the Nomination and Remuneration Committee
Age 56

Appointed : September 22nd, 2014 / April 1st, 2015 (re-elected)

Education / Training

- Honorary Doctoral, Soka University, Japan
- Doctorat en droit (mention très honorable), l'Université Robert Schuman de Strasbourg, France
- Diplôme d'études approfondies (D.E.A.) de droit Public, Strasbourg III, France
- Barrister at Law, Class of 35th, Institute of Thai Bar Association of Thailand
- Bachelor of Laws (Second Class Honors), Thammasat University
- Certificat, La Décentralisation et l'Administration Locale, Institut International d'Administration Publique (IIAP), Paris, France
- Capital Market Academy Leadership Program, Class 4, Capital Market Academy
- Diploma, National Defence Course for the Joint State-Private Sector, Class 23, The National Defence College, 2010
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 7, Thailand Energy Academy

Director Training

- Director Certification Program (DCP) Class 102/2008 and Role of the Chairman Program (RCP) Class 25/2011 Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 1

- Independent Director / Chairman of the Corporate Governance Committee and Director to 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 : 6

- Professor, Faculty of Law, Thammasat University
- Member of Council of State, Office of the Council of State
- Honorable Member of the Civil Service Commission in Higher Education
- Chairman of the Executive Directors, Thammasat University Hospital
- Member of the 8th Committee of Council of State, Office of the Council of State
- President of the Navamindradhiraj University Council

Work Experiences (5-years Past Experiences)

- 2014 - 2016 Chairman, The Krungthep Thanakom Company Limited
- 2009 - 2013 Honorable Member and Chairman of the Audit Committee, Mahidol Wittayanusorn School
- 2010 - 2012 Independent Director and Director to the Corporate Governance Committee, PTT Public Company Limited
- 2009 - 2011 Chairman of the Board, MCOT Public Company Limited
- 2004 - 2010 Rector of Thammasat University

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Anon Sirisaengtaksin
Director
Chairman of the Risk Management Committee
Age 64



Appointed : September 22nd, 2014 / April 5th, 2016 (re-elected)

Education / Training

- Honorary Doctor of Public Administration, Bangkok Thonburi University
- M.B.A., Thammasat University
- B.Sc. (Geology), Chulalongkorn University
- Certificate in Project Investment Appraisal and Management and Certificate in Global Leadership, Harvard University, U.S.A.
- Capital Market Academy Leadership Program, Class 1, Capital Market Academy

Director Training

- Director Accreditation Program (DAP) Class 52/2006 and 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

- Director and Chairman of the Risk Management Committee, PTT Global Chemical Public Company Limited
- Director and Member of the Corporate Governance and Nomination Committee, Banpu Public Company Limited

Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 9

- Chairman, PTT Chemical International Private Limited
- Chairman, NatureWorks LLC
- Chairman, Vencorex Holding
- Chairman, Myriant Corporation
- Director, Emery Oleochemicals (M) Sdn. Bhd.

- Director, Emery Specialty Chemicals Sdn. Bhd.
- Director / President, PTTGC International (USA) Inc.
- Director, PTTGC International (Netherlands) B.V.
- Independent Director / Chairman of the Audit Committee and Chairman of the Nomination and Remuneration Committee, Bangkok Commercial Asset Management Public Company Limited

Position in Other Organizations / Institutions : 2

- Chairman of Bioeconomy, New S-Curve Committee under the Pracharat PPP Collaboration Project
- Council Committee, King Mongkut's Institute of Technology Ladkrabang Council

Work Experiences (5-years Past Experiences)

- 2014 - 2016 Chairman, PTT Chemical International (Asia Pacific ROH) Limited
- Oct. 2014 - Sep. 2015 Member of the National Reform Council
- 1 Oct. 2013 - 21 Sep. 2014 Advisor, PTT Global Chemical Public Company Limited
- 2012 - 2013 Director and Chief Executive Officer, PTT Global Chemical Public Company Limited
- 2008 - 2013 Senior Executive Vice President, PTT Public Company Limited
- 2010 - 2012 President and Chief Executive Officer, PTT Exploration and Production Public Company Limited

Shareholding : 86,027 shares; Spouse 6,705 shares (0.002057%) as of December 31st, 2016

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mr. Amnuay Preemonwong
Independent Director
Director to the Audit Committee
Director to the Risk Management
Age 58

Appointed : October 19th, 2011 / April 8th, 2014 (re-elected)

Education / Training

- M.P.A., National Institute of Development Administration
- L.L.B., Sukhothai Thammathirat Open University
- B.A. in Economics, Ramkhamhaeng University
- Advanced Executive Program, Kellogg School of Management, Northwestern University, U.S.A.
- National Defence College, Class 51
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 8, Thailand Energy Academy

Director Training

- Director Certification Program (DCP) Class 80/2006
- Financial Statement for Directors (FSD) Class 11/2011
- Audit Committee Program (ACP) Class 38/2012
- and Anti-Corruption for Executive Program (ACEP) Class 13/2014, Thai Institute of Directors Association (IOD)

**Board member / Management in Listed Company -
The Stock Exchange of Thailand : 1**

- Independent Director / Director to the Audit Committee 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 Organizations / Institutions : 3

- Deputy Permanent Secretary of Ministry of Finance
- Director, Thailand Tobacco Monopoly, Ministry of Finance
- Director, The State Railway of Thailand

Work Experiences (5-years Past Experiences)

- 2015 - 2016 Director, Bangkok Commercial Asset Management Public Company Limited
- 2011 - 2016 Independent Director, Nusasiri Public Company Limited
- 2015 Director, Don Muang Tollway Public Company Limited
- 2012 - 2014 Director, Tourism Authority of Thailand
- 2012 - 2014 Committee Member, Government Savings Bank
- 2009 - 2013 Inspector General, Ministry of Finance
- 2012 Chairman, Thailand Tobacco Monopoly
- 2009 - 2012 Chairman, CAT Telecom Public Company Limited

Shareholding : None

**Relation among Family with other Directors, Management,
Major Shareholders of the Company or Subsidiaries : None**



Mr. Prasan Chuaphanich
Independent Director
Director to the Audit Committee
Age 65



Appointed : April 5th, 2016

Education / Training

- Bachelor of Accounting (Second Class Honor), Chulalongkorn University
- Diploma in Auditing Chulalongkorn Business School, Chulalongkorn University
- Certified Public Accountant (Thailand)
- Executive Management Program, Ivey School of Business, University of Western Ontario, Canada
- Leading Professional Services Firms Harvard Business School, Boston, U.S.A.

Director Training

- Director Certification Program (DCP) Class 119/2009 and Financial Institution Governance Program (FGP) Class 6/2013, Thai Institute of Directors Association (IOD)
- Audit Committee Seminar - AC Hot Update, Federation of Accounting Professions under the Royal Patronage of his Majesty the King

**Board member / Management in Listed Company -
The Stock Exchange of Thailand : 3**

- Independent Director and Director to the Audit Committee, PTT Global Chemical Public Company Limited
- Independent Director / Chairman of the Audit Committee, The Siam Commercial Bank Public Company Limited
- Independent Director / Director to the Audit Committee and Chairman of the Nomination and Remuneration Committee, Thai Solar Energy Public Company Limited

**Board member / Management in Non-Listed Company -
The Stock Exchange of Thailand : None**

Position in Other Organizations / Institutions : 11

- President of the Federation of Accounting Professions under the Royal Patronage of His Majesty the King
- Audit Committee Member, Mahidol University Council
- Expert Member of the General Insurance Fund under the Ministry of Finance
- Commission Member (Accounting) and Audit Committee of the Insurance Commission, Thailand
- Commission Member, OIC Advanced Insurance Institute
- Expert Member (Accounting) of the Committee on Dumping and Subsidy, Thailand
- Board of Directors / Chairman of the Audit Committee and Member of the Advisory Committee on Corporate Governance and Policy, Thai Institute of Directors Association (IOD)
- CAC Certification Committee Member, The Private Sector Collective Action Coalition Against Corruption (CAC) Certification Committee
- Member of the Finance and Property Committee, King Mongkut's University of Technology Thonburi
- Member of IFRS Advisory Council
- President, Faculty of Commerce and Accountancy, Chulalongkorn University Alumni Association

Work Experiences (5-years Past Experiences)

- 2008 - 2012 Executive Chairman, PricewaterhouseCoopers (Thailand)
- 2008 - 2012 Co- Executive Chairman, PricewaterhouseCoopers Southeast Asia Peninsula Region

Shareholding : None

**Relation among Family with other Directors, Management,
Major Shareholders of the Company or Subsidiaries : None**



Mr. Sarun Rungkasiri

Director

Director to the Nomination and Remuneration Committee

Director to the Risk Management Committee

Age 60

Appointed : October 18th, 2013 / April 8th, 2014 (re-elected)

Education / Training

- Master of Science in Management, Polytechnic Institute of New York, U.S.A.
- Bachelor of Engineering in Industrial Engineering, Chulalongkorn University
- Thirty Fourth Oxford Energy Seminar, St. Catherine's College, Oxford University, U.K.
- NIDA-Wharton Executive Leadership Program 2009, The Wharton School of the University of Pennsylvania, U.S.A.
- The Joint State - Private Sector Course, National Defence College, (Class of 23rd)
- Top Executive in Industrial Development and Investment, Class 1, Institute of Business and Industrial Development (IBID)
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 5, Thailand Energy Academy

Director Training

- Company Secretary Program (CSP) Class 8/2004
- Director Certification Program (DCP) Class 61/2005
- Finance for Non-Finance Director (FND) Class 19/2005 and Seminar "Briefing on International Anti-Corruption International cases and practices"
- Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company -

The Stock Exchange of Thailand : 3

- Chief Operating Officer, Downstream Petroleum Business, PTT Public Company Limited
- Director / Director to the Nomination and Remuneration Committee and Director to the Risk Management Committee, PTT Global Chemical Public Company Limited

- Director / Chairman of the Risk Management Committee and Director to the Nomination and Remuneration Committee, Thai Oil Public Company Limited

Board member / Management in Non-Listed Company -

The Stock Exchange of Thailand : 1

- Chairman, PTT Asahi Chemical Company Limited

Position in Other Organization / Institution : 1

- Chairman, Engineering Alumni Association of Chulalongkorn University

Work Experiences (5-years Past Experiences)

- 2016 Club President, PTT Rayong Football Club
- 15 Oct. 13 - 1 Apr. 16 Director / Chairman of the Risk Management Committee and Director to the Nomination and Remuneration Committee, IRPC Public Company Limited
- 2014 - 2015 Chairman, PTT Polymer Marketing Company Limited
- 2011 - 2013 Senior Executive Vice President, Oil Business Unit, PTT Public Company Limited
- 2010 - 2011 Executive Vice President - Retail Marketing, PTT Public Company Limited
- 2009 - 2010 Executive Vice President - Commercial & International Marketing, PTT Public Company Limited

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mrs. Watanan Petersik

Independent Director

Age 56

Appointed : September 22nd, 2014 / April 5th, 2016 (re-elected)

Education / Training

- AB Bryn Mawr College, Pennsylvania, U.S.A.
- Bursatra Sdn. Bhd. Mandatory Accreditation Programme (MAP) for Directors of Public Listed Companies (March 2010)

Director Training

- Director Accreditation Program (DAP) Class 83/2010, Thai Institute of Directors Association (IOD)
- Certificate : Role of Director, Singapore Institute of Directors Course

Board member / Management in Listed Company -

The Stock Exchange of Thailand : 2

- Independent Director, PTT Global Chemical Public Company Limited
- Independent Director / Chairperson of Nomination and Remuneration and Corporate Governance Committee and Member of Board Risk Committee, CIMB Thai Bank Public Company Limited

Board member / Management in Non-Listed Company -

The Stock Exchange of Thailand : 7

- Independent Director, CIMB Holdings Berhad, Malaysia
- Director, Asia Capital Advisory Pte Ltd.
- Director, TE Asia Healthcare Advisory Pte Ltd.
- Director, TE Asia Healthcare Partners Pte Ltd.
- Director, TPG Growth III Asia Internet Holdings Pte Ltd.
- Director, TPG Growth SF Pte Ltd.
- Director, TPG Star SF Pte Ltd.

Position in Other Organization / Institution : 1

- Director, Lien Centre for Social Innovation Singapore Management University

Work Experiences (5-years Past Experiences)

- 2010 - 2016 Member of Audit Committee, CIMB Thai Bank Public Company Limited
- 2015 Senior Advisor / Consultant, TPG Capital Asia

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mr. Don Wasantapruerk

Independent Director

Director to the Corporate Governance Committee

Age 58

Appointed : November 1st, 2015/ April 5th, 2015 (re-elected)

Education / Training

- Master of Industrial Engineering, University of New South Wales, Sydney, Australia
- Bachelor of Industrial Engineering, University of New South Wales, Sydney, Australia
- Thailand's 5th National Conference on Collective Action Against Corruption Tackling Corruption through Public - Private Collaboration (October 16th, 2014)
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 6, Thailand Energy Academy

Director Training

- 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 Member of the Corporate Governance Committee, PTT Public Company Limited
- Independent 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 Organization / Institution : None

Work Experiences (5-years Past Experiences)

- 2009 - Present Self-employed

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Colonel Nithi Chungcharoen

Independent Director

Director to the Corporate Governance Committee

Age 46



Appointed : September 22nd, 2014 / April 1st, 2015 (re-elected)

Education / Training

- Master of Engineering (Mechanical), Stevens Institute of Technology, New Jersey, U.S.A.
- Bachelor of Science, Chulachomklao Royal Military Academy
- Command and General Staff College, Class 80
- Peace Keeping Operation Course
- Peace Mediation Course

Director Training

- Director Certification Program (DCP) Class 200/2015 and Role of the Nomination and Governance Committee Class 8/2016, Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 1

- Independent 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 Organization / Institution : 1

- Deputy Defence Attaché, Canberra, Australia

Work Experiences (5-years Past Experiences)

- 2014 - 2015 Attached to Directorate of Intelligence
- 2013 - 2014 Deputy Chief of Staff, 11th Army Circle
- 2012 - 2013 Staff Officer Commanding General Office
- 2010 - 2012 Battalion Commander, 3rd Battalion 21st Regiment Queen Guard

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mr. Auttapol Rerkpiboon

Director

Director to the Corporate Governance Committee

Director to the Risk Management Committee

Age 51

Appointed : October 1st, 2015

Education / Training

- Master of Economics Program, National Institute of Development Administration (NIDA)
- Bachelor of Engineering (Civil Engineering), Chulalongkorn University
- Diploma of Petroleum Management, College of Petroleum Studies, Oxford, England
- Advanced Certificate Course in Politics and Governance in Democratic System for Executives, Class 14, King Prajadhipok's Institute
- Capital Market Academy Leadership Program, Class 20, Capital Market Academy
- NIDA-Wharton Executive Leadership Program 2009, The Wharton School of the University of Pennsylvania, U.S.A.
- PTT Executive Leadership, General Electric, GE, New York, U.S.A.
- Executive Development Program (EDP), The Stock Exchange of Thailand
- The National Defence Course (Class 58), National Defence College

Director Training

- Director Certification Program (DCP) Class 173/2013, Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 2

- Senior Executive Vice President - Oil Business Unit, PTT Public Company Limited
- Director / Director to the Corporate Governance Committee 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 Retail Business Company Limited
- Chairman, PTT Oil and Retail Business Company Limited

Position in Other Organization / Institution : 1

- Director, Sustainable Energy Foundation

Work Experiences (5-years Past Experiences)

- Oct. 2014 - Sep. 2015 Senior Executive Vice President - Sustainability Management and Project Engineering, PTT Public Company Limited
- Jun. 2015 - Oct. 2015 Director, IRPC Public Company Limited
- Feb. 2015 - May 2015 Director, Bangchak Petroleum Public Company Limited
- Dec. 2014 - Nov. 2015 Director, Energy Complex Company Limited
- Oct. 2013 - Oct. 2014 Director, PTT Retail Management Company Limited
- Nov. 2001 - Sep. 2014 Executive Vice President - Retail Marketing, PTT Public Company Limited
- Aug. 2012 - Oct. 2014 Chairman, PTT (Cambodia) Limited
- May 2012 - Oct. 2014 Chairman, Subic Bay Energy Company Limited (Philippines)
- Jun. 2012 - Oct. 2013 Chairman, PTT (LAO) Company Limited
- May 2011 - Oct. 2013 Executive Vice President - Commercial & International Marketing, PTT Public Company Limited
- Apr. 2011 - Apr. 2012 Director, Independent Power of Thailand Company Limited
- Apr. 2011 - Mar. 2012 Director, PTT Utility Company Limited
- 2011 Director, PTT Polymer Marketing Company Limited
- Oct. 2009 - May 2011 Executive Vice President - Corporate Communication & Social Responsibility, PTT Public Company Limited

Shareholding : Spouse 990 shares (0.000022%) as of December 31st, 2016

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mrs. Boobpha Amornkiatkajorn

Director

Age 58

Appointed : October 1st, 2014 / April 1st, 2015 (re-elected)

Education / Training

- Master of Business Administration (M.B.A.) Finance (Honor), NIDA
- Bachelor of Science Program in Economics (Honor), Kasetsart University
- Capital Market Academy Leadership Program, Class 21, Capital Market Academy, 2015
- Breakthrough Program for Senior Executives (BPSE) Class 2012, IMD Institute in Switzerland
- Leadership Development Program Class 2009, Institute Center for Creative Leadership, U.S.A.
- Army War College Class 2008, Institute of Army Academics
- Senior Executive Program Class 2003, Sasri Graduate Institute of Business Administration of Chulalongkorn University

Director Training

- Director Certification Program (DCP) Class 152/2011, 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, PTT Global Chemical Public Company Limited

Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 2

- Director, PTT Polymer Marketing Company Limited
- Director, Tiger Energy Trading Pte. Ltd.

Position in Other Organization / Institution : 1

- Vice Chairman Executive Committee, The Institute of Industrial Energy, The Federation of Thai Industries

Work Experiences (5-years Past Experiences)

- 2014 Executive Vice President, Trading Operation - International Trading Business Unit, PTT Public Company Limited
- 2010 - 2014 Executive Vice President - Downstream Business Group Alignment, PTT Public Company Limited
- 2010 - 2013 Director, Thai Oil Marine Company Limited

Shareholding : 57,700 shares (0.001280%) as of December 31st, 2016

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mr. Praphon Wongtharua

Director

Age 56

Appointed : August 24th, 2015

Education / Training

- Master of Engineering (Mechanical Engineering), Chulalongkorn University
- Bachelor of Engineering (Mechanical Engineering), King Mongkut's University of Technology North Bangkok
- Diploma, National Defence College, The National Defence Course Class 2013
- Joint Staff College, Class 45
- Senior Executive Program on Visionary Leadership (Class 55), Office of the Civil Service Commission (OCSC)
- Change Management Leadership Program (The Leadership Grid)
- Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 8, Thailand Energy Academy

Director Training

- Director Certification Program (DCP) Class 218/2016 and Financial Statements for Director (FSD) Class 31/2016, Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 1

- Director, PTT Global Chemical Public Company Limited

Board member / Management in Non-listed Company - The Stock Exchange of Thailand : None

Position in Other Organization / Institution :

- Director General, The Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy

Work Experiences (5-years Past Experiences)

- | | |
|------------------------------|--|
| - 2015 - 2016 | Deputy Permanent Secretary, Ministry of Energy |
| - 1 Oct. 2014 - 20 Jul. 2015 | Inspector - General, Ministry of Energy |
| - Feb. 2014 - Sep. 2014 | Deputy Director-General, Energy Policy and Planning Office |
| - 2008 - 2014 | Director, Bureau of Biofuel Development, Department of Alternative Energy Development and Efficiency |

Shareholding : None

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Supattanapong Punmeechaow

Director and Secretary to the Board of Directors

Director to the Risk Management Committee

Age 57



Appointed : September 25th, 2014 / April 5th, 2016 (re-elected)

Education / Training

- M.B.A., Chulalongkorn University
- B. Eng. (Chemical Engineering), Chulalongkorn University
- Advance Management Program, INSEAD University, France
- The National Defence Course (Class 50) and The Joint State-Private Sector Course (Class 20), National Defence College
- Oxford Energy Seminar 2013, United Kingdom
- Certificate in Top Executives in the Energy Education Program, Thailand Energy Academy (Class 4)
- Corporate Governance Program for Directors and Executives of State Enterprises and Public Organizations (Class 12), 2014, King Prajadhipok's Institute-State Enterprise Policy Office and Office of the Public Sector Development Commission
- The Rule of Law and Democracy Course (Class 3), 2015, College Constitution
- Capital Market Academy Leadership Program, Class 23, Capital Market Academy

Director Training

- Director Certification Program (DCP) Class 131/2010 and Role of the Chairman Program (RCP) Class 30/2013, Thai Institute of Directors Association (IOD)

Board member / Management in Listed Company - The Stock Exchange of Thailand : 4

- Senior Executive Vice President, PTT Public Company Limited
- Director and Secretary to the Board of Directors and Director to the Risk Management Committee / President & Chief Executive Officer, PTT Global Chemical Public Company Limited
- Chairman, Vinythai Public Company Limited
- Director, Global Power Synergy Public Company Limited

Board member / Management in Non-listed Company - The Stock Exchange of Thailand : 2

- Director, PTT Chemical International Private Limited
- Chairman, Global Green Chemicals Public Company Limited

Position in Other Organizations / Institutions :

- Member, Council of Trustees, Petroleum Institute of Thailand
- Chairman of the Community Partnership
- Honorary Member of Vidyasirimedhi Institute Council
- Member of Kamnoetvidya Science Academy

Work Experiences (5-years Past Experiences)

- | | |
|-------------------------------|--|
| - 2016 | Director of the Center of Excellence on Environmental Health and Toxicology (EHT), Mahido University |
| - 10 Aug. 2015 - 20 Jan. 2016 | Chairman, Thai Fatty Alcohol Company Limited |
| - 2014 - 19 Nov. 2015 | Chairman, Sport Services Alliance Limited |
| - 1 Aug. 2014 - 31 Dec. 2014 | Director, Islamic Bank of Thailand |
| - 1 Apr. 2012 - 30 Sep. 2014 | Senior Executive Vice President - Corporate Strategy, PTT Public Company Limited |
| - 2009 - 2011 | Executive Vice President - Business Development, PTT International Company Limited and Executive Vice President - Corporate Strategy, PTT Public Company Limited |
| - 30 Oct. 2013 - 25 Sep. 2014 | Director and Director of the Nomination and Remuneration Committee, Bangchak Petroleum Public Company Limited |
| - 27 May 2011 - 19 Sep. 2014 | Director, Sakari Resources Limited |

Shareholding : 60,000 shares (0.001331%) as of December 31st, 2016

Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

PTTGC EXECUTIVES



1 Mr. Supattanapong Punmeechaow
President and Chief Executive Officer

2 Miss Duangkamol Settanung
EVP-Finance and Accounting

3 Mr. Narongsak Jivakanun
EVP-Corporate Strategy

4 Mr. Siridech Kumvongdee
EVP-Organizational Effectiveness

5 Mr. Toasaporn Boonyapipat
EVP-International Business
Operations

6 Mrs. Warawan Tippawanich
SVP-Corporate Affairs
and Corporate Secretary

7 Mr. Saroj Putthammawong
SVP-Marketing, Commercial and
Supply

8 Mr. Chaya Chandavas
SVP-Science and Innovation

9 Mr. Kongkrapan Intarajang
Chief Operating Officer-Upstream
Petrochemical Business



10 Mr. Anutin Chuaypen
SVP-Group Performance
Center-Refinery and Shared
Facilities

11 Mr. Pukpong Wungrattanasopon
SVP-Group Performance
Center-Aromatics

12 Mr. Boonchai Chunhawiksit
SVP-Group Performance
Center-Olefins

13 Mr. Patiparn Sukorndhaman
Chief Operating Officer-Downstream
Petrochemical Business

14 Mr. Pairote Utaisup
EVP-Polymers Business Unit

15 Mr. Wiboon Chuchepchunkamon
SVP-EO-Based Performance
Business Unit

16 Mr. Jirawat Nooritanon
SVP-Green Chemicals
Business Unit

17 Mr. Kumpol Chaikitkosi
SVP-Phenol Business Unit

18 Mr. Varit Namwong
Chief Operating Officer
Center of Excellence

19 Mr. Wirat Boonbumrungchai
SVP-Quality, Safety,
Occupational Health
and Environment

20 Mrs. Jeeranee Pimthanothai
SVP-Technical and Operations
Excellence

21 Mr. Suwat Suratchaikarn
SVP-CAPEX Excellence

PTTGC EXECUTIVES

Mr. Supattanapong Punmeechaow

President & Chief Executive Officer

- Age : 57
- Appointed : October 1st, 2014
- Education / Training
 - M.B.A., Chulalongkorn University
 - B. Eng. (Chemical Engineering), Chulalongkorn University
 - Advance Management Program, INSEAD University, France
 - The National Defence Course (Class 50) and The Joint State-Private Sector Course (Class 20), National Defence College
 - Oxford Energy Seminar 2013, United Kingdom
 - Certificate in Top Executives in the Energy Education Program, Thailand Energy Academy (Class 4)
 - Corporate Governance Program for Directors and Executives of State Enterprises and Public Organizations (Class 12), 2014, King Prajadhipok's Institute-State Enterprise Policy Office and Office of the Public Sector Development Commission
 - The Rule of Law and Democracy Course (Class 3), 2015, College Constitution
 - Capital Market Academy Leadership Program, Class 23, Capital Market Academy
 - Director Certification Program (DCP) Class 131/2010 and Role of the Chairman Program (RCP) Class 30/2013, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 4
 - Senior Executive Vice President, PTT Public Company Limited
 - Director and Secretary to the Board of Directors and Director to the Risk Management Committee / President & Chief Executive Officer, PTT Global Chemical Public Company Limited
 - Chairman, Vinythai Public Company Limited
 - Director, Global Power Synergy Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 2
 - Director, PTT Chemical International Private Limited
 - Chairman, Global Green Chemicals Public Company Limited
- Position in Other Organizations / Institutions : 4
 - Member, Council of Trustees, Petroleum Institute of Thailand
 - Chairman of the Community Partnership
 - Honorary Member of Vidyasirimedhi Institute Council
 - Member of Kamnoetvidya Science Academy
- Work Experiences (5-years Past Experiences)
 - 2016 Director of the Center of Excellence on Environmental Health and Toxicology (EHT), Mahidol University
 - 10 Aug. 2015 - 20 Jan. 2016 Chairman, Thai Fatty Alcohol Company Limited
 - 2014 - 19 Nov. 2015 Chairman, Sport Services Alliance Limited
 - 1 Aug. 2014 - 31 Dec. 2014 Director, Islamic Bank of Thailand
 - 1 Apr. 2012 - 30 Sep. 2014 Senior Executive Vice President - Corporate Strategy, PTT Public Company Limited
 - 2009 - 2011 Executive Vice President -Business Development, PTT International Company Limited and Executive Vice President - Corporate Strategy, PTT Public Company Limited
 - 30 Oct. 2013 - 25 Sep. 2014 Director and Director of the Nomination and Remuneration Committee, Bangchak Petroleum Public Company Limited
 - 27 May 2011 - 19 Sep. 2014 Director, Sakari Resources Limited
- Shareholding : 60,000 shares (0.001331%) as of December 31st, 2016
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Kongkrapan Intarajang

Chief Operating Officer - Upstream Petrochemical Business

- Age : 49
- Appointed : April 1st, 2017
- Education / Training
 - Ph.D. Chemical Engineering, University of Houston, U.S.A.
 - B.Eng. Chemical Engineering (2nd Class Honors), Chulalongkorn University
 - Breakthrough Program for Senior Executives, IMD Business School
 - Director Certification Program (DCP) Class 119/2009 and Role of the Chairman Program (RCP) Class 21/2009, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - Chief Operating Officer - Upstream Petrochemical Business, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 10
 - Director / Chief Executive Officer, PTT Chemical International Private Limited
 - Director, Emery Oleochemicals (M) Sdn. Bhd.
 - Director, Emery Specialty Chemicals Sdn. Bhd.
 - Director / Vice President, PTTGC International (USA) Inc.
 - Director, NatureWorks LLC
 - Director, Vencorex Holding
 - Director, Myriant Corporation
 - Director, PTTGC International (Netherlands) B.V.
 - Director / President & CEO, PTTGC America Corporation
 - Director, PTTGC America LLC
- Work Experiences (5-years Past Experiences)
 - 1 Oct. 14 - 31 Mar. 17 Executive Vice President - International Business Operations, PTT Global Chemical Public Company Limited
 - 2012 - 2014 Executive Vice President reporting to Chief Executive Officer, PTT Global Chemical Public Company Limited - appointed as Chief Executive Officer of Emery Oleochemicals (M) Sdn. Bhd.
 - 2011 - 2012 Senior Vice President, PTT Global Chemical Public Company Limited - appointed as Chief Executive Officer of Emery Oleochemicals (M) Sdn. Bhd.
 - 2009 - 2011 Senior Vice President, PTT Global Chemical Public Company Limited - appointed as Chief Executive Officer of Emery Oleochemicals (M) Sdn. Bhd.
- Shareholding : None
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Patiparn Sukorndhaman

Chief Operating Officer - Downstream Petrochemical Business

- Age : 55
- Appointed : January 1st, 2016
- Education / Training
 - M.B.A. (Finance), The American University, U.S.A.
 - B.A. Political Science (Public Administration - Public Finance), 2nd Class Honors, Chulalongkorn University
 - Graduate Diploma in Public Law and Management (PLM 8), King Prajadhipok's Institute
 - Certification Program for Senior Management 5 (Ex - PSM 5), Fiscal Policy Research Institute Foundation
 - Certificate Program for GE : PTT Executive Program, GE U.S.A., 2012
 - Certification Program for "Breakthrough Program for Senior Executives", IMD Executive Development Services, Switzerland, 2014
 - Certification Program for "Leadership Development Program III (LDP III)", PTT Leadership and Learning Institute, 2014
 - Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 7, Thailand Energy Academy, 2015
 - The National Defence Course (Class 59), National Defence College
 - 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
 - Chief Operating Officer - Downstream Petrochemical Business and acting Senior Vice President - High Volume Specialties Business Unit, PTT Global Chemical Public Company Limited
 - Director and Member of Nomination and Remuneration Committee, Global Power Synergy Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 6
 - Chairman, TOC Glycol Company Limited
 - Chairman, Thai Styrenics Company Limited
 - Chairman, Solution Creation Company Limited
 - Director, PTT Polymer Marketing Company Limited
 - Director, Global Green Chemicals Public Company Limited
 - Director, PTT Phenol Company Limited
- Work Experiences (5-years Past Experiences)
 - Sep. 2012 - 2015 Director, PTT Chemical International Private Limited
 - Oct. 2009 - 20 Jan. 2016 Director, Thai Fatty Alcohol Company Limited
 - 19 Oct. 2011 - 31 Dec. 2015 Executive Vice President - Finance & Accounting, PTT Global Chemical Public Company Limited
 - 2011 - 31 Jan. 2015 Director, PTT ICT Solutions Company Limited
 - 2009 - 2014 Director, Bio Creation Company Limited
 - 2009 - 2012 Director, PTT Polyethylene Company Limited
 - 2009 - 2012 Director, Thai Ethanolamines Company Limited
 - 2009 - 2011 Executive Vice President - Finance & Accounting, PTT 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 : 53
- Appointed : October 1st, 2016
- Education / Training
 - Master of Business Administration, Business Administration (International Program), Ramkhamhaeng University
 - Bachelor of Business Administration, Marketing, Assumption Business Administration College
 - Certificate of Senior Executive Program (SEP), Sasin Graduate Institute of Business Administration of Chulalongkorn University
 - Certificate of Leadership Development Program III (LDP III), PTT Leadership and Learning Institute, 2014
 - Certificate of Advanced Human Resource Executive Program, The Stephen M. Ross School of Business, University of Michigan, 2014
 - Director Accreditation Program (DAP) Class 91/2011 and Director Certification Program (DCP) Class 160/2012, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - Chief Operating Officer - Center of Excellence and acting Executive Vice President - External Affairs, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 7
 - Chairman, NPC S&E Safety and Environmental Service Company Limited
 - Chairman, PTT Maintenance and Engineering Company Limited
 - Director, PTT Energy Solutions Company Limited
 - Director, PTT Chemical International Private Limited
 - Director, Sport Services Alliance Limited
 - Director, PTTGC America Corporation
 - Director, PTTGC America LLC
- Work Experiences (5-years Past Experiences)
 - 19 Oct. 2011 - 30 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 ICT Solutions Company Limited
 - 2011 - 2016 Director, Solution Creation Company Limited
 - 2014 Director, Myriant Corporation
 - 2011 - 2014 Director, Thai Styrenics Company Limited
 - 2009 - 2011 Executive Vice President - Human Resources & Corporate Administration, PTT Aromatics and Refining Public Company Limited
- Shareholding : 108,939 shares (0.002416%) as of December 31st, 2016
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Miss Duangkamol Settanung

Executive Vice President - Finance and Accounting

- Age : 57
- Appointed : November 1st, 2015
- Education / Training
 - Master of Business Administration, Thammasat University
 - Bachelor of Science in Statistics 1st Class Honors, Kasetsart University
 - PTT Executive Program, GE Crontonville, U.S.A.
 - PTT Leadership Development Program III
 - Director Certification Program (DCP) Class 155/2012, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 3
 - Executive Vice President, PTT Public Company Limited
 - Executive Vice President - Finance and Accounting, PTT Global Chemical Public Company Limited
 - Director, Vinythai Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 6
 - Director, PTT Phenol Company Limited
 - Director, PTT Chemical International Private Limited
 - Director, PTTGC America Corporation
 - Director, PTTGC America LLC
 - Director, Emery Oleochemicals (M) Sdn. Bhd.
 - Director, Emery Specialty Chemicals Sdn. Bhd.
- Work Experiences (5-years Past Experiences)
 - Oct. 2011 - Nov. 2015 Senior Executive Vice President - Corporate Accounting & Finance, IRPC Public Company Limited
 - Feb. 2011 - Oct. 2011 Executive Vice President - Finance & Accounting, PTT Aromatics and Refining Public Company Limited
 - Oct. 2010 - Jan. 2011 Senior Vice President - Finance & Accounting, PTT Aromatics and Refining 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 - Corporate Strategy

- Age : 48
- Appointed : January 1st, 2017
- Education / Training
 - Master of Science (Chemical Engineering), Oregon State University, Oregon, U.S.A.
 - Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
 - Certificate, Executive Program on Energy Literacy for a Sustainable Future (TEA), Class 8, Thailand Energy Academy
 - 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 - Corporate Strategy, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 9
 - Director, Global Green Chemicals Public Company Limited
 - Director, PTT Phenol Company Limited
 - Director, PTT Chemical International Private Limited
 - Director, Emery Oleochemicals (M) Sdn. Bhd.
 - Director, Emery Specialty Chemicals Sdn. Bhd.
 - Director, Myriant Corporation
 - Director, PTTGC America Corporation
 - Director, PTTGC America LLC
 - Director, PTT ICT Solutions Company Limited
- Work Experiences (5-years Past Experiences)
 - 1 Feb. - 31 Dec. 2016 Senior Vice President - Corporate Strategy, PTT Global Chemical Public Company Limited
 - 1 Jan. 2010 - 31 Jan. 2016 Chief Executive Officer, PTT Chemical International Private Limited
 - Oct. 2011 - 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



Mr. Toasaporn Boonyapipat

Executive Vice President - International Business Operations

- Age : 52
- Appointed : April 1st, 2017
- Education / Training
 - Master of Business Administration, Burapha University
 - Bachelor of Mechanical Engineering (Second Class Honors), Chiang Mai University
 - ASEAN Executive Program (AEP), GE 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 : 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 : 5
 - Director, Emery Oleochemicals (M) Sdn. Bhd.
 - Director, Emery Specialty Chemicals Sdn. Bhd.
 - Director, PTTGC International (Netherlands) B.V.
 - Director, Vencorex Holding
 - President and CEO, PTTGC America LLC
- Work Experiences (5-years Past Experiences)
 - 2014 - 2017 Senior Vice President reporting to Executive Vice President - International Business Operations, Secondment to PTTGC America LLC, PTT Global Chemical Public Company Limited
 - 2013 - 2014 Senior Vice President - High-Volume Specialties Business Unit, PTT Global Chemical Public Company Limited
 - 2010 - 2012 Vice President - Growth Project Management, PTT Global Chemical Public Company Limited
- Shareholding : None
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Siridech Kumvongdee

Executive Vice President - Organizational Effectiveness

- Age : 51
- Appointed : January 1st, 2017
- Education / Training
 - Master of Science (Chemical Engineering), Washington University, U.S.A.
 - Bachelor of Science (Chemistry), Ramkhamhaeng University
 - Certificate of Senior Executive Program (SEP), Sasin Graduate Institute of Business Administration of Chulalongkorn University
 - Leadership Development Program (LDP III) for Senior Executive Vice President Pool of PTT Group, PTT Leadership and Learning Institute
 - Director Certification Program (DCP) Class 209/2015 and Board Matters and Trends (BMT) Class 2/2017, 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, Thai Styrenics Company Limited
 - Director, PTT ICT Solutions Company Limited
 - Director, Solution Creation Company Limited
 - Director, Vencorex Holding
- Work Experiences (5-years Past Experiences)
 - 2016 Senior Vice President - Human Resources, PTT Global Chemical Public Company Limited
 - 2015 Senior Vice President - Acting Head of Science and Innovation, PTT Global Chemical Company Limited
 - 2013 - 2014 Executive Vice President, PTT Phenol Company Limited
 - 2011 - 2012 Senior Vice President - Supply Chain Management, PTT Global Chemical Public Company Limited
- Shareholding : 91 shares; Spouse 11,515 shares (0.000257%) as of January 1st, 2017
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None



Mr. Pairote Utaisup

Executive Vice President - Polymers Business Unit

- Age : 59
- Appointed : January 1st, 2017
- Education / Training
 - B.Eng. (Mechanical Engineering), Chulalongkorn University
 - NIDA-Wharton Executive Leadership Class 2008, Wharton School of Business, University of Pennsylvania, U.S.A.
 - Director Certification Program (DCP) Class 127/2010, 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 : 6
 - Director, Thai Styrenics Company Limited
 - Director, PTT Polymer Marketing Company Limited
 - Director, PTT Polymer Logistics Company Limited
 - Director, PT Indo Thai Trading
 - Director, Alliance Petrochemical Investment (Singapore) Private Limited
 - Director, Mehr Petrochemical Company
- Work Experiences (5-years Past Experiences)
 - 1 Jan. 14 - 31 Dec. 16 Senior Vice President - Polymers Business Unit, PTT Global Chemical Public Company Limited
 - 2016 Director / Acting Managing Director, Thai Styrenics Company Limited
 - 2011 - 2013 Vice President, Operations - Polymers Business Unit, PTT Global Chemical Public Company Limited
 - 2009 - 2013 Managing Director, Bangkok Polyethylene Public Company Limited
- Shareholding : None
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Pukpong Wungrattanasopon

Senior Vice President - Group Performance Center - Aromatics

- Age : 46
- Appointed : August 1st, 2016
- Education / Training
 - Master of Science Petrochemical Technology, 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
 - 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 : 1
 - Director, PTT Phenol Company Limited
- Work Experiences (5-years Past Experiences)
 - 19 Oct. 2011 - 31 Jul. 2016 Vice President, Technology, PTT Global Chemical Public Company Limited
 - 1 Mar. 2011 - 18 Oct. 2011 Vice President, Technology, PTT Aromatics and Refining Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Anutin Chuaypen

Senior Vice President

Group Performance Center - Refinery and Shared Facilities

- Age : 51
- Appointed : January 1st, 2014
- Education / Training
 - Master of Science in Computer & Engineering Management, Assumption University
 - B.Sc. in Chemical Engineering, Chulalongkorn University
 - 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 - Refinery and Shared Facilities, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 3
 - Director, PTT Maintenance and Engineering Company Limited
 - Director, Thai Tank Terminal Limited
 - Director, Eastern Fluid Transport Company Limited
- Work Experiences (5-years Past Experiences)
 - 2011 - 2013 Vice President - Refinery and Shared Facilities & Aromatics Maintenance, PTT Global Chemical Public Company Limited
 - 2008 - 2009 Vice President - Aromatics II Production, PTT Aromatics and Refining Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Boonchai Chunhawiksit

Senior Vice President - Group Performance Center - Olefins

- Age : 56
- Appointed : January 1st, 2017
- Education / Training
 - Master of Business Administration, Thammasat University
 - Bachelor's Degree in Electrical Engineering, King Mongkut's Institute of Technology (North Bangkok)
 - Director Certification Program (DCP) Class 244/2017, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - Senior Vice President - Group Performance Center - Olefins, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 2
 - Director, TOC Glycol Company Limited
 - Director, Thai Tank Terminal Limited
- Work Experiences (5-years Past Experiences)
 - 2016 Vice President - Group Performance Center - Olefins, PTT Global Chemical Public Company Limited
 - 1 Oct. 2015 - 30 Sep. 2016 Vice President - Olefins Plant II, PTT Global Chemical Public Company Limited
 - 2015 Vice President - GPC Strategy & Business Development, PTT Global Chemical Public Company Limited
 - 2013 - 2014 Vice President - Project Manager, PTT Global Chemical Public Company Limited
 - 2011 - 2012 Vice President - Growth Project Management, PTT Global Chemical Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Wiboon Chuchepchunkamon

Senior Vice President – EO-Based Performance Business Unit

- Age : 54
- Appointed : January 1st, 2016
- 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
 - Stanford – NUS Executive Program in International Management, the Republic of Singapore
 - Harvard - Leadership Development, Shanghai, the People's Republic of China
 - Director Certification Program (DCP) Class 219/2016, 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 : 1
 - Director / Managing Director, TOC Glycol Company Limited
- Work Experiences (5-years Past Experiences)
 - 2013 - 2015 Vice President – Olefins Plant I, PTT Global Chemical Public Company Limited
 - 2011 - 2013 Vice President - Linear Low Density Polyethylene Plant, PTT Global Chemical Public Company Limited
 - 2005 - 2011 Project Manager - Linear Low Density Polyethylene Plant, PTT Chemical Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Jirawat Nooritanon

Senior Vice President - Green Chemicals Business Unit

- Age : 50
- Appointed : October 1st, 2015
- Education / Training
 - Master of Engineering Program in Energy Technology, The Asian Institute of Technology (AIT)
 - M.B.A., Thammasat University
 - B.Eng. in Chemical Engineering, Chulalongkorn University
 - Director Accreditation Program (DAP) Class 124/2016 and Director Certification Program (DCP) Class 221/2016, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - Senior Vice President - Green Chemicals Business Unit, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 2
 - Director, Risk Management Committee / Managing Director and Secretary to the Board of Directors, Global Green Chemicals Public Company Limited
 - Chairman, Thai Fatty Alcohols Company Limited
- Work Experiences (5-years Past Experiences)
 - 2012 - 2015 Vice President - Marketing Commercial and Planning, PTT Global Chemical Public Company Limited
 - 2012 - 2016 Director and Managing Director, Thai Fatty Alcohols Company Limited
 - 2010 - 2015 Vice President - Marketing Commercial and Planning, Thai Oleochemicals Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Kumpol Chaikitkosi

Senior Vice President - Phenol Business Unit

- Age : 57
- Appointed : October 1st, 2015
- Education / Training
 - B.Eng. (Chemical Engineering), Chulalongkorn University
 - Program for Executive Development, IMD, Switzerland
 - Executive Development Program, TLCA
 - Director Certification Program (DCP) Class 219/2016, 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 / Managing Director and Secretary to the Board of Directors, PTT Phenol Company Limited
- Work Experience (5-years Past Experiences)
 - 2009 - 2015 Executive Vice President - Operation, PTT Phenol Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mrs. Warawan Tippawanich

Senior Vice President – Corporate Affairs and Corporate Secretary

- Age : 53
- Appointed : January 1st, 2015
- Education / Training
 - Master of Business Administration, Management, Chulalongkorn University
 - B.Sc. in Chemical Engineering, Chulalongkorn University
 - PTT Harvard Business School Leadership Development Program II (2014)
 - 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 and Board Matters and Trends (BMT) Class 2/2017, Thai Institute of Directors Association (IOD)
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - Senior Vice President - Corporate Affairs and Corporate Secretary, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 2
 - Director, TOC Glycol Company Limited
 - Director, PTT Chemical International Private Limited
- Work Experiences (5-years Past Experiences)
 - Jan. 2014 - Dec. 2014 Vice President - Corporate Governance and Corporate Secretary, PTT Global Chemical Public Company Limited
 - Oct. 2011 - Dec. 2013 Vice President - Strategy and Planning, PTT Global Chemical Public Company Limited
 - 2010 - Oct. 2011 Vice President - Corporate Planning, PTT Chemical Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Chaya Chandavasu

Senior Vice President – Science and Innovation

- Age : 43
- Appointed : November 1st, 2015
- Education / Training
 - Ph.D. in Chemical Engineering, New Jersey Institute of Technology, U.S.A.
 - M.S. in Chemical Engineering, New Jersey Institute of Technology, U.S.A.
 - B.Sc. in Chemistry (First Class Honors), Mahidol University
 - Advanced Senior Executive Program, Sasins & 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 - Science and Innovation, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 3
 - Chairman, Auria Bio Chemicals Company Limited
 - Director, Solution Creation Company Limited
 - Director, Myriant Corporation
- Work Experiences (5-years Past Experiences)
 - 2014 - 2015 Vice President - Innovation Strategy & Management, PTT Global Chemical Public Company Limited
 - 2013 - 2014 Vice President - Strategic Initiatives - International Business, PTT Chemical International (Asia Pacific ROH) Limited
 - 2011- 2013 Vice President - Innovation & Technology, PTT Global Chemical Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Saroj Putthammawong

Senior Vice President – Marketing, Commercial and Supply

- Age : 49
- Appointed : October 1st, 2015
- Education / Training
 - Master of Business Administration Program, Thammasat University
 - B.Eng. in Chemical Engineering, Chulalongkorn University
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - Senior Vice President - Marketing, Commercial and Supply, PTT Global Chemical Public Company Limited
- Board member / Management in Non-Listed Company - The Stock Exchange of Thailand : 3
 - Director, TOC Glycol Company Limited
 - Director, Solution Creation Company Limited
 - Director, Thai Tank Terminal Limited
- Work Experiences (5-years Past Experiences)
 - 1 Jul. 2015 - 30 Sep. 2015 Vice President - Marketing Strategy, PTT Global Chemical Public Company Limited
 - 1 Feb. 2013 - 30 Jun. 2015 Vice President - Supply Sourcing, PTT Global Chemical Public Company Limited
 - 19 Oct. 2011 - 31 Jan. 2013 Vice President - Commercial, PTT Global Chemical Public Company Limited
 - 1 Feb. 2009 - 18 Oct. 2011 Vice President - Commercial, PTT Aromatics and Refining Public Company Limited
- 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 : 56
- Appointed : January 1st, 2017
- Education / Training
 - Master of Engineering (Mechanical Engineering), Chulalongkorn University
 - Bachelor of Engineering (Mechanical Engineering), Chulalongkorn University
 - 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)
 - 2011 - 2013 Expert, PTT Global Chemical Public Company Limited, Secondment as Senior Vice President, PTT Maintenance and Engineering Company Limited
 - 2013 - 2016 Senior Vice President, PTT Global Chemical Public Company Limited, Secondment as Managing Director, PTT Maintenance and Engineering Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mrs. Jeeranee Pimthanothai

Senior Vice President - Technical and Operations Excellence

- Age : 53
- Appointed : September 1st, 2015
- Education / Training
 - M.Eng. in Petrochemical Technology, Chulalongkorn University
 - B.Sc. in Chemical Engineering, Chulalongkorn University
 - Certificate of the Columbia Senior Executive Program, U.S.A.
 - Certificate of NIDA-Wharton Executive Leadership Program, U.S.A.
 - Leadership Innovation & Strategy, GE Crotonville
 - PTT Group Leadership Development Program
 - 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 and Operations Excellence, 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)
 - Jan. - Aug. 2015 Vice President - Petrochemicals Subsidiary Planning & Management Department, PTT Public Company Limited
 - 2014 Vice President - Refining Subsidiary Planning & Management Department and Acting in Vice President - Petrochemicals Subsidiary Planning & Management Department and Project Director of PTT Group Operational Excellence Management System Transformation Project, PTT Public Company Limited
 - Mar. 2012 - Dec. 2013 Vice President - Refining Subsidiary Planning & Management Department and Project Director - PTT Group Operational Excellence Management System Transformation Project, PTT Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Suwat Suratchaikarn

Senior Vice President - CAPEX Excellence

- Age : 59
- Appointed : August 1st, 2013
- Education / Training
 - M.B.A., Sukhothai Thammathirat University
 - B.Eng. (Electrical Engineering), Chulalongkorn University
 - Certificate of Senior Executive Program (SEP), Sasin Graduate Institute of Business Administration of Chulalongkorn University
 - PTT Executive Leadership Program
 - Director Certification Program (DCP) Class 218/2016, 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 : 1
 - Director, NPC Safety and Environmental Service Company Limited
- Work Experiences (5-years Past Experiences)
 - 2010 - 2013 Vice President Integrity & Reliability, PTT Global Chemical Public Company Limited
 - 2008 - 2010 Vice President Project Engineering, PTT Aromatics and Refining Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

Mr. Adisorn Vichaiatka

Vice President - Internal Audit

- Age : 59
- Appointed : August 1st, 2013
- Education / Training
 - Bachelor's Degree in Engineering Program, King Mongkut's University of Technology Thonburi
 - Effective Audit Committee Program
 - Best Practices in Value - Added Auditing
 - The Executive Program for Senior Management (EX-PMS)
 - Enterprise Fraud Prevention
 - Audit Committee Seminar - AC Hot Update, Federation of Accounting Professions under the Royal Patronage of his Majesty the King
- Board member / Management in Listed Company - The Stock Exchange of Thailand : 1
 - 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)
 - 19 Oct. 2011 - 31 Jul. 2013 Vice President - Corporate Risk Management and Internal Control, PTT Global Chemical Public Company Limited
 - 2005 - 18 Oct. 2011 Vice President - Internal Audit, PTT Chemical Public Company Limited
- Relation among Family with other Directors, Management, Major Shareholders of the Company or Subsidiaries : None

SENIOR VICE PRESIDENT APPOINTED AS EXECUTIVES OF PTTGC'S SUBSIDIARIES

Mr. Sekxon Arttamangkura

Senior Vice President, reporting to Chief Operating Officer - Center of Excellence, Secondment as Managing Director; NPC Safety and Environmental Service Company Limited

Mr. Pairush Soovan

Senior Vice President, reporting to Chief Operating Officer - Center of Excellence, Secondment as President; PTT Maintenance and Engineering Company Limited

Mr. Vitaya Pinmuangngarm

Senior Vice President reporting to Chief Operating Officer - Upstream Petrochemical Business, Secondment as President; Thai Tank Terminal Limited

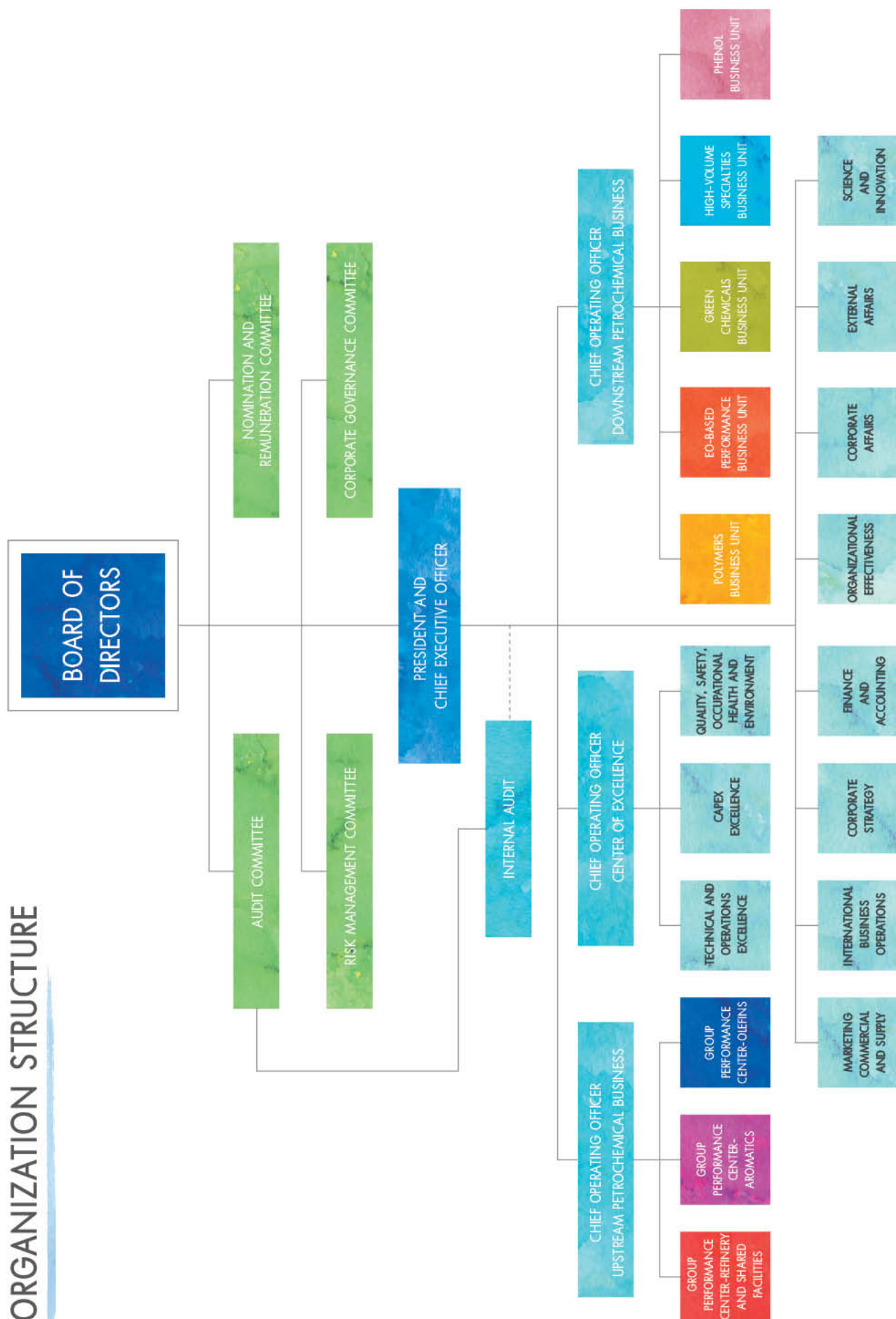
Mr. Narongchai Pisutpunya

Senior Vice President, reporting to Chief Operating Officer - Downstream Petrochemical Business, Secondment as President; PTT Polymer Marketing Company Limited

Mrs. Wilawan Songjaroen

Senior Vice President, reporting to Chief Operating Officer - Downstream Petrochemical Business, Secondment as President; PTT Polymer Logistics Company Limited

ORGANIZATION STRUCTURE



MANAGEMENT STRUCTURE

THE BOARD OF DIRECTORS

The Board of Directors as of December 31st, 2016, comprises of the following members :

Name - Last Name	Position	Date of Appointment
1. Mr. Prasert Bunsumpun	Chairman / Chairman of the Independent Directors	October 19 th , 2011
2. Mr. Somchai Kuvijitsuwan	Independent Director / Chairman of the Audit Committee	October 19 th , 2011
3. Mr. Vasin Teeravechyan	Independent Director / Chairman of the Nomination and Remuneration Committee	October 19 th , 2011
4. Professor Surapon Nitikraipot	Independent Director / Chairman of the Corporate Governance Committee / Director to the Nomination and Remuneration Committee	September 22 nd , 2014
5. Mr. Anon Sirisaengtaksin	Director / Chairman of the Risk Management Committee	September 22 nd , 2014
6. Mr. Amnuay Preemonwong	Independent Director / Director to the Audit Committee / Director to the Risk Management Committee	October 19 th , 2011
7. Mr. Prasan Chuaphanich*	Independent Director / Director to the Audit Committee	April 5 th , 2016
8. Mr. Sarun Rungkasiri	Director / Director to the Nomination and Remuneration Committee / Director to the Risk Management Committee	October 18 th , 2013
9. Mrs. Watanan Petersik	Independent Director	September 22 nd , 2014
10. Mr. Don Wasantapruek	Independent Director / Director to the Corporate Governance Committee	November 1 st , 2015
11. Colonel Nithi Chungcharoen	Independent Director / Director to the Corporate Governance Committee	September 22 nd , 2014
12. Mr. Auttapol Rerkpiboon	Director / Director to the Corporate Governance Committee / Director to the Risk Management Committee	October 1 st , 2015
13. Mrs. Boobpha Amornkiatkajorn	Director	October 1 st , 2014
14. Mr. Praphon Wongtharua	Director	August 24 th , 2015
15. Mr. Supattanapong Punmeechaow	Director / Secretary to the Board of Directors / Director to the Risk Management Committee	September 25 th , 2014

Remark: *Mr. Prasan Chuaphanich was appointed as an Independent Director to replace Miss Ruenvadee Suwanmongkol, whose term ended on April 5th, 2016.

Director whose term ended during 2016

Name - Last Name	Position	Time in Office
Miss Ruenvadee Suwanmongkol	Independent Director / Director to the Audit Committee	March 21 st , 2014 - April 5 th , 2016

Directors Authorized to Sign on Behalf of the Company

According to PTTGC's Articles of Association and Certification of Incorporation from the Department of Business Development of the Ministry of Commerce as of April 20th, 2016, the names of authorized signatory Director(s) are as follows: (1) Mr. Supattanapong Punmeechaow, Chief Executive Officer, can sign and affixes the Company's seal or (2) Mr. Sarun Rungkasiri, Mr. Anon Sirisaengtaksin, Mrs. Boobpha Amornkiatkajorn, any two of these three Directors, can jointly sign and affix the Company's seal.

The Composition of the Board of Directors

PTTGC's Articles of Association mandates that the Board of Directors shall consist of no less 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. Additionally, PTTGC's Corporate Governance Principles prescribes that more than half of the Board of Directors shall be comprised of Independent Directors. These Directors must be residents of the Kingdom of Thailand. Each of them must be qualified and must not possess any attributes prohibited by laws and they must not be over the age of 70 years old in accordance with the PTTGC's Good Corporate Governance principle.

The composition and qualifications of the Board of Directors comply with PTTGC's Articles of Association, Corporate Governance Principle and legal regulations without any gender discrimination. The Board of Directors is comprised of individuals from diverse fields of knowledge and expertise, whose experience is beneficial to PTTGC's business operations. In addition, each mandates Director may hold a directorship of no more than five companies listed with the Stock Exchange of Thailand and no more than three state enterprises or juristic persons whose shares are held by state enterprises as per the cabinet resolution mandated. PTTGC's Board of Directors comprises a total of 15 Directors, which is the number appropriate for our business size and type. These Directors are divided into the following categories:

- (1) Fourteen Non-Executive Directors
- (2) One Executive Director, namely the President and Chief Executive Officer
- (3) Nine Independent Directors (more than half of the Board; and 2 female Directors)

Authorities and Responsibilities of the Board of Directors

The Board of Directors task is to govern PTTGC's operations and to ensure strict compliance with applicable laws, objectives, regulations, shareholder resolutions, principles of good corporate governance and best practices for Directors of listed companies set forth by the Stock Exchange of Thailand. Each Director possesses the knowledge and capabilities needed to perform their function for the benefit of PTTGC and our shareholders. Notable authorities and responsibilities of the Board are summarized below:

- (1) The Board dedicates their time and attention to establish PTTGC's vision, mission, directions and strategies. Board members can freely express their opinions and actively seek out information that could be useful to determine the direction of the organization.
- (2) The Board reviews and approves strategies, important policies, objectives, financial goals, budgets, investments, projects, important agreements with financial obligations beyond the authority of the President and Chief Executive Officer and Company plans. The Board reviews and revises PTTGC directions and strategic plans at least once a year; this was done on August 13th in 2016. The Board of Directors supervises and monitors management's implementation of PTTGC strategic plans and directions, making sure that they are able to achieve PTTGC's vision, directions and strategies.

- (3) The Board of Directors oversees the Corporate Governance Policy and Business Code of Conduct, which suitably outline principles and guidelines for the Board itself, management and staff members. In addition to instilling responsibility awareness, it is the Board's duty to promote an understanding of the Corporate Governance Policy and Business Code of Conduct among all employees. The Board also encourages employees to strictly adhere to these principles and guidelines, in addition to PTTGC's rules and regulations, to assure all stakeholders of fairness.
- (4) The Board ensures that accounting system, financial reporting and auditing are credible. Moreover, the Board supervises the assessment of internal control's adequacy and makes certain that internal audits are performed efficiently and effectively.
- (5) The Board considers all relevant risk factors and devises comprehensive risk management plans. In extension, the Board ensures that Executives are equipped with an efficient system or process to mitigate risks, as well as to explore possible business opportunities that may arise from these risks.
- (6) The Board monitors and manages all conflicts of interest, as well as all related transactions, that may arise. The Board places great importance on key transactions with an aim to maximize benefits for shareholders and stakeholders.
- (7) The Board provides appropriate channels of communication with shareholders. It is also tasked with making certain that any disclosure of information be accurate, transparent, credible and of the highest standards.
- (8) The Board regularly conducts assessments and reviews of themselves and of the President and Chief Executive Officer.
- (9) The Board provides a system or mechanism that determines appropriate remunerations for PTTGC's Executives, relative to the profitability of PTTGC's operations, to afford short-term and long-term incentives.
- (10) The Board acts as leaders and role models in accordance with PTTGC's Corporate Governance Policy.
- (11) The Board assesses PTTGC's adherence to the Corporate Governance Policy and Business Code of Conduct at least once a year.
- (12) The Board provides an appropriate, transparent and fair nomination system for all important managerial positions. PTTGC's Senior Executives, from Executive Vice president to Chief Executive Officer, are appointed by the Board's majority votes.
- (13) The Board reports to PTTGC any conflicts of interest that its members or their affiliates may have towards the management of PTTGC or its subsidiaries.
- (14) Each Director must attend every Board meeting, as well as every shareholder meeting. If, under any circumstance, attendance cannot be fulfilled, the Chairman of the Board must be notified in writing.
- (15) The Board places value on corporate social and environmental responsibility, as well as on sustainably improving the quality of life in Thai society. All of this starts with improving the living standards of communities around PTTGC's plants, fostering an environment where our plants and these communities co-exist in a sustainable manner.
- (16) The Board provides support to all forms of anti-fraud and anti-corruption schemes for the sake of progress and sustainable growth.

Moreover, the Board of Directors must obtain permission from shareholders in a shareholder meeting before acting on the following issues:

- An acquisition or sale of an important asset or any related transaction as prescribed by law and the Capital Market Supervisory Board
- A sale or transfer of a PTTGC enterprise or its components to other entities
- A purchase or acquisition of an enterprise on behalf of PTTGC
- Initiation, modification or termination of all or some important lease contracts of PTTGC, including assignment of lease contracts to other individuals or entry into a partnership with another entity to share profits or losses
- Making addendums or amendments to PTTGC's Memorandum or Articles of Association
- Increasing or decreasing the registered capital
- Issuance of debentures for sales to the public
- Dissolution of PTTGC or merging it with another company
- Announcing annual dividends
- Various other activities as mandated by law or PTTGC's Articles of Association to seek approval from shareholder's meeting

Appointment to and Termination from the Board of Directors

PTTGC's Articles of Association provide the following guidelines in relation to the appointment to and termination from the Board of Directors:

Appointment

- Shareholders at the shareholder meeting shall vote to appoint Director(s) according to the following guidelines:
 - (1) A shareholder has one vote per share.
 - (2) In the event that the number of nominees does not exceed the number of vacant positions during the election, shareholders shall vote on those eligible nominees. Shareholders must allocate all of their votes to one nominee per (1) 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 to one nominee per (1), without dividing their

votes. Nominees receiving the majority 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 exceeds 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 is based on majority votes, with the Chairman voting only when a deciding vote is needed. In the event that a Director's position becomes vacant for any reason other than the end of term, the Board may appoint a new Director who is qualified and does not possess any attributes prohibited by law to attend the next Board meeting. However, in the event that the remaining term is less than two (2) months, the new Director shall only serve the remaining term of his or her predecessor. This decision must be made with the agreement of three-quarters (3/4) of the remaining Directors.
- In the event that vacancies cause the number of Directors to fall below the quorum, the only authority the remaining Directors shall have is to call for a shareholder meeting, in which shareholders shall vote to appoint new Directors to fill only these vacancies. This process must be completed within one (1) month from the date on which the number of Directors no longer constitutes the quorum. New Directors shall serve the remaining terms of their predecessors.

Termination

- In each Annual General Meeting, one-third (1/3) of the serving Directors shall step down as their terms end. In the event that the number of serving Directors is not equally divisible by three (3), the number of Directors stepping down shall be as close to the aforementioned ratio of 1:3 as possible. Directors to step down in the first and second years after Company registration shall be randomly selected; however, for later years, Directors serving the longest terms shall step down. Directors whose term has ended may be re-elected to the Board.

- In addition to the end of term, the causes for directorship termination include death, resignation or disqualification or prohibition by law. Additionally, Directors can be terminated by a shareholder meeting resolution or by a court order.
- Resigning Directors must submit their resignation notice to PTTGC. Resignation is effective the day PTTGC receives the said notice. In addition, Directors may also submit their resignation notice through the registrar.
- At a shareholder meeting, shareholders may pass a resolution to force the termination of a Director before his or her term ends with three-fourths (3/4) of the attending and eligible shareholders' votes. Additionally, these majority votes must constitute at least half (1/2) of the shares held by attending and eligible shareholders.

Independent Directors

According to PTTGC's Corporate Governance Principles, Independent Directors must constitute more than half of the Board of Directors. Each Director may serve up to three consecutive terms or up to nine years. The term begins from the date of the 2014 Annual General Meeting of Shareholders onwards, regardless of their previous terms. These Independent Directors must be experienced and fully qualified per the Capital Market Supervisory Board's requirements. Additionally, they must hold no more than 0.5% of PTTGC shares (a stricter regulation than the SEC's limit of 1%). The definition of Independent Directors is disclosed in the Corporate Governance Handbook and on PTTGC's website.

Independent Directors must attend meetings regularly. They are allowed to freely express their opinions during these meetings. To do so, they are entitled to adequate access to financial and business information. They are also tasked with protecting stakeholders' interests and preventing conflicts of interest among PTTGC, its Executives, Board of Directors and Majority Shareholders.

Currently, PTTGC has a total of nine Independent Directors, constituting more than one-third of the Board and exceeding the legal requirement. In addition, this

number is in line with PTTGC's Corporate Governance Principles, which stipulates that more than half of the Board should be comprised of Independent Directors. Moreover, the Charter of Independent Directors clearly outlines their duties and ensure their tangible performance. Duties and responsibilities of Independent Directors to the Board of Directors according to the recently amended Charter of Independent Directors are as follows:

- Independent Directors advise the Board of Directors on important issues that PTTGC should act upon or issues that could be beneficial to PTTGC, its shareholders and other relevant stakeholders.
- Independent Directors ensure that PTTGC thoroughly comply with anti-corruption policies and measures.
- Independent Directors prioritize corporate social and environmental responsibility.
- Independent Directors may seek consultation from an outside, independent consultant when necessary. PTTGC will absorb the expenses incurred.
- Independent Directors ensure that PTTGC operates according to all Independent Directors-related rules and regulations stipulated by agencies that supervise listed companies. They also review the definition of an Independent Director to make sure that it is appropriate and complete according to legal requirements.
- Independent Directors review and make amendments to the Charter of Independent Directors to make it more appropriate and up to date.
- Independent Directors may perform other duties assigned by the Board of Directors as long as these duties do not interfere with the independent nature required of Independent Directors.

Sub-Committees

In accordance with Good Corporate Governance Principles, the Board of Directors established four different Sub-Committees during Meeting No. 1/2011, held on October 19th, 2011, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee. Each Director on these Sub-Committees is to

serve a three-year term. They are to focus on their specific tasks with diligence and efficiency. All the Sub-Committees are to present their reports to the Board of Directors. The

list of names and the tasks of each Sub-Committee as of December 31st, 2016, are listed below.

AUDIT COMMITTEE

Name - Last Name	Position	Date of Appointment
1. Mr. Somchai Kuvijitsuwan	Chairman of the Audit Committee (Independent Director)	October 19 th , 2011
2. Mr. Amnuay Preemonwong	Director to the Audit Committee (Independent Director)	October 19 th , 2011
3. Mr. Prasan Chuaphanich*	Director to the Audit Committee (Independent Director)	April 25 th , 2016

Mr. Adisorn Vichaikatka, Vice President - Internal Audit, serves as Secretary to the Audit Committee.

Remark: *Mr. Prasan Chuaphanich holds an accounting degree and was appointed as Director to the Audit Committee to replace Miss Ruenvadee Suwanmongkol, whose directorship term ended.

The Audit Committee shall be comprised of Directors serving on the Board, at least three (3) of whom shall be Independent Directors. Each Director shall serve a three-year term unless their term of directorship on the Board ends, or they resign or are removed from position. Directors to the Audit Committee whose term ends may be re-appointed by the Board. Each Director's qualifications, duties and responsibilities shall be in line with the criteria set forth by the Securities and Exchange Commission. Their scope of work shall be as defined by the Capital Market Commission.

The Board of Directors has given its approval to the Charter of the Audit Committee, which identifies the composition, qualifications, term in office and scope of duties according to Corporate Governance Principles. Details of the charter are disclosed in PTTGC's Corporate Governance Handbook and our website.

PTTGC's Audit Committee is comprised of all Independent Directors. The Board believes that these respectable Directors possess sufficient knowledge, expertise and experience in finance and accounting. They have continuously undergone training to enhance their expertise for the benefit of ensuring the credibility of PTTGC's financial and auditing reports and their

adherence to accounting standards, applicable laws and other related practices. Furthermore, the Audit Committee makes certain of sufficient and efficient internal control and risk management systems while overseeing internal processes regarding whistleblowers and receipt of complaints. It nominates independent auditors and submits dismissal recommendation to the Board in the event that an independent auditor cannot or neglect or wrongfully perform their duties. It probes the suitability and efficacy of PTTGC's internal audit system and oversees the functions of Internal Audit to ensure compliance with internal auditing standards. The Audit Committee also reviews cases of connected transactions and conflicts of interest to make certain of their compliance with applicable laws and the provisions of the Stock Exchange of Thailand, affording PTTGC reasonableness, the utmost benefit and full disclosure.

In 2016, the Audit Committee held a total of eight (8) meetings and one (1) additional meeting with company auditors, carrying out its role within the scope of duties and responsibilities mandated by the Charter of the Audit Committee as assigned to them by the Board of Directors. The Audit Committee also reported its monitoring results to the Board on a quarterly basis before further presenting a summary to shareholders in the annual report.

NOMINATION AND REMUNERATION COMMITTEE

Name - Last Name	Position	Date of Appointment
1. Mr. Vasin Teeravechyan	Chairman of the Nomination and Remuneration Committee (Independent Director)	October 19 th , 2011
2. Professor Surapon Nitikraipot	Director to the Nomination and Remuneration Committee (Independent Director)	September 22 nd , 2014
3. Mr. Sarun Rungkasiri	Director to the Nomination and Remuneration Committee	September 22 nd , 2014

Mrs. Warawan Tippawanich, Senior Vice President - Corporate Affairs, serves as Secretary to the Nomination and Remuneration Committee.

The Nomination and Remuneration Committee shall be comprised of at least three (3) Directors serving on the Board and more than half of its Directors shall be Independent Directors. The Chairman of the Nomination and Remuneration Committee shall also be an Independent Director. Each Director shall serve a three-year term unless their term of directorship on the Board ends, or they resign or are removed from position.

The responsibilities of the Nomination and Remuneration Committee include the nomination of individuals to be considered for a directorship on the Board or Sub-Committee, as well as the nomination of the Chief Executive Officer (CEO). The nomination and remuneration consideration processes shall be transparent and aligned with established guidelines. Criteria include experience, profession, diversity in fields of expertise and niche qualifications needed for PTTGC's businesses per the Boards Skills Matrix. These criteria aim to strike a balance among all business fields and to yield the utmost benefit to PTTGC. In addition, the Nomination and

Remuneration Committee may consider candidates from the Director's Pool of trusted organizations and present nominees to the Board and/or at the shareholder meeting for appointment.

The Board of Directors has given its approval to the Charter of the Nomination and Remuneration Committee, which identifies the composition, qualifications, term in office and scope of duties according to Corporate Governance Principles. Details of the Charter are disclosed in PTTGC's Corporate Governance Handbook and our website.

In 2016, the Nomination and Remuneration Committee held a total of four (4) meetings, carrying out its role within the scope of duties and responsibilities mandated by the Charter of the Nomination and Remuneration Committee and assigned to them by the Board of Directors. The Nomination and Remuneration Committee also reported its performance to the Board before further presenting a summary to shareholders in the annual report.

CORPORATE GOVERNANCE COMMITTEE

Name - Last Name	Position	Date of Appointment
1. Professor Surapon Nitikraipot	Chairman of the Corporate Governance Committee (Independent Director)	September 22 nd , 2014
2. Mr. Don Wasantapruerk	Director to the Corporate Governance Committee (Independent Director)	November 1 st , 2015
3. Colonel Nithi Chungcharoen	Director to the Corporate Governance Committee (Independent Director)	September 22 nd , 2014
4. Mr. Auttapol Rerkpiboon	Director to the Corporate Governance Committee	November 1 st , 2015

Mrs. Warawan Tippawanich, Senior Vice President - Corporate Affairs, serves as Secretary to the Corporate Governance Committee.

The Corporate Governance Committee shall be comprised of at least three (3) Directors serving on the Board and more than half of its Directors shall be Independent Directors. The Chairman of the Corporate Governance Committee shall also be an Independent Director. Each Director shall serve a three-year term unless their directorship on the Board ends, or they resign or are removed from position.

The responsibilities of the Corporate Governance Committee include determining methods and policies related to Business Code of Conduct and Ethics in compliance with Corporate Governance. These methods

and policies are presented to the Board of Directors to be approved as regulations, standardizing our practices throughout the organization.

In 2016, the Corporate Governance Committee held a total of five (5) meetings, carrying out its role within the scope of duties and responsibilities mandated by the Charter of the Corporate Governance Committee and assigned to them by the Board of Directors. The Corporate Governance Committee also reported its monitoring results to the Board on a quarterly basis before further presenting a summary to shareholders in the annual report.

RISK MANAGEMENT COMMITTEE

Name - Last Name	Position	Date of Appointment
1. Mr. Anon Sirisaengtaksin	Chairman of the Risk Management Committee	September 22 nd , 2014
2. Mr. Amnuay Preemonwong ⁽¹⁾	Director to the Risk Management Committee (Independent Director)	April 25 th , 2016
3. Mr. Sarun Rungkasiri	Director to the Risk Management Committee	November 1 st , 2015
4. Mr. Auttapol Rerkpiboon ⁽²⁾	Director to the Risk Management Committee	December 26 th , 2016
5. Mr. Supattanapong Punmeechaow	Director to the Risk Management Committee	September 25 th , 2014

Mr. Amorn Putiphrawan, Vice President - Corporate Risk Management and Internal Control System, serves as Secretary to the Risk Management Committee.

Remarks: ⁽¹⁾ Mr. Amnuay Preemonwong was appointed as Director to the Risk Management Committee to replace Mrs. Watanan Petersik on April 25th, 2016

⁽²⁾ Mr. Auttapol Rerkpiboon was additionally appointed as Director to the Risk Management Committee on December 26th, 2016.

The Risk Management Committee shall be comprised of at least three (3) Directors serving on the Board and at least one (1) of whom shall be an Independent Director. Each Director shall serve a three-year term unless their directorship on the Board ends, or they resign or are removed from position. Directors to the Risk Management Committee whose term ends may be re-appointed by the Board. The responsibilities of the Risk Management Committee included considering and approving the policy, objectives and framework of risk management that together shall guide risk management for the entire organization, be align and in accordance with corporate objectives and strategies. The risk management framework shall be review annually and focus on early warning signs. In addition, the Risk Management Committee oversees the risk management process to ensure that both external and internal factors, which may impede the achievement of PTTGC objectives are considered during risk identification, the impact and likelihood are properly assessed, risks are properly prioritized, and appropriate risk mitigation methods are identified. It reviews the charter annually to make sure of its suitability. The Risk Management Committee also monitors and assesses

PTTGC's compliance with the risk management framework to ensure that PTTGC has sufficient and appropriate risk management.

In 2016, the Risk Management Committee held a total of three (3) meetings, carrying out its role within the scope of duties and responsibilities mandated by the Charter of the Risk Management Committee and assigned to them by the Board of Directors. The Risk Management Committee also reported its performance to the Board on a quarterly basis before further presenting a summary to shareholders in the annual report.

DIRECTORS' MEETINGS

In 2016, the Board of Directors, Sub-Committees, and Independent Directors held meetings as illustrated in the table. These meetings were scheduled in advance. Directors who could not attend these meetings due to important, urgent matters had submitted written notice to the Chairman of the Board of Directors detailing their reasons. The Chairman informed the meeting of missing Director(s) prior to commencing every meeting.



Name - Last Name	Meetings in 2016							2016 Annual General Meeting of Share holders
	Board of Directors	Independent Directors	Non-Executive Directors	Audit Committee	Nomination and Remuneration Committee	Corporate Governance Committee	Risk Management Committee	
	13 times	1 time	1 time	8 times	4 times	5 times	3 times	
1. Mr. Prasert Bunsumpun	13/13	1/1	1/1	-	-	-	-	1/1
2. Mr. Somchai Kuvijitsuwan	13/13	1/1	1/1	8/8	-	-	-	1/1
3. Mr. Vasin Teeravechyan	11/13	1/1	1/1	-	4/4	-	-	1/1
4. Professor Surapon Nitikraipot	13/13	1/1	1/1	-	4/4	5/5	-	1/1
5. Mr. Anon Sirisaengtaksin	12/13	-	1/1	-	-	-	3/3	1/1
6. Mr. Amnuay Preemonwong ⁽¹⁾	11/13	1/1	1/1	8/8	-	-	2/2	1/1
7. Mr. Prasan Chuaphanich ⁽²⁾	10/10	1/1	1/1	6/6	-	-	-	-
8. Mr. Sarun Rungkasiri	13/13	-	1/1	-	4/4	-	3/3	1/1
9. Mrs. Watanan Petersik	9/13	1/1	1/1	-	-	-	1/1	1/1
10. Mr. Don Wasantapruerk	13/13	1/1	1/1	-	-	5/5	-	1/1
11. Colonel Nithi Chungcharoen	12/13	1/1	1/1	-	-	5/5	-	1/1
12. Mr. Auttapol Rerkpiboon ⁽³⁾	13/13	-	1/1	-	-	5/5	-	1/1
13. Mrs. Boobpha Amornkiatkajorn	11/13	-	1/1	-	-	-	-	1/1
14. Mr. Praphon Wongtharua	13/13	-	1/1	-	-	-	-	1/1
15. Mr. Supattanapong Punmeechaow	13/13	-	-	-	-	-	3/3	1/1

Remarks :

- (1) Mr. Amnuay Preemonwong was appointed as Director to the Risk Management Committee, replacing Mrs. Watanan Petersik, on April 25th, 2016.
- (2) Mr. Prasan Chuaphanich was appointed to the Independent Director and as Director to the Audit Committee, replacing Miss Ruenvadee Suwanmongkol, on April 5th, 2016, and April 25th, 2016, respectively.
- (3) Mr. Auttapol Rerkpiboon was appointed as Director to the Risk Management Committee on December 26th, 2016.

Name - Last Name	Meetings in 2016							2016 Annual General Meeting of Shareholders	Term in Office
	Board of Directors	Independent Directors	Non-Executive Directors	Audit Committee	Nomination and Remuneration Committee	Corporate Governance Committee	Risk Management Committee		
	13 times	1 time	1 time	8 times	4 times	5 times	3 times		

Attendance of Director who resigned in 2016

1. Miss Ruenvadee Suwanmongkol	2/3	-	-	2/2	-	-	-	-/1	March 21 st , 2014-April 5 th , 2016
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PTTGC EXECUTIVES

To ensure efficient organizational management and operations that follow the policies and directions established by the Board of Directors, The President and Chief Executive Officer, exercising the power vested in him by the Articles of Association, formed the Management Committee (MC) and the Group Management Committee (GMC). Both committees are comprised of high level Executives from Senior Vice President to Executive Vice President, under direct supervision of the President and Chief Executive Officer who, at the highest position of PTTGC's hierarchy, has the authority and duty to ensure that PTTGC operates according to the policies, plans and budgets approved by the Board.

The Management Committee (MC) is responsible for devising and aligning operational directions and guidelines with the Board's established policies. To do this, the MC analyzes and advises on PTTGC's policies and operational guidelines that effect crucial changes to our operations, Group Performance Centers and Business Units. The MC also analyzes and advises on Board meeting agenda prior to presenting them to the Board at the meeting.

In extension, the MC also oversees PTTGC's compliance with laws, as well as PTTGC's rules and regulations. It makes sure that tasks are carried out according to the resolutions, suggestions and opinions given at Board meetings. It also oversees diverse aspects of PTTGC's progress as a whole and as an international business.

The Group Management Committee (GMC) is tasked with analyzing and advising on the consistency between PTTGC's policies and our Group Performance Centers and Business Units in relations to operational guidelines. Moreover, the GMC monitors PTTGC's progress on innovation and technology, as well as any projects that contribute to the efficiency of the operations of Group Performance Centers and Business Units.

The Management Committee holds at least three (3) meetings monthly, while the Group Management Committee holds at least one (1) meeting a month. In 2016, the MC held a total of thirty nine (39) meetings and GMC held a total of twelve (12) meetings. The Senior Vice President - Corporate Affairs serves as Secretary to both committees.

Executives per Organization Structure as of April 1st, 2017

Name - Last Name	Position
1. Mr. Supattanapong Punmeechaow	President & Chief Executive Officer
2. Mr. Kongkrapan Intarajang	Chief Operating Officer - Upstream Petrochemical Business
3. Mr. Patiparn Sukorndhaman	Chief Operating Officer - Downstream Petrochemical Business and Acting Senior Vice President - High Volume Specialty Business Unit
4. Mr. Varit Namwong	Chief Operating Officer - Center of Excellence and Acting Executive Vice President - External Affairs
5. Miss Duangkamol Settanung	Executive Vice President - Finance & Accounting
6. Mr. Narongsak Jivakanun	Executive Vice President - Corporate Strategy
7. Mr. Toasaporn Boonyapipat	Executive Vice President - International Business Operations
8. Mr. Siridech Kumvongdee	Executive Vice President - Organizational Effectiveness
9. Mr. Pairote Utaisup	Executive Vice President - Polymers Business Unit
10. Mr. Anutin Chuaypen	Senior Vice President - Group Performance Center - Refinery and Shared Facilities
11. Mr. Pukpong Wungrattanasopon	Senior Vice President - Group Performance Center - Aromatics
12. Mr. Boonchai Chunhawiksit	Senior Vice President - Group Performance Center - Olefins

Executives per Organization Structure as of April 1st, 2017 (Continued)

Name - Last Name	Position
13. Mr. Wiboon Chuchepchunkamon	Senior Vice President - EO-Based Performance Business Unit
14. Mr. Jirawat Nooritanon	Senior Vice President - Green Chemicals Business Unit
15. Mr. Kumpol Chaikitkosi	Senior Vice President - Phenol Business Unit
16. Mrs. Warawan Tippawanich	Senior Vice President – Corporate Affairs
17. Mr. Chaya Chandavas	Senior Vice President – Science and Innovation
18. Mr. Saroj Putthammawong	Senior Vice President - Marketing, Commercial and Supply
19. Mr. Wirat Boonbumrungchai	Senior Vice President - Quality, Safety, Occupational Health and Environment
20. Mrs. Jeeranee Pimthanothai	Senior Vice President - Technical and Operations Excellence
21. Mr. Suwat Suratchaikarn	Senior Vice President - CAPEX Excellence

Remark: Executives numbered 1 through 9 are executives per SEC definition.

Changes in Executives during 2016 - April 1st, 2017

- 1) **Mr. Kun Patumraj**, former Chief Operating Officer - Upstream Petrochemical Business, retired on December 31st, 2016.
- 2) **Mr. Suvit Tinnachote**, former Executive Vice President - Group Performance Center-Olefins, retired on December 31st, 2016.
- 3) **Mr. Kongkrapan Intarajang**, former Executive Vice President - International Business Operations, appointed as Chief Operating Officer - Upstream Petrochemical Business on April 1st, 2017.
- 4) **Mr. Varit Namwong**, former Executive Vice President - Organizational Effectiveness, was appointed as Chief Operating Officer - Center of Excellence on October 1st, 2016.
- 5) **Mr. Narongsak Jivakanun**, former Senior Vice President - Corporate Strategy, was appointed as Executive Vice President - Corporate Strategy on January 1st, 2017.
- 6) **Mr. Toasaporn Boonyapipat**, former Senior Vice President - International Business Operations, was appointed as Executive Vice President - International Business Operations on April 1st, 2017.
- 7) **Mr. Siridech Kumvongdee**, former Senior Vice President - Organizational Effectiveness, was appointed as Executive Vice President - Organizational Effectiveness on January 1st, 2017.
- 8) **Mr. Pairote Utaisup**, former Senior Vice President - Polymers Business Unit, was appointed as Executive Vice President - Polymers Business Unit on January 1st, 2017.
- 9) **Mr. Athavuth Vikitsreth**, Executive Vice President - External Affairs, has been assigned as a Government Relations Advisor at PTT Public Company Limited since July 1st, 2016.
- 10) **Mr. Pukpong Wungrattanasopon**, former Vice President - Technical and Operations Excellence, was appointed as Senior Vice President - Group Performance Center - Aromatics on August 1st, 2016.

- 11) **Mr. Boonchai Chunhawiksit**, former Vice President - Olefins Plant II, was appointed as Senior Vice President Group Performance Center - Olefins on January 1st, 2017.
- 12) **Mr. Pairush Soovan**, former Senior Vice President Group Performance Center - Aromatics, was appointed as Senior Vice President reporting to Chief Operating Officer - Center of Excellence and has been assigned as secondment as President of PTT Maintenance and Engineering Co. Ltd. since October 1st, 2016.
- 13) **Mr. Booncherd Suwantip**, former Senior Vice President - Quality, Safety, Occupational Health and Environment, retired on December 31st, 2016.
- 14) **Mr. Wirat Boonbumrunghchai**, former Senior Vice President reporting to Chief Operating Officer - Upstream Petrochemical Business and was assigned as secondment as President of PTT Maintenance and Engineering Co. Ltd., was appointed as Senior Vice President - Quality, Safety, Occupational Health and Environment on January 1st, 2017.

Company Secretary

In compliance with the Securities and Exchange Commission Act (No. 4) B.E. 2551, Sections 89/15 and 89/16, the Board of Directors appointed Mrs. Warawan Tippawanich, Senior Vice President - Corporate Affairs, as Company Secretary. By law, the responsibilities of this position include the preparation, storage and safeguarding of important company documents, including the roster of directors, meeting notices, Board and shareholder meeting minutes, annual reports and reports of connected transactions of Directors and Executives.

The Company Secretary is in charge of organizing Board and Shareholder meetings, in addition to informing the Board and Executives of rules and regulations they should familiarize themselves with. The Company Secretary also organizes training and orientation for existing and new Directors, as well as provides them with the information central to their performance as Directors. Company Secretary also oversees compliance with laws, regulations and resolutions passed in Board and shareholder meetings, as well as collaborates with relevant agencies in regards to compliance. The Company Secretary underwent training courses necessary for her to duly perform her role.

REMUNERATION FOR THE BOARD OF DIRECTORS AND EXECUTIVES

Board of Directors' Remuneration

The Board of Directors set up a fair and reasonable remuneration policy for PTTGC's Directors in accordance with good corporate governance principles. The Nomination and Remuneration Committee determines Directors' remunerations based on suitability and PTTGC's financial standing by means of comparison with other SET listed companies in the same industry and of similar sizes. The Nomination and Remuneration Committee also takes into account each Director's responsibilities. Any Directors appointed to be on a Sub-Committee are entitled to additional remuneration due to their added responsibilities.

Directors' remunerations must be approved at a shareholders meeting. At the 2016 General Meeting of Shareholders, held on April 5th, 2016, shareholders resolved to award Directors and Directors to Sub-Committees for the year 2016, and to acknowledge the Director's bonus for the year 2015 as follows:

(1) Remunerations for the Board of Directors and Sub-Committees.

Type of Remuneration	Rate
1. Board of Directors	Monthly Remuneration - Chairman 60,000 THB / Month - Director 50,000 THB / Month / Director Remuneration for Meeting Attendance - Chairman 40,000 THB / Meeting - Director 30,000 THB / Meeting / Director
2. Sub-Committees	Remuneration for Meeting Attendance - Audit Committee - Chairman 50,000 THB / Meeting - Director 40,000 THB / Meeting / Director - Nomination and Remuneration Committee - Corporate Governance Committee - Risk Management Committee
3. Others	-None-

(2) Directors' Bonus for their performance in 2015 was considered and given based on PTTGC's earnings in 2015. Effective from the date of the 2013 Annual General Meeting of Shareholders until the AGM passes a new resolution, the Board of Directors shall receive a bonus only when dividend is paid to shareholders within the same year. The amount of Directors' Bonus shall be 0.30% of PTTGC's net profit that year, but not exceeding 50 million baht. It shall be calculated based on the time served in the previous year. The Chairman shall receive a bonus of 25% higher than other Directors.

In 2016, the Board of Directors collectively received a total bonus of 50 million baht.



Directors' Remunerations in 2016

Name - Last Name	Monthly Remuneration for PTTGC Directors (THB)	Remuneration for Meeting Attendance (THB)	Remuneration for Sub-Committees Meeting Attendance (THB)				2015 Bonus paid in 2016 (THB)*	Total (THB)
			Audit Committee	Nomination and Remuneration Committee	Corporate Governance Committee	Risk Management Committee		
1. Mr. Prasert Bunsumpun	720,000.00	520,000.00	-	-	-	-	4,216,531.00	5,456,531.00
2. Mr. Somchai Kuvijitsuwan	600,000.00	390,000.00	400,000.00	-	-	-	3,373,227.00	4,763,227.00
3. Mr. Vasin Teeravechyan	600,000.00	330,000.00	-	150,000.00	-	-	3,373,227.00	4,453,227.00
4. Professor Surapon Nitikraipot	600,000.00	390,000.00	-	120,000.00	250,000.00	-	3,373,227.00	4,733,227.00
5. Mr. Anon Sirisaengtaksin	600,000.00	390,000.00	-	-	-	150,000.00	3,373,227.00	4,513,227.00
6. Mr. Amnuay Preemonwong	600,000.00	300,000.00	320,000.00	-	-	80,000.00	3,373,227.00	4,673,227.00
7. Mr. Prasan Chuaphanich	443,333.33	270,000.00	200,000.00	-	-	-	-	913,333.33
8. Mr. Sarun Rungkasiri	600,000.00	390,000.00	-	120,000.00	-	120,000.00	3,373,227.00	4,603,227.00
9. Mrs. Watanan Petersik	600,000.00	270,000.00	-	-	-	40,000.00	3,373,227.00	4,283,227.00
10. Mr. Don Wasantapruerk	600,000.00	360,000.00	-	-	160,000.00	-	563,745.00	1,683,745.00
11. Colonel Nithi Chungcharoen	600,000.00	360,000.00	-	-	200,000.00	-	3,373,227.00	4,533,227.00
12. Mr. Auttapol Rerkpi boon	600,000.00	390,000.00	-	-	200,000.00	-	850,238.00	2,040,238.00
13. Mrs. Boobpha Amornkiatkajorn	600,000.00	330,000.00	-	-	-	-	3,373,227.00	4,303,227.00
14. Mr. Praphon Wongtharua	600,000.00	360,000.00	-	-	-	-	1,201,423.00	2,161,423.00
15. Mr. Supattanapong Punmeechaow**	600,000.00	390,000.00	-	-	-	120,000.00	3,373,227.00	4,483,227.00
Director who resigned during 2016 and received remuneration in 2016***								
1. Miss Ruenvadee Suwanmongkol	156,666.67	60,000.00	80,000.00	-	-	-	3,373,227.00	3,669,893.67
Director who resigned their terms during 2015 (received bonus for performance in 2015 and received remuneration in 2016)****								
1. Mr. Veerasak Kositpaisal	-	-	-	-	-	-	1,293,840.00	1,293,840.00
2. Mr. Samerjai Suksumek	-	-	-	-	-	-	1,959,244.00	1,959,244.00
3. Mr. Siri Jirapongphan	-	-	-	-	-	-	2,809,482.00	2,809,482.00
Total	9,120,000.00	5,500,000.00	1,000,000.00	390,000.00	810,000.00	510,000.00	50,000,000.00	67,330,000.00

Remarks : PTTGC provides a corporate vehicle for the Chairman throughout the duration of his term for corporate-related activities only.

* Bonus for 2015 performance paid in 2016 per time served in 2015 in the amount not exceeding 50 Million Baht.

** Remuneration for directorship only, not including executive remuneration.

*** Director who completed his/her terms in 2015

Miss Ruenvadee Suwanmongkol's term ended on April 5th, 2016

**** Director who resigned in 2015

Mr. Veerasak Kositpaisal resigned on June 15th, 2015

Mr. Samerjai Suksumek resigned on August 1st, 2015

Mr. Siri Jirapongphan resigned on November 1st, 2015

Directors' Remunerations for Directorships at Major Subsidiaries

PTTGC's Directors hold a directorship at subsidiaries to ensure that their businesses are operated in accordance with the PTTGC Group's policies.

Name - Last Name	Position	Total Remuneration
PTT Chemical International Private Limited (CH Inter) (100% Shareholding)		
1. Mr. Anon Sirisaengtaksin	Chairman	30,000 Singapore Dollar
2. Mr. Supattanapong Punmeechaow	Director	20,000 Singapore Dollar
Global Green Chemical Public Company Limited (100% Shareholding)		
1. Mr. Supattanapong Punmeechaow	Chairman	360,000 Baht

Shares Held by the Board of Directors, Their Spouses & Their Minors as of December 31st, 2016

Name - Last Name	Shares		
	As of January 1 st , 2016	As of December 31 st , 2016	Increase / (Decrease) During the Year (Share)
1. Mr. Prasert Bunsumpun	-None-	-None-	-No Change-
Spouse	271,142	271,142	-No Change-
2. Mr. Somchai Kuvijitsuwan	-None-	-None-	-No Change-
3. Mr. Vasin Teeravechyan	-None-	-None-	-No Change-
4. Professor Surapon Nitikraipot	-None-	-None-	-No Change-
5. Mr. Anon Sirisaengtaksin	86,027	86,027	-No Change-
Spouse	6,705	6,705	-No Change-
6. Mr. Amnuay Preemonwong	-None-	-None-	-No Change-
7. Mr. Prasan Chuaphanich*	-N/A-	-None-	-No Change-
8. Mr. Sarun Rungkasiri	-None-	-None-	-No Change-
9. Mrs. Watanan Petersik	-None-	-None-	-No Change-
10. Mr. Don Wasantapruerk	-None-	-None-	-No Change-
11. Colonel Nithi Chungcharoen	-None-	-None-	-No Change-
12. Mr. Auttapol Rerkpiboon	-None-	-None-	-No Change-
Spouse	990	990	-No Change-
13. Mrs. Boobpha Amornkiatkajorn	61,704	57,700	(4,004)
14. Mr. Praphon Wongtharua	-None-	-None-	-No Change-
15. Mr. Supattanapong Punmeechaow	40,000	60,000	20,000

Remark: Mr. Prasan Chuaphanich was appointed as a Director on April 5th, 2016

Shares Held by Executives per SEC's Definition, Their Spouses & Their Minors as of December 31st, 2016

Name - Last Name	Shares		
	As of January 1 st , 2016	As of December 31 st , 2016	Increase / (Decrease) During the Year (Shares)
1. Mr. Supattapong Punmeechaow	40,000	60,000	20,000
2. Mr. Kun Patumraj *	114,629	114,629	-No Change-
3. Mr. Patiparn Sukorndhaman	-None-	-None-	-No Change-
4. Miss Duangkamol Settanung	-None-	-None-	-No Change-
5. Mr. Varit Namwong	108,939	108,939	-No Change-
6. Mr. Kongkrapan Intarajang	-None-	-None-	-No Change-
7. Mr. Athavuth Vikitsreth	-None-	-None-	-No Change-
8. Mr. Suvit Tinnachote*	96,086	96,086	-No Change-
Spouse	24,313	24,313	-No Change-

* Retirement as of December 31st, 2016

Remunerations for the Executives

PTTGC evaluates the performance of its Executives annually using Key Performance Indicator (KPIs). These include financial performance, implementation of long-term strategic goals, personal performance, PTTGC performance and guidelines from SET listed companies in the same industry and of similar sizes. The evaluation also takes into account their responsibilities, management development and overall economic conditions.

Remuneration for the President and 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 gives consideration and reviews it prior to submission to the Board of Directors for approval. It should be noted that, at the highest level of PTTGC's management hierarchy, the President and Chief Executive Officer is awarded compensation and other benefits in addition to those received as a Director on the Board of Directors.

Executives per SEC definition, including those who retired and resigned in 2016, were awarded a total of the following figures in 2016:

Type of Remuneration	Number of Executives	Total (Million Baht)
Total Combined Salaries	9	60
Special Bonuses	12	37
Provident Fund Contributions	7	5
Total		102

Board of Directors appointed as Directors of Subsidiaries / Affiliates / Associated and Related Companies (as of February 1st, 2016)

No.	Name	PTTGC	Subsidiaries										Affiliates / Associated and Related Companies					
			GGC	CH Inter	PTTGC (Netherlands)	PTTGC (USA)	Mytrant	Vencorex	NatureWorks	EOM	ESC	PTT	TOP	GPSC	PTTGM	PTTAC	VNT	
1	Mr. Prasert Bunsumpun	●														●		
2	Mr. Somchai Kuvijitsuwan	●																
3	Mr. Vasin Teeravechyan	●																
4	Professor Surapon Nitikraipot	●																
5	Mr. Anon Sirisaengtaksin	●	●	●	●	●	●	●	●	●								
6	Mr. Amnuay Preemonwong	●																
7	Mr. Prasan Chuaphanich	●																
8	Mr. Sarun Rungkasiri	●									●					●		
9	Mrs. Watanan Petersik	●																
10	Mr. Don Wasantapruet	●											●					
11	Colonel Nithi Chungcharoen	●																
12	Mr. Auttapol Rerkpilboon	●											●					
13	Mrs. Boobpha Amornkiatkajorn	●													●			
14	Mr. Praphon Wongtharua	●																
15	Mr. Supattanapong Punmeechaow	●	●	●												●	●	

Remarks : ● Chairman ● Director ● Executive

Executives appointed as Directors of Subsidiaries / Affiliates / Associated and Related Companies (as of February 1st, 2016)

No.	Name	Subsidiaries																		Affiliates / Associated and Related Companies										
		PTGC	TOCGC	PPCL	GGC	TSCL	SUN	NPC S&E	PTTME	CH Inter	PTGC (Netherlands)	PTGC (USA)	PTGC America Corporation	PTGC America LLC	Myriant	Vencorex	NatureWorks	EOM	ESC	ITT	PTT	PTTICT	GPSC	PTTSM	PTTPL	VNT	PTTES	API	MHPC	
1	Mr. Supattanapong Punmeechaow	●	●		●					●											●		●							
2	Mr. Kongkrapan Intarajang									●	●	●	●	●	●	●	●	●	●											
3	Mr. Patiparn Sukomdhaman		●	●	●	●					●												●							
4	Mr. Varit Namwong							●	●	●			●	●													●			
5	Miss Duangkamol Settanung			●						●		●	●	●				●				●								
6	Mr. Narongsak Jivakanun			●	●					●		●	●	●	●								●							
7	Mr. Siridech Kumvongdee					●										●						●								
8	Mr. Pairote Utaisup					●																		●	●	●			●	●

Remarks : ● Chairman ● Director ● Executive

Subsidiaries

TOCGC	=	TOC Glycol Company Limited
PPCL	=	PTT Phenol Company Limited
GGC	=	Global Green Chemicals Public Company Limited
TSCL	=	Thai Styrenics Company Limited
SUN	=	Solution Creation 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
TEX*	=	Thai Ethoxylate Company Limited
CH Inter	=	PTT Chemical International Private Limited

Affiliates

PTTICT	=	PTT ICT Solutions Company Limited
GPSC	=	Global Power Synergy Public Company Limited
PTTME	=	PTT Maintenance and Engineering Company Limited
PTTSM	=	PTT Polymer Marketing Company Limited
VNT	=	Vinythai Public Company Limited
EFT	=	Eastern Fluid Transport Company Limited
PTTES	=	PTT Energy Solutions Company Limited
API	=	Alliance Petrochemical Investment (Singapore) Private Limited
MHPC	=	Mehr Petrochemical Company

Associated and Related Companies

PTT	=	PTT Public Company Limited
TOP	=	Thai Oil Public Company Limited
PTTAC	=	PTT Asahi Chemicals Company Limited

* Jointly Controlled Entities

Directors of PTTGC's Subsidiaries - wholly owned by PTTGC (as of February 1st, 2017)

Name	Position
Thai Oleochemicals Company Limited	
1. Mr. Supattanapong Punmeechaow	Chairman
2. Mr. Athavudhi Hirunburana	Director
3. Mr. Permsak Shevawattananon	Director
4. ACM Songtam Chokkanapitag	Director
5. Prof. Kumchai Jongjakapun	Director
6. Mr. Patiparn Sukorndhaman	Director
7. Mrs. Kannika Ngamsopee	Director
8. Mr. Narongsak Jivakanun	Director
9. Mr. Apichart Jongsakul	Director
10. Mr. Payungsak Chartsutipol	Director
11. Mr. Jirawat Nooritanon	Director / Managing Director
TOC Glycol Company Limited	
1. Mr. Patiparn Sukorndhaman	Chairman
2. Mr. Saroj Putthammawong	Director
3. Mrs. Warawan Tippawanich	Director
4. Mr. Boonchai Chunhawiksit	Director
5. Mr. Wiboon Chuchepchankamon	Director / Managing Director

Name	Position
PTT Phenol Company Limited	
1. Mr. Bowon Vongsinudom	Chairman
2. Mr. Patiparn Sukorndhaman	Director
3. Miss Duangkamol Settanung	Director
4. Mr. Narongsak Jivakanun	Director
5. Mr. Pukpong Wungrattanasopon	Director
6. Mr. Pamin Phantawesak	Director
7. Mr. Kumpol Chaikitkosi	Director / Managing Director
Thai Styrenics Company Limited	
1. Mr. Patiparn Sukorndhaman	Chairman
2. Mr. Siridech Kumvongdee	Director
3. Mr. Pairote Utaisup	Director
4. Mr. Poonsak Harisadee	Director / Managing Director



Name	Position
Solution Creation Company Limited	
1. Mr. Patiparn Sukorndhaman	Chairman
2. Mr. Chaya Chandavas	Director
3. Mr. Saroj Putthammawong	Director
4. Mr. Siridech Kumvongdee	Director
5. Mr. Kittiphong Limsuwannarot	Director / Managing Director
NPC Safety and Environmental Service Company Limited	
1. Mr. Varit Namwong	Chairman
2. Mr. Wirat Boonbumrungchai	Director
3. Mr. Suwat Suratchaikarn	Director
4. Mr. Sekxon Arttamangkura	Director / Managing Director

Name	Position
PTT Chemical International Private Limited	
1. Mr. Anon Sirisaengtaksin	Chairman
2. Mr. Supattanapong Punmeechaow	Director
3. Mr. Varit Namwong	Director
4. Miss Duangkamol Settanung	Director
5. Mr. Pipat Suvanajata	Director
6. Mr. Narongsak Jivakanun	Director
7. Mrs. Warawan Tippawanich	Director
8. Mr. Kongkrapan Intarajang	Director / CEO
PTTGC America Corporation	
1. Miss Duangkamol Settanung	Director
2. Mr. Varit Namwong	Director
3. Mr. Narongsak Jivakanun	Director
4. Mr. Kongkrapan Intarajang	President & CEO



“...Every profession has its own **professional ethics**, either in writing or verbally. People of each profession are supposed to adhere to it. Any infringements might be harmful to the individual, the community and the society. Therefore, besides having profound and **clear knowledge** on each discipline, the practitioners of every profession must strictly adhere to the professional ethics, both dos and don'ts. In this way, that person will be **successful** in his or her work...”

His Majesty King Bhumibol Adulyadej's Address

Giving at the graduation ceremony of Mahidol University

On 4 July 1997



Corporate Governance

CORPORATE GOVERNANCE

The Board of Directors of PTT Global Chemical Public Company Limited adheres to good corporate governance and code of conduct, entrenching transparency and efficiency in our operations. This adherence brings about trust and confidence in our organization from shareholders, investors and all groups of stakeholders. Moreover, it bolsters our competitiveness in the market. Therefore, the Board of Directors ensures that all of our processes strictly conform to our Corporate Governance Policy.

CORPORATE GOVERNANCE POLICY

The Board of Directors has mandated that the Corporate Governance Policy, which was formulated in conformity to universally accepted practices, be part of our Business Operations Policy since 2011. It has tasked the Corporate Governance Committee with regulating, monitoring and assessing PTTGC's corporate governance. In addition, the Corporate Governance Committee must make certain that the implementation of the policy meets international standards, complements our business and operational strategies and conforms to regulatory and legal requirements and other international guidelines. The Corporate Governance Committee discusses monitoring and implementation assessment results at its meetings, regularly reports these results to the board and discloses such information in the annual report.

Corporate Governance and Business Code of Conduct

To bring about realistic implementation of the Corporate Governance Policy, the Board of Directors has issued a Corporate Governance and Business Code of Conduct Handbook. It defines a structure of corporate governance and provides guidelines that correspond with the Corporate Governance Policy. All levels of employees, including Directors and Executive Officers, must abide by the policy. The handbook is distributed to all personnel in our organization. By signing acknowledgement and conformity form, every employee acknowledges a safe receipt of the handbook and agrees to employ the principles therein as a benchmark in their day-to-day operations.

Our Business Code of Conduct is comprised of principles and best practices for an ethical business. Our Board of Directors and Executives act as role models to promote a culture of good corporate governance and take responsibility over related stakeholders. In doing so, they take into account human rights, consumer rights and lawful use of labor. They also provide a system to oversee, monitor, assess and review employees' compliance with the Business Code of Conduct. The Corporate Governance and Business Code of Conduct Handbook is also distributed to joint ventures, relevant authorities, stakeholders and business allies such as customers and suppliers. Additionally, shareholders, investors and the public may conveniently access to the handbook on our website, www.pttgcgroup.com, under Corporate Governance.

Corporate Compliance

To facilitate PTTGC's full compliance with our own policies, as well as relevant regulatory and legal requirements, PTTGC has established the Corporate Compliance Policy and disclosed it to PTTGC's personnel at every level. The Corporate Compliance Division has been founded to specially oversee all compliance-related matters, including to create awareness, follow up, review and ensure full compliance with our Corporate Compliance Policy & Program.

In 2016, PTTGC carried out the following tasks as part of its Corporate Compliance Program to ensure that every PTTGC Group's Company would move forward in the same direction.

- As for compliance communication, we educated our Executive Officers on matters related to Business Code of Conduct and the Corporate Compliance Policy. For instance, we held a training session entitled Corporate Compliance Overview for Executives and Management to equip our officers with guidelines and criteria for international regulatory practices, put into action of Tone at the Top with respect to Compliance, be a role model in adhering to Corporate Compliance

doctrine, laws, rules and regulations, as well as develop the practice into a corporate culture. We also held a Mandatory Corporate Compliance Training for New Division Managers 2016, a Compliance & Anti-Corruption Programs and Antitrust Principles / Offences focusing on New Thai Antitrust Law to employees at all level. We constantly circulate Compliance News via email to management and employees of PTTGC Group throughout the year.

- As for monitoring, auditing and reporting of corporate compliance, we in cooperation with our Internal Control and Risk Management Department, to conduct a compliance risk assessment by analyzing the results of corporate risk assessment related to Corporate Compliance matters. We also conducted a control self-assessment (CSA). The purpose of these two assessments was to ascertain whether our Corporate Compliance Program was up to standard and to further improve the program's effectiveness.

We regularly monitor the conduct of PTTGC Group on Corporate Compliance and report to the Board of Directors.

Dissemination of Good Corporate Governance Principles

PTTGC has established **CREATE**, which stands for **C**reation of long-term value, **R**esponsibility, **E**quitable treatment, **A**ccountability, **T**ransparency and **E**thics. We ensure that every employee is aware of CREATE on their first day at PTTGC and continue to instill its value in our employees' mind through continual seminars and activities. We regularly conduct assessments on our Board's performance and on our employees' awareness and implementation of good corporate governance principles, in addition to being assessed by authorities such as the Securities and Exchange Commission (SEC), the Stock Exchange of Thailand (SET), the Thai Institute of Directors (IOD) and the Thai Investors Association. All of this gauges our compliance with good corporate governance and ensure the elevation of our corporate governance towards international standards.

COMPLIANCE WITH INTERNATIONAL STANDARDS OF GOOD CORPORATE GOVERNANCE

PTTGC continues to adhere to international standards of good corporate governance, including those established by the Stock Exchange of Thailand, the ASEAN Scorecard and the Dow Jones Sustainability Indices (DJSI). In the past year, PTTGC complied with the following five aspects of good corporate governance:

Shareholder Rights

Placing a great deal of emphasis on the protection of shareholder rights, the Board of Directors included shareholder rights protection mechanisms in the Corporate Governance Handbook. It also oversaw PTTGC's compliance with the established principles.

(1) The provision of important and pertinent information to shareholders

We provided clear and up-to-date information of importance and pertinence to our business operations to shareholders on our website and via the Stock Exchange of Thailand's portal. If we deemed it necessary, we would disclose the information whether the law required it or not.

(2) The 2016 Annual General Meeting of Shareholders

PTTGC held the 2016 Annual General Meeting of Shareholders (AGM) on April 5th, 2016, at the Bangkok Convention Center on the 5th floor of Central Plaza Ladprao, located at 1695 Phahon Yothin Rd., Chatuchak, Chatuchak, Bangkok. The meeting commenced at 2 p.m. We afforded participating shareholders the following conveniences:

- We provided opportunities for minority shareholders, defined as any single shareholder or a group of shareholders holding at least 0.1% of all shares with eligible voting rights, to propose agenda items and nominate qualified candidates to be elected as Directors prior to the meeting during September 28th- December 31st, 2015. Nomination criteria and procedures were announced via the Stock Exchange of Thailand's portal and on www.pttggroup.com.

- The Nomination and Remuneration Committee was tasked with considering proposed candidates against established criteria, while the Corporate Governance Committee was in charge of reviewing and analyzing proposed agenda items for their benefits and appropriacy in conformity to established criteria. The approved agenda items would be submitted to the Board of Directors for its final approval. The Board would then inform the shareholders of its decision regarding these agenda items and its reasons at the meeting. However in the year 2016, no agenda items were proposed and no nominations were made.
- We informed all shareholders of the record date and the book-closing date in advance to facilitate their AGM attendance and promote their rights to receive their dividend payment. We also made the AGM date available on our website as soon as it was set by the Board to afford all shareholders sufficient time to make the arrangements needed to attend the meeting.
- We published the invitation to the 2016 Annual General Meeting of Shareholders on our website for more than 30 days prior to the date of the meeting. Enclosed with the invitation were meeting agenda with the Board's opinions about each agenda item and meeting documents. All of this was made available in both Thai and English.
- In the event that a shareholder would like to assign a proxy to attend and vote at the AGM on their behalf or that a shareholder would be unable to attend the AGM personally, we provided them with a proxy statement that allowed each shareholder to specify their "for", "against" or "abstain" vote for each agenda item. We also provided Independent Directors' names and biography for shareholders to consider as their proxy. Details of the proxy assignment process and documents required for the procedure were enclosed with the meeting invitation. All of this was available in both Thai and English.
- The invitation was mailed to shareholders 21 days prior to the meeting. A map of the meeting location and a phone number for inquiries were also included.
- We held the AGM in a large conference hall that could accommodate a sizeable number of shareholders. We provided shareholders with a platform to ask questions and express their opinions while ensuring smooth and efficient meeting organization. We organized an exhibition, with commentators, in front of the conference hall to educate participants about the various aspects of our business and performance. We also provided sufficient food and drink for participants.
- We adopted barcode scanning in our registration process for convenience and efficiency. We also provided staff to help verify shareholders' documents in advance. Registration was opened for more than two hours before the meeting started.
- Out of 15 Directors, 14 attended the 2016 Annual General Meeting of Shareholders. Also in attendance were high-ranking Executive Officers, Auditors, Legal Advisors, Shareholder rights protection volunteers, Lawyers and Shareholders who volunteered as vote counting witnesses. Before the meeting commenced, the Chairman of the meeting explained voting and vote counting procedures for each agenda item. Voting cards were provided for each agenda item. Shareholders and proxies could vote "for", "against" or "abstain."
- The Chairman proceeded with all the agenda items in order and afforded all shareholders equal rights to express their opinions. Sub-Committee Chairpersons, the President and Chief Executive Officer and related high-ranking Executive Officers were tasked with answering shareholders' questions. All opinion expressed and questions asked were fully recorded in the meeting's minutes.
- We disclosed the resolutions passed in the 2016 Annual General Meeting of Shareholders through the Stock Exchange of Thailand's portal on the next business day following the meeting. The disclosed resolutions included a complete set of the "for", "against" and "abstain" votes of each agenda item. We also put together meeting minutes, specifying the names of Directors and Executives in attendance, as well as other relevant attendees, important explanations, a list of questions and answers and a summary of opinion expressed. The minutes were made in both Thai and English and submitted to the Stock Exchange of Thailand and other related agencies within 14 days following the meeting. They were also made available on www.pttgcgroup.com for shareholders' consideration.

For the fifth consecutive years (2012–2016), PTTGC received a perfect score of 100, or outstanding, from the quality assessment of our organization of the 2016 Annual General Meeting of Shareholders conducted by the Thai Investors Association. We also received an Investors' Choice award from the Investors' Choice Awards 2016 with a perfect score of 100 for the organization quality of our 2016 AGM.

Equitable Treatment of Shareholders

The Board of Directors oversees equitable treatment of every shareholder, whether majority or minority, Thai or foreign. PTTGC's equitable treatment of shareholders can be summarized as follows:

1. **PTTGC values all shareholders.** We have measures in place to fairly and equitably protect the rights of every shareholder. These measures also bring about investors' trust and confidence in PTTGC and ensure continuous suitable returns.

2. **PTTGC affords minority shareholders a chance** to express their opinion, provide suggestions and submit complaints to the Chairman of the Corporate Governance Committee (an Independent Director) and Company Secretary via email at cg@pttgcgroup.com. The Corporate Governance Committee reviews these submissions and takes appropriate action. Institutional investors may request information or express their opinions via email at ir@pttgcgroup.com, which falls under the jurisdiction of Investor Relations.

3. **PTTGC advocates good relations with our shareholders** through a variety of activities that not only foster good relations with our shareholders but also benefit society and the environment. One notable activity was the Company Visit 2016 in the province of Rayong during November 29th - 30th, 2016. The activity gave 500 majority and minority shareholders an equal opportunity to be part of a social outreach activity, meet our Executives, learn about our operations and visit PTTGC Group plants.



Investors' Choice Awards 2016



2016 Annual General Meeting of Shareholders



2016 Shareholders' Company Visit

Stakeholders' Roles

Placing much importance on the rights of every group of stakeholders, PTTGC has collected and published practices for stakeholder rights protection and impact mitigation on our website. We have also provided channels, by which stakeholders can submit their opinion and complaints to PTTGC. Our stakeholder-related policies and guidelines, as well as their actualization in 2016, which were reported to the Corporate Governance Committee, are summarized below:

Shareholders: PTTGC respects the fundamental rights of shareholders and treats every shareholder equitably to bring about satisfaction. These rights include the right to participate in the annual general meeting, the right to vote, the right to propose meeting agenda items and the right to nominate candidates for a directorship. PTTGC organizes activities for shareholders, including Company Visits, listens to their opinions and suggestions and provides them with contact channels, via the www.pttgcgroup.com website and via email at ir@pttgcgroup.com and cg@pttgcgroup.com. These contact channels are disclosed under Shareholder Rights and Equitable Treatment of Shareholders.

Moreover, PTTGC collected 259,000 Baht in proceeds from bio-plastic product samples distributed at 50 Baht a set at the 2016 Annual General Meeting of Shareholders. All proceeds went to the fund for underprivileged patients at Siriraj Hospital.

Customers: PTTGC is committed to bringing about the satisfaction and confidence of customers and the public through the development of good products and services. By providing unprejudiced, appropriate, transparent and accountable management, we ensure that our products are of good quality and are reasonably priced. We also make certain that our standards continue to improve. We maintain a good and sustainable relationship with our customers through a diverse range of activities. For instance, we conduct a monthly review of our customer-related operations. We also quality check our products, develop new ones and try to the best of our abilities to meet customers' demand. We survey and assess their

satisfaction across six aspects: product quality, service quality of sales representatives and technology support, process quality, value and price, image and business relationship. We also have a customer relationship management (CRM) system in place to handle possible complaints about our products and services. Moreover, we now have the Marketing and Commercial Operations Policy in place, which has been devised in conformity to the Corporate Governance and Business Code of Conduct Handbook and the Corporate Compliance Policy. This policy serves as guidelines that every employee in the divisions must strictly adhere to.

Suppliers: To bring about equality, honesty and mutual benefits between PTTGC and our suppliers, we strictly conform to laws, agreements and Business Code of Conduct. Through the adoption of an e-procurement system, our procurement process and database are now efficiently interconnected with those of our subsidiaries. Our 5-year roadmap is designed to enhance our suppliers' capabilities without leaving behind issues such as the environment, society, communities and good corporate governance, ensuring the sustainability of our procurement excellence. We also assess our suppliers' operations to ascertain their compliance with the standards of the DJSI. In terms of our relationships with our suppliers, we have made improvements to the Approved Vendor List (AVL) with our use of online technologies in every process. We also organize activities to foster a good relationship with our suppliers, including activities for social and environmental benefits and the Suppliers Conference, where we meet with our suppliers to exchange ideas and communicate our policies to them by malicious accusation.



PTTGC Supplier Conference 2016

Business Competitors: It is PTTGC's policy to align our treatment towards our competitors with international practices under the framework of competition laws. We adhere to principles of fair and transparent competition. We neither seek competitors' trade secrets through inappropriate or dishonest means nor do we defame them by malicious accusation.

Creditors: PTTGC treats our creditors with fairness and responsibility. We strictly conform to best practices in accordance with terms and conditions set forth in the contracts, terms of guarantee, capital management and debt repayment, due dates and financial encumbrances. We do not conceal information or facts that may cause damage to creditors. In the event that PTTGC foresees that we may not be able to perform any of our contractual obligations, we promptly notify our creditors and work with them to find a solution. Furthermore, PTTGC surveys the opinion towards our organization's processes with financial institutions to enhance the confidence in our processes and compliance with financial institutions' regulations. As for debenture holders, PTTGC diligently complies with the laws and announcements of the Securities and Exchange Commission of Thailand, as well as the policies, objectives and resolutions passed at any of the shareholder meetings. We regularly organize activities to foster good relationships with our debenture holders, including the recent Company Visit 2016, to improve their trust and confidence in PTTGC and to promote a better understanding of our business among debenture holders. PTTGC has no lawsuits over debt default with any of our creditors.

The Public Sector: PTTGC believes that the public sector, one of our stakeholders, plays a key role in the success of our business. We have put in place a policy on our conduct towards the public sector in countries in which we invest to avoid any inappropriate action and transactions. This policy is disclosed in the Corporate Governance and Business Code of Conduct Handbook. PTTGC is committed to our corporate compliance with the local law and governmental regulations. To obtaining permit, benefits and concessions, we comply with all of the rules, regulations and laws, as well as established procedures and processes. Our contact with the public sector, including local authorities and state enterprises, is transparent. We also offer full disclosure per governmental requirements.

Employees: Understanding that employees are a vital key to progress, PTTGC focuses on developing our employees' competence with an aim of becoming an organization of learning. In addition, we afford our employees fair compensation, a safe work environment and the ability to offer opinions and suggestions regardless of their position in the corporate hierarchy.



PTTGC Fish Aggregating Devices Project



PTTGC Fish Aggregating Devices Project



Releasing Fish Activity



Beach Cleaning Activity

Our human resource management plan is aligned with our operations to support our business units and our foreign endeavors. We also strive to prepare our employees for our business expansion abroad.

Moreover, it is PTTGC's policy to welcome handicapped individuals into our organization with open arms and to make the necessary provisions to better the quality of their life at work. Not only did we hire handicapped individuals in 2016, but we also made improvements to our facilities and premises, rendering them more easily accessible and convenient. Further details of our human-resource management are disclosed in the People Management and Development Policy.

Society, Communities, and the Environment: Integral to our operations is our responsibility towards society, communities and the environment. We take into account issues such as safety, quality of life, conservation of natural resources, the promotion of efficient energy consumption and the quality of life of people living around our plants and across Thailand as a whole. To bring about the sustainability of our corporate social responsibility management, we have developed the Effective CSR Program. It is aimed at providing the support that society and communities truly need by taking advantage of our expertise. The coverage of our Effective CSR Program extends beyond communities surrounding our plants; it also includes the Province of Rayong and the whole Kingdom of Thailand. On top of our financial report, PTTGC also makes an integrated report, which is a global-scale sustainability record that covers topics such as the economy, society and the environment, as well as issues that may significantly impact PTTGC. More details on the topic may be found in the 2016 Integrated Sustainability Report.

Disclosure and Transparency

PTTGC is committed to the transparent and timely disclosure of accurate and complete information to stakeholders. In exhaustive conformity to the relevant rules of law and regulations, we disclose both financial and non-financial information through the SET Portal of the Stock Exchange of Thailand and on www.pttgcgroup.com website. Investors Relation (IR), Corporate Governance and Corporate Secretary are in

charge of providing such information and responding to inquiries.

- Disclosure of Important Information in the Annual Report and in Form 56-1

Financial Information: PTTGC's financial statements are audited by a professional auditor for the accuracy of essential information, following financial auditing standards. Each financial statement is also approved by the Audit Committee and the Board of Directors prior to the disclosure to shareholders and the public. The Board of Directors' statement on the accountability of our financial report is disclosed alongside the auditor's report in this annual report. It includes connected transactions, management's analysis and risk management.

Non-Financial Information: PTTGC also discloses non-financial information of the PTTGC Group, including the operational structure of the PTTGC Group, the majority shareholder's shareholding structure, the number of shares held, the ratio of shares held by institutional investors and the ratio of free-float shares. Upon taking office and every instance the information is changed, any persons tasked with the management of PTTGC and its subsidiaries must report their and their affiliates' conflicts of interest. They must also report their securities holding every month and at the end of the year in the Report of Corporate Governance Compliance.

- Channels that PTTGC uses to disclose essential information, which is available in Thai and English, include the following:
 - We disclose essential information via the SET Community Portal of the Stock Exchange of Thailand;
 - We disclose essential information on our website, www.pttgcgroup.com, which is regularly updated; channels that may be used to contact the Board and other divisions are also fully and clearly displayed;
 - We disclose information and news to our stakeholders via our Better Living magazine, newspaper articles, press releases, email, exhibitions and sundry other activities.

Insider Information

PTTGC places a great deal of importance on the issue of insider information. It is our policy to prohibit the use of insider information, which is defined as essential information that has not yet been made public, for personal gain or for the benefit of any individual. Such usage includes trading PTTGC's stock. This policy appears in the Corporate Governance and Business Code of Conduct Handbook, which is retrievable on the PTTGC website, for shareholders to acknowledge and for the Directors, Executive Officers and other personnel to abide by. The following is a summary of this policy.

- (1) From the moment they take office, Directors and Executive Officers from Senior Vice President to the Top of the hierarchy per the SEC's definition must report their and their affiliates' stock holding in PTTGC, as well as any changes, within three (3) business days following the change per the SEC's specifications to PTTGC.

In addition, the Corporate Governance Committee advised the Board of Directors in Meeting 5/2016, held on December 26th, 2016, to implement a new policy that would require Directors and Executive Officers to notify the Company Secretary of their trading of PTTGC shares at least one business day before the transaction. The Board has approved and implemented this policy accordingly.

- (2) The Board of Directors monitors the implementation of our Business Code of Conduct on the subject of insider information. It mandates that any person whose duty is to report stock holding and changes to stock holding must submit a copy of the report to the Company Secretary. The Company Secretary must then report these changes to the Board at every meeting or when the changes occur. Information of stock holding at the beginning and the end of each fiscal year is disclosed in the annual report.
- (3) PTTGC notifies Directors and Executive Officers in writing that they are prohibited from trading stock 30 days prior to the disclosure of the quarterly and

annual financial statements or other information that may affect the price of PTTGC's stock. They are also prohibited from trading PTTGC's securities within 24 hours from the disclosure.

- (4) According to PTTGC's Confidentiality of Information Policy, every Executive Officer and staff member is required to treat PTTGC's information with confidentiality and to safeguard our information, our business partners' information and the personal information of related parties. They are also required to adhere to our guidelines on confidential information or information that is yet to be in public domain.
- (5) PTTGC regularly keep our Directors, Executive Officers, and employees up to date on regulations and policies regarding insider information. On top of ensuring their acknowledgement and compliance, we also clearly outline punitive disciplinary action for cases of violation. No reports of violation were made in this past year.

Investors Relations

Investor Relations is the center of communication, where essential information is disclosed to shareholders, investors - including institutional and retail investors - analysts and relevant authorities. Investor Relations oversees the quality of financial reporting processes and essential information that may affect the price of PTTGC's stock, such as financial statements, earnings reports and quarterly and annual management discussions and analyses (MD&A). These are all indicators of PTTGC's financial standing, performance and future trend. Investor Relations also oversees the disclosure of information via the SET Community Portal of the Stock Exchange of Thailand to foreign and domestic investors.

Furthermore, in the year 2016, our Executive Officers regularly meet shareholders, financial analysts, investors and employees through a number of diverse activities and events to present them with our performance. These include analyst meetings, domestic and overseas roadshows and retail-investor event.

Investor Meetings	
Investor Meetings Abroad	4 times
Domestic Investor Meetings	8 times
Fixed Income Roadshow	1 time
SET Opportunity Day	4 times
Meetings with Financial Analysts	4 times
Meetings at the Company	78 times
Teleconference	14 times

Information Disclosure	
Disclosure via SET Community Portal and Company Website	44 times
Newsletter to Investors (The Better Living)	4 issues

Activities	
Bondholders Site Visit	1 time
Analysts/Fund Site Visit	4 times
Shareholders Site Visit	2 times
Relationship-Fostering Activities with Analysts	1 time
Basic Training with Analysts	1 time

Investors or any interested persons may contact PTTGC via the following five channels for more information:

- 1) Mail: Investor Relations, PTT Global Chemical Public Company Limited 555/1 Energy Complex, Building A, 14th–18th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900
- 2) Phone: 66(0) 2265-8574, 66(0) 2140-8712, 66(0) 2140-8714, 66(0) 2265-8327, 66(0) 2265-8364
- 3) Email: ir@pttgcgroup.com
- 4) Fax: 66(0) 2265-8500
- 5) Website: www.pttgcgroup.com

In addition, PTTGC offers a swift and convenient correspondence via email. The email address is published on our website under Corporate Governance. Shareholders and the public may reach out to the Chairman of the Corporate Governance Committee directly. They may also contact the Company Secretary for company information at cg@pttgcgroup.com.

Responsibilities of the Board of Directors

The Board of Directors has effectuated the following policy regarding their composition and the scope of their responsibilities and duties:

1) The establishment of business strategies, policies and directions

The Board considers and establishes PTTGC's policies, strategies and sustainable development goals under the framework of universal sustainable business practices with an aim to balance the economy, the environment and society. At least once a year, the Board reviews and sets corporate vision and goals in accordance with the current economic condition. In addition, the Board approves financial Key Performance Indicator (KPI) and the various corporate plans, as well as periodically monitors their progress. The Board also supervises the work of the President and Chief Executive Officer and the rest of the management team to ascertain the achievement of PTTGC's goals and plans.

2) Corporate governance and code of conduct

The Board provides the PTTGC Group with the Corporate Governance Policy and Business Code of Conduct, by which Directors, Executive Officers, and staff members must abide to bring about efficient, standardized, ethical, transparent and accountable operations. The Board also ensures that all stakeholders receive the benefits guaranteed to them by their fundamental rights, fostering fairness, confidence and recognition. The Corporate Governance Committee, set up by the Board, is tasked with ensuring that PTTGC diligently complies with the Corporate Governance Policy, Business Code of Conduct, Compliance Policy, as well as all applicable laws, regulations and shareholder resolutions. The Corporate Governance Committee also sees to the

equitable treatment of all shareholders, whether it be shareholder benefits and rights, and instills an understanding of good corporate governance in the mind of our employees.

3) Internal control and internal audit

The Board mandates that PTTGC and its subsidiaries shall have effective internal control system that is comparable to universally accepted standards; this internal control system shall also be adequate for our risk appetite and shall take into account the appropriate internal control environment. The Audit Committee and Internal Audit are tasked with performing reviews and monitoring internal audit on a regular basis. They must ascertain efficient internal control activities, adequate and accountable information and internal and external communication, and regular monitoring and assessment. Their efforts bring about the achievement of operational, reporting and compliance objectives. They also foster confidence among Executive Officers, investors and other stakeholders of PTTGC. Further information may be found under Internal Control.

4) Risk management

The Board oversees PTTGC's management system of risks that may derail our strategic objectives. The Board tasks the Risk Management Committee with devising policies and frameworks of risk management, as well as ensuring risk management efficiency. By reviewing risks that may negatively impact our objectives and considering substantial risks at project and organization levels, the Risk Management Committee provides PTTGC with an execution plan, as well as consistently monitors, assesses and makes adjustments to the said plan to make certain that these risks remain within our risk tolerance level. Furthermore, the Risk Management Committee provides risk management reports to the Board on both regular and ad-hoc bases, as disclosed under Risk Management and Risk Factors.

5) Conflicts of interest

The Board of Directors has laid down a policy and guidelines for the possibility of a conflict of interest in the Corporate Governance and Business Code of Conduct

Handbook, to which all Directors, Executive Officers and employees must conform. They must also carefully follow the guidelines for transactions or connected transactions to refrain from violating the regulations of the Securities and Exchange Commission and the Stock Exchange of Thailand. Directors and Executive Officers from Executive Vice President to the Top of the corporate hierarchy, as well as other finance-related positions per the SET's requirements, must report their interest and those of their related persons to PTTGC. Employees are required to report all possible conflicts of interest annually. In addition, in the event that a conflict of interest has arisen, all persons involved are required to report it to PTTGC immediately.

PTTGC has put further measures in place to prevent conflicts of interest. Directors, Executive Officers, employees and all related persons shall refrain from partaking in a financial transaction and/or a relation with an external entity that may result in a conflict of interest with PTTGC or may hinder the efficiency of our operations. In the event that a conflict of interest has arisen in procurement, bidding, decision making or transaction approval, they are required to report the conflict of interest to their immediate supervisor or the party involved, using our Conflict of Interest Form, and withdraw from such a process.

ANTI-CORRUPTION EFFORTS

PTTGC operates with transparency and accountability founded upon good corporate governance. We have a control and monitoring mechanism in place to prevent internal fraud and corruption, whether they be direct or indirect.

In the year 2016, PTTGC has expressed our dedication to the fight against fraud and corruption in the following manners:

CAC

PTTGC became a certified member of the Private Sector Collective Action Coalition Against Corruption (CAC) on July 4th, 2014. On top of our annual self-assessment, we also applied for membership recertification in February

of 2017. Recertification is a process required every February three years, according to the provisions of the CAC. Our application is currently under review by the CAC Council. We expect to be notified of their decision by the third quarter of 2017.

Organization of Transparency

PTTGC realizes that corruption is a major obstacle to development and poses as a significant threat to the country on several fronts, including the economy, society, politics, social values, virtues and morality. So we adhere to doing business with ethics and transparency to support the government's anti-corruption efforts via the promotion of awareness, social values, virtues and morality, as well as to propel Thailand's transparency towards an accepted standard and to promote a management culture based on good corporate governance.

Fraud Risk Assessment

PTTGC analyzes and evaluates fraud risks and the possible impacts of fraud in several internal processes, using a fraud risk assessment tool. Moreover, we have invited an expert lecturer from an external agency who specializes in fraud risk assessment and is certified by the Anti-Corruption Society to train us on fraud risk assessment techniques and to hold workshops for our relevant divisions.



No Gifts Policy

Giving or receiving of gifts, treating someone or being treated to a meal and giving or receiving other forms of benefits are all possible causes of corruption. Therefore, PTTGC has issued the No Gifts Policy in compliance with our Anti-Corruption Policy. Implemented across our organization, the No Gifts Policy mandates that any person employed by the PTTGC Group may not ask for or receive gifts, samples, meals or any form of favor that may be considered inappropriate from a business partner of the PTTGC Group. In doing so, we refrain from an act that may influence our decision or lead to selective treatment or result in a conflict of interest. We have communicated this policy to all external parties involved in our business operations for their acknowledgement. Compliance with the No Gifts Policy ensures that our business maintains its integrity, transparency, honesty and lawfulness.



PTT Group CG Day 2016 : See Through the Future



"Say No to Corruption" Activity



PTTGC joined the "Anti-Corruption Day 2016"

Whistleblower System

PTTGC has established, implemented and communicated the Whistleblower Policy to encourage all stakeholders to take parts in improving the Company. All stakeholders can file complaints if they witness any inappropriate behavior that breaches Corporate Governance and Business Code of Conduct and/or incompliance with Corporate Compliance Policy. Complaints can be submitted via mail, phone call, fax, e-mail and website of PTTGC. A complainant, known as the whistleblower, will be protected by the non-retaliation policy which is stipulated in the Whistleblower Policy. In 2016, PTTGC has improved the Whistleblower System by providing two additional departments to receive complaints: Internal Audit, and Company Secretary. This will enhance the independence and transparency of the system. Moreover, PTTGC will regularly report the Whistleblower status to the Board of Directors for their monitoring and suggestions to improve and align with business practices. The entire process is in line with those of the DJSI criteria and of the CAC.

BOARD OF DIRECTORS AND SUB-COMMITTEES

Board of Directors

The Board of Directors comprises 15 members, of which nine are Independent Directors. All Directors of the Board are experts from various fields with coveted knowledge, skills and experiences. The combination of their skills, qualifications and experiences bring about advantages to PTTGC. The Board dedicate their time to perform their duties for the utmost benefit to PTTGC and our shareholders. They are nominated and appointed according to proper criteria. Their duties and responsibilities are based on applicable laws, as well as PTTGC's regulations and Articles of Association, shareholder resolutions and good corporate governance. Directors' duties and responsibilities are effectuated in ways that steer them from conflicts of interest with PTTGC, instilling trust and confidence in our shareholders and investors. The structure of the Board of Directors as appears in Management Structure allows Board members to perform their duties efficiently. The number of Directors is suitable for the size and type of our business and is approved by shareholders.

Sub-Committees

The Board of Directors has established four Sub-Committees, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee. Directors selected to be on these Sub-Committees possess the expertise and knowledge required to oversee specific issues that each Sub-Committee is tasked with, according to the Articles of Association. Each Sub-Committee has established its own charter, which prescribes its Directors' desired qualifications, term in office and scope of duties and responsibilities. The names of Directors on these Sub-Committees, their responsibilities, the number of their meetings and attendance in these meetings are found under Management Structure.

Furthermore, every Sub-Committee is required to regularly report its performance to the Board at a Board meeting. It is also our policy that Sub-Committees reveal their performance of the previous year to our shareholders using Form 56-1 and in the annual report.

NOMINATION AND APPOINTMENT OF DIRECTORS, AND PRESIDENT AND CHIEF EXECUTIVE OFFICER

The Board of Directors, through the Nomination and Remuneration Committee, considers and nominates candidates with the knowledge, skills, expertise, experience and niche qualifications that are in agreement with PTTGC's business strategy or could benefit our operations when a Director position becomes vacant or when a Director's term limit is due. In the nomination process, we consider candidates from the Directors' Pool of the Thai Institute of Directors and allow shareholders' to nominate qualified individuals, ensuring that the composition of the Board is wholesome and will yield the utmost benefit to PTTGC. In the event that a former Director is re-nominated, we will also consider his or her past year's performance, dedication and participation in the various activities and events.

Concerning the nomination and appointment of Independent Directors, PTTGC strive to ascertain our compliance with the SEC's specifications regarding the suitable number of Independent Directors on the Board.

As of December 31st, 2016, PTTGC's Board of Directors is comprised of 15 members, of which 9 are Independent Directors, exceeding the number mandated by the SEC. The definition and qualifications of an Independent Director may be found in the Good Corporate Governance Handbook and on our website.

As for the nomination of a candidate to the office of the President and Chief Executive Officer, in the event that this position becomes vacant, the Nomination and Remuneration Committee will consider and nominate one of the Directors on the Board. The nominee must possess the skills, professional experience and niche qualifications that are needed and that will bring about the utmost benefit to PTTGC. This nominee must have the knowledge, expertise and experience in the petrochemical, petroleum or energy sector. He or she must also demonstrate a great deal of 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 nominee shall be appointed by the Board itself.

Roles of the Chairman and of the President and Chief Executive Officer

The Chairman of the Board of Directors and the President and Chief Executive Officer shall not be the same person. Their duties and responsibilities are separate, as outlined below:

The Chairman of the Board of Directors is an Independent Director tasked with ascertaining the Board's efficiency. The Chairman oversees that the Board complies with the Corporate Governance Policy and the Business Code of Conduct while maintaining its independence from management. The Chairman also works with the President and Chief Executive Officer to determine meeting agenda, but refrains from partaking in the day-to-day business management.

The Chairman of the Board of Directors serves as the Chairman at each Board meeting and at shareholder meetings. He is prohibited from being part of any Sub-Committees. This prohibition is clearly outlined in

the scope of responsibilities of the Board of Directors and of Sub-Committees. By clearly and suitably separating duties and functions, the Chairman is able to independently exercise his discretion.

The President and Chief Executive Officer sits at the pinnacle of our corporate hierarchy and is appointed from one of the Directors in conformity to the Articles of Association. He or she is tasked with managing PTTGC according to established policies, plans and budgets under the authority granted by the Board of Directors and set forth in the Articles of Association and PTTGC regulations. The President and Chief Executive Officer also serves as secretary to the Board. The roles and duties of this position are disclosed on our website in both Thai and English. Furthermore, the Articles of Association also mandate that the President and Chief Executive Officer receive compensation and benefits for his or her role as the highest-ranking officer in addition to what he or she earns as a Director.

Board Meetings

The Board of Directors schedules the exact date and time of Board meetings for the entire year in advance. The Board also clearly outlines the agenda of each meeting. It may also call for special meetings whenever the need arises. Directors receive the invitation to a Board meeting, draft minutes of the previous meeting and information accompanying the meeting agenda seven days prior to the meeting. In 2016, there were a total of 13 meetings scheduled in advance.

The Chairman presides over these Board meetings and ensures that every Director participate and express his or her opinions freely. At least two-thirds of all Board members must be present to constitute a quorum, and the quorum must be maintained until voting is complete. A resolution is passed based on majority votes. Each Director has one vote. The Chairman shall cast his or her vote in the event of a tie, which is the deciding vote. The Board places a great deal of importance on prudent, impartial and transparent management of conflicts of interest. All information regarding conflicts of interest is fully disclosed. In the event that a Director has an interest

in an agenda item, he or she must refrain from partaking in the decision-making process of that particular agenda item.

After the meeting, the Company Secretary is responsible for completing the meeting minutes, which will be presented for the Board's approval as the first agenda item of the next meeting. Once the Chairman places his or her signature on the minutes, they are approved and are systematically kept as a confidential electronic document, together with other agenda accompanying documents, for ease of retrieval and reference purposes.

Moreover, the Board of Directors mandates that Non-Executive Directors hold their own meeting, in the spirit of good corporate governance, to offer their opinions and guidelines for PTTGC's management and operations. The Board also mandates that Independent Directors hold similar meetings to exchange ideas and review their role and performance every year. In 2016, Non-Executive Directors held one meeting and Independent Directors also held one meeting and report the outcome / meeting resolutions to the Board.

The details of Board meetings and Sub-Committee meetings may be found in Directors' Meetings under Management Structure.

For ease and swiftness of dispatching information and meeting documents, as well as to reduce the use of paper, PTTGC has implemented an e-Meeting system. Information is sent to Directors' iPads, which are equipped with data encryption. LINE, a messaging application, is also used for internal communication between Directors and Company Secretary regarding meeting-related issues and other important matters.

DIRECTORS' PERFORMANCE ASSESSMENT

● Board of Directors

The Board of Directors is assessed every year to help Directors review their performance and revisit problems and obstacles of the past year. There are three types of assessment: group assessment, self-assessment, and cross-assessment (assessing another Director). The

score is divided into five levels. The overall assessment is summarized and presented to the Board and is disclosed in that year's annual report. The result of the assessment is also part of the criteria for considering annual remuneration for the Board, on top of PTTGC's operating performance. In 2016, the assessment form underwent another revision to further improve its suitability. PTTGC revised questions and criteria in accordance with the guidelines on Board assessment. The summary was presented to the Board, who acknowledged it and used the suggestions to devise guidelines that would help concretely improve the efficiency of the Board.

1. **Group Assessment** comprised six categories of questions, namely Board policy, Board performance, Board structure, Board style, Board meeting and Board development. The group assessment was conducted in December of 2016, during which 15 Directors were in office.

Group Assessment of the Board yielded a score of 94.6%

2. **Self-Assessment** comprised three categories of questions, namely responsibility towards duties, compliance with ethics and code of conduct, and self-development and teamwork.

Self-Assessment of the Board yielded a score of 93.9%.

3. **Cross-Assessment** comprised three categories of questions, namely expertise, independence and time dedication and meeting attendance.

Cross-Assessment of the Board yielded a score of 95.6%.

● Sub-Committee

Sub-Committees consist of the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee. These Sub-Committees were assessed as a whole and their members were also assessed individually. In 2016, every Sub-Committee reviewed and improved the topics, questions and criteria of the assessment.

1. The Audit Committee was assessed on the topics of its charter; composition; meetings; training and resources; responsibilities; relationship with managers of internal audit department, auditors, and management; reporting duty to the Board and shareholders; and the maintenance of their performance quality. The results are summarized below:

- Group Assessment: average of 86.9 %
- Individual Assessment: average of 82.9%

2. The Nomination and Remuneration Committee was assessed on the topics of composition and qualifications, scope of duties, meetings, reporting duty and performance evaluation. The results are summarized below:

- Group Assessment: average of 98.6%
- Individual Assessment: average of 98.4%

3. The Corporate Governance Committee was assessed on the topics of composition and qualifications, scope of duties, meetings, reporting duty and performance evaluation. The results are summarized below:

- Group Assessment: average of 97.6%
- Individual Assessment: average of 95.2%

4. The Risk Management Committee was assessed on the topics of composition and qualifications, scope of duty, meetings, reporting duty and performance evaluation. The results are summarized below:

- Group Assessment: average of 99%
- Individual Assessment: average 100%

Additionally, the Nomination and Remuneration Committee will use the results of these assessments as one of the criteria in considering appropriate remuneration for the Directors' 2017 performance, on top of PTTGC's earnings and other criteria.

DEVELOPMENT OF DIRECTORS AND EXECUTIVE OFFICERS

The Board of Directors emphasizes the importance of training courses pertinent to the functions of Directors and Executive Officers who are assigned a directorship at one of PTTGC's subsidiaries. These courses further enhance our Directors' competence, which bolsters the performance of the Board of Directors as a whole. They also prepare our Executive Officers for internal position rotations and for the succession to the offices of the President and Chief Executive Officer and other high-ranking officers. In addition, the Board also mandates the assessment of potential high-ranking executives to ensure their preparedness for future roles.

Orientation for New Directors

The orientation includes a presentation on PTTGC's business, data, practices, related rules and regulations, corporate governance, code of conduct and other useful information for the assumed position. Directors also receive handbooks and other documents needed to perform their role, namely the strategic plan, the Articles of Association, Company Memoranda, annual report, related regulations, the Corporate Governance and Business Code of Conduct Handbook and the Compliance Policy Handbook.

Training for Directors

PTTGC encourages every Director to acquire further knowledge through training to enhance the ability to perform their role. Past training for Directors include the following:

- The Board of Directors participated in activities and events aimed at the promotion and standardization of good corporate governance. The Board also visited operational sites of the PTTGC Group and of our joint ventures both in Thailand and overseas. These visits have enriched the Directors' understanding of our business and optimized their knowledge and experiences for the benefit of PTTGC.

- The Board of Directors enrolled in training programs that are of relevance or are beneficial to their directorship, including courses at the Thai Institute of Directors (IOD) and other institutes of renown. In 2016, our Directors participated the following programs:

IOD's Program

1. Mr. Praphon Wongtharua
Director Certification Program (DCP) Class 218/2016 and Financial Statements for Director (FSD) Class 31/2016
2. Colonel Nithi Chungcharoen
Role of the Nomination and Governance Committee Class 8/2016
3. Mr. Vasin Teeravechyan
Seminar Directors' Compensation Survey on 2016 and "Non-Executive Directors' Compensation - Global Practices and Trends"

Other Institutes

1. Mr. Somchai Kuvijitsuwan
- PTT Group AC Forum 2016 - Audit Committee : Yesterday Today and Tomorrow/PTT PLC.
- Audit Committee Seminar - AC Hot Update, Federation of Accounting Professions under the Royal Patronage of His Majesty the King.
2. Mr. Amnuay Preemonwong
Certificate, Executive Program on Energy Literacy for a Sustainable Future, Class 8, Thailand Energy Academy (TEA)
3. Mr. Praphon Wongtharua
Senior Management of the Energy Sector, Class 8, Thailand Energy Academy
4. Mr. Prasan Chuaphanich
Audit Committee Seminar - AC Hot Update, Federation of Accounting Professions under the Royal Patronage of His Majesty the King.
5. Mr. Supattanapong Punmeechaow
Capital Market Academy Leadership Program, Class 23, Capital Market Academy

- PTTGC held a seminar entitled Corporate Governance Code by experts from the law firm Weerawong, Chinnavat & Peangpanor Ltd. on September 19th, 2016, for the Board of Directors. The seminar's goal was to update our Directors on the knowledge of good corporate governance and practices of Registered Company Directors according to the regulations under revision by the Securities and Exchange Commission and the Stock Exchange of Thailand.

SUCCESSION PLAN

PTTGC has a systematic succession plan in place for positions crucial to our operations. Using talent grouping, 360-degree executive evaluation and an assessment center that gauges leadership competency, organization knowledge and experience, we are able to formulate effective individual development plans. Moreover, to support business expansion and organizational structure changes, as well as to ensure management continuity by finding replacements for positions to be vacant due to retirement, which will effectively contribute to the achievement of strategic goals, we have laid down succession plans. These plans help PTTGC manage positions to be left vacant by those entering retirement or those being rotated or new positions that emerge from restructuring or expansion in Thailand and overseas. Potential successors are part of a systematic development scheme that readies them for succession in a timely manner.

GOVERNANCE OF PTTGC AND ITS SUBSIDIARIES

In addition to our main operation, PTTGC also conducts business through other companies in the PTTGC Group. These are subsidiaries, affiliates and joint ventures. The details of our shareholding in these entities appear under Shareholding Structure. The Board of Directors has endorsed the following governance guidelines for the operations and management of these companies in conformity to the PTTGC Business Principles and published PTTGC way of Conduct as summarized :

- The Chief Executive Officer shall have the authority to formulate policies, guidelines, conditions and methods needed to appoint an employee or an individual to serve as a Director at one of the PTTGC Group companies as part of the PTTGC's human resource management regulations. In doing so, the Chief Executive Officer shall aim to bring about the utmost benefit to the Company through such an appointment.
- Major policies of PTTGC's subsidiaries shall comply with the regulations of the Securities and Exchange Commission and of the Stock Exchange of Thailand, as well as applicable laws. These major policies include management policy; governance policy; compliance policy; financial policy; safety, occupational health and environment policy; corporate social responsibility policy; human resource management policy; and sundry others.
- Established "Guidelines for Governance of Policies and Investments of Companies Whose Shares Are Held by PTT Global Chemical Public Company Limited" shall serve as guiding principles for a PTTGC representative in a Company under the PTTGC Group. By abiding by these guidelines, the representative shall be able to ensure the Company's management, governance and internal control are suitable and aligned with those of PTTGC's, fostering efficiency and bringing about the achievement of goals.

COMPLIANCE WITH OTHER PRINCIPLES OF GOOD CORPORATE GOVERNANCE

PTTGC has always thoroughly complied with principles of good corporate governance. In 2016, we made the following efforts:

- 1) We amended the right of shareholders to propose agenda items and nominate candidates for a directorship on the Board in advance. Previously, a single shareholder or a group of shareholders had to hold at least 0.5% of the total issued shares with a voting right to be able to propose agenda items and nominate candidates for a directorship. This figure has been reduced to 0.1% instead. Furthermore, in

agreement with the SEC's guidelines, we have amended our policy to no longer require a specific length (duration) of shareholding to encourage minority shareholders to exercise their rights.

- 2) We adopted the second announcement of the SEC regarding characteristics of Directors and Executive Officers that indicate the lack of trustworthiness as our own criteria for considering nominees for a directorship in the process of the Nomination and Remuneration Committee.
- 3) We disclosed the details of our Chief Executive Officer's compensation on our website.
- 4) The Audit Committee now has one Director with an accounting degree.
- 5) We made improvements to our Board's Skills Matrix for Directors to put more emphasis on Board development in aspects that either need improvements or are missing. Our aim is to ensure that we have Directors with the qualifications needed for our present business type and direction, as well as to support the nomination processes and methods. This change is in line with the DJSI's criteria.
- 6) We amended the Charter of the Risk Management Committee to better align it with the new CG Code.
- 7) We put together the PTTGC Way of Conduct, which is a collection of policies for the governance of the PTTGC Group.
- 8) We started publishing an integrated sustainability report.
- 9) We implemented a new policy that requires Directors and Executive Officers to inform the Board or the person assigned by the Board that they are about to trade PTTGC's stock at least one business day prior to the trading.

10) We update the Independent Director Charter to cover all of their recently practices related to the anti-corruption and the social and environmental responsibilities issues.

HEADS OF INTERNAL AUDIT AND CORPORATE COMPLIANCE

The Charter of the Audit Committee mandates that the appointment, termination and rotation of the Vice President of Internal Audit must be approved by the Audit Committee. In the Audit Committee Meeting No. 4/2013, held on July 5th, 2013, has appointed **Mr. Adisorn Vichaikatka** as Vice President of Internal Audit Department, effective on August 1st, 2013. Mr. Vichaikatka has extensive knowledge, skills, experience and qualifications required for the role. He also underwent all training courses required for internal audit, internal control and risk management of PTTGC.

Furthermore, PTTGC has established the Corporate Compliance Division under the supervision of Corporate Governance and Corporate Secretary Department. The Compliance Division's role is to monitor and oversee thorough compliance with the law by

every unit of PTTGC and appointed **Mrs. Rattana Nakasiri**, Vice President of Corporate Governance and Corporate Secretary Department, to oversee Corporate Compliance. Her role and responsibility are to encourage and support compliance activities among Executive Officers and employees of PTTGC and PTTGC Group companies, including joint ventures.



Mr. Adisorn Vichaikatka
Vice President - Internal Audit



Mrs. Rattana Nakasiri
Vice President - Corporate Governance
and Corporate Secretary



PEOPLE MANAGEMENT AND DEVELOPMENT POLICY

ORGANIZATIONAL AND PEOPLE MANAGEMENT

The development of a strong basic human-resource management system is a pivotal mechanism that effectively augments PTTGC's competitiveness and serves as the force that drives us towards operational excellence. It provides the necessary support for our domestic and international investments. This support allows us to grow sustainably through the development of specialty and eco-friendly products, which illustrate our corporate social responsibility. It also enables us to expand our business overseas. Our human-resource management and human-resource action plans are, therefore, aligned with these business directions, further growth readiness while linking to overseas businesses plan and supporting larger and more diverse nature of our operations.

PTTGC assures that all of our employees have all the legally required welfare benefits to afford them a good-quality work life. We have established the Employee's Welfare Committee, whose role is to provide advice to our executives on matters of employee benefits. The Committee also offers advice to management and promotes good relationship between PTTGC and our employees. In terms of our policy on performance evaluation, all employees undergo annual goal setting, mid-year review and year-end assessment. Furthermore, to ensure impartiality and transparency, we require that employees and their supervisors discuss their performance at least twice a year, in addition to conducting a panel-style peer review in each field of work. The results of this performance evaluation are part of our annual salary adjustment as outlined in our remuneration policy, which is also subject to our earnings. In 2016, PTTGC trained our line managers and higher-ranking personnel on the topic of performance evaluation with an aim to help better classify the performance of each group and retain quality and skilled employees. Moreover, we also added the GC SPIRIT core values as another criterion to our behavioral assessment, which is part of the performance evaluation, to measure how much they have been put into practice. Furthermore, we have integrated

the performance evaluation system with human-resource development planning by adding another channel by which employees can express their own wishes about their field of work for the next one to three years. This allows us to consider employees' wishes in our future job rotation, development and hiring.

People Readiness: We have to prepare our personnel qualitatively and quantitatively. To get our people ready for assignment to various projects, we work with project owners to establish staffing plans and timelines. Doing so allows us to ready and deliver the manpower needed for new projects at the right moment. In addition, PTTGC has further developed our own talent pool database in 2016, realizing that it would enable us to find employees with the desired qualifications for instant assignment. This database helps us store and analyze employees' crucial information, including their skills, expertise, experience and job interests, on top of enhancing our talent recruitment and management. The database has been expanded to include foreign candidates to support our overseas endeavors, especially in the United States. Moreover, we have developed an E-recruitment platform, which has augmented the efficiency of our recruitment, in addition to supporting our very many projects and business growth. We have also promoted an awareness of our brand through social media, including Facebook, LINE and LinkedIn. All of this gives us the ability to find experienced individuals from many different fields to join our team.

Career Management is a fundamental system for Human Resources Development, which will efficiently support our long-term growth. PTTGC's career management system help develop employees with potential to grow within or across job family and this is one of a talent retention tools. Moreover, our established structure of career paths provide our employees with a clear vision of career advancement possibilities. It also serves as guidelines for supervisors to train their subordinates and equip them with the knowledge and skills needed for business as usual and future business growth.

Learning and Development: To bring about effective employee development, PTTGC requires that supervisors in each line manager works with their subordinates in the formulation of an individual development plan (IDP). We also develop career plans for employees who are ready, especially for those considered talents or successors, to prepare them for critical / targeted positions. In developing employee, we focus on special project assignment and systematic job rotation per the established IDPs and career plans. In this regard, we are supporting our human-resource development policy by applying the 70:20:10 (experience: exposure: education) guidelines. IDP progress is also monitored to ensure continuous development.

PTTGC has conducted the following training internally and externally.

- In compliance with PTTGC's human resource management strategy for business growth, we have launched the Marketing & Sales Competency Development (MSCD) program. It aims to continuously develop the expertise of all sales and marketing personnel, ranging from entry-levels to executives. We also offer the Overseas Readiness program to help improve employees' English skills and foster their cultural awareness, preparing them for our foreign expansion and projects.
- To develop PTTGC's junior to senior management, the Leadership Development Roadmap has been established and implemented. It enhances their management skills, in terms of leadership skill and business. Our executives also participate in leadership development training conducted by PTTGC and PTT Group.

- To support our safety, environmental and energy conservation policies, PTTGC has provided over 50 domestic and overseas training courses for relevant personnel of all levels to improve their knowledge and skills. Those programs, which include topics such as process safety management, risk management and internal control, help ensure that all processes are done correctly, safely and with the environment focus.

To support future growth, PTTGC has established guidelines for competency development of specialized areas, such as engineering and research and development. In 2016 we assessed the competency of R&D personnel and measured it against the criteria of knowledge, skills and expertise needed for business as usual and future business growth. This assessment gave us insights information of the development need of researchers and allow us to generate plans to fulfill those needs and lead to the execution of the 2017 development plan.

Succession Planning: PTTGC formulates succession plans from division up to senior executive positions managers especially for positions of retiring executives, to ensure a smooth transition. In 2016 we smoothly and successfully filled every position that became vacant due to retirement in accordance with our succession plans through the appointment of new executives with proper job shadowing period. In addition, we have focused on the continuous development of executives of all levels, to enhance their leadership capabilities required to take over all positions of retiring executives.



LDP Workshop



Be the Catalyst Workshop

For ready appointed leaders, PTTGC offers a development scheme called “Strong Start in a New Role”. The program has been created for all new leaders from division manager level up. It aims to educate, promote their understanding and equip them with the skills they need to properly lead in their new roles. The program gives them the confidence and ability to smoothly transition to new roles and expectation. The program combines diverse learning and development interventions, including classroom workshops, coaching, goal setting and execution, behavioral monitoring and evaluation.

Knowledge Management is also of great value to PTTGC. We want our staff to have the proper capabilities and expertises built on an excellent base of knowledge. Since it is our goal to become a global knowledge-based petrochemical and refinery organization, we have seriously and systematically collected and shared work-related knowledge and experience. This is achieved through a multitude of diverse knowledge-management activities that encourage people in our organization to connect and share their knowledge, such as KM Forum, Lesson Learned Sharing, Community of Practice (CoP) and small group activities. All of these allow us to retain our know-how, learn from past mistakes and improve our work processes through Continuous Performance Improvement (CPI). We continuously share our knowledge through a variety of CoPs, such as Polymers CoP, EO/EG CoP, Maintenance CoP, Rotating Equipment CoP and House of Experts CoP. Our Best Practice Sharing program has enabled us to implement best practices and develop future knowledge based on these best practices. Moreover, we encourage employees to be creative and take initiatives through

iWisdom program which encourage our personnel to think out - of - the - box and present new creative ideas that could potentially be beneficial. We have established Ideation System, in which ideas shared through iWisdom program can be concretely realized, whether as a product, process, service or even equipment. This practice brings about business value to our organization, gives us competitive advantage and creates value-added for stakeholders in a sustainable manner.

The GC SPIRIT Core Values: PTTGC is dedicated to instilling our core values in the mind of our employees to create unity and drives our business towards its goal of becoming a global player and a petrochemical flagship company of PTT. As such, we have promoted an understanding of these values and encouraged our personnel to put them to practice. By giving them easy-to-understand behaviors that reflect these values, we believe that our employees will be able to concretely put these values into practice in their line of work continuously and sustainably. To achieve this, the Shift Mindset & Culture program has been formed. It focuses on preparing our employees for the uncertainty, volatility, complexity and ambiguity of their work environment through the adjustment of their mindset and work processes. This program is designed to ensure our competitiveness and ability to follow through with our business strategies in order to grow sustainably. It also helps employees develop desirable behaviors in accordance with the GC SPIRIT core values. In addition, the program helps with the execution of our action plan by promoting acknowledge and understanding of change and the need to shift the mindset among employees, leading to the realization of the four core



KM Day 2016



KM Day 2016

behaviors: Take initiative to create better results, Keep improving self and inspiring teamwork, Work proactively to serve customers' needs and Strive for the greater good. The Shift Mindset & Culture team has established an action plan to promote awareness and understanding among employees in order to change their mindset and work behaviors. The following are the processes:

- The Shift Mindset & Culture Committee was founded, comprising executives from various units to encourage organization-wide participation in the formulation of the action plan and directions.
- The team established an action plan to promote awareness and understanding among employees to shift their mindset and culture in 2016 with a focus on the training of executives, who play an important role in this undertaking.
- Be the Catalyst of Change workshop was held for high-level executives and department managers. It created a common mission, in which management serve as role models who promote the four core behaviors.
- Shift Mindset & Culture Committee meetings and Change Agent meeting were held every month to align both parties' understanding of the direction, as well as to share knowledge and present ongoing model projects.
- Through Shift Mindset News, we communicated about budget control via the operating expenses report (not including employee-related expenses) of each business unit to promote an awareness of expenses and encourage every unit to control its budget according to the plan.

International human-resource management: PTTGC has improved our contract standard for overseas secondment, aligning it with our tax policy and the law of the destination country, in an effort to support our growth abroad. Moreover, we have improved our overseas secondment management processes by clearly outlining pre-, mid- and post-overseas secondment procedures, which are aligned with our provisions and policies, as well as related units. Furthermore, we have built relations

with world-class universities through the Thammasat Undergraduate Business Challenge (TUBC) project and accepting interns from the University of California, Berkeley, which is a collaborative effort with Sirindhorn International Institute of Technology of Thammasat University to support our future needs and increase our foreign hiring opportunities.

PTTGC encourages employees to work happily and enjoy a good quality of life, safety and hygiene in workplace. We are also dedicated to improving and enhancing our organizational and personnel management capacity because human resources are valuable components of a strong organization with sustainable growth.



GC SPIRIT 4 CORE BEHAVIORS



REPORT OF THE CORPORATE GOVERNANCE COMMITTEE

Dear Shareholders,

The Corporate Governance Committee of 2016 is comprised of Professor Surapon Nitikraipot (Chairman), Mr. Don Wasantapruet, Colonel Nithi Chungcharoen and Mr. Auttapol Rerkpiboon. We have duly performed our duties set forth in PTTGC's Corporate Governance Committee Charter and executed the tasks mandated by the Board of Directors. The Committee held a total of five meetings. Below is a summary of key developments:

1. Ensuring compliance with applicable laws, regulations and best practices

- The Committee has reviewed the preparation plan for the annual general shareholders' meeting (AGM) to ensure orderly, transparent and efficient organization of the AGM according to good corporate governance guidelines and in compliance with the AGM Checklist. As a result, PTTGC's AGM has been awarded a perfect score of 100 for the fifth consecutive year for its organizational and operational qualities.
- The Committee has ensured that minority shareholders were given an opportunity to propose meeting agenda items and nominate persons to be elected as members of the Board of Directors more than three months in advance of the 2017 AGM date (September 20th - December 31st, 2016). To promote shareholders' rights and equality, the Committee has amended the minimum number of shares required to be held by a shareholder to submit a proposal from no less than 0.5 percent to no less than 0.1 percent without stipulating the length of shareholding.
- The Committee has overseen operational processes to prevent violation of the rules, regulations and laws that govern the PTTGC Group's businesses and to minimize risks that could arise as a result of such violation. Additionally, we have provided guidelines to improve PTTGC's whistleblower program, creating more transparency and efficiency.

2. Securing compliance with Good Corporate Governance and Business Code of Conduct

- The Committee has formulated the 2017 Corporate Governance and Corporate Compliance Plans, aligning them with PTTGC's strategies. We have also reviewed the previous year's performance, including that of companies in PTTGC Group.
- The Committee has reviewed the Corporate Governance report in the 2016 Annual Report and in Form 56-1 to ensure complete disclosure of information and compliance with good corporate governance guidelines at both domestic and international levels. As a result of this practice, PTTGC was once again named "Excellent" in the CGR Awards.
- The Committee has advised on the review of PTTGC's anti-corruption measures and the preparation of operational data according to the self-evaluation form of Thailand's Private Sector Collective Action Coalition Against Corruption (CAC).
- The Committee has advised on the implementation of regulations according to the criteria of the NACC Integrity Awards.

3. Supervising sustainable-development processes

- The Committee has continued to supervise and monitor PTTGC's sustainable-development processes. We have established the PTTGC Sustainability Framework as the fundamental standard of our organization. This framework was adapted from many international sustainability principles. It encompasses economic, social and environmental aspects of sustainable development. Ultimately, our goal is to maintain our position as a prototype organization of sustainability at the global level.
- The Committee has continued to monitor and supervise PTTGC's operational responsibility towards the various groups of stakeholders, namely the mitigation of the tar ball issue. In this case, PTTGC has joined forces with the government to build a national database, taking advantage of our organization's scientific expertise.
- The Committee has placed much importance on caring for communities, society and the environment. We have continued to visit communities in the Province of Rayong. We spoke and exchanged views with representatives from Ko Kok, Rayong's eco-community pilot model, and encouraged people in that community to take part in sustainable-development activities.
- The Committee has encouraged PTTGC to employ handicapped individuals and to provide them with the needed facilities.
- The Committee's advice on public relations has helped PTTGC earn widespread trust as an organization of sustainability at both domestic and international levels.

4. Performance, assessment and development

- The Committee preset the dates for our meetings for the entire year. Scheduling these meetings in advance has allowed us to consider and acknowledge various matters, including future plans, and to make recommendations to the Board of Directors and management.
- The Committee has ensured the provision of training for the Board of Directors in accordance with Directors' Development outlined in PTTGC's Good Corporate Governance. We have encouraged Directors to take the Thai Institute of Directors' various classes and invited experts from outside our organization to give a lecture to members of the Board.
- The Committee has reviewed and updated questions in the 2016 Board Performance Assessment Questionnaire in accordance with present circumstances, with the Stock Exchange of Thailand's guidelines and with other global standards such as the DJSI and the ASEAN CG Scorecard.
- The Committee has reported our performance and the results of our 2016 individual and group performance assessment to the Board of Directors for their acknowledgement.

Good Corporate Governance plays an important role in supporting and creating added value to PTTGC's operations. It allows us to operate with better efficiency and to become a sustainable business. The Corporate Governance Committee is, therefore, dedicated to ensuring that PTTGC strictly adheres to its Good Corporate Governance Policy and Business Code of Conduct. The Committee shall endeavor to unceasingly develop our corporate governance in reflection of international practices to earn the confidence of our stakeholders, as well as domestic and global recognition.

On behalf of the Corporate Governance Committee

(Signed) Surapon Nitikraipot

(Professor Surapon Nitikraipot)

Chairman of the Corporate Governance Committee

REPORT OF THE NOMINATION AND REMUNERATION COMMITTEE

Dear Shareholders,

The Nomination and Remuneration Committee of 2016 is comprised of Mr. Vasin Teeravechyan (Chairman), Professor Surapon Nitikraipot, and Mr. Sarun Rungkasiri. The Committee held a total of four meetings. They have duly performed their duties set forth in PTTGC's Nomination and Remuneration Committee Charter and executed the tasks mandated by the Board of Directors. Below is a summary of key developments:

1. Nomination of Directors

- The Committee nominated persons to replace members of the Board of Directors who retire by rotation at the 2016 Annual General Shareholders' Meeting (AGM). A period of more than three months prior of the AGM was afforded to shareholders, during which they could nominate candidates for the position. Since no nominations were submitted, the Committee re-nominated the following Directors who retire by rotation to stay in the post for one more term, namely Mr. Anon Sirisaengtaksin, Mr. Don Wasantapruet, Mrs. Watanan Petersik and Mr. Supattanapong Punmeechaow, and nominated Mr. Prasan Chuaphanich to replace a Director who retires by rotation. All of these individuals possess qualification that align with PTTGC's strategic needs. At the AGM, shareholders voted to appoint these candidates as Directors.
- The Committee nominated Mr. Prasan Chuaphanich to the Audit Committee and named Mr. Amnuay Preemonwong to the Risk Management Committee to fill the vacant position. Mr. Auttapol Rerkpiboon was also nominated to the Risk Management Committee, in addition to his existing post, to provide further support for PTTGC's risk management, according to our business needs and circumstances. The Committee considered these candidates against established criteria, based on the components of each sub-committee, while taking into account their specific experience and expertise that might benefit their roles.

2. Remuneration

- The Committee considered and proposed the 2016 remunerations for the Board of Directors and for the Directors of each Sub-Committee, as well as the Board's bonus for 2015. Considering the Board's performance, economic conditions, PTTGC's earnings and remunerations of Directors at other companies of similar sizes in the same industry, the Committee proposed that remuneration policy and components remain the same. Shareholders voted to approve this proposal in the 2016 AGM.
- The Committee gave consideration to the President & Chief Executive Officer's 2016 performance assessment form, performance assessment and remuneration. PTTGC took into account his past year's performance, comparison with remunerations of the same positions at other companies of similar sizes in the same industry and scope of responsibilities. The proposed remuneration was presented to the Board of Directors for their approval.

- The Committee supported the Director Compensation Survey 2016 by disclosing Directors' remunerations to the IOD. The chairman of the Nomination and Remuneration Committee also attended the seminar, in which results of this survey were presented.

3. Assessment of the Board of Directors' 2016 performance

- The Committee reviewed and improved the assessment form for the performance of the Board of Directors in 2016, rendering it complete, up-to-date and in line with the global standards of the DJSI. The results of this assessment, in addition to PTTGC's performance, were among the criteria for determining Directors' annual remunerations.
- The Committee also assessed its own performance for 2016 and reported the results to the Board of Directors and disclosed in the Annual Report.

4. Performance improvement and development

- The Committee reviewed and improved the skills matrix of the Board of Directors, rendering it more diverse and suitable for PTTGC's businesses. It now focuses more clearly on each Director's education, experience and training history. The skills matrix is part of the nomination process and will serve as guidelines for Directors to develop themselves in whichever aspect that is needed.
- The Committee reviewed and updated our search criteria, quality checklist and selection process for individuals who qualify to be nominated as Directors, ensuring their compliance with applicable laws and regulations.
- The Committee ensured that the nomination of Directors, as well as the disclosure of their remunerations in the Annual Report and AGM thoroughly comply with CGR's regulations.

The Nomination and Remuneration Committee is committed to performing their duties in a transparent manner with strict adherence to the principles of good corporate governance to ensure confidence among the shareholders and stakeholders. This commitment will culminate in PTTGC's excellent stature in the long run.

On behalf of the Nomination and Remuneration Committee

(Signed) Vasin Teeravechyan

(Mr. Vasin Teeravechyan)

Chairman of the Nomination and Remuneration Committee

REPORT OF THE RISK MANAGEMENT COMMITTEE

Dear Shareholders,

In 2016, due to the global economy recession, it influenced to volatility of the petroleum product prices, petrochemical products prices and foreign exchange rates. The lowest crude oil price in 13 years at 26.8 USD per barrel in January 2016 and the price rebounded to 52.1 USD per barrel at the end of year. For the gross refinery margin (GRM), it has been decreased comparing with the year 2015 approximately 1.5 USD per barrel. As mentioned above, it was benefit to Olefin and Aromatic chains, but not went as anticipated in Ethylene Glycol and Phenol products; Overall, the petrochemical industry was better than the year 2015. PTTGC made an effort to manage and control our productions accord with market situation even uncontrollable events occurred.

The Risk Management Committee (RMC) is fully aware and places great importance on price, crude oil stock and foreign exchange rate hedging. Hedging execution has been done when the appropriate time by focusing on petroleum product as gross refinery margin (GRM) decreased. The crude oil stock hedging was gained benefit from the year-end crude oil closing price higher than the beginning of the year. For foreign exchange rate, it changed in the range of 34.54 - 36.35 Baht per USD and this was manageable. Additionally, PTTGC also have prescribed additional measures to strengthen and sustain reliability of the factories by applying new technology and assess reliability management of supplier plants.

Moreover, RMC also address the matters of business opportunity seeking and keeping track of Emerging Risks during the year by closely monitoring major international events and changes e.g. new government policies and regulations, the consequences and impact of BREXIT, the new U.S. President's policy, Thailand 4.0, the Digital Economy and Bio-economy, etc. These events may not have direct impact on PTTGC, but they required closely monitoring so as to define mitigation measures on time together with enforcement of Risk Management to assure of PTTGC's success, to build up trust of the Shareholders, and to lead PTTGC towards sustainability.

In 2016, the RMC has been performing its duties to the best of their abilities and would like to report on accomplishments as detailed below:

- Drive and continuously monitor the 2016 Corporate Risk Management and also providing opinions and recommendations to develop and improve the Risk Management Standards as well as keeping a close eye on the external situation so as be adequately prepared.
- Provide opinions and recommendations to Risk Assessment and Mitigation Measures for the high capital investment projects.
- Review and provide consent to the improvement of the RMC Charter, Policy, Objectives and Framework of Risk Management to align them with corporate governance code by The Securities and Exchange Commission (SEC)

- Consider and provide recommendations on the 2017 Corporate Risk Factors to ensure alignment with business directions and organizational goals as well as monitoring the major events both domestic and international.
- Consider and provide recommendations on the 2017 hedging frameworks for feedstock price, product price and foreign exchange rate, so they are more flexible and can still adequately cope with the rapidly changing market situation and economics.
- Evaluate the RMC's performance as a committee and of each individual member.

All in all, the Risk Management Committee has adequately and properly fulfilled its roles as prescribed in the Risk Management Charter, including to govern, consider, provide useful opinions and recommendations as well as follow up on Corporate Risk Management to ensure coverage of all short and long-term Risk Management issues to ensure that PTTGC achieve its planned goals and objectives.

On behalf of the Risk Management Committee

(Signed) Anon Sirisaengtaksin

(Mr. Anon Sirisaengtaksin)

Chairman of the Risk Management Committee

“...In making a living, one must adhere to step-by-step approach with **carefulness**, prudence and **moderation**, without doing things beyond capacity or in a hurry. Once the foundation is strengthened, higher level of development should be promoted gradually. The outcome will then be certain, based on regulations and render **sustainable** and **true benefits...**”

His Majesty King Bhumibol Adulyadej's Address

Giving at the graduation ceremony of Khon Kaen University

On 18 December 1997



Sustainable Development

SUSTAINABLE DEVELOPMENT

At PTTGC, we have always striven for self-development. We have endeavored to achieve all aspects of operational excellence to maintain our leading position in the chemical industry, become a role model for sustainable organizations and prepare for global-scale competition. We have developed a sustainable development framework in accordance with the Dow Jones Sustainability Indices (DJSI) for the chemical sector, starting with responsible business operations, environmental friendliness and participation in social development. All of this has helped us become a role model. Additionally, we have extended our sustainable business processes to our partners through collaborative development in sustainability dimension, such as our Code of Conduct and environmental and social responsibility principles. Consequently, we have contributed to the foundation of sustainability in Thailand and, ultimately, the world.

Our efforts to strike a balance between business and social values through the implementation of sustainability policy and sustainable management framework have proven fruitful. The DJSI has categorized PTTGC as an industry leader with a score of 92 percent with the following seven outstanding achievements:

1. Risk and Crisis Management

PTTGC has a uniformed, organization-wide risk management system and mechanism, namely our translation of strategic direction into practice, risk surveillance, monthly assessment and the creation of a risk culture that every employee understands and partakes in.

2. Code of Conduct

PTTGC's Business Code of Conduct has been evaluated and received a top score for three consecutive years. It promotes accountability and transparency throughout the supply chain along with the standardization of processes of every company in the PTTGC Group.

3. Tax Strategy

PTTGC is striving to become a role model organization, and is committed to garner trust from all stakeholders and every relevant sector in society. The guidelines we have put in place ensure that our tax management

continues improve by focusing on compliance with all relevant laws and ethical tax practices, suitable tax risk management and transparent disclosure of information. As a result, we have received a top score for two consecutive years in the assessment of our tax strategy.

4. Environmental Reporting

PTTGC discloses our environmental plans and performance throughout the supply chain. Moreover, the completeness and accuracy of the disclosure is verified by experts.

5. Product Excellence

PTTGC has excellent guidelines for product creation that minimize our impact on the environment. Our plans are clear and practical.

6. Climate Management

PTTGC effectively and systematically minimizes our impact on climate change. Our clear mechanism and effectiveness indices, which are measurable against other industry leaders, have earned us a place on the A-Level of the Carbon Disclosure Project (CDP), the world's most credible environmental evaluation organization.

7. Social Reporting

PTTGC discloses our social work, which has created shared value to communities, especially our ability to profit while simultaneously elevating the quality of life in communities.

PTTGC is dedicated to ensuring that we operate according to sustainable development principles by balancing the three facets of sustainability, namely the economy, society and the environment (2E1S). By striking the 2E1S balance, we are able to foster organizational growth, fulfill stakeholders' expectations and face up to our social and environmental responsibility under the framework of good corporate governance. As a result, PTTGC is held in high regard by leading organizations at local and global levels. More details can be found in PTTGC Integrated Sustainability Report 2016.

SAFETY, OCCUPATIONAL HEALTH AND ENVIRONMENTAL MANAGEMENT

PTTGC operates under the Quality, Security, Safety, Occupational Health, Environment and Business Continuity (QSHEB) Policy, which is based on principles of good corporate governance and other international standards. We also strictly adhere to other applicable safety, occupational health and environmental standards, laws and regulations. This practice has garnered us a score of prestigious awards and accolades that embody our determination for business excellence.

QUALITY, SECURITY, SAFETY, OCCUPATIONAL HEALTH, ENVIRONMENT AND BUSINESS CONTINUITY (QSHEB) POLICY

PTTGC is committed to being a leading chemical company and an organization of innovation with corporate social responsibility (CSR). Outlined below are the ways in which we unceasingly improve our quality, security, safety, occupational health, environment and business continuity:

1. PTTGC complies with quality, security, safety, occupational health, environment and business continuity laws, rules and regulations, as well as other related standards and requirements.
2. PTTGC implements total quality management (TQM) to satisfy customers and to develop Environmentally-friendly innovations by adopting quality, knowledge and productivity management tools.

3. PTTGC exercises risk management to prevent danger, work-related illnesses, accidental loss, injuries and property damage, while fostering the B-CAREs safety culture and exercising process safety management (PSM) to ensure everybody's safety.
4. PTTGC is vigilant of security threats in order to protect lives, assets, data, and business continuity of our organization.
5. PTTGC pays attention to good occupational health and work environment, including the promotion of good health and a happy workplace.
6. PTTGC assesses and minimizes our impact on the environment, ecosystem and bio-diversity by focusing on at-source improvement and prevention, as well as efficient resource consumption. We also foster a strong environmentally aware culture by disseminating information and encouraging employees and stakeholders to become part of the culture.

Since all PTTGC's Executives are responsible for ensuring the achievement of our goals and objectives, they are determined to lead by example and maintain our quality, security, safety, occupational health, environment and business continuity management system. By providing adequate resources, they encourage PTTGC's employees to adopt the QSHEB Policy as part of their everyday operations. Additionally, our Executives are also tasked with relaying the results of QSHEB Policy implementation to all related parties.



Management Safety, Energy and Reliability Walk

PTTGC's performance regarding quality, safety, occupational health and environmental management in 2016 are summarized below:

1. Safety Management

PTTGC places a great deal of importance on the safety of employees and contractors by building awareness of their own safety and that of their colleagues under the B-CAREs safety culture: "Safe behaviors, Caring each other, Stop if unsafe." Aiming to become an organization free from work-related accidents and injuries, PTTGC effectuates occupational health, safety and environmental management OHSAS15001, process safety management and contractor safety management.

Safety record in 2016 showed that Total Recordable Injury Rate, (TRIR) is 0.18 case per 200,000 man-hour higher than the target at 0.12 case per 200,000 man-hour. This statistics is still in the first quartile, the same level with world leading chemical companies. Therefore, we have executed the Safety Focus Proactive Program to encourage employees and contractors to be a part of safety management. B-CAREs safety culture are reiterated to imbue workplace safety into employees' mind. This reiteration allows them to identify risks pertaining to their function, enables them to prevent and mitigate those risks and to help them communicate safety measures to fellow workers before commencing their tasks. They will also able to stop working if there is any unsafe. All of this serves as guidelines to lower cases of accident.

In 2016, PTTGC Group plants received gold level awards for being outstanding role model enterprise on safety, occupational health, and working environment at the national level for the 18th consecutive year (1998 - 2016), which is a testament to our unceasing excellence in safety management.

Because PTTGC's Top Executives value the awareness of safety, occupational health and environmental, it has the policy to dedicate one day of every year to promote employees' understanding of this

matter, as well as energy conservation. This year the event was named "PTTGC Group SEEK Day 2016," under the concept of "Take initiative to create better results." This annual event promotes the awareness under the frameworks of process safety management and B-CAREs safety culture. The President and Chief Executive Officer hands out awards to employees who had been role model of safety and environmental performance. There is an exhibition to share knowledge, foster a sense of pride and relish the achievements which collectively made in safety, occupational health and environmental management.

Moreover, the Executives also show their attention through the Management's Safety, Energy and Reliability Walk, which has served as a key to promote safety culture in production area. The walk happens every Thursday and rotates from one area to another within the premises of PTTGC Group.

Process Safety Management (PSM) plays a vital role to ensure that production process equipment is designed for and must pass a process hazard analysis (PHA), even before the construction of a plant, to assure the surrounding communities of high safety standards. PTTGC also applies Contractor Safety Management, which starts from selecting skilled and safety-conscious contractors, regularly test and train employees and contractors about safety. Any modification to the production process needs to study and assess a Hazard and Operability Study (HAZOP) to ensure the management of change (MoC) must also be put in place prior to such modification or construction. Before commissioning, an expert engineer must conduct a pre-startup and safety review. Furthermore, anyone working in any of the production areas needs to obtain Permit to Work from the officer in charge; these individuals must also be informed of safety measures before work commencing. Additionally, Process Safety Management Effectiveness KPIs was established to serve as guidelines in the assessment of process safety management's effectiveness. Related departments work together to ensure

thorough and complete implementation of process safety management. Moreover, PTTGC assess the process safety management by analyzing and comparing it to the standard of other leading chemical companies, which empowers it to maximize process safety management effectiveness. The results, analyzed by Phillip Townsend, show that PTTGC process safety management is comparable to that of first-quartile world-class chemical enterprises.

For safety culture, PTTGC conducts PTTGC SHE Culture Survey to evaluate the safety culture level of employees and contractors. The analysis of the results is used as guidelines for continuous improvements aiming to be the organization with zero accident and injury. PTTGC also creates Product Safety and Toxicity Disclosure to communicate product safety data to all related parties, whether internal or external, so that they acknowledge about the safety qualification of our products.

PTTGC has another role as a founding member of the Emergency Mutual Aid Group (EMAG), who took part in drafting Rayong emergency plan and an emergency plan for the Map Ta Phut Industrial Estate. PTTGC, together with a group of industrial plants in the estate, participate in a provincial-level emergency drill and an evacuation drill of communities around the estates. Additionally, it assigns employees with experiences and expertise in responding and mitigating a state of emergency - in collaboration with the Rayong Provincial Governor, Rayong Disaster Prevention Director, Map Ta Phut Municipality and a group of industrial plants in the Map Ta Phut area - to help nearby communities set up and conduct emergency drills as preparation for possible accidents that plant may affect them. Implementation Business Continuity Management System prepares PTTGC for an incident that may take place at any given moment to effectively coordinate with related parties, respond to the situation and effective recover after the situation to ensure the business continuity. Business Continuity Plan (BCP) outline a structure of individuals in charge of different responsibilities, serves as a standard and guidelines for the

recovery of PTTGC Group plants. PTTGC 2 already received an ISO22301:2012 certification.

2. Occupational Health Management

Because PTTGC highly values our employees' health, especially those working in production process, proactive health monitoring measure was approached by reviewing the health examination program, especially on employees with higher chances of exposure to hazardous substances. There are regular industrial hygiene measurement in operations areas at the interval plan such as heat, light, noise and chemical levels. The acquired data are used to improve workplace safety and to conduct health risk assessment in order to review the existing measures for the prevention of work-related illnesses. On top of our employees' well-being, PTTGC also cares about the people in communities surrounding by set up two free-of-charge Pan Nam Jai Clinics to provide primary medical treatment for the locals, one of which is located at Aromatics 2 plant while the other is in Ban Nong Fab area near Olefins 3 plant. The budget for operations of these two clinics is about 4 million Baht a year. Additionally, in collaboration with the Community Partnership Association (CPA), mobile clinic unit sets out to provide basic checkups and healthcare knowledge dissemination to residents in the communities surrounding the Map Ta Phut and Ban Chang areas with assistance from volunteers employees who donated their time, even on their days off. In response to the seasonal flu epidemic, PTTGC provides free flu vaccinations to all employees and directly hired contractors and also extends concern to their family members, who are able to get vaccinated at a cost price. It illustrates PTTGC concern for everybody who working together and their family.

3. Environmental Management

PTTGC Group strictly adheres to all environmental standards, laws, and regulations by employing an environmental management system that conforms to the ISO 14001 standard as a fundamental practice in operations. Other international standards and best practices are implemented, including the Environmental, Health and Safety Guidelines by the

World Bank's International Finance Corporation (IFC), Proactive Environmental Management (PEM) and life cycle management (LCM) of petrochemical products alongside the company long-term business plan.

PTTGC Group places a great deal of environmental impact prevention, it begins employing a stringent set of prevention and control measures from the designing phase. We also conduct an environmental impact assessment (EIA) cover every project aspect and establish measures to prevent and mitigate impacts during construction and operation phase. Moreover, PTTGC prepares the proper environmental quality monitoring plans and present to the responsible approval government authorities to obtain the appropriate permission prior to the commencement of work. It strictly complies with these prevention and mitigation measures and report the performance for the measures to the supervisory authorities involved on a regular basis.

Furthermore, PTTGC Group has received the ISO 14064-1:2006 certification for quantification and reporting of greenhouse gas emissions and removals as Thailand's first certified plant in petrochemical and refinery sector. The adherence to this international standard allows PTTGC to employ efficient greenhouse gas emission management, along with setting up guidelines to cope with the climate change in the future. PTTGC Group takes pride in announcing that the target for reducing its greenhouse gas emissions by 10 percent within 2022 based on business as usual, using 2012 as the base year. Between 2013 - 2016, PTTGC Group has reduced greenhouse gas emissions from direct and indirect activities (scope 1 and 2) by 315,000 t-CO_{2e}* or about 44 percent from the target of 715,000 t-CO_{2e} by 2022. Furthermore, to support government policy in attending the 21st Sessions of the conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change which set the goal to limit global temperature rise well below 2°C above pre-industrial levels, PTTGC Group also set the greenhouse gases emission reduction according to the Science Based

Targets Initiative by voluntarily setting up a target to reduce greenhouse gas emissions per production unit by 52 percent by 2050, using 2012 as the base year. This endeavors have earned a place on the A-List of the Carbon Disclosure Project (CDP) for the fourth consecutive year, which gives only organizations with excellent, effective and internationally recognized in climate change management. PTTGC Group commits to operate with effective use of energy and resources, while paying attention in controlling and minimizing environmental impact.

PTTGC Group has systematically employed the resource management philosophy along with sustainable business operation which called Eco-Efficiency from the manual of the United Nations Conference on Trade and Development (UNCTAD) as indices of the environmental efficiency systematic and continuous since 2008, comprising of water use, energy use, wastewater generation, global warming contribution and ozone-depleting substances. The measurement of these indices helps the company its optimize consumption of resources while minimizing environmental impacts from PTTGC Group activities and production processes. It is the way to run business while optimizing the use of resources, contribute to the country's overall sustainable environmental management.

PTTGC Group has commitment and pay attention to the environment to drive the business toward sustainability development. In addition to manage environmental aspects from plant processes and activities, which is in strict compliance with applicable laws, PTTGC Group has achieved the Zero Waste to Landfill target since the end of 2014, and continuously maintain by applying the 5Rs Principle; "Reduce" waste at its source, "Reuse" waste, "Recycle" waste, "Repair" broken things and "Reject" using things which can cause pollution both inside and outside production process, in conjunction with suitable technological innovations concept. PTTGC also support research and development efforts that seek ways to increase the value and utilization of waste, which is a part of the eco-industry development guidelines. Furthermore, PTTGC Group has voluntarily stipulated

and implemented other measures in addition to the requirements mandated by laws such as stringent criteria for selecting industrial waste processors, including proper waste management methods which will be monitored the practicality of waste processing; the hazardous waste transporters must install a global positioning system (GPS) on every vehicle used to carry hazardous waste to follow and avoid illegal waste dumping. Furthermore, PTTGC Group regularly educates its employees about environmental management, which starts from the orientation of new staff, continues with a biennial refreshment training session and encourage the provision of environmental information in meetings and other occasions, such as in meetings of the Safety, Occupational Health and Working Environment Committee, meetings of the Welfare Committee, SEEK Day, the Reforestation and Water Conservation Project at Huai Ma Haad Mountain Area and other additional training sessions for special events, for instance, training contractors who work during shutdown about environmental management, which is part of the Safety Introduction Course prior to the commencement of their work to remind them about safety and environmental awareness.

In 2016, the Ministry of Industry granted the Green Industry Level 5 certification (Green Network) to all plants of PTTGC Group, further demonstrating the dedication to encouraging their business partner and alliances to enter the green industry through the supply chain, as well

as building and maintaining environmental network with communities and stakeholders in a sustainable manner.

As PTTGC Group realizes and places much significance on communities surrounding, it installed enclosed ground flare at Olefins 3 plant, Olefins 1 plant, Jetty and Buffer Tank Farm to minimize any possible impact to the surrounding communities. The enclosed system ensures complete and smokeless combustion of hydrocarbons and is equipped with noise and heat insulations; it prevents noise, heat radiation and flare from disturbing the surrounding vicinities. These enclosed ground flares also automatically feed gas for combustion. The enclosed ground flare at Olefins 3 plant is the first and largest of its kind in Thailand.

Additionally, PTTGC has installed vapor recover units (VRUs) to recover hydrocarbon vapors emitted from raw material and product tanks and return them to the manufacturing process. In addition to reducing emission of hydrocarbon vapors into the atmosphere, VRUs ensure optimal resources use. PTTGC's VRU system is the largest of its kind in Thailand.

PTTGC Group began the construction of groundwater monitoring wells since 1992. At the present there are totally 116 wells, enabling us to monitor and control soil and groundwater contamination within the premises of every plant. We also report our findings to relevant state authorities.



SEEK Day 2016

In response to the green market demand, all PTTGC products have been certified the carbon footprint label from the Thailand Greenhouse Gas Management Organization (Public Organization) or the TGO, under the Ministry of Natural Resources and Environment, since 2014. On top of this, in 2016 PTTGC Group also has completed life cycle assessments (LCA) for all products.

PTTGC's operational excellence exceeds any regular operational expectations and certainly goes above and beyond what the law requires, reflecting the corporate social and environmental responsibility. All plants of PTTGC Group obtained the ISO 50001:2011 certification for energy management system from Management System Certification Institute (Thailand) or the MASCI. This accomplishment illustrates the energy efficiency management, as well as the continuous improvement and strict compliance with applicable regulations and laws. All of this stems from the awareness of the importance of energy conservation, which has always played a crucial role in all of the company operations.

In addition, PTTGC also received the Thailand Quality Class (TQC) award as a result of quality management excellence. PTTGC Group also received the ISO9001:2015 certification, this new version certificate is a testament to the company commitment to the continuous development of an organization-wide management system.

PTTGC has pollution prevention measures as follows:

- Prepare the database of volatile organic compounds (VOCs) inventory and control equipment maintenance to ensure minimum emissions of VOCs into the atmosphere. These tasks are performed in addition to the installation of vapor recover units (VRUs) to recover hydrocarbon vapors emitted from truck loading.

- Install vapor return lines to recover hydrocarbon vapors that may have been emitted into the atmosphere back into product tanks for further beneficial use and proper management.
- Study ways to enhance production capabilities of low-sulfur diesel according to the Euro IV provision of the Clean Fuels project. Consequently, PTTGC is able to provide environmentally friendly fuels, ultimately contributing to the overall reduction of air pollution in Thailand.
- Use clean fuels use measure to lower the emission of sulfur dioxide (SO₂) and improves the ignition of the gas-turbine for power generation to lower the emission of oxides of nitrogen (NO_x).
- Install the continuous emission monitoring systems (CEMS) at the top of stacks at plants and constantly sends around the clock data to the Environmental Monitoring and Control Center (EMC2) located at the Map Ta Phut Industrial Estate Office.
- Install a wastewater recycling system that makes optimal use of treated water and reduces the discharge of effluent from plants. In 2016 it can recycle 922,401 cubic meters of wastewater, an increase of 37.4 percent or 17,500 cubic meters from 2015. The system also monitors and ensures that the quality of wastewater to be discharged conforms to the legal requirement. Moreover, there are plans to install the wastewater recycling system at Olefins 3 plant in 2017, which can recycle 50 percent of the wastewater that would otherwise be discharged.

As a chemical industry leader and an organization of innovation, PTTGC Group is determined to operate their businesses with a strong commitment to both society and communities. In the long run, such endeavors will allow them to become a "Leading Chemical Company for Better Living."



The Prime Minister's Industry Award 2016



The Role Model Workplace
Excellence Award : Gold Class



PTTGC received the Thailand Quality
Class Award Year 2015.



PTTGC joined the emergency evacuation plan with the province of Rayong.



“...Being economical will ensure **prosperity** for oneself and family, while preventing scarcity in the future. This will yield **benefits** not only for the one who **practice** it but also for the national as a whole...”

His Majesty King Bhumibol Adulyadej's Speech
Given on the New Year
On 31 December 1959

The background of the slide is an abstract composition of thick, expressive brushstrokes. The color palette is dominated by warm tones, including various shades of orange, from deep burnt orange to bright, sunny yellow. The strokes are layered and textured, creating a sense of movement and depth. In the bottom right corner, there is a solid orange rectangular box containing the text "Financial Excellence" in white.

Financial Excellence

REPORT OF THE AUDIT COMMITTEE

Dear Shareholders,

The Audit Committee of PTT Global Chemical Public Company Limited (PTTGC) is comprised of three independent directors with experiences in the fields of law, management, finance, accounting and economics. Our expertise allows us to carry out our duties with efficacy. The current Audit Committee consists of the following three members:

- | | |
|-----------------------------|---------------------------------|
| 1. Mr. Somchai Kuvijitsuwan | Chairman of the Audit Committee |
| 2. Mr. Amnuay Preemonwong | Director to the Audit Committee |
| 3. Mr. Prasan Chuaphanich | Director to the Audit Committee |

The Audit Committee's composition and qualifications are based on the announcements of the Stock Exchange of Thailand. As Ms. Ruenwadee Suwanmongkol completed her term as Director to the Audit Committee on April 5th, 2016, the Board of Directors appointed Mr. Prasan Chuaphanich to replace the position on April 25th, 2016.

The Audit Committee has performed our duties mandated by the Board of Directors and our charter; these duties are consistent with announcements made by the Stock Exchange of Thailand and the Securities and Exchange Commission. It has been our policy to focus on good corporate governance and on compliance with the laws, rules and regulations that apply to both our domestic and international operations. We have also put an emphasis on the adequacy and effectiveness of PTTGC's internal control and internal audit systems, as well as reviewing the performance of all business groups and major investments.

In 2016 the Audit Committee held a total of eight meetings. All of our directors were present at all of these meetings. We performed our duties with independence. The following is a summary of opinions and key activities that we undertook:

1. Review of Financial Reports: The Audit Committee reviewed PTTGC's 2016 quarterly and annual financial statements, as well as any possible conflicting interest transactions. Relevant members of management and the auditors attended these review sessions to give explanations and respond to questions pertinent to their accuracy and completeness, significant adjusted entries that affected the financial statements, the sufficiency of information disclosure and the auditors' notes. It is our opinion that PTTGC's financial statements present all entries fairly in accordance with the Thai Financial Reporting Standards. In addition, a meeting between the Audit Committee and the auditors without the presence of management was arranged to allow for independent discussions on the preparation process of financial statements and reporting, namely the auditors' annual audit plan and framework, risks, internal control, internal audit, allegation, fraud and other related issues that the auditors have not raised elsewhere. It is our opinion that the auditors received good cooperation and support from management, independently performed their duties with sufficient knowledge, experience and an appropriate audit approach.

2. Review of Risk Management: The Board of Directors, the Risk Management Committee and PTTGC management have given priority to risk management. PTTGC has assessed identifiable internal and external risk factors for their impact and likelihood, as well as developed and executed a risk mitigation plan that prevent or ensure that these risks remain within the boundaries of our tolerance levels. PTTGC has established key risk indicators to monitor the ever-changing risk factors, and put measures in place to enhance the effectiveness and timeliness of the company's responses to these risks. The board has established the Risk Management Committee to oversee PTTGC's risk management. The progress of risk management activities is reported to the board on a regular basis. Additionally, the Audit Committee began receiving an assessment of emerging technologies' risks in order to ensure that these risks remain within our risk tolerance levels, reduce loss and the likelihood of damage to the company and ascertain whether our control of information technology was tantamount with international standards. Moreover, the Audit Committee has reviewed the effectiveness of risk management based on business groups' performance reports, internal audit reports and auditors' reports. It is our belief that these mechanisms could reasonably guarantee that PTTGC is capable of maintaining risks within its risk tolerance levels.

3. Review of Internal Control Systems' Effectiveness: The Audit Committee reviewed PTTGC's internal control system by examining the results of internal control assessment performed by management in accordance with the guidelines set forth by the Securities and Exchange Commission (SEC), as well as the internal audit reports and the auditors' reports. We discovered no irregularities that could significantly affect PTTGC. Moreover, management has continuously improved the internal control system based on suggestions from us, the auditor and Internal Audit. All of this leads to the conclusion that PTTGC has prioritized internal control, which could reasonably ensure its adequacy and effectiveness.

4. Oversight of Internal Auditing: The Audit Committee approved the amendment of Internal Audit's charter; the risk-based internal audit plan for significant control activities of PTTGC and its subsidiaries; the strategic plan that focuses on the development of internal audit capabilities, alignment with the company strategies and fostering good relations with stakeholders; and the key performance indicators (KPIs) for major tasks of Internal Audit. From monitoring and assessing the execution of established plans, the Audit Committee found that Internal Audit succeeded in carrying out its tasks as described in the aforementioned plans and KPIs. The International Standards for the Professional Practice of Internal Auditing has been adapted, along with other best practices. They have emphasized the adherence to the code of conduct for internal auditing and remained independent according to the established structure. In 2016 they have developed a Continuous Control Monitoring System (CCMS) that screens and monitors irregularities and fraud in the procure to pay process. Moreover, an independent auditor also assessed the internal auditing with an aim to evaluate its quality and provide suggestions for improvements based on the International Standards for the Professional Practice of Internal Auditing and other best practices. The results reveal that

most of the findings complies with standards. The independent auditor found no non-compliance that would significantly impact internal auditing. Furthermore, there are good coordination with the management, the auditors and also strongly support to the Audit Committee. These signify that PTTGC have an independent and effective internal auditing with international standard practices.

5. Compliance with Securities and Stock Market Laws, Regulations of the Stock Exchange of Thailand and/or Other Applicable Laws: The Audit Committee assigned Internal Audit to examine PTTGC's compliance with laws pertinent to our operations. Internal Audit concluded that PTTGC has a system of control in place to ensure compliance, which includes the compilation of applicable laws and monitoring of legal changes and new provisions. PTTGC has also appointed individuals to oversee and monitor all matters of compliance. Internal Auditors did not find any non-compliance issues that would significantly affect the company. Furthermore, the Audit Committee did not receive any reports from the auditors, allegations from outsiders or management's information disclosure that indicated PTTGC had breached any laws or regulations that would have a significantly impact on us. It is our opinion that PTTGC has effective control of legal compliance and there is no non-compliance issues that would significantly affect us.

6. Review of Connected Transactions or Possible Conflicting Interest Transactions to Ensure Compliance with the Law and Stock Exchange of Thailand's Regulations: The Audit Committee assigned Internal Audit to randomly review feedstock and service purchase and sale transactions between PTTGC and related parties. Internal Audit concluded that no connected transactions showed signs of irregularities from the approved contracts that were processed in accordance with the announcements of the Securities and Exchange Commission (SEC). Moreover, the Audit Committee reviewed the auditors' report on connected transaction or conflicting interest transaction disclosure. The auditor reported that PTTGC complied with the laws and regulations of the Stock Exchange of Thailand and that no irregularities were found.

7. Appointment of 2017 Auditors: The Audit Committee nominated the following auditors to the Board of Directors, who proposed these names at the shareholder meeting for appointment as the 2017 auditors: Mr. Charoen Phosamritlert (Auditor #4068), or Mr. Waiyawat Korsamarnchaiyakij (Auditor #6333) or Mr. Natthaphong Tantichattanon (Auditor #8829) from KPMG Phoomchai Audit Ltd. These auditors were selected from a pool of auditors who proposed their service to the company for three years, using 2016 as the base year. Taken into consideration were their qualifications, competence, service fees and distinguished auditing performance in 2016. All of the nominees were from the list approved by the SEC; they possess sufficient experience and hasn't audited or expressed their opinions on PTTGC's financial statements for more than five fiscal years consecutively.

8. Review of Good Corporate Governance: It is the Audit Committee's policy to focus on systematic management that brings about good corporate governance. We promote anti-corruption and corruption-prevention awareness among executive officers and employees through constant seminar and training sessions. We also acknowledge whistleblower reports of the PTTGC Group, which have been compiled according to the established procedures. The Audit Committee reviewed the PTTGC's anti-corruption

self-assessment form for accuracy and adequacy. The form's 71 questions are divided into the following categories: 1) principles, 2) development of anti-corruption measures, 3) forms of corruption and 4) measures to implement. We have reviewed and updated our existing anti-corruption measures and corruption risk assessment, as well as the 71 questions. In 2016 we added the PTTGC Way of Conduct and improved our director nomination criteria by adding punitive measures for directors who fail to comply with our anti-corruption policy according to the assessment form of CAC. We initiated control self-assessment and added corruption as one of the risk factors in our fraud risk assessment. We also added an anti-bribery clause into our suppliers' contracts. All of this shows our continuous commitment to compliance with good corporate governance and anti-corruption measures.

9. Reviews of the Audit Committee's Charter: The Audit Committee reexamined the charter to ascertain its alignment with the Stock Exchange of Thailand's 2015 announcement on the scope of responsibilities of an audit committee and qualifications of its members, as well as the Audit Committee Manual of 2010 and gave the opinion that the charter, which was approved by the board in meeting numbered 3/2015, is still suitable.

10. Assessments of the Audit Committee's Performance: The Audit Committee evaluated our 2015 performance as a whole and as individual directors. The results of these assessments were reported to the board and are disclosed in this annual report.

11. Performance Reports of the Audit Committee: The Audit Committee provided reports on our activities to the Board of Directors on a regular basis. In 2016 a total of four reports were made.

Based on the aforementioned activities throughout 2016, it is believed that PTTGC possesses good corporate governance, adequate internal control that suits its business, effective risk management, accurate and accountable financial and accounting reporting system and compliance with all laws, rules and regulations pertinent to its operations.

The Audit Committee received good cooperation throughout 2016 from the Board of Directors, executive officers, auditors and all other relevant departments. We would like to express our gratitude here.

On behalf of the Audit Committee

(Signed) Somchai Kuvijitsuwan

(Mr. Somchai Kuvijitsuwan)

Chairman of the Audit Committee

REPORT OF THE BOARD OF DIRECTORS' ACCOUNTABILITY TO FINANCIAL REPORT

The consolidated financial statements of PTT Global Chemical Public Company Limited and its subsidiaries was prepared in accordance with the Securities Exchange Commission under the Securities and Exchange Act B.E. 2535 and Department of Business Development, issued under the Accounting Act B.E. 2543 Section 11 paragraph 3 in accordance with the Federation of Accounting Professions' Thai Financial Reporting Standards.

The Company's Board of Directors is responsible for financial report of PTT Global Chemical Public Company Limited and its subsidiaries in providing reasonable assurance that the financial report present fairly 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 accordingly to appropriate accounting policy and consistency practices, and in accordance with Thai Financial Reporting Standards. Significant information has been sufficiently disclosed in notes to financial statements, where 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) Prasert Bunsumpun
(Mr. Prasert Bunsumpun)
Chairman

(Signed) Supattanapong Punmeechaow
(Mr. Supattanapong Punmeechaow)
President & Chief Executive Officer

INDEPENDENT AUDITOR'S REPORT

To the Shareholders of PTT Global Chemical Public Company Limited

Opinion

I have audited the consolidated and separate financial statements of PTT Global Chemical Public Company Limited and its subsidiaries (the "Group") and of PTT Global Chemical Public Company Limited (the "Company"), respectively, which comprise the consolidated and separate statements of financial position as at 31 December 2016, the consolidated and separate statements of income and comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

In my opinion, the accompanying consolidated and separate financial statements present fairly, in all material respects, the financial position of the Group and the Company, respectively, as at 31 December 2016 and their financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards (TFRSs).

Basis for Opinion

I conducted my audit in accordance with Thai Standards on Auditing (TSAs). My responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements section of my report. I am independent of the Group and the Company in accordance with the Code of Ethics for Professional Accountants issued by the Federation of Accounting Professions under the Royal Patronage of His Majesty the King that is relevant to my audit of the consolidated and separate financial statements, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Key Audit Matters

Key audit matters are those matters that, in my professional judgment, were of most significance in my audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of my audit of the consolidated and separate financial statements as a whole, and in forming my opinion thereon, and I do not provide a separate opinion on these matters.

Impairment of goodwill, property, plant and equipment, intangible assets and investments in subsidiaries
Refer to Notes 3 (k), 9, 12, 14 and 15 to the financial statements.

The key audit matter

Due to price pressure on Petro-based succinic acid from the continued low level of crude oil prices, the Group has undertaken a change in the operational plan for a foreign subsidiary (Myriant Corporation). The change in operational plan indicated that related assets may be impaired and that the carrying amount of assets may exceed its recoverable amount and therefore a provision is required as a result of impairment. The recoverable amount of assets is based on fair value less cost of disposal and value in use. The value in use is derived from discounted cash flow projection, which is reflecting a number of assumptions and estimates.

How the matter was addressed in the audit

In planning my audit procedures, I performed an understanding of the Group's strategic plan and detailed testing of recoverable amount of the related assets in accordance with the strategic plan. I assessed the independence and competency of the external specialist engaged by the Group for the valuation of fair value of relating assets. I assessed the assumptions made by the management with reference to internally and externally derived sources and taking into account the historical forecasting accuracy. I tested the accuracy of the calculation and consulted with valuation specialists when considering the appropriateness of the discount rate. I considered the adequacy of the Group's disclosures in respect of the impairment.

Valuation of inventories

Refer to Notes 3(g) and 8 to the financial statements.

The key audit matter

Inventory is valued at the lower of its cost and net realisable value. As a result of fluctuation in crude oil price may cause the net realisable value to be lower than its cost. The measurement of inventories together with their net realisable values are based on assumptions about the production yield of crude oil.

How the matter was addressed in the audit

I assessed assumptions used in the key measurement of inventory by evaluating the production assumptions and comparing to the actual production in the past and checked the selling price of each finished goods with reference market price. I assessed the calculation of net realisable value of inventory whether the net realisable value was appropriately calculated. In addition, I assessed the adequacy of the disclosures relating to the valuation of inventories.

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 my auditor's report thereon.

My opinion on the consolidated and separate financial statements does not cover the other information and I will not express any form of assurance conclusion thereon.

In connection with my audit of the consolidated and separate financial statements, my 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 my knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact. I 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 and the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements

My 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 my 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, I exercise professional judgment and maintain professional skepticism throughout the audit. I 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 my 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 I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my 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. I am responsible for the direction, supervision and performance of the group audit. I remain solely responsible for my audit opinion.

I 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 I identify during my audit.

I also provide those charged with governance with a statement that I 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 my independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, I 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. I describe these matters in my auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, I determine that a matter should not be communicated in my report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.



(Charoen Phosamritlert)

Certified Public Accountant

Registration No. 4068

KPMG Phoomchai Audit Ltd.

Bangkok

14 February 2017

FINANCIAL STATEMENTS

STATEMENT OF FINANCIAL POSITION

PTT Global Chemical Public Company Limited and its Subsidiaries

		Consolidated financial statements		Separate financial statements	
		31 December		31 December	
Assets	Note	2016	2015	2016	2015
<i>(in Baht)</i>					
Current assets					
Cash and cash equivalents	5	31,143,384,207	11,482,803,936	27,949,661,787	6,948,680,839
Current investments	11	14,168,554,037	36,258,195,511	13,195,207,881	35,106,047,000
Trade accounts receivable	4,6	40,982,613,321	32,148,157,836	34,318,805,032	26,565,899,697
Other receivables	4,7	3,551,258,902	6,125,513,333	2,974,132,762	5,542,075,140
Inventories	8	35,753,675,748	29,930,018,935	26,259,815,101	23,392,590,733
Short-term loans to related parties	4	-	-	655,000,000	591,000,000
Receivable from Oil Fuel Fund		13,428,346	17,505,196	13,428,346	17,505,196
Value-added tax receivable		713,959,743	1,064,676,284	-	440,142,509
Derivatives	34	57,755,829	22,804,440	52,591,637	20,768,417
Other current assets		1,128,843,780	850,914,937	879,118,257	718,860,278
Total current assets		127,513,473,913	117,900,590,408	106,297,760,803	99,343,569,809
Non-current assets					
Investments in subsidiaries	4,9	-	-	54,343,205,600	54,706,000,180
Investments in joint ventures	4,10	10,297,828,778	11,109,689,855	942,840,400	1,152,840,400
Investments in associates	4,10	13,026,186,055	12,392,623,078	9,322,699,660	9,322,699,660
Other long-term investments	11	5,886,683,107	573,614,909	5,603,806,590	290,738,392
Long-term loans to other parties		734,690,566	739,978,684	-	-
Property, plant and equipment	12	221,514,174,171	220,212,777,529	170,166,576,127	171,521,410,627
Land leasehold right	13	362,329,692	400,939,481	362,045,490	400,262,401
Goodwill	14	931,328,672	1,267,501,158	-	-
Intangible assets	15	8,130,575,418	8,837,070,464	5,232,936,789	5,338,539,749
Derivatives	34	-	7,845,653	-	7,845,653
Deferred tax assets	16	306,067,907	304,832,159	-	-
Other non-current assets		4,462,864,808	3,797,391,879	2,988,805,642	2,521,062,536
Total non-current assets		265,652,729,174	259,644,264,849	248,962,916,298	245,261,399,598
Total assets		393,166,203,087	377,544,855,257	355,260,677,101	344,604,969,407

The accompanying notes are an integral part of these financial statements.

STATEMENT OF FINANCIAL POSITION

PTT Global Chemical Public Company Limited and its Subsidiaries

		Consolidated financial statements		Separate financial statements	
		31 December		31 December	
Liabilities and equity	Note	2016	2015	2016	2015
		(in Baht)			
Current liabilities					
Short-term loans from financial institutions	17	562,609,893	601,668,697	-	-
Trade accounts payable	4,18	27,727,469,853	19,650,224,134	23,885,752,801	15,873,557,469
Other payables	4,19	9,904,921,375	7,779,235,029	7,816,954,585	5,625,059,921
Payables to contractors	4	1,909,117,797	2,131,516,025	1,842,693,528	2,212,474,187
Short-term loans from related parties	4,17	-	-	1,513,795,970	880,120,417
Current portion of long-term loans					
from financial institutions	17	7,091,451,997	7,456,254,643	4,948,450,000	5,968,226,000
Current portion of long-term loans					
from other parties	17	746,906,105	754,909,442	-	-
Current portion of debentures	17,34	2,798,938,302	1,058,000,000	2,798,938,302	1,058,000,000
Income tax payable		1,873,402,849	642,529,493	1,670,555,166	557,903,488
Derivatives	34	166,696,998	431,666,704	155,250,926	425,768,667
Short-term provision		456,694,976	690,032,897	-	-
Other current liabilities		29,392,511	24,753,092	-	-
Total current liabilities		53,267,602,656	41,220,790,156	44,632,391,278	32,601,110,149
Non-current liabilities					
Long-term loans from financial institutions	17	35,988,091,066	44,010,299,423	19,471,550,000	31,588,854,000
Long-term loans from other parties	17	1,168,372,202	1,158,090,527	-	-
Debentures	17,34	47,786,239,921	50,807,499,956	47,786,239,921	50,807,499,956
Deferred tax liabilities	16	2,238,629,584	2,227,324,764	1,807,050,827	1,608,628,604
Employee benefit obligations	20	3,067,176,745	2,918,651,764	2,113,277,613	1,963,199,810
Derivatives	34	23,629,844	97,080,566	23,629,844	97,080,566
Long-term provisions		458,380,989	397,827,667	-	-
Other non-current liabilities		499,321,107	442,529,194	351,987,162	329,420,217
Total non-current liabilities		91,229,841,458	102,059,303,861	71,553,735,367	86,394,683,153
Total liabilities		144,497,444,114	143,280,094,017	116,186,126,645	118,995,793,302

The accompanying notes are an integral part of these financial statements.

STATEMENT OF FINANCIAL POSITION

PTT Global Chemical Public Company Limited and its Subsidiaries

		Consolidated financial statements		Separate financial statements	
		31 December		31 December	
Liabilities and equity	Note	2016	2015	2016	2015
<i>(in Baht)</i>					
Equity					
Share capital	21				
Authorised share capital		45,088,491,170	45,088,491,170	45,088,491,170	45,088,491,170
Issued and paid-up share capital		45,088,491,170	45,088,491,170	45,088,491,170	45,088,491,170
Treasury shares	22	(2,409,544,289)	(2,104,534,625)	(2,409,544,289)	(2,104,534,625)
Share premium					
Share premium	23	36,936,829,684	36,936,829,684	36,936,829,684	36,936,829,684
Surplus on treasury shares	22,23	7,490,764	-	7,490,764	-
Difference arising from business combination					
under common control	23	(1,658,035,683)	(1,658,035,683)	480,500,000	-
Retained earnings					
Appropriated					
Legal reserve	23	4,512,930,269	4,512,930,269	4,512,930,269	4,512,930,269
Loan repayment reserve		807,802,564	807,802,564	807,802,564	807,802,564
Projects expansion reserve		12,446,994,126	12,446,994,126	12,446,994,126	12,446,994,126
Treasury shares reserve	22,23	2,409,544,289	2,104,534,625	2,409,544,289	2,104,534,625
Unappropriated		147,220,167,889	132,503,486,704	138,850,652,172	125,816,128,292
Other components of equity		653,078,970	913,050,544	(57,140,293)	-
Equity attributable to owners of the Company		246,015,749,753	231,551,549,378	239,074,550,456	225,609,176,105
Non-controlling interests		2,653,009,220	2,713,211,862	-	-
Total equity		248,668,758,973	234,264,761,240	239,074,550,456	225,609,176,105
Total liabilities and equity		393,166,203,087	377,544,855,257	355,260,677,101	344,604,969,407

The accompanying notes are an integral part of these financial statements.

STATEMENT OF INCOME

PTT Global Chemical Public Company Limited and its Subsidiaries

	Note	Consolidated financial statements		Separate financial statements	
		For the year ended 31 December		For the year ended 31 December	
		2016	2015	2016	2015
(in Baht)					
Revenue from sale of goods and rendering of services	4	349,101,094,612	403,440,229,574	307,047,821,209	359,155,731,950
Cost of sale of goods and rendering of services	4	(307,063,589,917)	(366,168,005,889)	(270,369,868,015)	(328,405,897,582)
Gross profit		42,037,504,695	37,272,223,685	36,677,953,194	30,749,834,368
Investment income	4	841,688,086	1,212,296,615	3,696,703,445	4,668,199,642
Other income	4	2,201,200,418	2,394,866,238	2,522,303,707	2,198,247,816
Selling expenses	4,25	(1,996,872,055)	(1,283,957,458)	(1,352,640,121)	(670,652,910)
Administrative expenses	4,26	(9,592,779,442)	(10,139,562,481)	(7,066,620,069)	(7,140,327,864)
Loss from impairment of assets	9,12,14,15	(655,533,811)	(2,530,904,888)	(3,847,721,967)	(281,551,026)
Net derivative gain (loss)		(602,230,698)	2,595,388,702	(653,999,504)	2,636,950,356
Net foreign exchange gain (loss)		275,253,424	(2,288,507,809)	157,257,649	(2,333,249,469)
Finance costs	4,29	(4,220,049,355)	(5,177,793,631)	(3,528,810,613)	(4,616,400,343)
Share of loss of investments in joint ventures	10	(488,585,352)	(14,482,835)	-	-
Share of profit of investments in associates	10	1,105,550,289	725,371,261	-	-
Profit before income tax expense		28,905,146,199	22,764,937,399	26,604,425,721	25,211,050,570
Income tax expense	30	(3,025,092,480)	(1,984,085,210)	(2,783,719,580)	(2,011,732,717)
Profit for the year		25,880,053,719	20,780,852,189	23,820,706,141	23,199,317,853
Profit attributable to:					
Owners of the Company		25,601,632,867	20,502,497,777	23,820,706,141	23,199,317,853
Former shareholder before business restructuring		-	105,156,553	-	-
Non-controlling interests		278,420,852	173,197,859	-	-
Profit for the year		25,880,053,719	20,780,852,189	23,820,706,141	23,199,317,853
Basic earnings per share	32	5.74	4.55	5.34	5.15

The accompanying notes are an integral part of these financial statements.

STATEMENT OF COMPREHENSIVE INCOME

PTT Global Chemical Public Company Limited and its Subsidiaries

		Consolidated financial statements		Separate financial statements	
		For the year ended 31 December		For the year ended 31 December	
	Note	2016	2015	2016	2015
		(in Baht)			
Profit for the year		25,880,053,719	20,780,852,189	23,820,706,141	23,199,317,853
Other comprehensive income (loss)					
Items that will not be reclassified to profit or loss					
Defined benefit plan actuarial gains (losses)	20	(34,655,608)	41,349,867	-	-
Share of other comprehensive income (loss) of investments in joint ventures	10	(70,407,622)	(46,053,175)	-	-
Share of other comprehensive income (loss) of investments in associates	10	1,165,992	(9,241,006)	-	-
		(103,897,238)	(13,944,314)	-	-
Items that are or may be reclassified subsequently to profit or loss					
Foreign currency translation differences for foreign operations		(282,426,107)	(309,304,170)	-	-
Net change in fair value of available-for-sale investments		(20,398,751)	-	(20,398,751)	-
Effective portion of changes in fair value of cash flow hedges		(86,362,650)	41,165,191	(36,741,542)	-
Share of other comprehensive income of investments in joint ventures	10	68,006,896	471,215,203	-	-
Share of other comprehensive income (loss) of investments in associates	10	19,742,171	(40,156,002)	-	-
		(301,438,441)	162,920,222	(57,140,293)	-
Other comprehensive income (loss) for the period, net of income tax		(405,335,679)	148,975,908	(57,140,293)	-
Total comprehensive income for the year		25,474,718,040	20,929,828,097	23,763,565,848	23,199,317,853
Total comprehensive income attributable to:					
Owners of the Company		25,242,891,872	20,644,825,847	23,763,565,848	23,199,317,853
Former shareholder before business restructuring		-	105,445,111	-	-
Non-controlling interests		231,826,168	179,557,139	-	-
Total comprehensive income for the year		25,474,718,040	20,929,828,097	23,763,565,848	23,199,317,853

The accompanying notes are an integral part of these financial statements.

STATEMENT OF CHANGES IN EQUITY

PTT Global Chemical Public Company Limited and its Subsidiaries

		Retained earnings						
		Issued and		Difference arising		Loans	Projects	
		paid-up		from business		repayment	expansion	
Note	share capital	Treasury shares	Share premium	combination under common control	Legal reserve	reserve	reserve	
Year ended 31 December 2015								
Balance at 1 January 2015	45,088,491,170	-	36,936,829,684	(1,657,080,044)	4,512,930,269	807,802,564	12,446,994,126	
Transactions with owners, recorded directly in equity								
<i>Contributions by and distributions to owners of the Company</i>								
Treasury shares purchased	22	-	(2,104,534,625)	-	-	-	-	-
Dividends to owners of the company	33	-	-	-	-	-	-	-
Total contributions by and distributions to owners of the Company		-	(2,104,534,625)	-	-	-	-	-
<i>Changes in ownership interests in subsidiary</i>								
Increase in investment holding in subsidiary	9	-	-	-	-	-	-	-
Total changes in ownership interests in subsidiary		-	-	-	-	-	-	-
<i>Changes in interests from business restructuring</i>								
Impact of business restructuring		-	-	-	(955,639)	-	-	-
Total changes in interests from business restructuring		-	-	-	(955,639)	-	-	-
Total transactions with owners, recorded directly in equity		-	(2,104,534,625)	-	(955,639)	-	-	-
Comprehensive income (loss) for the year								
Profit		-	-	-	-	-	-	-
Other comprehensive income (loss)		-	-	-	-	-	-	-
Total comprehensive income (loss) for the year		-	-	-	-	-	-	-
Balance at 31 December 2015		45,088,491,170	(2,104,534,625)	36,936,829,684	(1,658,035,683)	4,512,930,269	807,802,564	12,446,994,126

The accompanying notes are an integral part of these financial statements.

Consolidated financial statements

		Other components of equity				Total other components of equity	Equity attributable to owners of the Company	Former shareholder before business restructuring	Non- controlling interests	Total equity
Treasury shares reserve	Unappropriated	Currency translation changes (in Baht)	Cash flow hedges	Share of other comprehensive income of investments in joint ventures	Share of other comprehensive income (loss) of investments in associates					
-	125,880,676,906	627,160,920	8,455,917	110,064,966	358,074	746,039,877	224,762,684,552	1,513,579,251	2,173,739,821	228,450,003,624
2,104,534,625	(2,104,534,625)	-	-	-	-	-	(2,104,534,625)	-	-	(2,104,534,625)
-	(11,270,015,535)	-	-	-	-	-	(11,270,015,535)	-	(494,900,000)	(11,764,915,535)
2,104,534,625	(13,374,550,160)	-	-	-	-	-	(13,374,550,160)	-	(494,900,000)	(13,869,450,160)
-	(484,991,025)	4,535,803	-	-	-	4,535,803	(480,455,222)	-	854,814,902	374,359,680
-	(484,991,025)	4,535,803	-	-	-	4,535,803	(480,455,222)	-	854,814,902	374,359,680
-	-	-	-	-	-	-	(955,639)	(1,619,024,362)	-	(1,619,980,001)
-	-	-	-	-	-	-	(955,639)	(1,619,024,362)	-	(1,619,980,001)
2,104,534,625	(13,859,541,185)	4,535,803	-	-	-	4,535,803	(13,855,961,021)	(1,619,024,362)	359,914,902	(15,115,070,481)
-	20,502,497,777	-	-	-	-	-	20,502,497,777	105,156,553	173,197,859	20,780,852,189
-	(20,146,794)	(309,460,970)	41,165,191	471,215,203	(40,444,560)	162,474,864	142,328,070	288,558	6,359,280	148,975,908
-	20,482,350,983	(309,460,970)	41,165,191	471,215,203	(40,444,560)	162,474,864	20,644,825,847	105,445,111	179,557,139	20,929,828,097
2,104,534,625	132,503,486,704	322,235,753	49,621,108	581,280,169	(40,086,486)	913,050,544	231,551,549,378	-	2,713,211,862	234,264,761,240

STATEMENT OF CHANGES IN EQUITY

PTT Global Chemical Public Company Limited and its Subsidiaries

		Retained earnings						
		Issued and		Share	Surplus on	Difference arising	Loans	Projects
	Note	paid-up	Treasury shares	premium	treasury shares	from business	repayment	expansion
		share capital				combination under	reserve	reserve
						common control	Legal reserve	
Year ended 31 December 2016								
Balance at 1 January 2016		45,088,491,170	(2,104,534,625)	36,936,829,684	-	(1,658,035,683)	4,512,930,269	807,802,564
Transactions with owners, recorded directly in equity								
<i>Contributions by and distributions to owners of the Company</i>								
Treasury shares purchased	22	-	(330,081,400)	-	-	-	-	-
Treasury shares sold	22	-	25,071,736	-	7,490,764	-	-	-
Dividends to owners of the Company	33	-	-	-	-	-	-	-
Total contributions by and distributions to owners of the Company		-	(305,009,664)	-	7,490,764	-	-	-
<i>Changes in ownership interests in subsidiary</i>								
Increase in investment holding in subsidiary	9	-	-	-	-	-	-	-
Total changes in ownership interests in subsidiary		-	-	-	-	-	-	-
Total transactions with owners, recorded directly in equity		-	(305,009,664)	-	7,490,764	-	-	-
Comprehensive income (loss) for the year								
Profit		-	-	-	-	-	-	-
Other comprehensive income (loss)		-	-	-	-	-	-	-
Total comprehensive income (loss) for the year		-	-	-	-	-	-	-
Balance at 31 December 2016		45,088,491,170	(2,409,544,289)	36,936,829,684	7,490,764	(1,658,035,683)	4,512,930,269	807,802,564

The accompanying notes are an integral part of these financial statements.

Consolidated financial statements

		Other components of equity					Total other components of equity	Equity attributable to owners of the Company	Non- controlling interests	Total equity
treasury shares reserve	Unappropriated (in Baht)	Currency translation changes	Fair value changes in available-for-sale investments	Cash flow hedges	Share of other comprehensive income of investments in joint ventures	Share of other comprehensive income (loss) of investments in associates				
2,104,534,625	132,503,486,704	322,235,753	-	49,621,108	581,280,169	(40,086,486)	913,050,544	231,551,549,378	2,713,211,862	234,264,761,240
330,081,400	(330,081,400)	-	-	-	-	-	-	(330,081,400)	-	(330,081,400)
(25,071,736)	25,071,736	-	-	-	-	-	-	32,562,500	-	32,562,500
-	(10,481,172,597)	-	-	-	-	-	-	(10,481,172,597)	(392,000,000)	(10,873,172,597)
305,009,664	(10,786,182,261)	-	-	-	-	-	-	(10,778,691,497)	(392,000,000)	(11,170,691,497)
-	-	-	-	-	-	-	-	-	99,971,190	99,971,190
-	-	-	-	-	-	-	-	-	99,971,190	99,971,190
305,009,664	(10,786,182,261)	-	-	-	-	-	-	(10,778,691,497)	(292,028,810)	(11,070,720,307)
-	25,601,632,867	-	-	-	-	-	-	25,601,632,867	278,420,852	25,880,053,719
-	(98,769,421)	(240,959,240)	(20,398,751)	(86,362,650)	68,006,896	19,742,171	(259,971,574)	(358,740,995)	(46,594,684)	(405,335,679)
-	25,502,863,446	(240,959,240)	(20,398,751)	(86,362,650)	68,006,896	19,742,171	(259,971,574)	25,242,891,872	231,826,168	25,474,718,040
2,409,544,289	147,220,167,889	81,276,513	(20,398,751)	(36,741,542)	649,287,065	(20,344,315)	653,078,970	246,015,749,753	2,653,009,220	248,668,758,973

STATEMENT OF CHANGES IN EQUITY

PTT Global Chemical Public Company Limited and its Subsidiaries

	<i>Note</i>	Issued and paid-up share capital	Treasury shares	Share premium
Year ended 31 December 2015				
Balance at 1 January 2015		45,088,491,170	-	36,936,829,684
Transactions with owners, recorded directly in equity				
<i>Contributions by and distributions to owners of the Company</i>				
Treasury shares purchased	22	-	(2,104,534,625)	-
Dividends to owners of the Company	33	-	-	-
<i>Total contributions by and distributions to owners of the Company</i>		-	(2,104,534,625)	-
Comprehensive income for the year				
Profit		-	-	-
Other comprehensive income		-	-	-
Total comprehensive income for the year		-	-	-
Balance at 31 December 2015		45,088,491,170	(2,104,534,625)	36,936,829,684

The accompanying notes are an integral part of these financial statements.

Separate financial statements

Retained earnings					
	Loans	Projects	Treasury		
	repayment	expansion	shares		Total
Legal reserve	reserve	reserve	reserve	Unappropriated	equity
	(in Baht)				
4,512,930,269	807,802,564	12,446,994,126	-	115,991,360,599	215,784,408,412
-	-	-	2,104,534,625	(2,104,534,625)	(2,104,534,625)
-	-	-	-	(11,270,015,535)	(11,270,015,535)
-	-	-	2,104,534,625	(13,374,550,160)	(13,374,550,160)
-	-	-	-	23,199,317,853	23,199,317,853
-	-	-	-	-	-
-	-	-	-	23,199,317,853	23,199,317,853
4,512,930,269	807,802,564	12,446,994,126	2,104,534,625	125,816,128,292	225,609,176,105

STATEMENT OF CHANGES IN EQUITY

PTT Global Chemical Public Company Limited and its Subsidiaries

		Issued and paid-up share capital	Treasury shares	Share premium	Surplus on treasury shares	Difference arising from business combination under common control
	Note					
Year ended 31 December 2016						
Balance at 1 January 2016		45,088,491,170	(2,104,534,625)	36,936,829,684	-	-
Transactions with owners, recorded directly in equity						
<i>Contributions by and distributions to owners of the Company</i>						
Treasury shares purchased	22	-	(330,081,400)	-	-	-
Treasury shares sold	22	-	25,071,736	-	7,490,764	-
Dividends to owners of the Company	33	-	-	-	-	-
Total contributions by and distributions to owners of the Company		-	(305,009,664)	-	7,490,764	-
<i>Changes in interests from business restructuring</i>						
Impact of business restructuring	10	-	-	-	-	480,500,000
Total changes in interests from business restructuring		-	-	-	-	480,500,000
Total transactions with owners, recorded directly in equity		-	(305,009,664)	-	7,490,764	480,500,000
Comprehensive income (loss) for the year						
Profit		-	-	-	-	-
Other comprehensive income		-	-	-	-	-
Total comprehensive income (loss) for the year		-	-	-	-	-
Balance at 31 December 2016		45,088,491,170	(2,409,544,289)	36,936,829,684	7,490,764	480,500,000

The accompanying notes are an integral part of these financial statements.

Separate financial statements								
Retained earnings					Other components of equity		Total	
Legal reserve	Loans repayment reserve	Projects expansion reserve	Treasury shares reserve	Unappropriated	Fair value changes in available-for-sale investments	Cash flow hedges	other components of equity	Total equity
		(in Baht)						
4,512,930,269	807,802,564	12,446,994,126	2,104,534,625	125,816,128,292	-	-	-	225,609,176,105
-	-	-	330,081,400	(330,081,400)	-	-	-	(330,081,400)
-	-	-	(25,071,736)	25,071,736	-	-	-	32,562,500
-	-	-	-	(10,481,172,597)	-	-	-	(10,481,172,597)
-	-	-	305,009,664	(10,786,182,261)	-	-	-	(10,778,691,497)
-	-	-	-	-	-	-	-	480,500,000
-	-	-	-	-	-	-	-	480,500,000
-	-	-	305,009,664	(10,786,182,261)	-	-	-	(10,298,191,497)
-	-	-	-	23,820,706,141	-	-	-	23,820,706,141
-	-	-	-	-	(20,398,751)	(36,741,542)	(57,140,293)	(57,140,293)
-	-	-	-	23,820,706,141	(20,398,751)	(36,741,542)	(57,140,293)	23,763,565,848
4,512,930,269	807,802,564	12,446,994,126	2,409,544,289	138,850,652,172	(20,398,751)	(36,741,542)	(57,140,293)	239,074,550,456

STATEMENT OF CASH FLOWS

PTT Global Chemical Public Company Limited and its Subsidiaries

	Consolidated financial statements		Separate financial statements	
	For the year ended 31 December		For the year ended 31 December	
	2016	2015	2016	2015
	(in Baht)			
Cash flows from operating activities				
Profit for the year	25,880,053,719	20,780,852,189	23,820,706,141	23,199,317,853
<i>Adjustments for</i>				
Depreciation and amortisation	17,304,363,382	16,384,825,932	12,974,904,595	12,400,904,368
Investment income	(841,688,086)	(1,212,296,615)	(3,696,703,445)	(4,668,199,642)
Finance costs	4,220,049,355	5,177,793,631	3,528,810,613	4,616,400,343
Unrealised (gain) loss on derivative	(383,961,859)	176,302,754	(391,492,766)	179,048,857
Unrealised (gain) loss on exchange rate	(71,798,117)	3,788,698,967	(18,850,722)	3,763,296,152
(Reversal of) allowance for doubtful accounts and bad debts	4,202,068	77,896,128	-	(20,870)
Loss from written-off of assets	6,163,921	9,427,742	3,295,892	20,053,049
Reversal of allowance for decline in value and obsolescence of inventories	(289,077,284)	(2,902,358,278)	(167,427,386)	(2,845,156,448)
Gain from capital distribution of subsidiary	-	-	-	(42,302,503)
Allowance for impairment of assets	567,374,531	2,619,064,168	3,759,562,687	369,710,306
Loss on disposal of property, plant and equipment	538,507,991	224,334,435	503,405,701	166,996,619
Provision for employee benefit	292,737,353	285,587,782	214,493,012	205,766,997
Realised deferred pipeline income and equipment and other income	(7,660,751)	(8,535,925)	(9,024,478)	(10,040,842)
Share of loss of investments in joint ventures, net of income tax expense	488,585,352	14,482,835	-	-
Share of profit of investments in associates, net of income tax expense	(1,105,550,289)	(725,371,261)	-	-
Realised gain on dilution of investment	-	(432,350,388)	-	-
Income tax expense	3,025,092,480	1,984,085,210	2,783,719,580	2,011,732,717
	49,627,393,766	46,242,439,306	43,305,399,424	39,367,506,956

The accompanying notes are an integral part of these financial statements.

STATEMENT OF CASH FLOWS

PTT Global Chemical Public Company Limited and its Subsidiaries

	Consolidated financial statements		Separate financial statements	
	For the year ended 31 December		For the year ended 31 December	
	2016	2015	2016	2015
	<i>(in Baht)</i>			
<i>Cash flows from operating activities (continue)</i>				
<i>Changes in operating assets and liabilities</i>				
Trade accounts receivable	(8,912,734,133)	6,310,986,025	(7,747,460,329)	4,923,577,727
Other receivables	2,387,149,892	(1,078,736,516)	2,295,124,649	(879,417,172)
Inventories	(5,285,408,150)	4,518,806,856	(2,703,092,874)	5,323,158,031
Value-added tax receivable	(100,884,205)	(170,980,513)	-	(163,834,022)
Other current assets	(439,242,857)	454,060,255	(156,207,190)	627,162,251
Other non-current assets	(1,478,998,699)	(855,900,569)	(1,013,033,282)	(557,171,260)
Trade accounts payable	8,181,092,491	(2,047,744,344)	8,010,513,513	(2,736,823,777)
Other payables	2,564,710,623	(464,738,130)	2,643,575,273	2,760,416
Short-term provision	(210,667,389)	(9,608,916)	-	(9,608,916)
Other current liabilities	4,412,792	658,207,634	-	-
Employee benefit obligations	(149,893,586)	(101,773,673)	(64,415,209)	(60,445,659)
Long-term provision	80,132,805	-	-	-
Other non-current liabilities	82,009,061	(770,367,183)	15,498,480	86,235,587
Cash generated from operating activities	46,349,072,411	52,684,650,232	44,585,902,455	45,923,100,162
Income tax paid	(1,858,818,624)	(1,862,288,778)	(1,472,645,680)	(1,309,370,320)
Net cash from operating activities	44,490,253,787	50,822,361,454	43,113,256,775	44,613,729,842
<i>Cash flows from investing activities</i>				
Interest received	1,104,570,733	1,173,340,957	1,075,549,631	1,932,460,594
Dividends received	846,599,761	542,635,015	2,903,624,761	2,963,095,015
Purchase of property, plant and equipment	(18,105,561,374)	(17,745,812,935)	(11,280,550,748)	(9,407,871,513)
Sale of property, plant and equipment	15,199,917	64,028,179	14,061,672	44,702,298
Purchase of land leasehold right	-	(66,862)	-	-
Purchase of intangible assets	(384,367,976)	(1,233,178,337)	(336,114,780)	(886,656,205)
(Increase) decrease in current investments	23,643,437,551	(4,188,697,715)	23,464,635,197	(3,527,040,000)
Increase in debt securities available for sale	(7,213,907,470)	-	(7,213,907,470)	-
Increase in other investment	(500,000)	-	(500,000)	-
Proceeds from short-term loans to related parties	-	2,000,000,000	786,000,000	2,706,000,000
Proceeds from long-term loans to related parties	-	-	-	6,425,967,752
Increase in short-term loans to related parties	-	(2,000,000,000)	(850,000,000)	(2,560,000,000)
Increase in long-term loans to related parties	-	-	-	(563,866,230)
Cash inflow from capital pay back of subsidiaries	-	-	50,000,000	42,302,503
Cash outflow for investment in subsidiaries, joint ventures and associate	(16,650,075)	(956,980,000)	(3,534,927,386)	(12,522,695,271)
Cash inflow from disposal of investment in joint venture	-	-	690,500,000	-
Net cash from (used in) investing activities	(111,178,933)	(22,344,731,698)	5,768,370,877	(15,353,601,057)

The accompanying notes are an integral part of these financial statements.

STATEMENT OF CASH FLOWS

PTT Global Chemical Public Company Limited and its Subsidiaries

		Consolidated financial statements		Separate financial statements	
		For the year ended 31 December		For the year ended 31 December	
	Note	2016	2015	2016	2015
		(in Baht)			
Cash flows from financing activities					
Finance costs paid		(4,144,827,845)	(5,157,565,245)	(3,494,936,459)	(4,627,681,731)
Dividend paid		(10,873,172,597)	(11,764,915,535)	(10,481,172,597)	(11,270,015,535)
Finance lease payments		(192,415,921)	(209,649,874)	(120,566,621)	(135,122,897)
Proceeds from short-term loans from financial institutions		4,775,863,580	85,000,000	-	-
Proceeds from short-term loans from related parties		-	-	640,926,520	-
Proceeds from long-term loans from financial institutions		14,828,845,971	26,433,837,503	7,050,000,000	20,842,500,000
Proceeds from long-term loans from other parties		50,745,266	51,572,818	-	-
Repayment of short-term loans from financial institutions		(4,798,070,957)	(250,450,153)	-	-
Repayment of short-term loans from related parties		-	-	(7,250,967)	(1,134,502,413)
Repayment of long-term loans from financial institutions		(22,916,406,411)	(22,798,674,418)	(20,056,900,000)	(19,362,339,332)
Repayment of long-term loans from other parties		(51,819,156)	(43,546,974)	-	-
Proceeds from increase in investment in subsidiary					
from non-controlling interests		92,717,076	374,359,680	-	-
Repayment of debentures		(1,058,000,000)	(14,643,180,000)	(1,058,000,000)	(14,643,180,000)
Repayment of treasury shares		(330,081,400)	(2,104,534,625)	(330,081,400)	(2,104,534,625)
Proceeds from sale of treasury shares		32,562,500	-	32,562,500	-
Net cash used in financing activities		(24,584,059,894)	(30,027,746,823)	(27,825,419,024)	(32,434,876,533)
Net increase (decrease) in cash and cash equivalents		19,795,014,960	(1,550,117,067)	21,056,208,628	(3,174,747,748)
Cash and cash equivalents at 1 January		11,482,803,936	13,819,656,269	6,948,680,839	10,136,107,441
Effect of exchange rate changes on balances held in					
foreign currencies		(134,434,689)	(786,735,266)	(55,227,680)	(12,678,854)
Cash and cash equivalents at 31 December	5	31,143,384,207	11,482,803,936	27,949,661,787	6,948,680,839

The accompanying notes are an integral part of these financial statements.

PTT Global Chemical Public Company Limited and its Subsidiaries
Notes to the financial statements
For the year ended 31 December 2016

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PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

These notes form an integral part of the financial statements.

The financial statements issued for Thai statutory and regulatory reporting purposes are prepared in the Thai language. These English language financial statements have been prepared from the Thai language statutory financial statements and, were approved and authorised for issue by the Board of Directors on 14 February 2017.

1 General information

PTT Global Chemical Public Company Limited, “PTTGC”, arose from the amalgamation between PTT Chemical Public Company Limited, “PTTCH”, and PTT Aromatics and Refining Public Company Limited, “PTTAR”, which was registered on 19 October 2011 in accordance with the Public Company Limited Act, B.E. 2535 (1992).

The Board of Governors of the SET approved the listing of the Company on the day that the Registrar accepted the registration of the amalgamation on 19 October 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 48.89% of the Company’s issued and paid-up share capital.

PTT Global Chemical Public Company Limited, 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

PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

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 Songkro-Rat Road, Tambon Map Ta Phut, Amphoe Mueang Rayong, Rayong, Thailand
Branch 10 (PTTGC 10 Branch)	: 555/1, Energy Complex, Building A, 3rd 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

The principal businesses of the Company are production and distribution of ethylene, propylene polyethylene and biochemical products in which by-products are mixed C4, cracker bottom and tail gas, refining and provision of integrated petroleum products, and production and distribution of aromatics products with plans to proceed with the production of aromatic products. 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.

Details of the Company's subsidiaries as at 31 December 2016 and 2015 were as follows:

Name of the entity	Type of business	Country of incorporation	Ownership interest (%)	
			2016	2015
<i>Direct subsidiaries</i>				
Global Green Chemicals Plc. (Formerly Thai Oleochemicals Co., Ltd.)	Manufacturing and distributing biochemical products	Thailand	100	100
Solution Creation Co., Ltd.	Manufacturing and distributing health and nutrition products	Thailand	100	100
TOC Glycol Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
Thai Tank Terminal Limited	Service for the storage and handling of liquid chemicals, oil and gas	Thailand	51	51
Thai Styrenics Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
Bangkok Polyethylene Plc. (In process of liquidation)	Manufacturing and distributing petrochemical products	Thailand	100	100

PTT Global Chemical Public Company Limited and its Subsidiaries

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Name of the entity	Type of business	Country of incorporation	Ownership interest (%)	
			2016	2015
Direct subsidiaries (continue)				
Bio Spectrum Co., Ltd. (In process of liquidation)	Manufacturing and distributing biochemical products	Thailand	100	100
PTT Phenol Co., Ltd.	Manufacturing and distributing petrochemical products	Thailand	100	100
PTT Maintenance and Engineering Co., Ltd.	Factory maintenance and engineering services	Thailand	60	60
Auria BioChemicals Co., Ltd. (54% Direct interest and 46% Indirect interest)	Research and development of bio-based chemicals	Thailand	100	100
NPC Safety and Environmental Service Co., Ltd.	Safety and environmental services	Thailand	100	100
PTT Chemical International Pte. Ltd.	Holding and operating international business	Singapore	100	100
PTTGC America Corporation	Holding and operating international business	United States of America	100	100
Indirect subsidiaries				
Thai Fatty Alcohols Co., Ltd.	Manufacturing and distributing biochemical products	Thailand	100	100
PTT Chemical International (Asia Pacific ROH) Ltd. (In process of liquidation)	Services rendering to the Group	Thailand	100	100
NPC S&E Security Guard Co., Ltd.	Safety services	Thailand	100	-
Myriant Corporation	Research and development of bio-based chemicals	United States of America	100	100
PTTGC International (USA) Inc.	Holding and operating international business	United States of America	100	100
PTTGC International (Netherlands) B.V.	Holding and operating international business	Netherlands	100	100
PTTGC America LLC	Operating petrochemical business	United States of America	100	100
Vencorex Holding	Manufacturing and distributing chemical specialties	France	85	85

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2 Basis of preparation of the financial statements

(a) Statement of compliance

The financial statements are prepared in accordance with Thai Financial Reporting Standards (TFRS); guidelines promulgated by the Federation of Accounting Professions (“FAP”); and applicable rules and regulations of the Thai Securities and Exchange Commission.

The FAP has issued new and revised TFRS effective for annual accounting periods beginning on or after 1 January 2016. The application of these new and revised TFRS has resulted in changes in certain of the Group’s/Company’s accounting policies. The changes have no material effect on the financial statements.

In addition to the above new and revised TFRS, the FAP has issued a number of other new and revised TFRS which are effective for annual financial periods beginning on or after 1 January 2017 and have not been adopted in the preparation of these financial statements. These new and revised TFRS that are relevant to the Group’s/ Company’s operations are disclosed in note 38.

(b) Basis of measurement

The financial statements have been prepared on the historical cost basis, except as described in accounting policy.

(c) Functional and presentation currency

The financial statements are presented in Thai Baht which is the Company’s functional currency. All financial information presented in Thai Baht has been rounded in notes to the financial statements to the nearest million unless otherwise stated.

(d) Use of judgements and estimates

The preparation of financial statements in conformity with TFRS requires management to make judgements, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised prospectively.

Information about assumptions and estimation uncertainties is included in the following notes:

Notes 9, 10, 12, 14 and 15	Impairment test: key assumptions underlying recoverable amounts
Note 20	Measurement of defined benefit obligations: key actuarial assumptions

Measurement of fair values

A number of the Group’s/Company’s accounting policies and disclosures require the measurement of fair values for financial assets and liabilities.

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Fair value hierarchy

These fair value measurements for financial assets and liabilities are categorised into 3 levels in the fair value hierarchy based on the inputs to valuation techniques used as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities that the Group 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 (i.e. as prices) or indirectly (i.e. derived from prices).
- Level 3: unobservable inputs and assumptions for fair value measurement for the assets or liabilities.

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 the lowest level input that is significant to the entire measurement. The Group/Company recognises transfers between levels of the fair value hierarchy at the end of the reporting period during which the change has occurred.

Further information about the assumptions made in measuring fair values is included in note 34: Financial instruments.

3 Significant accounting policies

The accounting policies set out below have been applied consistently to all periods presented in these financial statements.

(a) Basis of consolidation

The consolidated financial statements relate to the Company and its subsidiaries (together referred to as the “Group”) and the Group’s interests in joint ventures and associates.

Business combinations

The Group/Company applies the acquisition method for all business combinations when control is transferred to the Group/Company other than those with entities under common control.

The Group/Company 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.

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Transaction costs that the Group/Company 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 recognized, to reflect new information obtained about facts and circumstances that existed at the acquisition date that, if known, would have affected the amounts recognized at that date.

Acquisitions from entities under common control

Business combinations of entities or businesses under common control are accounted for using a method similar to the pooling of interest method and in accordance with the Guideline issued in 2009 by the FAP.

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.

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Transactions eliminated on consolidation

Intra-group balances and transactions and any unrealised income or expenses arising from intra-group transactions are eliminated in preparing 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.

(b) 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 rates 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 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 reporting date.

The revenues and expenses of foreign operations are translated to Thai Baht at rates approximating the exchange rates at the dates of the transactions.

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.

(c) Derivative financial instruments

Derivative financial instruments are used to manage exposure to foreign exchange, interest rate arising from operating and financing activities. Derivative financial instruments are not used for trading purposes. However, derivatives that do not qualify for hedge accounting 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.

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The fair value of forward exchange contracts is based on their listed market price as the reporting date, if available. If a 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.

(d) Hedging accounting

Cash flow hedges accounting of the non-financial assets or non-financial liabilities

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 financial instrument 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.

(e) Cash and cash equivalents

Cash and cash equivalents comprise cash balances, call deposits and highly liquid current investments.

(f) Trade and other receivables

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.

(g) Inventories

Inventories are stated at the lower of cost and 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.

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(h) Investments

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. Investments in joint ventures and associates in the consolidated financial statements are accounted for using the equity method.

Investments in other debt securities

Debt securities that the Group/Company 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.

Marketable debt securities, other than those securities held for trading or intended to be held to maturity, are classified as available-for-sale investments. Available-for-sale investments 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.

The fair value of financial instruments classified as available-for-sale is determined as the quoted bid price at the reporting date.

Investments in other equity securities

Equity securities which are not marketable are stated at cost less any impairment losses.

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.

If the Group/Company disposes of part of its holding of a particular investment, the deemed cost of the part sold is determined using the weighted average method.

(i) Property, plant and equipment

Recognition and measurement

Owned assets

Property, plant and equipment are stated at cost less accumulated depreciation and 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

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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.

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 net within other income and other expense in profit or loss.

Leased assets

Leases in terms of which the Group/Company 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.

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/Company, 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 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 property, plant and equipment. The estimated useful lives are as follows:

Leasehold improvement	5-30 years
Plant, machinery, equipment and factory tools	5-40 years
Buildings and buildings improvement	5-30 years
Furniture, fixtures and office equipment	3-10 years
Vehicles	5-25 years

No depreciation is provided on freehold land or assets under construction.

Depreciation methods, useful lives and residual values are reviewed at each financial year-end and adjusted if appropriate.

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(j) 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/Company 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, or other amount substituted for cost, 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 for the current and comparative periods are as follows:

Right to use pipe rack	6-15 years
Right to use Jetty	8-16 years
Right to use - others	10-15 years
Production licence fees	10-30 years
Computer software	3-20 years
Customer contracts and the related customer relationships	5 years

Amortisation methods, useful lives and residual values are reviewed at each financial year-end and adjusted if appropriate.

(k) Impairment

The carrying amounts of the Group's/Company'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.

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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.

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.

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 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.

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.

(l) Interest-bearing liabilities

Interest-bearing liabilities are recognised initially at fair value less attributable transaction charges. Subsequent to initial recognition, interest-bearing liabilities are stated at amortised cost with any difference between cost and redemption value being recognised in profit or loss over the period of the borrowings on an effective interest basis.

(m) Trade and other payables

Trade and other payables are stated at cost.

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(n) Employee benefits

Defined contribution plans

Obligations for contributions to defined contribution plans are expensed as the related service is provided.

Defined benefit plans

The Group's/Company'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 net defined benefit liability, actuarial gain or loss are recognised immediately in OCI. The Group/Company determines the interest expense on the net 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. Net 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/Company recognises gains and losses on the settlement of a defined benefit plan when the settlement occurs.

Other long-term employee benefits

The Group's/Company'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/Company can no longer withdraw the offer of those benefits and when the Group/Company 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/Company 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.

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(o) Provisions

A provision is recognised if, as a result of a past event, the Group/Company 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.

(p) Repurchase of share capital (treasury shares)

When share capital recognised as equity is repurchased, the amount of consideration paid, including directly attributable costs, is classified as treasury shares and recognised as a deduction from equity. An equal amount is appropriated from retained earnings and taken to a reserve for treasury shares within equity. When treasury shares are sold, the amount received is recognised as an increase in equity by crediting the cost of the treasury shares sold, calculated using the weighted average method, to the treasury shares account and transferring the equivalent amount back from reserve for treasury shares to retained earnings. Surpluses on the sale of treasury shares are taken directly to a separate category within equity, 'Surplus on treasury shares'. Net deficits on sale or cancellation of treasury shares are debited to retained earnings after setting off against any remaining balance of surplus on treasury shares.

(q) Revenue

Revenue excludes value added taxes and is arrived at after deduction of trade discounts.

Sale of goods and services rendered

Revenue is recognised in profit or loss when the significant risks and rewards of ownership have been transferred to the buyer. No revenue is recognised if there is continuing management involvement with the goods or there are significant uncertainties regarding recovery of the consideration due, associated costs or the probable return of goods. Service income is recognised as services are provided.

Investments

Revenue from investments comprises dividend and interest income from investments and bank deposits.

Dividend income

Dividend income is recognised in profit or loss on the date the Group's/Company's right to receive payments is established.

Interest income

Interest income is recognised in profit or loss as it accrues.

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(r) 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, fair value losses on financial assets at fair value through profit or loss, impairment losses recognised on financial assets (other than trade receivables), and losses on hedging instruments that are recognised in profit or loss.

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.

(s) Lease payments

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.

(t) 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 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/Company 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/Company takes into account the impact of uncertain tax positions and whether additional taxes and interest may be due. The Group/Company 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/Company 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.

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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.

(u) *Earnings per share*

The Group/Company presents basic earnings per share (EPS) data for its ordinary shares. Basic EPS is calculated by dividing the profit or loss attributable to ordinary shareholders of the Company by the weighted average number of ordinary shares outstanding during the year, adjusted for treasury shares.

(v) *Segment reporting*

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.

4 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/Company 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/Company or;
- The Group/Company 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.

Relationships with related parties were as follows:

Name of entities	Country of incorporation/ nationality	Nature of relationships
PTT Plc.	Thailand	Parent Company, some common directors and management and the Company's director as a management
Global Green Chemicals Plc. (Formerly Thai Oleochemicals Co., Ltd.)	Thailand	Subsidiary, 100% shareholding , some common directors and the Company's management as a director
Solution Creation Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as a director
TOC Glycol Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as a director

PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

Name of entities	Country of incorporation/ nationality	Nature of relationships
Thai Tank Terminal Limited	Thailand	Subsidiary, 51% shareholding, and the Company's management as a director
Thai Styrenics Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as a director
Bangkok Polyethylene Plc. (In process of liquidation)	Thailand	Subsidiary, 100% shareholding
Bio Spectrum Co., Ltd. (In process of liquidation)	Thailand	Subsidiary, 100% shareholding
PTT Phenol Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as a director
PTT Maintenance and Engineering Co., Ltd.	Thailand	Subsidiary, 60% shareholding and the Company's management as a director
Auria BioChemicals Co., Ltd.	Thailand	Subsidiary, 54% shareholding by the Company and 46% shareholding by subsidiary of the Company's subsidiary
NPC Safety and Environmental Service Co., Ltd.	Thailand	Subsidiary, 100% shareholding and the Company's management as a director
PTT Chemical International Pte. Ltd.	Singapore	Subsidiary, 100% shareholding, some common directors and the Company's management as a director
PTTGC America Corporation	United States of America	Subsidiary, 100% shareholding, some common management and the Company's management as a director
PTTGC America LLC	United States of America	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's subsidiary, and the Company's management as a director
Thai Fatty Alcohols Co., Ltd.	Thailand	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's Subsidiary
PTT Chemical International (Asia Pacific ROH) Ltd. (In process of liquidation)	Thailand	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's subsidiary, some common directors and the Company's management as a director
NPC S&E Security Guard Co., Ltd.	Thailand	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's Subsidiary

PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

Name of entities	Country of incorporation/ nationality	Nature of relationships
Vencorex (Thailand) Co., Ltd.	Thailand	Subsidiary of subsidiary of subsidiary of the Company's subsidiary, 100% shareholding by subsidiary of subsidiary of the Company's subsidiary
Myriant Corporation	United States of America	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's subsidiary, some common directors and the Company's management as a director
PTTGC International (Netherlands) B.V.	Netherlands	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's subsidiary, some common directors and the Company's management as a director
PTTGC International (USA) Inc.	United States of America	Subsidiary of the Company's subsidiary, 100% shareholding by the Company's subsidiary, some common directors and the Company's management as a director
Vencorex France S.A.S.	France	Subsidiary of subsidiary of subsidiary of the Company's subsidiary, 100% shareholding by subsidiary of subsidiary of the Company's subsidiary
Vencorex Holding	France	Subsidiary of subsidiary of the Company's subsidiary, 85% shareholding by subsidiary of the Company's subsidiary, some common directors and the Company's management as a director
Thai Ethoxylate Co., Ltd.	Thailand	Joint venture of the Company's subsidiary, 50% shareholding by the Company's subsidiary
PTT Polymer Marketing Co., Ltd.	Thailand	Joint venture, 49% shareholding by the Company, 1% shareholding by the Company's subsidiary and shareholding by Parent Company, some common directors and the Company's management as a director
PTT Polymer Logistics Co., Ltd.	Thailand	Joint venture, 49% shareholding by the Company, 1% shareholding by the Company's subsidiary and shareholding by Parent Company

PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

Name of entities	Country of incorporation/ nationality	Nature of relationships
Emery Oleochemicals (M) Sdn. Bhd.	Malaysia	Joint venture of the Company's subsidiary, 50% shareholding by the Company's subsidiary, some common directors and the Company's management as a director
Emery Specialty Chemicals Sdn. Bhd.	Malaysia	Joint venture of the Company's subsidiary, 50% shareholding by the Company's subsidiary, some common directors and the Company's management as a director
Emeryoleo Specialties (M) Sdn. Bhd.	Malaysia	Subsidiary of joint venture of the Company's subsidiary, 100% shareholding by joint venture of the Company's subsidiary
NatureWorks LLC	United States of America	Joint venture of subsidiary of the Company's subsidiary, 50% shareholding by subsidiary of the Company's subsidiary, some common directors and the Company's management as a director
NatureWorks Asia Pacific Co., Ltd.	Thailand	Subsidiary of joint venture of subsidiary of the Company's subsidiary, 100% shareholding by joint venture of subsidiary of the Company's subsidiary
Global Power Synergy Plc.	Thailand	Associate, 23% shareholding, shareholding by Parent Company, some common directors and the Company's management as a director
PTT Energy Solutions Co., Ltd.	Thailand	Associate, 20% shareholding, shareholding by Parent Company and the Company's management as a director
PTT ICT Solutions Co., Ltd.	Thailand	Associate, 40% shareholding, shareholding by Parent Company
Vinythai Plc.	Thailand	Associate, 25% shareholding, some common directors and the Company's management as a director
Eastern Fluid Transport Co., Ltd.	Thailand	Associate, 15% shareholding, 15% shareholding by the Company's subsidiary
Thai Eastern Topseeds Oil Co., Ltd.	Thailand	Associate of the Company's subsidiary, 30% shareholding by the Company's subsidiary
PT. Indo Thai Trading	Indonesia	Associate of the Company's subsidiary, 49% shareholding by the Company's subsidiary

PTT Global Chemical Public Company Limited and its Subsidiaries

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For the year ended 31 December 2016

Name of entities	Country of incorporation/ nationality	Nature of relationships
Thai Petroleum Pipeline Co., Ltd.	Thailand	Shareholding by Parent Company
Dhipaya Insurance Plc.	Thailand	Shareholding by Parent Company
Thai Paraxylene Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
Thai Oil Plc.	Thailand	Shareholding by Parent Company and some common directors
The Bangchak Petroleum Plc.	Thailand	Shareholding by the Parent Company until 8 May 2015
TOP Solvent Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
TOP Solvent (Vietnam) LLC.	Vietnam	Subsidiary of the Company's related party that has shareholding by Parent Company
Business Services Alliance Co., Ltd.	Thailand	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	Shareholding by Parent Company
PTT Retail Services Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
PTT Retail Management Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company and some common directors
PTTEP Siam Limited	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
PTTEP International Limited	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
PTT Exploration and Production Plc.	Thailand	Shareholding by Parent Company
PTT Tank Terminal Limited	Thailand	Shareholding by Parent Company
PTT Asahi Chemical Co., Ltd.	Thailand	Shareholding by Parent Company
PTT Energy Resources Co., Ltd.	Thailand	Shareholding by Parent Company
PTT MCC Biochem Co., Ltd.	Thailand	Shareholding by Parent Company

PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

Name of entities	Country of incorporation/ nationality	Nature of relationships
PTT LNG Co., Ltd.	Thailand	Shareholding by Parent Company
Rayong Olefins Co., Ltd.	Thailand	Shareholding by Parent Company
Rak Phasak Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
LABIX Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
Sak Chaisidhi Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
Sport Services Alliance Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company and the Company's management as a director
Star Petroleum Refining Plc.	Thailand	Shareholding by Parent Company until 3 December 2015
Community Partnership Association	Thailand	Some common directors
Amata Natural Gas Distribution Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
HMC Polymers Co., Ltd.	Thailand	Shareholding by Parent Company and the Company's management as a director
Energy Complex Co., Ltd.	Thailand	Shareholding by Parent Company
UBE Chemicals (Asia) Plc.	Thailand	Associate of the Company's related party that has shareholding by Parent Company
Advanced Biochemical (Thailand) Co., Ltd.	Thailand	Subsidiary of the Company's associates
IRPC Plc.	Thailand	Shareholding by Parent Company
IRPC Polyol Co., Ltd.	Thailand	Subsidiary of the Company's related party that has shareholding by Parent Company
Carigali-PTTEPI Operating Company Sdn. Bhd.	Malaysia	Joint operation of subsidiary of the Company's related party that has shareholding by Parent Company
PTT Green Energy Pte. Ltd.	Singapore	Shareholding by Parent Company

PTT Global Chemical Public Company Limited and its Subsidiaries
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For the year ended 31 December 2016

Name of entities	Country of incorporation/ nationality	Nature of relationships
PTT International Trading DMCC	United Arab Emirates	Subsidiary of the Company's related party that has shareholding by Parent Company
PTT International Trading Pte. Ltd.	Singapore	Shareholding by Parent Company
Alliance Petrochemical Investment (Singapore) Pte. Ltd.	Singapore	The Company's management as a director

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

Significant transactions for the year ended 31 December 2016 and 2015 with related parties were as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Parent Company				
Sales of goods or rendering of services	115,114	124,317	109,243	118,465
Purchases of goods or receiving of services	191,566	235,823	191,256	235,489
Other income	85	89	69	75
Other expense	87	112	75	95
Subsidiaries				
Sales of goods or rendering of services	-	-	20,999	16,330
Purchases of goods or receiving of services	-	-	2,345	2,073
Interest income	-	-	25	563
Dividend income	-	-	2,138	2,426
Other income	-	-	659	681
Interest expense	-	-	21	45
Other expense	-	-	1,110	853
Joint ventures				
Sales of goods or rendering of services	68,647	70,257	63,581	66,676
Purchases of goods or receiving of services	620	923	608	908
Dividend income	-	-	245	176
Other income	69	65	66	63
Other expense	758	217	641	97

PTT Global Chemical Public Company Limited and its Subsidiaries
Notes to the financial statements
For the year ended 31 December 2016

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Associates				
Sales of goods or rendering of services	5,298	6,346	5,191	6,231
Purchases of goods or receiving of services	8,500	7,926	4,215	4,367
Dividend income	2	-	507	360
Other income	61	67	61	67
Other expense	326	347	317	331
Other related parties				
Sales of goods or rendering of services	36,401	66,635	33,345	63,834
Purchases of goods or receiving of services	11,629	26,559	11,033	25,815
Dividend income	14	-	14	-
Other income	1,184	835	1,177	834
Other expense	328	332	293	304
Key management personnel				
Key management personnel compensation				
Short-term benefits	307	366	168	236
Post-employment benefits and other long-term benefits	5	5	5	4
Total key management personnel compensation	312	371	173	240

Balances as at 31 December with related parties were as follows:

Trade accounts receivable - related parties

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Parent Company				
PTT Plc.	12,161	6,095	11,631	5,380
Subsidiaries				
Global Green Chemicals Plc.	-	-	10	4
TOC Glycol Co., Ltd.	-	-	866	864
Thai Tank Terminal Limited	-	-	5	6
Thai Styrenics Co., Ltd.	-	-	5	2
PTT Phenol Co., Ltd.	-	-	1,588	705
Joint Ventures				
Thai Ethoxylate Co., Ltd.	603	242	-	-
PTT Polymer Marketing Co., Ltd.	7,490	6,252	7,337	6,101
PTT Polymer Logistic Co., Ltd.	70	3	-	-
Associates				
Global Power Synergy Plc.	10	11	-	-
PTT Energy Solutions Co., Ltd.	-	2	-	-
Vinythai Plc.	546	678	544	676

PTT Global Chemical Public Company Limited and its Subsidiaries
Notes to the financial statements
For the year ended 31 December 2016

Trade accounts receivable - related parties (continue)

	Consolidated		Separate	
	financial statements		financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Other related parties				
TOP Solvent Co., Ltd.	12	9	1	1
Thai Oil Plc.	50	47	-	-
Thai Paraxylene Plc.	-	140	-	140
PTTEP Siam Limited	6	5	-	-
PTT Exploration and Production Plc.	2	2	-	-
PTT Tank Terminal Co., Ltd.	50	56	4	4
PTT Asahi Chemical Co., Ltd.	146	72	-	-
PTT MCC Biochem Co.,Ltd.	-	7	-	-
Advanced Biochemical (Thailand) Co., Ltd.	11	11	-	-
PTT LNG Co.,Ltd.	1	2	-	-
Rayong Olefins Co., Ltd.	68	-	68	-
LABIX Co., Ltd.	2	-	-	-
Sak Chaisidhi Co., Ltd.	150	-	150	-
Amata Natural Gas Distribution Co., Ltd.	-	5	-	-
HMC Polymers Co., Ltd.	503	513	486	507
Energy Complex Co., Ltd.	11	-	-	-
IRPC Plc.	1,517	1,672	1,481	1,668
IRPC Polyol Co., Ltd.	10	6	-	-
PTT International Trading DMCC	322	-	322	-
PTT International Trading Pte. Ltd.	1,055	2,408	1,055	2,408
TOP Solvent (Vietnam) LLC.	15	4	-	-
Total	24,811	18,242	25,553	18,466
Less allowance for doubtful accounts	-	-	-	-
Net	24,811	18,242	25,553	18,466
Bad and doubtful debts expense for the year	-	-	-	-

Other receivables - related parties

	Consolidated		Separate	
	financial statements		financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Parent Company				
PTT Plc.	411	448	409	445
Subsidiaries				
Global Green Chemicals Plc.	-	-	33	19
Solution Creation Co., Ltd.	-	-	1	1
TOC Glycol Co., Ltd.	-	-	22	27
Thai Tank Terminal Limited	-	-	8	28
Thai Styrenics Co., Ltd.	-	-	7	1
PTT Phenol Co., Ltd.	-	-	16	15
PTT Maintenance and Engineering Co., Ltd.	-	-	18	28
Auria BioChemicals Co., Ltd.	-	-	-	2
NPC Safety and Environmental Service Co., Ltd.	-	-	10	12

PTT Global Chemical Public Company Limited and its Subsidiaries
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Other receivables - related parties (continue)

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Subsidiaries (continue)				
Thai Fatty Alcohols Co., Ltd.	-	-	2	1
PTT Chemical International (Asia Pacific ROH) Ltd.	-	-	-	3
Vencorex (Thailand) Co., Ltd.	-	-	14	12
PTTGC America Corporation	-	-	-	21
PTTGC America LLC	-	-	31	-
Vencorex France S.A.S.	-	-	2	2
Vencorex Holding	-	-	8	17
Joint Ventures				
Thai Ethoxylate Co., Ltd.	7	9	5	8
NatureWorks Asia Pacific Co., Ltd.	-	5	-	5
PTT Polymer Marketing Co., Ltd.	9	12	8	12
PTT Polymer Logistic Co., Ltd.	5	2	5	2
Emery Oleochemicals (M) Sdn. Bhd.	1	1	1	1
NatureWorks LLC	1	1	-	1
Associates				
Global Power Synergy Plc.	20	90	5	90
PTT Energy Solutions Co., Ltd.	1	26	1	26
PTT ICT Solutions Co., Ltd.	18	20	18	20
Vinythai Plc.	1	1	1	1
Eastern Fluid Transport Co., Ltd.	2	14	-	13
PT. Indo Thai Trading	-	1	-	1
Other related parties				
Dhipaya Insurance Plc.	1,425	1,273	1,338	1,163
PTT Asahi Chemical Co., Ltd.	1	-	1	-
IRPC Plc.	6	6	6	6
PTT International Trading Pte. Ltd.	47	-	47	-
Total	1,955	1,909	2,017	1,983
Less allowance for doubtful accounts	-	-	-	-
Net	1,955	1,909	2,017	1,983
Bad and doubtful debts expense for the year	-	-	-	-

PTT Global Chemical Public Company Limited and its Subsidiaries
Notes to the financial statements
For the year ended 31 December 2016

Loans to related parties

	Interest rate		Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015	2016	2015
	<i>(% per annum)</i>		<i>(in million Baht)</i>			
Subsidiaries						
Thai Styrenics Co., Ltd.	4.10 - 4.36	4.30 - 4.72	-	-	655	550
NPC Safety and Environmental Service Co., Ltd.	4.10 - 4.24	4.30 - 4.72	-	-	-	41
Total			-	-	655	591
<i>Less allowance for doubtful accounts</i>			-	-	-	-
Net			-	-	655	591
Bad and doubtful debts expense for the year			-	-	-	-

Movements during the year ended 31 December 2016 and 2015 of loans to related parties were as follows:

Loans to related parties

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Short-term loans				
Parent Company				
At 1 January	-	-	-	-
Increase	-	2,000	-	2,000
Decrease	-	(2,000)	-	(2,000)
At 31 December	-	-	-	-
Subsidiaries				
At 1 January	-	-	591	737
Increase	-	-	850	560
Decrease	-	-	(786)	(706)
At 31 December	-	-	655	591
Total				
At 1 January	-	-	591	737
Increase	-	2,000	850	2,560
Decrease	-	(2,000)	(786)	(2,706)
At 31 December	-	-	655	591

PTT Global Chemical Public Company Limited and its Subsidiaries
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Loans to related parties (continue)

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Long-term loans				
Subsidiaries				
At 1 January	-	-	-	6,001
Increase	-	-	-	564
Decrease	-	-	-	(6,426)
Effect of change in exchange rates	-	-	-	(139)
	-	-	-	-
<i>Less current portion due within one year</i>	-	-	-	-
At 31 December	-	-	-	-

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Investments in subsidiaries (Note 9)	-	-	54,343	54,706
Investments in joint ventures (Note 10)	10,298	11,110	943	1,153
Investments in associates (Note 10)	13,026	12,393	9,323	9,323

Trade accounts payable - related parties

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Parent Company				
PTT Plc.	20,610	13,363	20,576	13,361
Subsidiaries				
Global Green Chemicals Plc.	-	-	59	44
PTT Phenol Co., Ltd.	-	-	10	3
Associates				
Global Power Synergy Plc.	752	844	353	494
Vinythai Plc.	10	9	9	9
Other related parties				
TOP Solvent Co., Ltd.	7	9	5	9
Business Services Alliance Co.,Ltd.	12	21	-	-
PTT Asahi Chemical Co., Ltd.	10	17	-	-
Rayong Olefins Co., Ltd.	-	3	-	3
HMC Polymers Co., Ltd.	33	37	33	37
IRPC Plc.	1,421	1,031	1,397	1,024
Total	22,855	15,334	22,442	14,984

PTT Global Chemical Public Company Limited and its Subsidiaries
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Other payables - related parties

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Parent Company				
PTT Plc.	971	46	964	45
Subsidiaries				
Global Green Chemicals Plc.	-	-	6	19
TOC Glycol Co., Ltd.	-	-	26	24
Thai Tank Terminal Limited	-	-	67	46
Thai Styrenics Co., Ltd.	-	-	11	5
PTT Phenol Co., Ltd.	-	-	54	41
PTT Maintenance and Engineering Co., Ltd.	-	-	149	169
NPC Safety and Environmental Service Co., Ltd.	-	-	13	23
PTT Chemical International (Asia Pacific ROH) Ltd.	-	-	-	24
NPC S&E Security Guard Co., Ltd.	-	-	7	-
Vencorex (Thailand) Co., Ltd.	-	-	1	1
Vencorex France S.A.S.	-	-	7	15
Joint Ventures				
Thai Ethoxylate Co., Ltd.	2	-	-	-
PTT Polymer Marketing Co., Ltd.	1	1	1	1
PTT Polymer Logistic Co., Ltd.	298	178	242	160
Emery Oleochemicals (M) Sdn. Bhd.	4	1	4	1
Associates				
Global Power Synergy Plc.	1	2	1	1
PTT Energy Solutions Co., Ltd.	42	27	42	27
PTT ICT Solutions Co., Ltd.	42	46	41	42
Vinythai Plc.	5	1	5	1
Eastern Fluid Transport Co., Ltd.	-	14	-	14
PT. Indo Thai Trading	1	-	1	-
Other related parties				
Dhipaya Insurance Plc.	19	40	15	34
TOP Solvent Co., Ltd.	-	2	-	-
Thai Oil Plc.	1	1	-	-
Business Services Alliance Co., Ltd.	64	58	61	51
HMC Polymers Co., Ltd.	1	-	-	-
Energy Complex Co., Ltd.	3	2	2	2
IRPC Plc.	1	1	1	1
PTT International Trading Pte. Ltd.	118	10	118	10
Total	1,574	430	1,839	757

PTT Global Chemical Public Company Limited and its Subsidiaries
Notes to the financial statements
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Payables to contractor - related parties

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Parent Company				
PTT Plc.	1	7	-	-
Subsidiaries				
PTT Maintenance and Engineering Co., Ltd.	-	-	391	593
NPC Safety and Environmental Service Co., Ltd.	-	-	-	1
Associates				
Global Power Synergy Plc.	18	-	-	-
PTT ICT Solutions Co., Ltd.	54	39	54	39
Other related parties				
Dhipaya Insurance Plc.	-	2	-	2
Business Services Alliance Co., Ltd.	4	15	4	9
Total	77	63	449	644

Short-term loans from related parties

	Interest rate		Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015	2016	2015
	<i>(% per annum)</i>		<i>(in million Baht)</i>			
Subsidiaries						
Solution Creation Co., Ltd.	1.24 - 1.86	1.82 - 2.79	-	-	8	15
TOC Glycol Co., Ltd.	1.24 - 1.86	1.82 - 2.79	-	-	1,469	865
NPC Safety and Environmental Service Co., Ltd.	1.24 - 1.55	-	-	-	37	-
Total			-	-	1,514	880

Movements during the year ended 31 December 2016 and 2015 of loans from related parties were as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Subsidiaries				
At 1 January	-	-	880	2,015
Increase	-	-	641	-
Decrease	-	-	(7)	(1,135)
At 31 December	-	-	1,514	880

PTT Global Chemical Public Company Limited and its Subsidiaries
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Significant agreements with related parties

As at 31 December 2016, the Group/Company has significant agreements with related parties 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 Ethane price and Ethylene price in the world market. These agreements are for the periods from 7 years to 15 years, commencing from the effective date specified in each agreement. One agreement that is expired in July 2017 is automatically renewable except for advance cancellation not less than 1 year through written notice by each party. Other three agreements will expire in August 2021, December 2021 and May 2022.

The Company has 3 Propylene sales and purchase agreements with 2 related parties. Selling prices are determined based on Polypropylene and Propylene prices in the world market. These agreements are for the periods from 2 years to 15 years, commencing from the effective date specified in each agreement and expiring in December 2018, December 2023 and December 2026.

By-Product Sales and Purchase Agreements

The Company has a Hydrogen sales and purchase agreement with a related party. The 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 March 2024.

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 March 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 period of 15 years and 20 years 9 months, commencing from the date as specified in each agreement and expiring in September 2022, June 2027 and September 2028.

The Company has 2 Utilities agreements covering electricity, steam and demineralised water with a related party. These agreements are for the periods from 10 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 various Utilities agreements for the industries covering electricity, steam, and water with a related party. These agreements are for the periods from 15 years to 20 years, commencing from the date as specified in each agreement and expiring from December 2021 to June 2031. These agreements can be renewed for the period of 5 years with the terms and conditions agreed by both parties.

The Company has a Product Transportation agreement with a related party. The agreement is for the period of 3 years, commencing from the date as specified in the agreement and expiring in December 2018. The agreement is automatically renewable for another period of 3 years, except for advance cancellation through written notice by each party, not exceeding a total period of 15 years.

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Feedstock and Fuel Gas Sales and Purchase Agreements

The Company has 3 LPG sales and purchase agreements with a parent company. The selling price is determined based on the Polypropylene price. The agreement is for the period from 8 years 7 months to 15 years, commencing from the date as specified in the agreement. Two agreements will expire in December 2020 and one agreement will expire in May 2021.

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 and expiring in December 2018. The agreement is renewable for the period of 4 years, by providing not less than 1 year advance written notice to the counterparty.

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 the agreement and Thailand Producer Price Index as classification of products by activity (CPA). These agreements are for the period of 10 years, commencing from the date as specified in each agreement and expiring in May 2018 and April 2021.

The Company and related parties have various Natural Gas sales and purchase agreements with a parent company. Selling price in an agreement is 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 March 2017 to June 2026.

The Company has a Natural Gas Liquid sales and purchase agreement with a parent company. The selling price is determined based on the standard price of Naphtha in the region. The agreement is for the period of 15 years, commencing from the date as specified in the agreement and expiring in May 2021. The agreement is renewable for the period of 5 years with the agreement of both parties.

The Company has 2 Ethane, Propane and LPG sales and purchase agreements with a parent company. Selling price in the agreement is determined based on the high density Polyethylene and Polypropylene price and another agreement is determined based on the high density Polyethylene price. These agreements have been extended and consequently will expire in December 2020.

The Company has an Ethane sales and purchase agreement with a parent company. The selling price is determined based on prices prevailing in the high density Polyethylene price in the world market. The agreement is for the period of 15 years, commencing from the date as specified in the agreement and expiring in January 2025. The agreement is renewable for 5 years, by providing not less than 1 year advance written notice to the counterparty.

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.

From 1 August 2012, the Company has entered into the adjustment of the pricing formula in the sales and purchase agreements of petrochemical natural gas feedstock with a parent company.

PTT Global Chemical Public Company Limited and its Subsidiaries
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Petroleum Product Offtake Agreement

The Company has a Petroleum Product sales and purchase agreement with a parent company and another company. 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. These agreements are for the period of 18 years, commencing from the date as specified in the agreement and expiring in February 2024. The agreement is automatically renewable 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, whereas a parent company 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% 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 renewable except for advance cancellation through written notice by each party.

Long-term Crude Oil and Other Raw materials Supply Agreements

The Company 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. These agreements are for the periods of 18 years and 20 years, will expire in December 2017 and February 2024. The agreements are automatically renewable except for advance cancellation through written notice by each party.

Crack Spread Swap Agreements

The Company has entered into crack spread swap agreements with a parent company to hedge the Company's oil refinery margin. Under the agreements the floating amount of the basket refinery margin, (calculated based on the Singapore price of refined petroleum products, 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 agreement, the Company shall make payment or receive of the crack spread difference according to terms and conditions stipulated in the agreements.

Crude Oil and Feedstock Time Spread Agreements

The Company has entered into crude oil and feedstock time spread agreements to mitigate price risk with a parent company, calculated based on the difference of the average price of crude oil and feedstock for the current month and the price of the following month. The Company shall make payment or receive of the difference according to terms and conditions stipulated in the agreements. As at 31 December 2016, the Company has oil volume under the agreement totaling 1,300,000 barrels.

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Notes to the financial statements
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Sales and Purchase Aromatics Product Agreements

The Company, a parent company, related parties and various other companies have entered into 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 15 years, commencing from the effective date as specified in each agreement. Two agreements will expire in December 2023 and December 2026. Other agreements are automatically renewable except for an advance cancellation period of 1-2 years through written notice by each party.

Polyethylene Sales and Purchase Agreements

The Company and a related party have 2 Polyethylene sales and purchase agreements with a related party. The Company agrees to sell all Polyethylene to a related party for distributing to the customers in the market. Under the agreement, the Polyethylene pricing structure is changed to link to the Polyethylene product price, which the Company sells to end customers, adjusted by the appropriate marketing expenses for fairness to both parties. 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.

Loan Agreements

The Company has unsecured short-term lending agreements for the period of 3 years through Liquidity Management System “LMS” with 3 related parties with the credit facility of Baht 1,000 million, Baht 80 million and Baht 20 million. These loans bear interest at the rate of the Company’s average cost of funds.

The Company has unsecured short-term borrowing agreements for the period of 3 years through Liquidity Management System “LMS” with 3 related parties with the credit facility of Baht 4,000 million, Baht 60 million and Baht 50 million. These loans bear interest at the rate of the Company’s average return on current investment minus 0.25% per annum.

The Company provides unsecured short-term loans to related party by receiving the promissory notes amounting to Baht 655 million. The loans bear interest at the rate of the lender’s average cost of funds. The promissory notes are for the period of 3 months and are renewable.

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 and lending credit facility of Baht 5,000 million and Baht 2,000 million, respectively. The agreement was expired on 19 December 2016 and has been extended for an additional period until 19 December 2017. 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 15 related parties for the provision of general services. All of these agreements are effective from the date as specified in the agreements and are automatically renewable except for 3 months advance cancellation through written notice by each party. The service charges will be agreed in the fourth quarter of each year.

PTT Global Chemical Public Company Limited and its Subsidiaries
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The Company has a Technical Services agreement with a related party. Under the agreement, the Company agreed to obtain certain technical advisory services. The agreement is for the period of 3 years 4 months and will expire in December 2019.

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 to 3 years 3 months, commencing from the date as specified in the agreement and expiring in December 2018.

The Company has 3 Services agreements to have the right to lay the pipelines for delivery of raw material and product on pipeline structure with a parent company. These agreements are for the period of 15 years from the agreement date and will expire in June 2025.

The Company has a Security Service and Fire Protection agreement with a related party. The agreement is to provide security and fire protection service to asset, employees and visitors in the location of the Company. The agreement is for the period of 3 years and will expire in December 2017.

The Company has 4 Warehouse Management agreements with a related party. The agreements are for the periods from 3 years to 21 years 3 months and will expire in December 2018 and December 2030.

The Company has a Tank Maintenance Service agreement with a related party. The agreement is for the period of 2 years 6 months and will expire in February 2018.

The Company has a Logistics Services agreement with a related party. The agreement is for the period of 4 years 7 months and will expire in December 2020.

The Company has entered into 2 Information and Communication Technology Service agreements with a related party. A related party will 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 5 years to 15 years, commencing from the date as specified in the agreement and expiring in December 2018 and December 2027.

Rental Agreements

The Company has Office Rental and Service agreement with a related party. The agreement is for the period of 2 years and will expire in September 2017 with rental and service rate and conditions as stipulated in the agreement.

The Company has entered into Land Lease agreement with a parent company to operate jetty and buffer tank farm services. The agreement is for the period of 22 years 6 months, commencing from the date signed in the agreement by both parties, with land lease rate and condition as specified in the agreement, and will expire in December 2037.

PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

5 Cash and cash equivalents

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Cash on hand	2	2	2	2
Cash (Private funds)	440	-	440	-
Cash at banks - current accounts	299	2,089	4	163
Cash at banks - savings accounts	5,530	3,145	4,786	1,972
Cash at banks - foreign accounts	868	963	697	809
Highly liquid current investments	24,004	5,284	22,021	4,003
Total	31,143	11,483	27,950	6,949

The currency denomination of cash and cash equivalents as at 31 December was as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Thai Baht (THB)	23,608	8,383	21,009	6,137
United States Dollars (USD)	7,452	1,778	6,940	810
Euro (EUR)	67	1,288	-	-
Singapore Dollar (SGD)	11	15	-	-
Brazilian Real (BRL)	3	9	-	-
Chinese Yuan (CNY)	2	10	1	2
Total	31,143	11,483	27,950	6,949

6 Trade accounts receivable

		Consolidated financial statements		Separate financial statements	
	Note	2016	2015	2016	2015
		<i>(in million Baht)</i>			
Related parties	4	24,811	18,242	25,553	18,466
Other parties		16,254	13,992	8,785	8,119
Total		41,065	32,234	34,338	26,585
Less allowance for doubtful accounts		(82)	(86)	(19)	(19)
Net		40,983	32,148	34,319	26,566
Bad and doubtful debts expense for the year		6	15	-	-

PTT Global Chemical Public Company Limited and its Subsidiaries
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For the year ended 31 December 2016

Aging analyses for trade accounts receivable were as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Related parties				
Within credit terms	24,797	18,229	25,553	18,466
Overdue:				
Less than 3 months	14	11	-	-
3 - 6 months	-	2	-	-
6 - 12 months	-	-	-	-
Over 12 months	-	-	-	-
	<u>24,811</u>	<u>18,242</u>	<u>25,553</u>	<u>18,466</u>
Less allowance for doubtful accounts	-	-	-	-
Net	<u>24,811</u>	<u>18,242</u>	<u>25,553</u>	<u>18,466</u>
Other parties				
Within credit terms	16,055	13,784	8,759	8,098
Overdue:				
Less than 3 months	107	110	7	2
3 - 6 months	3	5	-	-
6 - 12 months	5	-	-	-
Over 12 months	84	93	19	19
	<u>16,254</u>	<u>13,992</u>	<u>8,785</u>	<u>8,119</u>
Less allowance for doubtful accounts	(82)	(86)	(19)	(19)
Net	<u>16,172</u>	<u>13,906</u>	<u>8,766</u>	<u>8,100</u>
Total	<u>40,983</u>	<u>32,148</u>	<u>34,319</u>	<u>26,566</u>

The normal credit term granted by the Group/Company ranges from 14 days to 90 days.

The currency denomination of trade accounts receivable as at 31 December was as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Thai Baht (THB)	29,482	25,018	27,260	22,961
United States Dollars (USD)	9,962	5,380	7,059	3,605
Euro (EUR)	1,433	1,604	-	-
Others	106	146	-	-
Total	<u>40,983</u>	<u>32,148</u>	<u>34,319</u>	<u>26,566</u>

PTT Global Chemical Public Company Limited and its Subsidiaries
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7 Other receivables

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Prepaid expenses	1,539	1,554	1,059	1,156
Receivable from oil hedging contracts	339	2,980	339	2,980
Accrued income	319	582	406	605
Other receivables	1,076	675	1,067	708
Prepaid income tax expense	5	3	-	-
Receivable from Revenue Department	110	146	-	-
Others	163	186	103	93
Total	3,551	6,126	2,974	5,542

8 Inventories

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Finished goods	13,386	11,566	8,161	7,623
Work in progress	1,920	1,809	1,125	1,074
Raw materials	6,447	6,766	5,011	6,115
Factory supplies and spare parts	8,909	8,728	7,420	7,276
Goods in transit	5,279	1,674	4,574	1,522
	35,941	30,543	26,291	23,610
Less allowance for decline in value	(21)	(467)	-	(168)
allowance for obsolescence	(166)	(146)	(31)	(49)
Net	35,754	29,930	26,260	23,393

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Inventories recognised as an expense in 'cost of sales of goods':				
- Cost	305,147	367,136	270,257	331,026
- Write-down to net realisable value	-	256	-	167
- Reversal of write-down to net realisable value	(289)	(3,158)	(168)	(3,012)
Net	304,858	364,234	270,089	328,181

As at 31 December 2016 and 2015, the Company's inventories included petroleum legal reserve of 294 million liters with approximated value of Baht 3,424 million and 306 million liters with approximated value of Baht 2,834 million, respectively.

PTT Global Chemical Public Company Limited and its Subsidiaries
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9 Investments in subsidiaries

	Separate financial statements	
	2016	2015
	<i>(in million Baht)</i>	
<i>Subsidiaries</i>		
At 1 January	54,706	43,398
Acquisition	3,535	11,590
Capital distribution	(50)	-
Impairment losses	(3,848)	(282)
At 31 December	54,343	54,706

PTT Global Chemical Public Company Limited and its Subsidiaries
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For the year ended 31 December 2016

Investments in subsidiaries as at 31 December 2016 and 2015, and dividend income from those investments for the years then ended, were as follows:

Separate financial statements												
	Ownership Interest (%)	Paid-up capital		Cost		Impairment		At cost-net		Fair value of listed securities		Dividend income for the year ended
		2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	
Subsidiaries												
	100	100	7,400	7,400	7,400	-	-	7,400	7,400	-	-	77
Global Green Chemicals Plc.	100	100	5,395	5,395	5,395	-	-	5,395	5,395	-	-	1,834
TOC Glycol Co., Ltd.	51	100	900	900	459	-	-	459	459	-	-	515
Thai Tank Terminal Co., Ltd.	100	100	190	190	190	-	-	190	190	-	-	-
Thai Styrenics Co., Ltd.												
Bangkok Polyethylene Plc.	100	100	1,700	1,700	1	-	-	1	1	-	-	-
(In process of liquidation)	100	100	116	116	116	-	-	116	116	-	-	-
Solution Creation Co., Ltd.												
Bio Spectrum Co., Ltd.	100	100	146	146	146	(95)	(41)	1	105	-	-	-
(In process of liquidation)	100	100	11,851	11,201	13,155	-	-	13,155	12,505	-	-	-
PTT Phenol Co., Ltd.												
PTT Maintenance and Engineering Co., Ltd.	60	60	137	137	82	-	-	82	82	-	-	-
Auria BioChemicals Co., Ltd.	54	54	90	90	49	-	-	49	49	-	-	-
NPC Safety and Environmental Service Co., Ltd.	100	100	165	165	165	-	-	165	165	-	-	-
PTTGC America Corporation	100	100	-	-	3,908	-	-	3,908	2,134	-	-	-
PTT Chemical International Pte. Ltd.	100	100	28,497	27,387	27,387	(5,076)	(1,282)	23,422	26,105	-	-	-
Total					59,514	56,029	(5,171)	(1,323)	54,343	54,706	2,138	2,426

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Change in investment in subsidiaries

On 24 March 2016, PTT Phenol Co., Ltd. has called for paid-up capital from the capital increase by the Extraordinary General Meeting of shareholders of subsidiary held on 11 July 2013 for the purpose of Phenol 2 project at Baht 25 per share, 25.99 million shares, totalling Baht 649.80 million, of which fully received in March and May 2016.

At the Board of Directors' Meeting of NPC Safety and Environmental Service Co., Ltd. held on 20 April 2016, the Board approved to establish NPC S&E Security Guard Co., Ltd. under the Business Security Act B.E. 2558 which the Company holds a 100% interest through NPC Safety and Environmental Service Co., Ltd. The share capital was registered at Baht 5 million, of which fully paid in May 2016.

On 12 May 2016, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 20 February 2014 to invest in Vencorex Holding which the Company holds a 100% interest through PTTGC International (Netherlands) B.V. in accordance with business plan of Vencorex group. The share capital was registered and called at EUR 14.03 million or equivalent to Baht 566.50 million (1,402.5 million shares at EUR 0.01 par value), of which fully received in May 2016.

On 8 August 2016, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting held on 25 July 2016 for the purpose of corporate operation at USD 0.80 million or equivalent to Baht 27.86 million, of which fully received in August 2016.

During the year ended 31 December 2016, PTT Chemical International Pte. Ltd. has called for paid-up capital increase by the Board of Directors' Meeting of subsidiary held on 25 September 2015 to invest in Myriant Corporation at USD 14.63 million or equivalent to Baht 516.17 million, of which fully received during the period ended 31 December 2016.

During the year ended 31 December 2016, PTTGC America Corporation has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 29 June 2015 for the purpose of US Petrochemical Complex project at USD 50 million or equivalent to Baht 1,774.60 million, of which fully received during the period ended 31 December 2016.

On 5 January 2015, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 20 February 2014 to invest in Vencorex Holding which the Company holds a 100% interest through PTTGC International (Netherlands) B.V. in accordance with business plan of Vencorex group. The share capital was registered and called at EUR 19.98 million or equivalent to Baht 806.10 million (1,997.5 million shares at EUR 0.01 par value), of which fully received in January 2015.

On 5 June 2015, Solution Creation Co., Ltd. (Formerly Bio Creation Co., Ltd.) has called for the additional paid-up capital of the remaining share capital by the Board of Directors' Meeting of subsidiary held on 31 March 2015 to invest in PTT Polymer Marketing Co., Ltd. and PTT Polymer Logistics Co., Ltd. at Baht 17.25 per share, 1.4 million shares, totalling Baht 24.15 million, of which fully received in June 2015.

PTT Global Chemical Public Company Limited and its Subsidiaries

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At the Board of Directors' Meeting of the Company held on 29 June 2015, the Board approved to establish PTTGC America Corporation which is 100% owned by the Company and PTTGC America LLC which is 100% owned by PTTGC America Corporation. On 13 July 2015, PTTGC America Corporation has called for paid-up capital to invest in PTTGC America LLC. for conducting a study and invest in US Petrochemical Complex Project in the US, at USD 36.4 million or equivalent to Baht 1,305 million, of which fully received in July and September 2015.

On 16 July 2015, PTT Phenol Co., Ltd. has called for paid-up capital from the capital increase by the Extraordinary General Meeting of shareholders of subsidiary held on 11 July 2013 for the purpose of Phenol 2 project at Baht 20 per share, 25.99 million shares, totalling Baht 519.84 million, of which fully received in July 2015.

On 17 July 2015, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 20 February 2014 to invest in Vencorex Holding which the Company holds a 100% interest through PTTGC International (Netherlands) B.V. in accordance with the business plan of Vencorex group. The share capital was registered and called at EUR 17 million (1,700 million shares at EUR 0.01 par value) or equivalent to Baht 641.29 million, of which fully received in July 2015.

On 24 August 2015, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 5 August 2015 to invest in Myriant Corporation at USD 184.08 million or equivalent to Baht 6,614 million, of which fully received in August 2015. As a result, the group's shareholding in Myriant changed from 84.18% to 100%.

On 5 October 2015, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 25 September 2015 to invest in Myriant Corporation ("Myriant") totalling USD 5 million or equivalent to Baht 177 million, of which fully received in October 2015.

On 12 November 2015, PTTGC America Corporation has called for paid-up capital from the capital increase by the Board of Directors' Meeting held on 29 June 2015 for the purpose of US Petrochemical Complex project at USD 23 million or equivalent to Baht 829 million, of which fully received in November 2015.

On 2 December 2015, PTT Chemical International Pte. Ltd. has called for paid-up capital from the capital increase by the Board of Directors' Meeting of subsidiary held on 20 February 2014 to invest in Vencorex Holding which the Company holds a 100% interest through PTTGC International (Netherlands) B.V. in accordance with business plan of Vencorex group. The share capital was registered and called at EUR 17 million or equivalent to Baht 673.98 million (1,700 million shares at EUR 0.01 par value), of which fully received in December 2015.

On 28 August 2014, PTTGC International (Netherlands) B.V. ("PTTGC NL") in which the Company holds a 100% interest through a subsidiary PTT Chemical International Pte. Ltd. ("CH Inter"), and Perstorp Holding AB ("Perstorp") agreed to amend the Securityholders Agreement related to call and put options on the remaining 49% of equity still held by Perstorp. PTTGC NL acquired an additional 34% of the registered capital in Vencorex Holding ("Vencorex") from Perstorp, and as a result its shareholding interest in Vencorex increased from 51% to 85%. The consideration will be determined based on the financial performance of Vencorex during the years 2014 and 2015. As at 31 December 2016, the Company estimated the consideration at EUR 5.97 million or approximately Baht 225 million and recognised a liability for that amount in other non-current liabilities. The estimate will be remeasured at the end of the financial reporting period. In addition, Perstorp retained a put option to sell the remaining of shareholding in Vencorex to PTTGC NL and PTTGC NL retained call option to buy the remaining of Perstorp' shareholding in Vencorex.

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Dividends paid by subsidiaries

At the Annual General Meeting of the shareholders of Global Green Chemicals Plc. (Formerly Thai Oleochemicals Co., Ltd.) held on 15 March 2016, the shareholders of the subsidiary approved the appropriation of dividends of Baht 0.55 per share, amounting to Baht 407 million. The dividend was paid to the shareholders in April 2016.

At the Annual General Meeting of the shareholders of TOC Glycol Co., Ltd. held on 21 April 2016, the shareholders approved the appropriation of dividends of Baht 35 per share, amounting to Baht 1,888.25 million, of which amounting to Baht 1,564.55 million, was paid as an interim dividend in 2015. The remaining dividend at the rate of Baht 6 per share, amounting to Baht 323.70 million was paid to the shareholders in April 2016.

At the Annual General Meeting of the shareholders of Thai Tank Terminal Ltd. held on 26 April 2016, the shareholders approved the appropriation of dividends of Baht 33.33 per share, amounting to Baht 300 million. The dividend was paid to the shareholders in May 2016.

At the Board of Directors' Meeting of the shareholders of Global Green Chemicals Plc. held on 14 September 2016, the Board approved the appropriation of interim dividends of Baht 1.35 per share, amounting to Baht 999 million. The dividend was paid to the shareholders in October 2016.

At the Extraordinary General Meeting of the shareholders of Thai Tank Terminal Ltd. held on 29 September 2016, the shareholders approved the appropriation of dividends of Baht 55.56 per share, amounting to Baht 500 million. The dividend was paid to the shareholders in October 2016.

At the Annual General Meeting of the shareholders of Thai Oleochemicals Co., Ltd. (Currently Global Green Chemicals Plc.) held on 21 April 2015, the shareholders approved the appropriation of dividends of Baht 6.64 per share, amounting to Baht 491.36 million, of which amounting to Baht 414.40 million, was paid as an interim dividend in 2014. The remaining dividend at the rate of Baht 1.04 per share, amounting to Baht 76.96 million was paid to the shareholders in April 2015.

At the Annual General Meeting of the shareholders of Thai Tank Terminal Ltd. held on 23 April 2015, the shareholders approved the appropriation of dividends of Baht 33.33 per share, amounting to Baht 300 million, the dividend was paid to the shareholders in May and June 2015.

At the Annual General Meeting of the shareholders of TOC Glycol Co., Ltd. held on 23 April 2015, the shareholders approved the appropriation of dividends of Baht 49 per share, amounting to Baht 2,643.55 million, of which amounting to Baht 2,373.80 million was paid as an interim dividend in 2014. The remaining dividend at the rate of Baht 5 per share, amounting to Baht 269.75 million was paid to the shareholders in April 2015.

At the Board of Directors' Meeting of TOC Glycol Co., Ltd. held on 28 May 2015, the Board approved the appropriation of interim dividends of Baht 11 per share, amounting to Baht 593.45 million. The dividend was paid to the shareholders in May 2015.

At the Board of Directors' Meeting of TOC Glycol Co., Ltd. held on 28 August 2015, the Board approved the appropriation of interim dividends of Baht 13 per share, amounting to Baht 701.35 million. The dividend was paid to the shareholders in August 2015.

At the Board of Directors' Meeting of TOC Glycol Co., Ltd. held on 19 November 2015, the Board approved the appropriation of interim dividends of Baht 5 per share, amounting to Baht 269.75 million. The dividend was paid to the shareholders in November 2015.

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At the Annual General Meeting of the shareholders of Thai Tank Terminal Ltd. held on 17 December 2015, the shareholders approved the appropriation of dividends of Baht 78.89 per share, amounting to Baht 710 million. The dividend was paid to the shareholders in December 2015.

Impairment loss on investment in subsidiary

The Company recognised impairment loss on the investment in Bio Spectrum Co., Ltd. totalling Baht 54.19 million in the separate financial statements for the year ended 31 December 2016 as the recoverable amount of investment in Bio Spectrum Co., Ltd. was less than its carrying amount.

The Company recognised impairment loss on the investment in PTT Chemical International Pte. Ltd. totalling Baht 6.74 million in the separate financial statements for the year ended 31 December 2016 as the recoverable amount of investment of PTT Chemical International Pte. Ltd. in PTT Chemical International (Asia Pacific ROH) Limited ("AP ROH") was less than its carrying amount due to the dissolution of APROH.

The Company recognised impairment loss on the investment in PTT Chemical International Pte. Ltd. totalling Baht 3,787 million in the separate financial statements for the year ended 31 December 2016 as the recoverable amount of investment of PTT Chemical International Pte. Ltd. in Myriant Corporation was less than its carrying amount. The recoverable amount was determined using the estimated future cash flows discounted to their present value. The key assumptions included the oil and bio-succinic acid prices in the future and discount rates. The forecast oil and bio-succinic acid prices in the future obtained from independent expert. The discount rate is derived from weighted average cost of capital of 9.39%.

The Company recognized impairment loss on the investment in PTT Chemical International Pte. Ltd. totalling Baht 282 million in the separate financial statements for the year ended 31 December 2015 as the recoverable amount of investment of PTT Chemical International Pte. Ltd. in Myriant Corporation was less than its carrying amount.

Others

On 31 March 2016, Bio Spectrum Co., Ltd. which is a subsidiary of the Company registered the dissolution with Department of Business Development, Ministry of Commerce. Subsequently on 28 December 2016, Bio Spectrum Co., Ltd. distributed capital to the Company amounting to Baht 50 million. As at 31 December 2016, Bio Spectrum Co., Ltd. is in the liquidation process.

On 5 October 2016, Global Green Chemicals Plc. ("GGC"), the Company's subsidiary with 100% of shares held by the Company, filed an application for offering of newly-issued shares with the Office of the Securities and Exchange Commission (the "Office of the SEC"). Concurrently, the Company filed its registration statement for offering of securities with the Office of the SEC, because the Company may consider making a public offering of its shares in GGC concurrently with GGC's Initial Public Offering ("IPO"). However, the Company will continue to be the majority, controlling shareholder of GGC after the IPO.

On 30 November 2016, PTT Chemical International (Asia Pacific ROH) Ltd., which is 100% owned by PTT Chemical International Pte. Ltd., a subsidiary of the Company, registered the dissolution with Department of Business Development, Ministry of Commerce. As at 31 December 2016, PTT Chemical International (Asia Pacific ROH) Ltd. is in the liquidation process.

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10 Investments in joint ventures and associates

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
<i>Joint ventures</i>				
At 1 January	11,110	11,539	1,153	220
Acquisitions	-	-	-	933
Share of loss of investment in joint ventures	(489)	(14)	-	-
Share of other comprehensive income (loss) of investments in joint ventures	(2)	425	-	-
Dividend income	(321)	(840)	-	-
Disposal of investment	-	-	(210)	-
At 31 December	10,298	11,110	943	1,153
<i>Associates</i>				
At 1 January	12,392	11,647	9,323	9,323
Acquisitions	17	-	-	-
Share of profit of investment in associates	1,106	725	-	-
Share of other comprehensive income (loss) of investments in associates	20	(49)	-	-
Dividend income	(509)	(363)	-	-
Realised gain on dilution of investment	-	432	-	-
At 31 December	13,026	12,392	9,323	9,323
<i>Total</i>				
At 1 January	23,502	23,186	10,476	9,543
Acquisitions	17	-	-	933
Share of profit of investment in joint ventures and associates	617	711	-	-
Share of other comprehensive income of investments in joint ventures and associates	18	376	-	-
Dividend income	(830)	(1,203)	-	-
Realised gain on dilution of investment	-	432	-	-
Disposal of investment in joint ventures	-	-	(210)	-
At 31 December	23,324	23,502	10,266	10,476

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Investments in joint ventures and associates as at 31 December 2016 and 2015, and dividend income from those investments for the years then ended were as follows:

Consolidated financial statements											
Ownership interest	Paid-up capital		Cost		Equity		Impairment		Equity - net		Dividend income for the year ended
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	
(in million Baht)											
Direct joint ventures											
50	50	40	260	260	318	495	-	-	318	495	55
50	50	1,200	707	707	872	768	-	-	872	768	663
			967	967	1,190	1,263	-	-	1,190	1,263	718
Indirect joint ventures											
50	50	420	210	210	688	660	-	-	688	660	122
50	50	4,530	4,966	4,966	5,102	5,256	-	-	5,102	5,256	-
50	50	818	407	407	82	227	-	-	82	227	-
50	50	43,167	4,793	4,793	3,236	3,704	-	-	3,236	3,704	-
			10,376	10,376	9,108	9,847	-	-	9,108	9,847	122
Total - joint ventures											
			11,343	11,343	10,298	11,110	-	-	10,298	11,110	840

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Consolidated financial statements														
Ownership interest		Paid-up capital		Cost		Equity		Impairment		Equity - net		Dividend income for the year ended		
2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	
(in million Baht)														

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Notes to the financial statements For the year ended 31 December 2016

Separate financial statements												
Ownership interest	Paid-up capital		Cost		Impairment		At cost - net		Fair value of listed securities		Dividend income for the year ended	
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
(in million Baht)												
Joint ventures												
-	50	-	420	-	-	210	-	210	-	-	-	122
49	49	40	40	-	-	250	250	250	-	-	245	54
49	49	1,200	1,200	693	-	693	693	693	-	-	-	-
			943	1,153	943	1,153	943	1,153	245	176		
Associates												
23	23	14,983	14,983	5,934	-	-	5,934	5,934	12,686	7,561	358	299
20	20	150	150	30	-	-	30	30	-	-	-	-
40	40	150	150	60	-	-	60	60	-	-	26	26
25	25	7,111	7,111	3,297	-	-	3,297	3,297	4,885	2,738	118	30
15	15	10	10	2	-	-	2	2	-	-	5	5
			9,323	9,323	9,323	9,323	9,323	9,323	17,571	10,299	507	360
Total												
			10,266	10,476	-	-	10,266	10,476	17,571	10,299	752	536

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Associates

The financial information of the associate adjusted for fair value adjustments at acquisition and differences in accounting policies. The details are as follows;

	Global Power Synergy Plc. (in million Baht)
For the year ended 31 December 2016	
Statement of income	
Revenue	20,037
Profit for the year	2,699
Other comprehensive income	95
Total comprehensive income for the year	2,794

As at 31 December 2016
Statement of financial position

Current assets	11,665
Non-current assets	43,363
Current liabilities	(4,120)
Non-current liabilities	(15,077)
Net assets	38,831

The reconciliation of the summarised financial information to the carrying amount of the Group's interest in this company.

	Global Power Synergy Plc. (in million Baht)
Group's interest in net assets of investee at 1 January 2016	7,800
Total comprehensive income attributable to the Group	636
Dividends received during the year	(358)
Carrying amount of interest in investee at 31 December 2016	8,078

Immaterial joint ventures and associates

The summarised financial information for the Group's interest in immaterial joint ventures and associates based on the amounts reported in the Group's consolidated financial statements:

	Immaterial Joint ventures	Immaterial Associates
For the year ended 31 December 2016		
Carrying amount of interests in immaterial joint ventures and associates	10,298	4,948
Group's share of:		
- Profit (loss) for the year	(489)	492
- Other comprehensive income (loss)	(2)	(1)
- Total comprehensive income (loss) for the year	(491)	491

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Change in investment in joint venture and associates

On 31 March 2016, the Company sold ordinary shares totalling 2,100,000 shares or equivalent to 50% shareholding interest in Thai Ethoxylate Co., Ltd. to Global Green Chemicals Plc. which is a subsidiary of the Company at the selling price of Baht 328.8 per share, totalling Baht 690.5 million. The Company recognised the difference from the divestment of the joint venture in “Difference arising from business combination under common control” totalling Baht 480.5 million in the separate financial statements for the year ended 31 December 2016.

On 6 October 2016, Global Green Chemicals Plc. which is a subsidiary of the Company made a new investment in 30% of the issued and paid up capital of Thai Eastern Top Seeds Oil Co., Ltd., incorporated in Thailand, for a consideration of Baht 16.65 million. Thai Eastern Top Seeds Oil Co., Ltd. thereby became an indirect associate of the Group.

On 18 May 2015, Global Power Synergy Plc. (“GPSC”) which 30.31% shareholding by the Company offered shares to Initial Public Offering (IPO) in the Stock Exchange of Thailand. The Company did not acquire additional shares resulting in dilution of an interest in its ownership from 30.31% to 22.73%. The Group recognised realised gain on dilution of investment in the amount of Baht 432 million in the consolidated statement of income for the year ended 31 December 2015.

11 Other investments

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
<i>Current investment</i>				
Promissory notes - financial institutions	12,244	36,258	11,271	35,106
Available-for-sale debt securities	43	-	43	-
Available-for-sale debt securities (Private funds)	1,881	-	1,881	-
	14,168	36,258	13,195	35,106
<i>Other long - term investments</i>				
Available-for-sale debt securities	1,650	-	1,650	-
Available-for-sale debt securities (Private funds)	3,663	-	3,663	-
Other non-marketable equity securities				
Alliance Petrochemical Investment (Singapore) Pte. Ltd. (15.34% shareholding by the Company)	290	290	290	290
Exeltium SAS (4% shareholding by the Group)	283	283	-	-
Other	1	1	1	1
	5,887	574	5,604	291
Total	20,055	36,832	18,799	35,397

During the third quarter of 2016, the Company established private funds and engaged independent assets management companies for the purpose of cash balance management of the Company. Those private funds have invested in debt securities which had high liquidity and credit quality. As at 31 December 2016, the value of private funds outstanding totalling Baht 6,013 million.

PTT Global Chemical Public Company Limited and its Subsidiaries
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The currency denomination of other investments as at 31 December was as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Thai Baht (THB)	10,501	26,443	9,528	25,291
United States Dollars (USD)	9,271	6,825	9,271	6,825
Euro Dollars (EUR)	283	283	-	-
Chinese Yuan (CNY)	-	3,281	-	3,281
Total	20,055	36,832	18,799	35,397

PTT Global Chemical Public Company Limited and its Subsidiaries
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For the year ended 31 December 2016

12 Property, plant and equipment

Consolidated financial statements

	Land & improvement	Plant, machinery, factory equipment and tools	Buildings & buildings improvement	Furniture, fixtures and equipment	Vehicles	Asset under construction	Total
<i>Cost</i>							
At 1 January 2015	6,897	297,318	14,545	3,300	892	23,656	346,608
Additions	5	464	18	212	22	17,049	17,770
Transfers	22	9,174	75	(664)	-	(8,875)	(268)
Disposals	(4)	(1,372)	(16)	(172)	(88)	(9)	(1,661)
Effect of change in exchange rates	4	(60)	(5)	7	-	470	416
At 31 December 2015 and 1 January 2016	6,924	305,524	14,617	2,683	826	32,291	362,865
Additions	979	424	11	188	70	16,314	17,986
Transfers	24	26,457	491	58	-	(27,371)	(341)
Disposals	(6)	(2,033)	(90)	(193)	(64)	(205)	(2,591)
Effect of change in exchange rates	(12)	(362)	(46)	(1)	-	(106)	(527)
At 31 December 2016	7,909	330,010	14,983	2,735	832	20,923	377,392

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PTT Global Chemical Public Company Limited and its Subsidiaries

Notes to the financial statements

For the year ended 31 December 2016

Consolidated financial statements

	Land& improvement	Plant, machinery, factory equipment and tools	Buildings& buildings improvement	Furniture, fixtures and equipment	Vehicles	Asset under construction	Total
<i>(in million Baht)</i>							
Net book value							
At 1 January 2015							
Owned assets	6,256	178,974	9,398	615	91	23,383	218,717
Assets under finance leases	46	174	6	215	188	-	629
	6,302	179,148	9,404	830	279	23,383	219,346
At 31 December 2015 and 1 January 2016							
Owned assets	6,216	174,499	8,873	399	125	29,755	219,867
Assets under finance leases	32	18	3	205	88	-	346
	6,248	174,517	8,876	604	213	29,755	220,213
At 31 December 2016							
Owned assets	7,153	186,137	8,729	389	111	18,675	221,194
Assets under finance leases	16	5	-	188	111	-	320
	7,169	186,142	8,729	577	222	18,675	221,514

The gross amount of the Group's fully depreciated property and equipment that was still in use as at 31 December 2016 amounted to Baht 14,674 million. (2015: Baht 11,824 million)

Security

At 31 December 2016, the Group's properties with a net book value of Baht 9,245 million (2015: Baht 8,766 million) were registered to secure Bank loan (see note 17).

Property, plant and equipment under construction

Capitalised borrowing costs relating to the acquisition of the land and the construction of the new factory amounted to Baht 168 million (2015: Baht 186 million), with a capitalization rate of 3.73% to 5.00% (2015: 3.73% to 5.00%).

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Impairment of assets in Myriant Corporation

Due to price pressure from petro-based succinic acid as a result of continuity low level of crude oil prices, the Group has undertaken a change in operation plan for Myriant Corporation, a subsidiary within the Group by changed the commercial production plant of bio-succinic acid to pilot plant for research and development of other bio-based chemicals. The change in operation plan is aligned with market condition. The Group is still considering commercial production plan if there is a business opportunity arising and has a strategy to develop technology and manufacturing processes of bio-succinic acid in the near future.

The recoverable amount of the property, plant and equipment was based on the fair values determined based on replacement cost by an independent valuer. The recoverable amount of the intangible assets from business acquisition relating to bio-succinic acid license is based on value in use determined using estimated future cash flows discounted to their present value. The key assumptions included the oil and bio-succinic acid prices in the future and discount rates. The forecast oil and bio-succinic acid prices in the future obtained from independent expert. The discount rate is derived from weighted average cost of capital of 9.39%. If the bio-succinic acid price assumption for all future years were to be increased and the discount rate to be decreased, this would cause the recoverable amount to be equal to the carrying amount. Goodwill was fully impaired.

The Group recognised impairment charges relating to the assets in the consolidated statement of income for the year ended 31 December 2016 and 2015 were as follows:

		Consolidated financial statements	
	Note	2016	2015
		<i>(in million Baht)</i>	
Impairment loss			
Property, plant and equipment		-	2,151
Intangible assets	15	319	-
Goodwill	14	337	380
Total		656	2,531
Less Effect from the reversal related deferred tax liabilities		(112)	(475)
Net		544	2,056

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Separate financial statements

	Land& improvement	Plant, machinery, factory equipment and tools	Buildings& buildings improvement	Furniture, fixtures and equipment	Vehicles	Asset under construction	Total
<i>(in million Baht)</i>							
Cost							
At 1 January 2015	5,027	245,373	9,006	2,293	601	10,478	272,778
Additions	3	342	13	140	6	9,007	9,511
Transfers	7	4,580	34	(82)	-	(4,478)	61
Disposals	(4)	(975)	(6)	(145)	(53)	-	(1,183)
At 31 December 2015 and 1 January 2016	5,033	249,320	9,047	2,206	554	15,007	281,167
Additions	978	325	8	147	48	9,596	11,102
Transfers	25	15,225	269	16	-	(15,646)	(111)
Disposals	-	(1,486)	(42)	(173)	(54)	-	(1,755)
At 31 December 2016	6,036	263,384	9,282	2,196	548	8,957	290,403
Depreciation							
At 1 January 2015	(386)	(93,698)	(2,938)	(1,901)	(423)	-	(99,346)
Depreciation charge for the year	(52)	(10,604)	(381)	(179)	(52)	-	(11,268)
Transfers	-	(166)	-	166	-	-	-
Disposals	-	779	1	146	42	-	968
At 31 December 2015 and 1 January 2016	(438)	(103,689)	(3,318)	(1,768)	(433)	-	(109,646)
Depreciation charge for the year	(55)	(11,233)	(380)	(173)	(33)	-	(11,874)
Disposals	-	1,028	32	173	51	-	1,284
At 31 December 2016	(493)	(113,894)	(3,666)	(1,768)	(415)	-	(120,236)

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	Separate financial statements					
	Land& improvement	Plant, machinery, factory equipment and tools	Buildings& buildings improvement	Furniture, fixtures and equipment	Vehicles	Asset under construction
						Total
<i>Net book value</i>						
At 1 January 2015						
Owned assets	4,641	151,675	6,068	217	51	173,130
Assets under finance leases	-	-	-	175	127	302
	4,641	151,675	6,068	392	178	173,432
At 31 December 2015 and 1 January 2016						
Owned assets	4,595	145,631	5,729	283	85	171,330
Assets under finance leases	-	-	-	155	36	191
	4,595	145,631	5,729	438	121	171,521
At 31 December 2016						
Owned assets	5,543	149,490	5,616	280	75	169,961
Assets under finance leases	-	-	-	148	58	206
	5,543	149,490	5,616	428	133	170,167

The gross amount of the Company's fully depreciated property and equipment that was still in use as at 31 December 2016 amounted to Baht 8,743 million (2015: Baht 7,570 million).

Property, plant and equipment under construction

Capitalised borrowing costs relating to the acquisition of the land and the construction of the new factory amounted to Baht 62 million (2015: 18 million), with a capitalisation rate of 5% (2015: 5%).

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13 Land leasehold right

	Consolidated financial statements (in million Baht)	Separate financial statements
<i>Cost</i>		
At 1 January 2015	1,131	1,130
Additions	-	-
Effect of change in exchange rates	-	-
At 31 December 2015 and 1 January 2016	1,131	1,130
Additions	-	-
Effect of change in exchange rates	-	-
At 31 December 2016	1,131	1,130
<i>Amortisation</i>		
At 1 January 2015	(692)	(692)
Amortisation charge for the year	(38)	(38)
At 31 December 2015 and 1 January 2016	(730)	(730)
Amortisation charge for the year	(39)	(38)
At 31 December 2016	(769)	(768)
<i>Net book value</i>		
At 1 January 2015	439	438
At 31 December 2015 and 1 January 2016	401	400
At 31 December 2016	362	362

14 Goodwill

	<i>Note</i>	Consolidated financial statements (in million Baht)
<i>Cost</i>		
At 1 January 2015		1,644
Effect of change in exchange rates		4
At 31 December 2015 and 1 January 2016		1,648
Effect of change in exchange rates		-
At 31 December 2016		1,648
<i>Impairment losses</i>		
At 1 January 2015		-
Impairment loss	12	(380)
At 31 December 2015 and 1 January 2016		(380)
Impairment loss	12	(337)
At 31 December 2016		(717)
<i>Net book value</i>		
At 1 January 2015		1,644
At 31 December 2015 and 1 January 2016		1,268
At 31 December 2016		931

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15 Intangible assets

	Consolidated financial statements					
	License for production process	Software licences	Customer contracts and the related customer relationships	Right to use pipeline (in million Baht)	Right for other operation	Intangible in progress
						Total
Cost						
At 1 January 2015	5,464	3,219	152	425	2,477	12,245
Additions	19	35	-	12	-	1,056
Transfers	81	225	-	22	219	282
Effect of change in exchange rates	-	1	12	-	90	103
At 31 December 2015 and 1 January 2016	5,564	3,480	164	459	2,786	13,686
Additions	-	13	-	-	-	386
Transfers	441	222	-	49	(9)	-
Disposals	(32)	(28)	-	-	-	(60)
Effect of change in exchange rates	-	(5)	(2)	-	(58)	(68)
At 31 December 2016	5,973	3,682	162	508	2,719	13,944

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	<i>Note</i>	Consolidated financial statements				
		License for production process	Software licences	Customer contracts and the related customer relationships (in million Baht)	Right to use pipeline operation	Intangible in progress
<i>Amortisation and impairment losses</i>						
At 1 January 2015		(1,793)	(1,428)	(97)	(569)	-
Amortisation charge for the year		(191)	(274)	(12)	(220)	-
Transfers		(1)	47	-	7	-
Effect of change in exchange rates		-	(1)	(8)	(15)	-
At 31 December 2015 and 1 January 2016		(1,985)	(1,656)	(117)	(797)	(4,145)
Amortisation charge for the year		(201)	(265)	(13)	(206)	-
Disposals		-	13	-	-	-
Reversal of (impairment losses)	12	33	-	-	(319)	-
Effect of change in exchange rates		-	5	2	18	-
At 31 December 2016		(2,153)	(1,903)	(128)	(1,304)	(5,813)
<i>Net book value</i>						
At 1 January 2015		3,671	1,791	55	1,908	508
At 31 December 2015 and 1 January 2016		3,579	1,824	47	1,989	1,233
At 31 December 2016		3,820	1,779	34	1,415	900

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	License for production process	Software licences	Separate financial statements (in million Baht)			Total
			Right to use pipeline	Right for other operation	Intangible in progress	
Cost						
At 1 January 2015	3,932	2,629	355	-	465	7,381
Additions	18	20	12	-	836	886
Transfers	-	311	-	-	(376)	(65)
At 31 December 2015 and 1 January 2016	3,950	2,960	367	-	925	8,202
Additions	-	10	-	-	326	336
Transfers	163	217	48	-	(428)	-
Disposals	-	(20)	-	-	-	(20)
At 31 December 2016	4,113	3,167	415	-	823	8,518
Amortisation						
At 1 January 2015	(1,192)	(1,056)	(195)	-	-	(2,443)
Amortisation charge for the year	(150)	(244)	(26)	-	-	(420)
At 31 December 2015 and 1 January 2016	(1,342)	(1,300)	(221)	-	-	(2,863)
Amortisation charge for the year	(153)	(249)	(27)	-	-	(429)
Disposals	-	7	-	-	-	7
At 31 December 2016	(1,495)	(1,542)	(248)	-	-	(3,285)
Net book value						
At 1 January 2015	2,740	1,573	160	-	465	4,938
At 31 December 2015 and 1 January 2016	2,608	1,660	146	-	925	5,339
At 31 December 2016	2,618	1,625	167	-	823	5,233

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16 Deferred tax

Deferred tax assets and liabilities as at 31 December were as follows:

	Consolidated financial statements			
	Assets		Liabilities	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Total	1,527	1,535	(3,460)	(3,457)
Set off of tax	(1,221)	(1,230)	1,221	1,230
Net deferred tax assets (liabilities)	306	305	(2,239)	(2,227)

	Separate financial statements			
	Assets		Liabilities	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Total	1,134	1,143	(2,941)	(2,752)
Set off of tax	(1,134)	(1,143)	1,134	1,143
Net deferred tax assets (liabilities)	-	-	(1,807)	(1,609)

Movements in total deferred tax assets and liabilities during the year were as follows:

	Consolidated financial statements				
	(Charged) / credited to:				
At 1 January 2016	Profit and loss <i>(note 30)</i>	Other comprehensive income <i>(in million Baht)</i>	Acquisition of subsidiary	Exchange differences	At 31 December 2016
<i>Deferred tax assets</i>					
Inventories	2	(1)	-	-	1
Employee benefit expenses	454	38	(1)	-	491
Capital distribution from subsidiaries	365	-	-	-	365
Others	714	(43)	-	(1)	670
Total	1,535	(6)	(1)	(1)	1,527
<i>Deferred tax liabilities</i>					
Property, plant and equipment	(2,987)	(47)	-	10	(3,024)
Finance lease assets	(4)	(2)	-	-	(6)
Others	(466)	31	-	5	(430)
Total	(3,457)	(18)	-	15	(3,460)
Net	(1,922)	(24)	(1)	14	(1,933)

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Consolidated financial statements						
	At 1 January 2015	(Charged) / credited to:		Acquisition of subsidiary	Exchange differences	At 31 December 2015
		Profit and loss (note 30)	Other comprehensive income (in million Baht)			
Deferred tax assets						
Inventories	7	(5)	-	-	-	2
Employee benefit expenses	415	38	1	-	-	454
Recoverable oil spill expenses form insurance	149	(149)	-	-	-	-
Capital distribution from subsidiaries	365	-	-	-	-	365
Others	780	(76)	-	-	10	714
Total	1,716	(192)	1	-	10	1,535
Deferred tax liabilities						
Property, plant and equipment	(3,473)	502	-	-	(16)	(2,987)
Finance lease assets	(6)	2	-	-	-	(4)
Others	(471)	35	-	-	(30)	(466)
Total	(3,950)	539	-	-	(46)	(3,457)
Net	(2,234)	347	1	-	(36)	(1,922)

Separate financial statements				
	At 1 January 2016	(Charged) / credited to:		At 31 December 2016
		Profit and loss (note 30)	Other comprehensive income (in million Baht)	
Deferred tax assets				
Inventories	1	(1)	-	-
Employee benefit expenses	393	27	-	420
Capital distribution from subsidiaries	365	-	-	365
Others	384	(35)	-	349
Total	1,143	(9)	-	1,134
Deferred tax liabilities				
Inventories	(120)	119	-	(1)
Property, plant and equipment	(2,624)	(81)	-	(2,705)
Finance lease assets	(3)	(1)	-	(4)
Compensation for damage of assets	-	(231)	-	(231)
Others	(5)	(5)	-	-
Total	(2,752)	(189)	-	(2,941)
Net	(1,609)	(198)	-	(1,807)

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	At 1 January 2015	Separate financial statements (Charged) / credited to:		At 31 December 2015
		Profit and loss (note 30) (in million Baht)	Other comprehensive income	
Deferred tax assets				
Inventories	4	(3)	-	1
Employee benefit expenses	364	29	-	393
Recoverable oil spill expenses form insurance	149	(149)	-	-
Capital distribution from subsidiaries	365	-	-	365
Loss carry forward	87	(87)	-	-
Others	342	42	-	384
Total	1,311	(168)	-	1,143
Deferred tax liabilities				
Inventories	(100)	(20)	-	(120)
Property, plant and equipment	(2,637)	13	-	(2,624)
Finance lease assets	(4)	1	-	(3)
Others	(35)	30	-	(5)
Total	(2,776)	24	-	(2,752)
Net	(1,465)	(144)	-	(1,609)

17 Interest-bearing liabilities

Interest bearing liabilities are defined as loans and finance lease liabilities which are as follows;

	Note	Consolidated financial statements		Separate financial statements	
		2016	2015	2016	2015
		(in million Baht)			
Current					
Short-term loans from financial institutions					
secured		342	602	-	-
unsecured		221	-	-	-
Short-term loans from related parties					
unsecured	4	-	-	1,514	880
Short-term loans		563	602	1,514	880

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	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Current (continue)				
Current portion of long-term loans from financial institutions				
secured	1,289	1,446	-	-
unsecured	5,802	6,010	4,948	5,968
Current portion of long-term loans from other parties				
secured	725	739	-	-
unsecured	22	16	-	-
Current portion of debentures				
unsecured	2,799	1,058	2,799	1,058
Current portion of long-term loans	10,637	9,269	7,747	7,026
Current portion of financial lease liabilities	173	173	109	105
Total current	11,373	10,044	9,370	8,011
Non-current				
Long-term loans from financial institutions				
secured	9,272	9,446	-	-
unsecured	26,716	34,565	19,472	31,589
Long-term loans from other parties				
secured	962	970	-	-
unsecured	207	188	-	-
Debentures				
unsecured	47,786	50,807	47,786	50,807
Long-term loans	84,943	95,976	67,258	82,396
Finance lease liabilities	168	185	108	93
Total non-current	85,111	96,161	67,366	82,489
Total	96,484	106,205	76,736	90,500

The currency denomination of interest-bearing liabilities as at 31 December was as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Thai Baht (THB)	50,935	61,801	38,011	50,807
United States Dollars (USD)	40,529	41,609	38,725	39,693
Euro (EUR)	5,020	2,795	-	-
Total	96,484	106,205	76,736	90,500

As at 31 December 2016, the Group and the Company had unutilised credit facilities totalling Baht 6,897 million and none, respectively. (2015: Baht 43,031 million and 29,759 million, respectively)

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The periods to maturity of interest-bearing liabilities, excluding finance lease liabilities, as at 31 December were as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Within one year	11,200	9,871	9,261	7,906
After one year but within five years	40,060	41,525	31,414	36,328
After five years	44,883	54,451	35,844	46,068
Total	96,143	105,847	76,519	90,302

Long-term loans as at 31 December were secured on the following assets;

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Property, plant and equipment	9,245	8,766	-	-

Debentures and Loans from financial institutions of the Group/Company were as follow;

Debentures

As at 31 December 2016, the Company had unsubordinated and unsecured debentures in US dollar and Thai Baht in the amount of Baht 50,585 million (2015: Baht 51,865 million). These debentures have maturity periods between 7 years to 10 years, bear different interest rates and repayment schedules as specified in each agreement.

Details of the Company's debentures as at 31 December 2016 were as follows:

	Currency	Facilities (in million)	Face value per share	Years	Interest rates (%) p.a.	Repayment Terms
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	2,800	1,000	10	5.50	Interest is payable on semi-annual basis and maturity in October 2017
Unsubordinated debenture unsecured with a debenture holders' representative	Baht	1,942	1,000	10	5.50	Interest is payable on semi-annual basis and maturity in June 2019

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	Currency	Facilities (in million)	Face value per share	Years	Interest rates (%) p.a.	Repayment Terms
Unsubordinated debenture at 99.108% of the face value unsecured with a debenture holders' representative	USD	1,000	1,000	10	4.25	Interest is payable on 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 semi-annual basis and maturity in August 2021

Loans from financial institution

As at 31 December 2016, the Group and the Company had long-term and revolving long-term credit facility agreements with several financial institutions totalling Baht 43,079 million and Baht 24,420 million, respectively (2015: Baht 51,467 million and Baht 37,557 million, respectively) bear different interest rates as specified in each agreement. The Company is required to comply with certain covenants pertaining to maintenance of certain financial ratios, percentage of share held by the major shareholder and other conditions as specified in each agreement.

Details of the Group/Company's loans as at 31 December 2016 were as follows:

	Currency	Facilities (in million)	Interest Rates (%) p.a.	Repayment Terms
The Company				
	Baht	2,500	THBFIX 6 M plus margin	Principal is repayable on annual basis, in 3 instalments commencing from July 2016.
	Baht	7,500	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on semi-annual basis, in 15 instalments commencing from August 2011.
	Baht	3,000	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on semi-annual basis, in 10 instalments commencing from July 2015.
	Baht	7,000	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on semi-annual basis, in 15 instalments commencing from September 2013.
	USD	100	LIBOR 6M plus margin	Principal is repayable on semi-annual basis, in 10 instalments commencing from March 2016.

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Currency	Facilities (in million)	Interest Rates (%) p.a.	Repayment Terms
The Company (continue)			
Baht	3,000	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on semi-annual basis, in 14 instalments commencing from March 2014.
Baht	3,000	THBFIX 6 M plus margin	Principal is repayable at the end of contract, in June 2020.
Baht	6,000	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on semi-annual basis, in 10 instalments commencing from March 2016.
Subsidiaries			
Baht	6,320	FDR 6 M-average of 4 banks plus a margin	Principal is repayable on semi-annual basis, in 11 instalments commencing from September 2013.
Baht	3,650	FDR 6 M-average of 4 banks plus a margin	Principal is repayable on semi-annual basis, in 17 instalments commencing from September 2013.
Baht	7,000	FDR 6 M-average of 4 banks plus a margin	Principal is repayable on semi-annual basis, in 20 instalments commencing from March 2017.
Baht	700	BIBOR 3 M plus a margin	Principal is repayable on quarterly basis, in 16 instalments, commencing from September 2014.
EURO	190	EURIBOR 3 M plus a margin	Principal is repayable on annually basis, in 6 instalments commencing from 2017.
Baht	700	BIBOR 3 M plus a margin	Principal is repayable on quarterly basis, in 20 instalments, commencing from March 2016.
Baht	900	Highest interest rate for 6 month-fixed deposit plus margin	Principal is repayable on 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 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 semi-annual basis, in 14 instalments commencing from May 2016.

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18 Trade accounts payable

	<i>Note</i>	Consolidated financial statements		Separate financial statements	
		2016	2015	2016	2015
		<i>(in million Baht)</i>			
Related parties	4	22,855	15,334	22,442	14,984
Other parties		4,872	4,316	1,444	890
Total		27,727	19,650	23,886	15,874

The currency denomination of trade accounts payable as at 31 December was as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Thai Baht (THB)	24,282	17,066	22,822	15,850
United States Dollars (USD)	1,462	537	1,064	24
Euro (EUR)	1,973	2,020	-	-
Japanese Yen (JPY)	1	1	-	-
Others	9	26	-	-
Total	27,727	19,650	23,886	15,874

19 Other payables

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Accrued operating expenses	2,388	2,203	1,518	1,305
Accrued interest expenses	704	701	671	669
Other payables	4,487	3,163	3,991	2,751
Deposits and advances received	95	97	17	17
Retention payables	73	95	47	45
Current portion of finance lease liabilities	173	173	109	105
Withholding tax payable	316	354	240	233
Accrued other tax expenses	1,246	515	1,221	493
Others	423	478	3	7
Total	9,905	7,779	7,817	5,625

20 Employee benefit obligations

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Statement of financial position				
Statement of financial position				
obligations for:				
Present value of unfunded obligation	2,703	2,566	1,781	1,640
Other long-term employee benefits	364	353	332	323
Total	3,067	2,919	2,113	1,963

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Movement in the present value of the defined benefit obligations:

		Consolidated financial statements		Separate financial statements	
	<i>Note</i>	2016	2015	2016	2015
		<i>(in million Baht)</i>			
Defined benefit obligations at 1 January		2,919	2,789	1,963	1,818
Include in profit or loss:	27				
Current service costs		222	191	134	131
Interest on obligation		101	94	80	75
Past service costs		(30)	-	-	-
		<u>293</u>	<u>285</u>	<u>214</u>	<u>206</u>
Included in other comprehensive income					
Actuarial (gain) loss		34	(40)	-	-
Currency translation differences		(29)	(14)	-	-
		<u>5</u>	<u>(54)</u>	<u>-</u>	<u>-</u>
Others					
Benefits paid by the plan		(150)	(101)	(64)	(65)
Others		-	-	-	4
		<u>(150)</u>	<u>(101)</u>	<u>(64)</u>	<u>(61)</u>
Defined benefit obligations at 31 December		<u>3,067</u>	<u>2,919</u>	<u>2,113</u>	<u>1,963</u>

Actuarial gains and losses recognised in other comprehensive income arising from:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Financial assumptions	47	(8)	-	-
Experience adjustment	(13)	(32)	-	-
Total	<u>34</u>	<u>(40)</u>	<u>-</u>	<u>-</u>

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Year ended 31 December				
Statement of income:				
Recognised in profit or loss:				
Long-term employee benefit obligations	235	234	176	168
Other long-term employee benefit obligations	58	51	38	38
Total	<u>293</u>	<u>285</u>	<u>214</u>	<u>206</u>

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	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Statement of comprehensive income:				
Recognised in other comprehensive income:				
Actuarial losses (gain) recognised during the year	34	(40)	-	-
Cumulative actuarial losses recognised	511	477	368	368

The expense is recognised in the following line items in the statement of income:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Cost of sales	169	179	116	111
Administrative expenses	124	106	98	95
Total	293	285	214	206

Actuarial assumptions

The following were the principal actuarial assumptions at the reporting date (expressed as weighted averages).

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(%)</i>			
Discount rate	1-4.2	1.9-4.2	4.2	4.2
Future salary growth	2.5-7	2.5-7	7	7
Turnover rate	0-15	0-15	0-3	0-3
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.

At 31 December 2016, the weighted-average duration of the defined benefit obligation was 12 years (2015: 12 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;

	Consolidated financial statements		Separate financial statements	
	Increase	Decrease	Increase	Decrease
	<i>(in million Baht)</i>			
Defined benefit obligation 31 December 2016				
Discount rate (1% movement)	(299)	354	(210)	247
Future salary growth (1% movement)	360	(312)	254	(217)

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	Consolidated financial statements		Separate financial statements	
	<i>(in million Baht)</i>			
Defined benefit obligation 31 December 2015	Increase	Decrease	Increase	Decrease
Discount rate (1% movement)	(300)	358	(203)	240
Future salary growth (1% movement)	327	(279)	226	(194)

21 Share capital

	Par value per share (Baht)	2016		2015	
		Number	Amount (million shares / million Baht)	Number	Amount
Authorised					
At 1 January					
ordinary shares	10	4,508.8	45,088.5	4,508.8	45,088.5
At 31 December					
ordinary shares	10	<u>4,508.8</u>	<u>45,088.5</u>	<u>4,508.8</u>	<u>45,088.5</u>
Issued and paid-up					
At 1 January					
ordinary shares	10	4,508.8	45,088.5	4,508.8	45,088.5
At 31 December					
ordinary shares	10	<u>4,508.8</u>	<u>45,088.5</u>	<u>4,508.8</u>	<u>45,088.5</u>

22 Treasury shares

At the Board of Directors' Meeting of the Company held on 24 August 2015, the Board approved a share repurchase program for financial management purpose (Treasury Stocks) not exceeding 90 million shares, or approximately 2 percent of the total issued shares, with the maximum amount of Baht 4,500 million. The Company can purchase the shares through the Stock Exchange of Thailand within the period of 6 months, during the period from 8 September 2015 to 7 March 2016. The shares purchased may be resold after 6 months from the date of purchase but must not exceed 3 years from such completion.

As at 7 March 2016, the Company has repurchased the shares under the program totalling 48.6 million shares, equivalent to 1.08% of issued share and paid-up capital, at a total cost of Baht 2,434.6 million with an equivalent amount had been appropriated from retained earnings to treasury shares reserve.

At the Board of Directors' Meeting of the Company held on 22 August 2016, the Board approved the sale of 48.6 million treasury shares, equivalent to 1.08% of issued share and paid-up capital. The specified selling period is from 8 September 2016 to 7 March 2019 through the Stock Exchange of Thailand.

During the year ended 31 December 2016, the Company has sold 0.5 million treasury shares, amounting to Baht 32.6 million and recognised surplus on treasury shares of Baht 7.4 million. As at 31 December 2016, the Company had remaining 48.1 million shares of treasury share or equivalent to 1.07% of issued share and paid-up capital.

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23 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.

Surplus on treasury shares

The surplus on treasury shares represents the accumulated surplus on sale of treasury shares, net of any deficits on sale or cancellation of treasury shares. The surplus on treasury shares 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 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 shares reserve

The treasury shares reserve represents the amount appropriated from retained earnings equal to the cost of the Company’s own shares held by the Company. The treasury shares reserve is not available for dividend distribution.

Other components of equity

Currency translation differences

The currency translation differences 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.

Fair value changes in available-for-sale investments

The fair value changes in available-for-sale investments account within equity comprises the cumulative net change in the fair value of available-for-sale investments 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.

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Movements in reserves

Movements in reserves are shown in the statements of changes in equity.

24 Segment information

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 described below.

Segment 1	Refinery and shared facilities
Segment 2	Aromatics
Segment 3	Olefins and Derivatives
Segment 4	EO-Based Performance
Segment 5	Green Chemicals
Segment 6	High Volume Specialties
Segment 7	Services and Others

Other operations in 2016 and 2015, none of these segments meets the quantitative thresholds for determining additional reportable segments.

Performance information of each reportable segment is measured based on segment profit before interest expense, 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 interest expense, 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.

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Information about reporting segments for the year ended 31 December 2016

	Refinery & Shared facilities	Aromatics	Olefins & Derivatives	EO-Based Performance	Green Chemicals	High Volume Specialties	Services & Others	Elimination	Total
					(in million Baht)				
External revenues	129,777	63,218	95,245	13,153	16,288	29,018	2,402	-	349,101
Inter-segment revenues	11,480	33,967	17,044	1	978	51	3,178	(66,699)	-
Total revenues	141,257	97,185	112,289	13,154	17,266	29,069	5,580	(66,699)	349,101
Cost of sales and rendering of services	(130,885)	(86,891)	(82,451)	(12,152)	(15,214)	(25,535)	(4,447)	66,815	(290,760)
Selling and administrative expenses	(562)	(1,168)	(4,510)	(403)	(851)	(2,061)	(1,550)	568	(10,537)
Profit before interest expense, tax, depreciation and amortisation	8,756	9,203	26,810	713	1,248	1,846	296	(69)	48,803
Interest income	126	106	535	22	14	30	38	(46)	825
Finance costs	(513)	(341)	(837)	(6)	(190)	(486)	(1,901)	54	(4,220)
Depreciation and amortisation	(3,251)	(2,999)	(6,674)	(1,059)	(652)	(2,354)	(501)	134	(17,356)
Loss from impairment of assets	-	-	-	-	(656)	-	-	-	(656)
Dividend income	-	-	-	-	-	-	2,115	(2,098)	17
Share of profit (loss) of investments in joint ventures	-	-	178	-	(667)	-	-	-	(489)
Share of profit (loss) of investments in associates	-	-	340	-	(1)	-	759	8	1,106
Others	114	129	205	12	31	124	260	-	875
Profit (loss) before tax	5,232	6,098	20,557	(318)	(873)	(840)	1,066	(2,017)	28,905
Profit (loss) for reportable segment	4,333	5,784	18,987	(372)	(757)	(712)	422	(2,083)	25,602

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Information about reporting segments for the year ended 31 December 2015

	Refinery & Shared facilities	Aromatics	Olefins & Derivatives	EO-Based Performance	Green Chemicals	High Volume Specialties	Services & Others	Elimination	Total
					(in million Baht)				
External revenues	181,155	59,634	104,140	14,464	13,810	28,044	2,193	-	403,440
Inter-segment revenues	8,308	36,464	15,207	1	961	47	4,658	(65,646)	-
Total revenues	189,463	96,098	119,347	14,465	14,771	28,091	6,851	(65,646)	403,440
Cost of sales and rendering of services	(181,065)	(89,948)	(89,831)	(12,623)	(12,836)	(24,770)	(5,572)	65,791	(350,854)
Selling and administrative expenses	(662)	(1,141)	(3,896)	(428)	(1,516)	(1,938)	(1,625)	850	(10,356)
Profit before interest expense, tax, depreciation and amortisation	10,555	5,095	26,630	1,536	495	1,861	848	251	47,271
Interest income	209	252	681	27	29	42	574	(604)	1,210
Finance costs	(542)	(606)	(1,284)	(4)	(777)	(401)	(2,237)	673	(5,178)
Depreciation and amortisation	(3,167)	(2,905)	(6,299)	(931)	(660)	(2,022)	(521)	123	(16,382)
Loss from impairment of assets	-	-	-	-	(2,531)	-	-	-	(2,531)
Dividend income	-	-	-	-	-	-	2,118	(2,116)	2
Share of profit (loss) of investments in joint ventures	-	-	229	96	(342)	-	-	3	(14)
Share of profit (loss) of investments in associates	-	-	149	-	-	-	590	(14)	725
Others	1,265	(187)	(656)	19	66	(63)	(2,782)	-	(2,338)
Profit (loss) before tax	8,320	1,649	19,450	743	(3,720)	(583)	(1,410)	(1,684)	22,765
Profit (loss) for reportable segment	8,140	1,358	17,802	574	(3,021)	(672)	(1,972)	(1,707)	20,502

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	Refinery & Shared facilities	Aromatics	Olefins & Derivatives	EO-Based Performance	Green Chemicals	High Volume Specialties	Services & Others	Elimination	Total
<i>(in million Baht)</i>									
At 31 December 2016									
Segment assets	75,827	73,762	136,191	15,997	15,480	45,157	76,754	(46,002)	393,166
Investment in joint ventures and associates	-	-	-	-	704	-	22,620	-	23,324
Change in non-current assets	2,576	(293)	(3,464)	(738)	(383)	1,812	5,246	1,259	6,015
At 31 December 2015									
Segment assets	72,967	75,961	130,532	15,999	13,142	42,168	72,366	(45,590)	377,545
Investment in joint ventures and associates	-	-	-	-	-	-	23,502	-	23,502
Change in non-current assets	(1,206)	(270)	(3,282)	970	1,592	3,174	(5,014)	5,450	1,414

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Geographical segments

In presenting information on the basis of geographical segments, segment sales and service revenues are based on the geographical location of customers. Segment non-current assets (exclude derivatives and deferred tax) are based on the geographical location of the assets.

Geographical information

	Revenues	
	2016	2015
	<i>(in million Baht)</i>	
Thailand	226,977	254,789
The People's Republic of China	39,402	48,268
Singapore	21,685	27,683
Vietnam	17,282	20,883
Malaysia	4,330	4,152
United States of America	2,024	2,684
Other countries	37,401	44,981
Total	349,101	403,440

	Non-current assets (excluding deferred tax assets and derivatives)	
	2016	2015
	<i>(in million Baht)</i>	
Thailand	240,086	235,751
United States of America	11,074	10,324
France	8,840	7,653
Malaysia	5,194	5,491
Other countries	153	113
Total	265,347	259,332

Major customers

The Group's sales and service revenues mainly comprise revenue from one customer of Refinery and shared facilities, Aromatics and Olefins and derivatives segment representing Baht 115,114 million (2015: Baht 124,317 million) and revenue from another customer of Olefins and derivatives segment representing Baht 65,798 million (2015: Baht 68,806 million).

25 Selling expenses

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Distribution	1,740	1,056	1,318	632
Promotional	68	48	18	19
Marketing	24	35	17	20
Personnel	165	145	-	-
Total	1,997	1,284	1,353	671

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26 Administrative expenses

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Personnel expense	4,569	4,550	3,124	3,067
Professional fee and consultancy fee	825	831	873	830
Secondment fee	49	49	198	248
Depreciation and amortisation	1,054	1,068	654	659
Loss on disposal of fixed assets	539	234	503	187
Donation	70	226	68	223
Others	2,487	3,182	1,647	1,926
Total	9,593	10,140	7,067	7,140

27 Employee benefit expenses

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
Management				
Salaries, bonus, wages and other welfares	301	355	163	225
Contribution to provident funds	6	11	5	10
Long-term employee benefits	5	5	5	4
	312	371	173	239
Other employees				
Salaries, bonus, wages and other welfares	11,141	11,108	6,797	6,449
Contribution to provident funds	472	431	402	363
Long-term employee benefits	230	229	171	164
Other long-term employee benefits	58	51	38	38
	11,901	11,819	7,408	7,014
Total	12,213	12,190	7,581	7,253

Defined benefit plans

Details of the defined benefit plans are given in note 20.

Defined contribution plans

The defined contribution plans comprise provident funds established by the Group/Company 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/Company 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.

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28 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:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
<i>Included in cost of sales of goods:</i>				
Changes in inventories of finished goods and work in progress	(1,931)	1,168	(589)	1,842
Raw materials used	250,170	291,190	202,519	252,170
Personnel expense	7,479	7,495	4,457	4,186
Depreciation of property, plant and equipment	14,754	13,695	11,424	10,811
Amortisation of intangible assets	412	417	225	218
<i>Included in selling and administrative expenses:</i>				
Personnel expense	4,734	4,695	3,124	3,067
Depreciation of property, plant and equipment	750	759	450	457
Amortisation of intangible assets	304	309	204	202
Minimum lease payments recognised as an operating lease expense	585	510	348	356

29 Finance costs

		Consolidated financial statements		Separate financial statements	
	Note	2016	2015	2016	2015
		<i>(in million Baht)</i>			
<i>Interest expense :</i>					
Subsidiaries	4	-	-	21	45
Debentures		2,254	2,833	2,254	2,833
Bank loans and overdrafts		1,621	1,846	1,034	1,371
Loans from other parties		130	125	-	-
Total interest expense		4,005	4,804	3,309	4,249
Other finance costs		383	560	282	385
<i>Less: Capitalised as cost of assets under construction</i>	12	(168)	(186)	(62)	(18)
Net		4,220	5,178	3,529	4,616

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30 Income tax expense

		Consolidated financial statements		Separate financial statements	
	<i>Note</i>	2016	2015	2016	2015
		<i>(in million Baht)</i>			
Current tax expense					
Current year		3,002	2,294	2,583	1,868
(Over) under provided in prior years		(1)	37	3	-
		<u>3,001</u>	<u>2,331</u>	<u>2,586</u>	<u>1,868</u>
Deferred tax expense					
Movements in temporary differences	16	24	(347)	198	144
Total		<u>3,025</u>	<u>1,984</u>	<u>2,784</u>	<u>2,012</u>

Reconciliation of effective tax rate

	Consolidated financial statements			
	2016		2015	
	<i>Rate (%)</i>	<i>(in million Baht)</i>	<i>Rate (%)</i>	<i>(in million Baht)</i>
Profit before income tax expense		28,905		22,765
Income tax using the Thai corporation tax rate	20.0	5,781	20.0	4,553
Effect of different tax rates in foreign jurisdictions		184		379
Income not subject to tax		(3,931)		(3,317)
Expenses not deductible for tax purposes		981		301
(Over) under provided in prior years		(1)		37
Others		11		31
Total	10.5	<u>3,025</u>	8.7	<u>1,984</u>

	Separate financial statements			
	2016		2015	
	<i>Rate (%)</i>	<i>(in million Baht)</i>	<i>Rate (%)</i>	<i>(in million Baht)</i>
Profit before income tax expense		26,604		25,211
Income tax using the Thai corporation tax rate	20.0	5,321	20.0	5,042
Income not subject to tax		(3,483)		(3,311)
Expenses not deductible for tax purposes		943		281
Under provided in prior years		3		-
Total	10.5	<u>2,784</u>	8.0	<u>2,012</u>

Income tax reduction

Revenue Code Amendment Act No. 42 B.E. 2559 dated 3 March 2016 grants a reduction of the corporate income tax rate to 20% of net taxable profit for accounting periods which begin on or after 1 January 2016.

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31 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 eight 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:

	Separate financial statements					
	2016			2015		
	Promoted businesses	Non-promoted businesses	Total	Promoted businesses	Non-promoted businesses	Total
	<i>(in million Baht)</i>					
Export sales	1,044	28,823	29,867	2,792	52,971	55,763
Local sales	79,325	197,381	276,706	78,293	224,722	303,015
Service income	17	458	475	16	362	378
Total revenue	80,386	226,662	307,048	81,101	278,055	359,156

Certain subsidiaries in the Group have been granted promotional privileges as same as the Company.

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32 Basic earnings per share

The calculation of basic earnings per share for the year ended 31 December 2016 and 2015 were based on the profit for the years attributable to ordinary shareholders of the Company and the weighted average number of ordinary shares outstanding during the years as follows:

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht / million shares)</i>			
Profit attributable to ordinary shareholders of the Company (basic)	25,601.63	20,502.50	23,820.71	23,199.32
Number of ordinary shares as at 1 January	4,508.85	4,508.85	4,508.85	4,508.85
Effect of treasury shares	(48.19)	(2.66)	(48.19)	(2.66)
Weighted average number of ordinary shares outstanding (basic)	4,460.66	4,506.19	4,460.66	4,506.19
Earnings per share (basic) (in Baht)	5.74	4.55	5.34	5.15

33 Dividends

At the Annual General Meeting of the shareholders of the Company held on 5 April 2016, the shareholders approved the appropriation of annual dividend from 2015 performance at Baht 2.80 per share, amounting to Baht 12,561 million. The Company had paid an interim dividend of the first half year of 2015 at Baht 1.50 per share, amounting to Baht 6,763 million on 22 September 2015. The remaining dividend was paid for the second half year of 2015 at Baht 1.30 per share, amounting to Baht 5,798 million. The dividend was paid to the shareholders in April 2016.

At the Board of Directors' Meeting of the Company held on 22 August 2016, the Board approved the appropriation of interim dividends from the earnings from 1 January 2016 to 30 June 2016 at Baht 1.05 per share, amounting to Baht 4,683 million. The dividend amounting to Baht 4,683 million was paid to the rightful shareholders in September 2016.

At the Annual General Meeting of the shareholders of the Company held on 1 April 2015, the shareholders approved the appropriation of annual dividend from 2014 performance at Baht 2.37 per share, amounting to Baht 10,686 million. The Company had paid an interim dividend of the first half year of 2014 at Baht 1.37 per share, amounting to Baht 6,175 million on 15 August 2014. The remaining dividend was paid for the second half year of 2014 at Baht 1.00 per share, amounting to Baht 4,507 million. The dividend amounting to Baht 4,507 million was paid to the rightful shareholders in April 2015.

At the Board of Directors' Meeting of the Company held on 24 August 2015, the Board approved the appropriation of interim dividends from the earnings from 1 January 2015 to 30 June 2015 at Baht 1.50 per share, amounting to Baht 6,763 million. The dividend amounting to Baht 6,763 million was paid to the rightful shareholders in September 2015.

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34 Financial instruments

Financial risk management policies

The Group/Company is exposed to normal business risks from changes in market interest rates and currency exchange rates and from non-performance of contractual obligations by counterparties. The Group/Company does not hold or issue derivative financial instruments for speculative or trading purposes.

Risk management is integral to the whole business of the Group/Company. The management continually monitors the Group's/Company'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/Company's operations and its cash flows because the Group/Company's finances loans which have both floating and fixed interest rates for their operations. The Group/Company has managed this risk to ensure the appropriateness to the business operation.

The effective interest rates of interest-bearing liabilities at 31 December 2016 and 2015 and the periods in which those liabilities mature or re-price were disclosed in note 17 to the financial statements.

Foreign currency risk

The Group/Company is exposed to foreign currency risk relating to purchases, sales, and construction payment, including borrowings which are denominated in foreign currencies. The Group/Company primarily utilises forward exchange contracts to hedge such financial assets and liabilities denominated in foreign currencies. The forward exchange contracts entered into at the reporting date also relate to anticipated purchases and sales, denominated in foreign currencies, for the subsequent period.

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At 31 December, the Group/Company was exposed to foreign currency risk in respect of financial assets and liabilities denominated in the following currencies:

		Consolidated financial statements		Separate financial statements	
	<i>Note</i>	2016	2015	2016	2015
		<i>(in million Baht)</i>			
USD					
Cash and cash equivalents	5	7,452	1,778	6,940	810
Trade accounts receivable	6	9,962	5,380	7,059	3,605
Other receivables		601	3,057	449	3,015
Long-term loans to other parties		735	740	-	-
Other investments	11	9,271	6,825	9,271	6,825
Interest-bearing liabilities	17	(40,529)	(41,609)	(38,725)	(39,693)
Trade accounts payable	18	(1,462)	(537)	(1,064)	(24)
Payable to contractors		(239)	(725)	(233)	(335)
Other payables		(2,500)	(1,328)	(2,144)	(907)
Gross statement of financial position exposure		(16,709)	(26,419)	(18,447)	(26,704)
Currency forwards		(14,323)	5,221	(13,459)	3,984

The Group/Company performs foreign currency risk management on assets and liabilities held in USD. The Group/Company has net liabilities under USD currency. The Group/Company manages net USD liabilities by naturally hedged USD portion of net profit to minimise the impact from fluctuations in foreign currency to the Group/Company's performance.

In addition to forward exchange contracts, the Group/Company uses derivatives financial instruments, principally currency swaps and interest rate swap, to manage exposure to fluctuations in interest rates and in exchange rates. As at 31 December 2016, the Group/Company entered into interest rate swap contracts, totalling Baht 50 million (*As at 31 December 2015, the Group/Company entered into foreign currency and interest rate swap contracts, totalling Baht 7,793 million*) to repay certain interest bearing liabilities in foreign currencies.

		Consolidated financial statements		Separate financial statements	
	<i>Note</i>	2016	2015	2016	2015
		<i>(in million Baht)</i>			
EUR					
Cash and cash equivalents	5	67	1,288	-	-
Trade accounts receivable	6	1,433	1,604	-	-
Other receivables		176	513	5	127
Other investments	11	283	283	-	-
Interest-bearing liabilities	17	(5,020)	(2,795)	-	-
Trade accounts payable	18	(1,973)	(2,020)	-	-
Payable to contractors		(7)	(46)	(7)	(46)
Other payables		(608)	(646)	(62)	(72)
Gross statement of financial position exposure		(5,649)	(1,819)	(64)	9
Currency forwards		139	4	-	-

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		Consolidated financial statements		Separate financial statements	
	<i>Note</i>	2016	2015	2016	2015
		<i>(in million Baht)</i>			
SGD					
Cash and cash equivalents	5	11	15	-	-
Other payables		(3)	(3)	(1)	-
Gross statement of financial position exposure		8	12	(1)	-
Currency forwards		-	-	-	-
JPY					
Other receivables		-	5	-	-
Trade accounts payable	18	(1)	(1)	-	-
Payable to contractors		(4)	(10)	(4)	(10)
Other payables		(7)	(4)	(7)	(4)
Gross statement of financial position exposure		(12)	(10)	(11)	(14)
Currency forwards		-	-	-	-
Others					
Cash and cash equivalents	5	5	19	1	2
Trade accounts receivable	6	106	146	-	-
Other receivables		16	99	-	80
Other investments	11	-	3,281	-	3,281
Trade accounts payable	18	(9)	(26)	-	-
Payable to contractors		-	(5)	-	(5)
Other payables		(13)	(16)	(7)	(8)
Gross statement of financial position exposure		105	3,498	(6)	3,350
Currency forwards		-	(3,177)	-	(3,177)

Credit risk

Credit risk is risk of failure from a customer or a counterparty to settle its obligations to the Group/Company 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 concentrations 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/Company 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/Company will demand a payment on a case to case basis and also has commercial credit insurance. Management does not anticipate material losses from its debt collection.

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Liquidity risk

The Group/Company monitors its liquidity risk and maintains a level of cash and cash equivalents deemed adequate by management to finance the Group's/Company's operations and to mitigate the effects of fluctuations in cash flows.

Carrying amount and fair values

As at 31 December 2016 and 2015, fair values of financial assets and liabilities are taken to approximately the carrying value, except the following items:

	Consolidated financial statements						
	Carrying value			Fair value			
	Current	Non-current	Total	Level 1	Level 2	Level 3	Total
	(in million Baht)						
31 December 2016							
Financial assets							
Available-for-sale investments	1,924	5,313	7,237	-	7,237	-	7,237
Derivatives	58	-	58	-	58	-	58
Total	1,982	5,313	7,295	-	7,295	-	7,295
Financial liabilities							
Debentures	2,799	47,786	50,585	-	53,083	-	53,083
Derivatives	167	24	191	-	191	-	191
Total	2,966	47,810	50,776	-	53,274	-	53,274
31 December 2015							
Financial assets							
Derivatives	23	8	31	-	31	-	31
Total	23	8	31	-	31	-	31
Financial liabilities							
Debentures	1,058	50,807	51,865	-	54,200	-	54,200
Derivatives	432	97	529	-	529	-	529
Total	1,490	50,904	52,394	-	54,729	-	54,729

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	Separate financial statements						
	Carrying value		Total	Fair value			
	Current	Non-current		Level 1	Level 2	Level 3	Total
(in million Baht)							
31 December 2016							
<i>Financial assets</i>							
Available-for-sale investments	1,924	5,313	7,237	-	7,237	-	7,237
Derivatives	53	-	53	-	53	-	53
Total	1,977	5,313	7,290	-	7,290	-	7,290
<i>Financial liabilities</i>							
Debentures	2,799	47,786	50,585	-	53,083	-	53,083
Derivatives	155	24	179	-	179	-	179
Total	2,954	47,810	50,764	-	53,262	-	53,262
31 December 2015							
<i>Financial assets</i>							
Derivatives	21	8	29	-	29	-	29
Total	21	8	29	-	29	-	29
<i>Financial liabilities</i>							
Debentures	1,058	50,807	51,865	-	54,200	-	54,200
Derivatives	426	97	523	-	523	-	523
Total	1,484	50,904	52,388	-	54,723	-	54,723

Level 2 fair values for debt instrument are based on the yield rate quoted by the Thai Bond Market Association or other markets and for simple over-the-counter derivative financial 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/Company and counterparty when appropriate.

35 Commitments with non-related parties

	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
<i>(in million Baht)</i>				
Capital commitments				
<i>Contracted but not provided for</i>				
Land	2	17	2	-
Plant, machinery and equipment	4,213	10,147	3,686	7,274
Buildings	39	42	39	27
Others	713	982	713	980
Total	4,967	11,188	4,440	8,281

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	Consolidated financial statements		Separate financial statements	
	2016	2015	2016	2015
	<i>(in million Baht)</i>			
<i>Non-cancellable operating lease commitments</i>				
Within one year	169	99	113	31
After one year but within five years	876	318	657	141
After five years	2,623	303	2,353	45
Total	3,668	720	3,123	217
<i>Other commitments</i>				
Unused letters of credits	353	11	-	11
Bank guarantees	2,756	3,328	1,001	861
Guarantees for credit facilities and bank guarantees	8,307	8,677	8,306	8,676
Other agreements	10,212	9,375	9,719	9,190
Total	21,628	21,391	19,026	18,738

36 Litigation

(a) Purchase and sales of raw materials agreement legal case

On 3 December 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 8 March 2010, the dispute was thrown out of the case-list by the arbitration ruling that the Company was not a party to the contract.

On 27 August 2010, the said company filed a civil suit 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 objections against the indictment with the civil court on the basis that the Company was not a party to the contract.

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

Subsequently, on 25 March 2016, the arbitration has reached a conclusion for PTT to compensate the damages in some amount. The Company believes that the outcome of the consideration will not result in any liability to the Company, and therefore, has not provided against any loss that may result from this matter in the financial statements.

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(b) Oil spill incident legal case

During the 3rd quarter of 2014, the number of people in Rayong filed several lawsuits with the Civil Court and 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 25 August 2016 ordered the Company to compensate for damages including interest and rehabilitation, of approximately Baht 11.26 million. The Company is considering the Court judgement to prepare for an appeal. Nevertheless, there are remaining cases that are still on trial by Rayong Provincial Court, in which the Company believes that the outcome of the consideration will not result in material damage and material financial impact to the Company. The Company, therefore, has not provided against any loss that may result from this matter in the financial statements.

37 Events after the reporting period

On 25 January 2017, Solution Creation Co., Ltd. which is a subsidiary of the Company signed a joint venture agreement with S.P. PETPACK Company Limited (“S.P.PETPACK”) to hold 25% of the issued and paid up capital of S.P. PETPACK INTER GROUP (THAI) Company Limited, a subsidiary of S.P. PETPACK, at approximately Baht 50 million for the purpose of jointly investment expansion in building plastic packaging manufacturing plant and develop packaging market in the Republic of the Union of Myanmar. This project follows strategic direction and business strategy of the Group to expand into Cambodia-Laos-Myanmar-Vietnam (“CLMV”) market.

At the Company’s Board of Directors’ Meeting held on 14 February 2017, the Board approved to submit for approval at the Annual General Meeting of the Shareholders for the purchase of the shares, the acceptance of the transfer of rights and obligations under the shareholders agreements and loan agreements, and the acceptance of the transfer of study results in the company operating the propylene and biochemical lines of the petrochemical business and related services business (“Target Companies”) from PTT Public Company Limited (“PTT”) for the amount of 26,300 million Baht, in which such amount may be decreased or increased depending on certain factors but a total amount will not be more than 26,800 million Baht. For the purchase of the shares, such amount may be decreased, if, prior to the share transfer date, there is an incident resulting in the adjustment of purchase and sale price of shares of the Target Companies, or only shares in any of the Target Companies have been purchased and sold. For the acceptance of the transfer of rights and obligations under the Shareholders Agreements and Loan Agreements, such amount shall be decreased or increased pursuant to the actual accrued interest under shareholders loan agreement between PTT and a target company from 1 January 2017 to the acceptance date of rights and obligations under such Loan Agreement or if there is a drawdown under financial support agreement and credit facility agreement between PTT and another target company prior to share transfer date, or if only rights and obligations under some agreements are transferred.

38 Thai Financial Reporting Standards not yet adopted

A number of new and revised Thai Financial Reporting Standards (“TFRS”) have been issued but are not yet effective and have not been applied in preparing these financial statements. Those new and revised TFRS that may be relevant to the Group’s/Company’s operations, which become effective for annual financial periods beginning on or after 1 January 2017 as follows:

TFRS	Topic
TAS 1 (revised 2016)	Presentation of Financial Statements
TAS 2 (revised 2016)	Inventories
TAS 7 (revised 2016)	Statement of Cash Flows

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TFRS	Topic
TAS 8 (revised 2016)	Accounting Policies, Changes in Accounting Estimates and Errors
TAS 10 (revised 2016)	Events After the Reporting Period
TAS 11 (revised 2016)	Construction Contracts
TAS 12 (revised 2016)	Income Taxes
TAS 16 (revised 2016)	Property, Plant and Equipment
TAS 17 (revised 2016)	Leases
TAS 18 (revised 2016)	Revenue
TAS 19 (revised 2016)	Employee Benefits
TAS 20 (revised 2016)	Accounting for Government Grants and Disclosure of Government Assistance
TAS 21 (revised 2016)	The Effects of Changes in Foreign Exchange Rates
TAS 23 (revised 2016)	Borrowing Costs
TAS 24 (revised 2016)	Related Party Disclosures
TAS 26 (revised 2016)	Accounting and Reporting by Retirement Benefit Plans
TAS 27 (revised 2016)	Separate Financial Statements
TAS 28 (revised 2016)	Investments in Associates and Joint Ventures
TAS 33 (revised 2016)	Earnings Per Share
TAS 34 (revised 2016)	Interim Financial Reporting
TAS 36 (revised 2016)	Impairment of Assets
TAS 37 (revised 2016)	Provisions, Contingent Liabilities and Contingent Assets
TAS 38 (revised 2016)	Intangible Assets
TAS 105 (revised 2016)	Accounting for Investments in Debt and Equity Securities
TAS 107 (revised 2016)	Financial Instruments Disclosure and Presentation
TFRS 3 (revised 2016)	Business Combinations
TFRS 8 (revised 2016)	Operating Segments
TFRS 10 (revised 2016)	Consolidated Financial Statements
TFRS 11 (revised 2016)	Joint Arrangements
TFRS 12 (revised 2016)	Disclosure of Interests in Other Entities
TFRS 13 (revised 2016)	Fair Value Measurement
TSIC 15 (revised 2016)	Operating Leases – Incentives
TSIC 25 (revised 2016)	Income Taxes – Changes in the Tax Status of an Enterprise or its Shareholders
TSIC 27 (revised 2016)	Evaluating the Substance of Transactions in the Legal Form of a Lease
TFRIC 10 (revised 2016)	Interim Financial Reporting and Impairment
TFRIC 14 (revised 2016)	TAS 19 (revised 2016) <i>Employee Benefits</i> – The Limit on a Defined Benefit Asset, Minimum Funding Requirements and their Interaction
FAP Announcement no. 5/2559	Accounting Guidance for derecognition of financial assets and financial liabilities

The Group/Company has made a preliminary assessment of the potential initial impact on the consolidated and separate financial statements of these new and revised TFRS and expects that there will be no material impact on the financial statements in the period of initial application.

AUDIT FEE AND NON-AUDIT FEE

Audit Fee

PTTGC and its subsidiaries paid the audit fee to:

- KPMG Phoomchai Audit Limited, which is the auditor of PTTGC and its subsidiaries for the fiscal year of 2016 amounting to 6,870,000 THB. Of this amount PTTGC paid 3,300,000 THB and its subsidiaries paid 3,570,000 THB.
- 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 2016 amounting to 25,400 SGD, 390,540 Euro and 302,500 USD.

Non-Audit Fee

PTTGC and its subsidiaries paid the non-audit fee for tax compliance and tax consulting services, consulting in due diligence and other audits by agreed-upon procedures to:

- KPMG Phoomchai Audit Limited, which is the auditor of PTTGC and its subsidiaries for the fiscal year of 2016 amounting to 1,100,000 THB; plus for incomplete services in the fiscal year of 2016 that will be paid for a total of 1,285,000 THB.
- 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 2016 amounting to 1,120,000 THB, 89,100 EUR and 192,192 CNY; plus for incomplete services in the fiscal year of 2016 that will be paid for a total of 7,943,000 THB, 5,250 SGD, 22,595 Euro and 50,450 USD.







Appendix

COMPANY INFORMATION

Name PTT Global Chemical Public Company Limited

Initial PTTGC

Website www.pttgcgroup.com

Registered Number 0107554000267

Number and Value of Issued Shares

As at 31 December 2016, the Company's registered share capital was Baht 45,088,491,170 made up 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

Establishment 19 October 2011

First Day Trade on the SET 21 October 2011

Business Structure and Value Chain

- Group Performance Center - Refinery & Shared Facilities
- Group Performance Center - Aromatics
- Group Performance Center - Olefins
- Polymer Business Unit
- EO - Based Performance Business Unit
- Green Chemical Business Unit
- High-Volume Specialist (HVS) Business Unit
- Phenol Business Unit
- Services & Others

Number of Employees 6,346 as of December 31st, 2016

Contact

Investor Relation:

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66(0) 2 265-8364, 66(0) 2 140-8714

Email: ir@pttgcgroup.com

Corporate Governance & Secretarial:

Tel: 66(0) 2 265-8635, 8456, 66(0) 2 140-8759

Email: cg@pttgcgroup.com

Head Office:

Tel: 66(0) 2 265-8400

Fax: 66(0) 2 265-8500

Head Office Address

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Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900

Tel: 66(0) 2 265-8400

Fax: 66(0) 2 265-8500

Branch 1 : Rayong Office

59 Ratniyom Road, Noen Phra Sub-District,
Muang Rayong District, Rayong Province 21150

Tel: 66(0) 3899-4000

Fax: 66(0) 3899-4111

Branch 2 : Olefins I-1

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

Branch 3 : Olefins I-4

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

Branch 4 : Aromatics 1

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

Branch 5 : Aromatics 2

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

Branch 6 : Refinery

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

Branch 7 : Jetty and Buffer Tank Farm

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

Branch 8 : Aromatics Tank Farm

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

Branch 9 : Laboratory Service Center

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

Branch 10 : PTTGC 10

555/1 Energy Complex, Building A, 3rd, 10th Floor
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Tel: 66(0) 2 265-8400

Fax: 66(0) 2 265-8500

Branch 11 : Olefins 3

8, Padaeng Road, Map Ta Phut Sub-District,
Muang Rayong District, Rayong Province 21150

Tel : 66(0) 3899-4000

Fax : 66(0) 3897-6205

Branch 12 : Polyethylene

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

References**Securities Registrar**

Thailand Securities Depository Company Limited
93 Rachadapisek Road, Dindaeng, Dindaeng,
Bangkok 10400

Tel: 66(0) 2009-9000 Call center : 66(0) 2009-9999

Fax: 66(0) 2009-9991

Website www.set.or.th/tsd

Registrar and Debenture Holders Representative

Bank of Ayudhya Public Company Limited
1222 Rama III Road, Bang Phongphang, Yan Nawa,
Bangkok 10120

Tel: 66(0) 2296-3582,5557

Fax: 66(0) 2683-1298

Website www.krungsri.com

Registrar Services

Siam Commercial Bank Public Company Limited,
Registrar 1, 15th Floor, North Wing,
G Tower Grand Rama 9, 9 Rama 9 Road, Huaykwang,
Huaykwang, Bangkok 10310

Tel : 66(0) 2128-2324-9

Fax : 66(0) 2128-4625

Global Transaction Services Division Corporate Trust
7th Fl. Zone A, 9 Ratchadapisek Road, Chatuchak,
Bangkok 10900

Tel: 66(0) 2544-2923

Fax: 66(0) 2544-7475

Website www.scb.co.th

US\$ Bond Registrar Citibank, N.A

39th Floor, Citibank Tower, Citibank Plaza,
3 Garden Road, Central, Hong Kong

Tel: 852-2868 7961

Fax: 852 2323 0279

Auditor

1. Mr. Niran Lilamethawat CPA No. 2316 or
2. Mr. Winid Silamongkol CPA No. 3378 or
3. Mr. Charoen Phosamritlert CPA No. 4068

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Tel: 66(0) 2305-8000

Fax: 66(0) 2305-8010

Website www.linklaters.com

TECHNICAL TERMS & ABBREVIATIONS

Technical Terms & Abbreviations	
Aromatics	A group of unsaturated cyclic hydrocarbons containing one or more benzene rings of six carbon atoms. They are highly reactive and chemically versatile. The group name is derived from the strongly and weakly unpleasant odor characteristic of most chemicals in this family.
Bis Phenol A (BPA)	BPA is an intermediate product produced from Acetone and Phenol used to produce Polycarbonate and Epoxy Resins.
Butadiene	Butadiene is an intermediate in 4 carbon atoms family, used as raw materials to produce synthetic rubber. It is also used extensively in the production of plastics.
Butene -1	Butene-1 is an organic chemical base, derived from cracking of petroleum or C4 distillate, and used mainly to produce butadiene and butanol.
Carotenoid	Carotenoid is used as a colorant in food for human consumption and as constituents in vitamins and dietary supplements.
EO Base Performance	EO Based is Ethylene Oxide derivatives such as Ethylene Oxide, Ethylene Glycol, Ethanolamine Product and Ethoxylate.
Ethanolamine (EA)	EA include Monoethanolamine, Diethanolamine and Triethanolamine. Ethanolamine are used as ingredient in sweeteners, detergent and specialty cleaner formulations, flexible urethane foam catalysts, and pharmaceuticals.
Ethoxylate	Ethoxylate is produced from Ethylene Oxide and often processed to be used as a foaming control agent in soap and detergent.
Ethylene	Ethylene is an essential organic chemical base derived from the thermal cracking of Ethane and Naphtha or dehydration of Ethanol. It is used to produce many organic chemical intermediates, such as Polyethylene, Ethylene Oxide, Ethylene Glycol, Vinyl Chloride, Styrene, Acetaldehyde and Ethanol.
Ethylene Glycol (EG)	EG is produced from Ethylene (ethene), via the intermediate Ethylene Oxide. Ethylene Oxide reacts to water to produce Ethylene Glycol. A major product is Monoethylene Glycol and by-products are the Ethylene Glycol, Diethylene Glycol and Triethylene Glycol.
Ethylene Oxide (EO)	EO is a highly reactive chemical intermediate used in the production of Ethylene Glycol and other Oxide derivatives such as Glycol Ethers, Polyethylene Glycol, Polyether Polyols, Diethylene and Triethylene Glycols and Ethanolamine.
Fatty Alcohol	Fatty alcohol is produced from Methyl Ester and Hydrogen (Hydrogenation). Fatty alcohol may be used in personal care product.
Glycerin	Glycerin is a by-product from Methyl Ester production. Glycerin may be used in pharmaceutical, food, and personal care product.

Technical Terms & Abbreviations

Hexamethylene Diisocyanate (HDI)	HDI is an intermediary chemical used in the production of polyurethane.
High Density Polyethylene (HDPE)	Produced from Ethylene, HDPE is an inexpensive, flexible, durable and Chemical-resistant. One of the major uses of HDPE is in blow-molding applications, such as bottles for milk and non-carbonated drinks, fuel tanks for automobiles and containers of household and industrial chemicals. HDPE is also used for films and pipes.
Hydrocracking	Hydrocracking is an oil refinery process that makes use of hydrogen. The process may be used for producing gasoline, jet fuels and high-quality lubricating oils. It may also convert distillation residues into lighter oils.
Linear Low Density Polyethylene (LLDPE)	LLDPE is a type of Polyethylene and has basic properties similar to LDPE. LDPE and LLDPE are substitutable product for each other.
Low Density Polyethylene (LDPE)	LDPE is a type of Polyethylene used for thin films, tubes, mechanical parts, toys and electric wire insulation.
Methyl Ester	Methyl Ester are oleochemicals derived from plant feedstock, such as palm-kernel oils. Methyl Ester may be used in the esterification reaction for biodiesel resources.
Methyl Amines	Methyl Amines derivatives have beneficial uses in many industries, including water treatment, gas and oil treatment, animal nutrient, agricultural chemicals and personal care products.
Mixed C4s	Mixed C4s are the colorless gases produced from naphtha crackers. It may be used as a raw material for the production of Butadiene and Butane-1.
Mixed Xylenes	Mixed Xylenes, the mixture containing Xylenes such as Orthoxylene, Metaxylene and Paraxylene, are used in the production of solvents and high value downstream product.
Mono Ethylene Glycol (MEG)	MEG is an organic chemical compound derived from the oxidation of Ethylene. It is produced by the reaction of Ethylene Oxide and water. MEG is mainly used for Polyester and anti-freeze production.
Naphtha	Naphtha, a general term used for low boiling hydrocarbon fractions, is a product of crude oil or condensate splitter.
Olefins	Olefins are straight or branched-chain hydrocarbon with at least one unsaturated carbon-carbon bond. They are products by cracking feedstock from raw materials such as natural gas and light naphtha. The main Olefins are Ethylene and Propylene which also include Butadiene, and C4 derivatives.
Oleochemicals	Oleochemicals are bio-based and environmentally friendly chemicals derived from plants and animal fats, which have similar functions as petrochemicals derived from petroleum.

Technical Terms & Abbreviations

O-Xylene or Orthoxylene (OX)	An aromatic compound is used in the manufacturing of plasticizers and unsaturated polyesters.
Polyethylene Terephthalate (PET)	PET is made by the combination of Ethylene Glycol and Terephthalic acid. Typical end uses for PET are packaging and fibers.
PolyVinyl Chloride (PVC)	PVC is a versatile thermoplastic polymer produced from Vinyl Chloride Monomer (VCM). It is extensively used in the construction sector for a variety of applications including pipes, siding and window/door profiles, wire and cable insulation, rigid film/sheet and flooring.
Polymers	When certain individual molecules (monomers) integrate and link up in a chain-like fashion, they form a Polymer. The chemical reaction that forms a Polymer is called polymerization.
Polyurethane (PU)	PU is a polymer composed of a chain of organic units joined by urethane links.
Propylene	Propylene is a flammable gas which is largely derived either as a co-product of the refinery FCC process used to make gasoline or as a co-product of the steam cracking process used to make Ethylene. Propylene has virtually no independent end use, but is an important input for a significant number of industrial products, and is the main feedstock used to make Polypropylene and Acrylonitrile.
P-xylene or Paraxylene (PX)	PX is an aromatic hydrocarbon in the form of colorless and flammable liquid that is recovered from mixed Xylenes streams by adsorption and by isomerization of aromatics. It is an upstream raw material for PTA and DMT, which are used for production of downstream Polyester fiber and Polyethylene Terephthalate.
Pyrolysis Gasoline	Pyrolysis Gasoline is a naphtha-range product with a high aromatics content used in the production of Benzene, Toluene and Mixed Xylenes and as a motor vehicle gas blending stock.
Toluene	Toluene is an aromatic hydrocarbon used as an octane enhancer in gasoline, as a chemical intermediate in the production of Benzene, Paraxylene, Toluene Diisocyanate and as a solvent in paint.
Toluene Diisocyanate (TDI)	TDI is an intermediary chemical used in the production of Polyurethane.



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