

SUSTAINABLE GROWTH F ∞ R ALL



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To the country

Ensuring long-term energy security by providing sufficient high-quality energy supply at fair prices to support economic growth

To community and society

Maintaining a good standing corporate status in Thai society by exercising environmental stewardship of internationally accepted standards and helping to improve the quality of life for community and society

To shareholders

Operating profitable business that leads to sustainable growth while generating optimum returns

**To customers**

Ensuring customer satisfaction and loyalty by delivering world-class quality products and services at fair prices

To business partners

Conducting fair business practice with all partners while promoting trust, relationship, and cooperation to expand business capability and increase efficiency in long-term business partnership

To employees

Promoting capability building professionally and ensuring employees' well-being is on the level with other leading companies

Thai Premier Multinational Energy Company



PTT GROUP VISION

PTT GROUP MISSION

To conduct integrated energy and petrochemical business as the nation's energy company whose mission to equally respond to all stakeholders through the following aspects

PTT STRATEGIC FRAMEWORK



PTT GROUP VALUES



The way we work together

S

Synergy

P

Performance
Excellence

I

Innovation

R

Responsibility
for Society

I

Integrity
& Ethics

T

Trust
& Respect



Financial Highlights

Statement of Income

(THB million)

	2015	2016	2017
Sales and Service Income	2,025,552	1,718,846	1,995,722
Earnings before Interest, Taxes, Depreciation and Amortization (EBITDA)	286,214	312,526	345,395
Net Income (Loss)	19,936	94,609	135,180

Statement of Financial Position

(THB million)

	2015	2016	2017
Total Assets	2,173,996	2,232,331	2,232,314
Total Liabilities	1,086,309	1,060,734	983,759
Non-controlling Interests	390,540	408,649	429,884
Total Equity Attributable to Owners of the Parent	697,147	762,948	818,672

Shares or Information about Common Shares

		2015	2016	2017
Shares and Fully Paid-up Share Capital	(Million Shares)	2,856	2,856	2,856
Book Value per Share	(THB)	244.07	267.14	286.65
Earnings per Share	(THB)	6.73	32.68	46.74
Dividend per Share	(THB)	10.00	16.00	20.00
Dividend Payout Ratio to Net Income	(%)	148.6	49.0	42.8
Share Price at the End of Financial Period	(THB)	244	372	440

Financial Ratios

		2015	2016	2017
Net Profit to Total Sales Revenue	(%)	1.52	7.54	9.25
Return on Equity	(%)	2.89	12.96	17.09
Return on Total Assets	(%)	1.39	5.88	8.27
Debt to Equity	(Times)	0.61	0.52	0.42
Net Debt to Equity	(Times)	0.29	0.19	0.11
Net Debt to EBITDA	(Times)	1.09	0.71	0.39
Interest Coverage	(Times)	9.50	9.23	11.01

Financial Highlights

01

Sales
and Service Income
in 2017

1,995,722

THB million

Earnings before Interest, Taxes,
Depreciation and Amortization (EBITDA)

345,395

THB million

Net Income

135,180

THB million

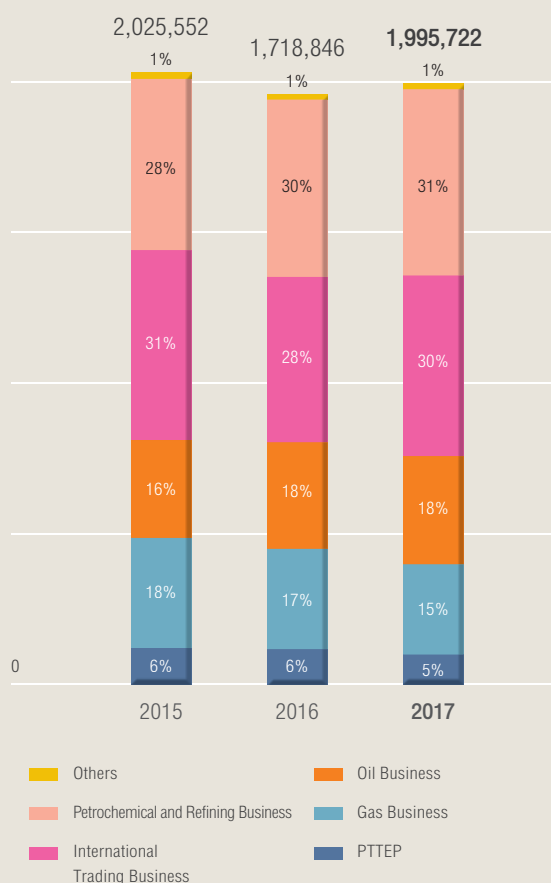
Sales and Service Income

Unit: THB million

-15%

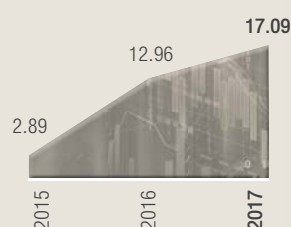
+16%

3,000,000

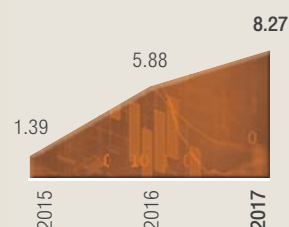


Financial Ratios

Return on Equity
(%)

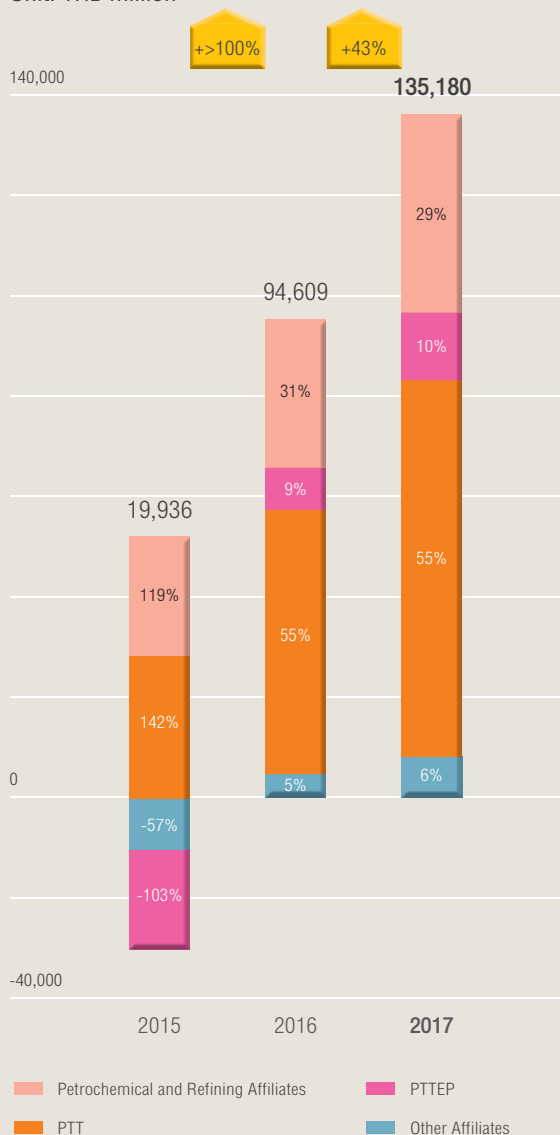


Return on Total Assets
(%)



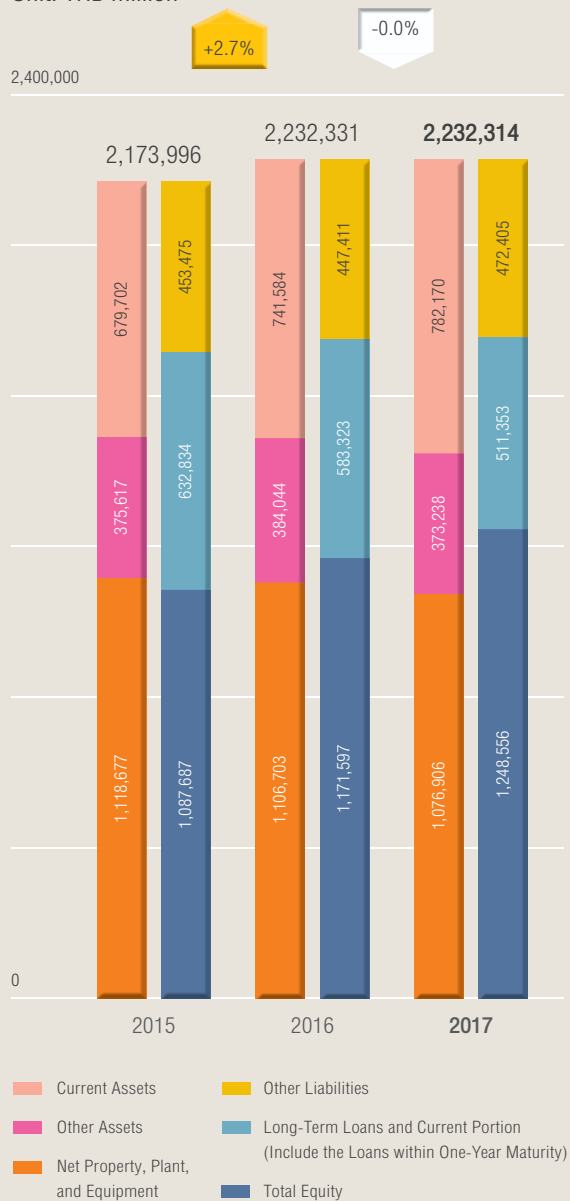
Net Income

Unit: THB million

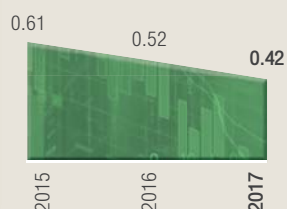


Statement of Financial Position

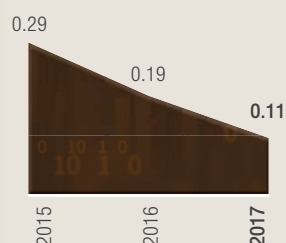
Unit: THB million



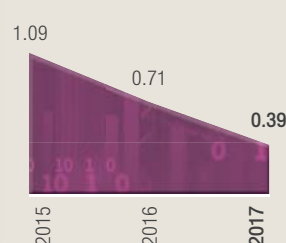
Debt to Equity (Times)



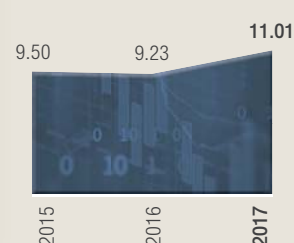
Net Debt to Equity (Times)



Net Debt to EBITDA (Times)



Interest Coverage (Times)



02

PTT Information

Name	PTT Public Company Limited
Initial	PTT
Registered Number	0107544000108
Type of Business	The company operates petroleum business through investments in subsidiaries, joint ventures, and associates (PTT Group), which are engaged in upstream and downstream petroleum, coal, power, and infrastructure businesses.
Registered Capital	THB 28,572,457,250, including 2,857,245,725 common shares at THB 10 per share (as of December 31, 2017)
Issued and Fully Paid-up Capital	THB 28,562,996,250, consisting of 2,856,299,625 common shares at THB 10 per share (as of December 31, 2017)
Head Office	555 Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900, Thailand Telephone: 66 (0) 2537-2000 Fax: 66 (0) 2537-3498-9 Website: www.pttplc.com
Corporate Communication and Branding Department	Telephone: 66 (0) 2537-2150-1 Fax: 66 (0) 2537-2572, 66 (0) 2537-2171 E-mail: corporate@pttplc.com
Investor Relations Department	Telephone: 66 (0) 2537-3518-9 Fax: 66 (0) 2537-3948 E-mail: ptt-ir@pttplc.com
Office of the President and Corporate Secretary	Telephone: 66 (0) 2537-3885-6, 66 (0) 2537-3855 Fax: 66 (0) 2537-3883, 66 (0) 2537-3887 E-mail: corporatesecretary@pttplc.com

References

- Securities Registrar

Thailand Securities Depository Company Limited

1st Floor, The Stock Exchange of Thailand Building,
93 Ratchadapisek Road, Dindaeng, Bangkok 10400, Thailand
Telephone: 66 (0) 2009-9999
Fax: 66 (0) 2009-9991

- Auditor

Office of the Auditor General

Rama VI Road, Phayathai, Bangkok 10400, Thailand
Telephone: 66 (0) 2271-8000
Fax: 66 (0) 2618-5769

- Registrar

Siam Commercial Bank Public Company Limited

Registrar 1, Markets Operations Division,	Corporate Trust Sale,
15 th Floor, North Wing,	Corporate Trust,
G Tower Grand Rama 9,	9 Ratchadapisek Road,
Huai Khwang, Bangkok 10310, Thailand	Chatuchak, Bangkok 10900
Telephone: 66 (0) 2128-2394-9	Telephone: 66 (0) 2544-3937,
	66 (0) 2544-2923
Fax: 66 (0) 2128-4625	Fax: 66 (0) 2544-7475



03

Message from the Board of Directors

PRIDE AND TREASURE OF THAILAND



Dear Shareholders,

2017 was the year that the global oil prices continually rose since the global oil prices crisis in late 2014, resulting from the increase of global crude oil supply by 1.5 million barrels per day since the recovery of the world's economy. In addition, OPEC and non-OPEC producers, namely Russia, reached agreement to maintain production effectively. Consequently, in 2017, the average Dubai oil prices increased to USD 53.2 per barrel from USD 41.3 per barrel in 2016. Likewise, the demand for petroleum and petrochemical products climbed up as the global economy improved. Urban communities also expanded, resulting the gross profit of petrochemical and refinery businesses to increase. In addition, the Thai economy expanded by 3.9% and was higher than forecasted due to recovery of export, tourism expansion, and economic stimulation policies. Therefore, domestic demand for energy and petrochemicals was increased.

From the aforementioned factors of the economic boost and demand of global oil supply, for the 2017 overall performance, PTT Group has THB 2 trillion in sales revenue, increased from 2016 by 16% and has consolidated profit of THB 135,180 million, rose by 43% from previous year. It is consisted of profit from operating performance at THB 74,552 million (55%) and profit from companies of PTT Group at THB 60,628 million (45%). It is considered as the best performance since PTT has been founded. Apart from the aforementioned factors, the success is a result of Operational Excellence and Productivity Improvement of PTT Group by reviewing working processes and business models, synergizing power of the group, as well as utilizing technology, innovation and digitization in marketing and production. The productivity improvement strategy has trimmed about THB 30 billion in expenses. The rising profit enables PTT and its flagship companies to remunerate the government in the forms of tax and dividend of about THB 70 billion, which is the highest amount since PTT has been founded as well.

The success of Productivity Improvement is a part of the 'Do Now' strategy to enhance competitiveness of PTT Group, which needs to continue seriously to create the highest added value, which will enable PTT Group's Return on Investment (ROI) to catch up with the leading competitors. In order to gain confidence in future business growth, the 'Decide Now' strategy aims to ensure investment effectiveness of PTT Group. It urges for making decision in strategic investment to expand the current operating business including expanding natural gas pipelines, LNG terminal, oil and retail businesses as well as PTT group's businesses including exploration and production, electricity and petrochemical and refinery. Oil and retail business focuses on creating inclusive growth with partner alliances. PTT Life Station concept will be leveraged to be 'Living Community' in order to be center of the community fulfilled with bonding of local people. The business improvement also covers the designing of service stations under the concept of 'PTT Friendly Design' which can serve customers regardless of ages and disabilities.

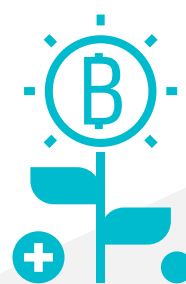
In order to respond to disruptive technology and changing consumer behaviours due to the megatrends, PTT prepares to invest in new S-Curve businesses for the long term under the 'Design Now' strategy. PTT's board of directors approved the management structure by forming technology and engineering business unit to be responsible for optimizing innovation and technology to create new businesses. New generation of employees who received scholarships from PTT to study at the world's leading universities are now working under the "Express Solution" or "ExpresSo" team to analyse the opportunities for Start up businesses and also investing in Corporate Venture Capital (CVC).



Optimizing innovation and technology to drive new businesses is aligned with the Thailand 4.0 policy which aim for developing existing S-Curve and New S-Curve for the country, PTT signed the Memorandum of Agreement with The National Science and Technology Development (NSTDA) to develop the Wangchan Valley as the center of research and development of innovation and technology as well as creating environment and network with domestic and international entrepreneurs (Eco-System) in order to develop new businesses in the Eastern Economic Corridor of Innovation (EECi).

The aforementioned business strategies also focus on inclusiveness along with balancing stakeholders. PTT leverages its Corporate Social Responsibility (CSR) into Creating Shared Value (CSV) with Social Enterprise (SE). In 2017, PTT jointly with its flagship companies including PTT Exploration and Production Public Company Limited (PTTEP), PTT Global Chemical Public Company Limited (PTTGC), Thai Oil Public Company Limited (TOP), IRPC Public Company Limited (IRPC), Global Power Synergy Public Company Limited (GPSC) and PTT Oil and Retail Business Company Limited (PTTOR), founded the PTT Sarn Palung Social Enterprise Company Limited in order to gather business experiences and expertise to create new business model for community and society. One of the pilot project is Coffee Sourcing for Sustainability, which having farmers growing coffee in the borders of Chiang Rai to sell coffee seeds directly to Amazon's coffee roasters. Another project is Café amazon's project which grooms people with hearing disability to pursue career as baristas.

In addition, the board of directors also approved the inclusion of SDGs (the United Nation's Sustainable Development Goals) as a part of PTT's future business direction which covers public's energy accessibility and efficiency as well as increasing clean energy usage along with preserving land-based and marine natural resources. It also includes lowering greenhouse gas emission in order to prevent climate change. The key project in 2017 is Sustainable Khung Bang Kachao Project with the goal to develop the area to be the new green space near Bangkok. The Energy for Community Project has extended into floating solar farms in the area that has no electricity. The community, thus, are now self-reliable in terms of energy, with the lower agricultural costs in addition.



For the 2017 overall performance, PTT Group has consolidated profit of THB 135,180 million, rose by 43% from previous year. It is considered as the best performance since PTT has been founded.





DO NOW
DECIDE NOW
DESIGN NOW

Through the years, PTT business operation is adhered firmly to good governance and transparency. The working process continuously develop to reassure that internal mechanisms are efficient and effective, such as investment screening system, procurement process, internal control as well as introducing Integrity Pact to key projects. Eventually in 2017, PTT received the 'Honourable Mention Corporate Transparency Award', granted by National Anti-Corruption Commission (NACC), and 'Excellence Award in Innovative Integrity and Integrity in Internal Working awards' from NACC.

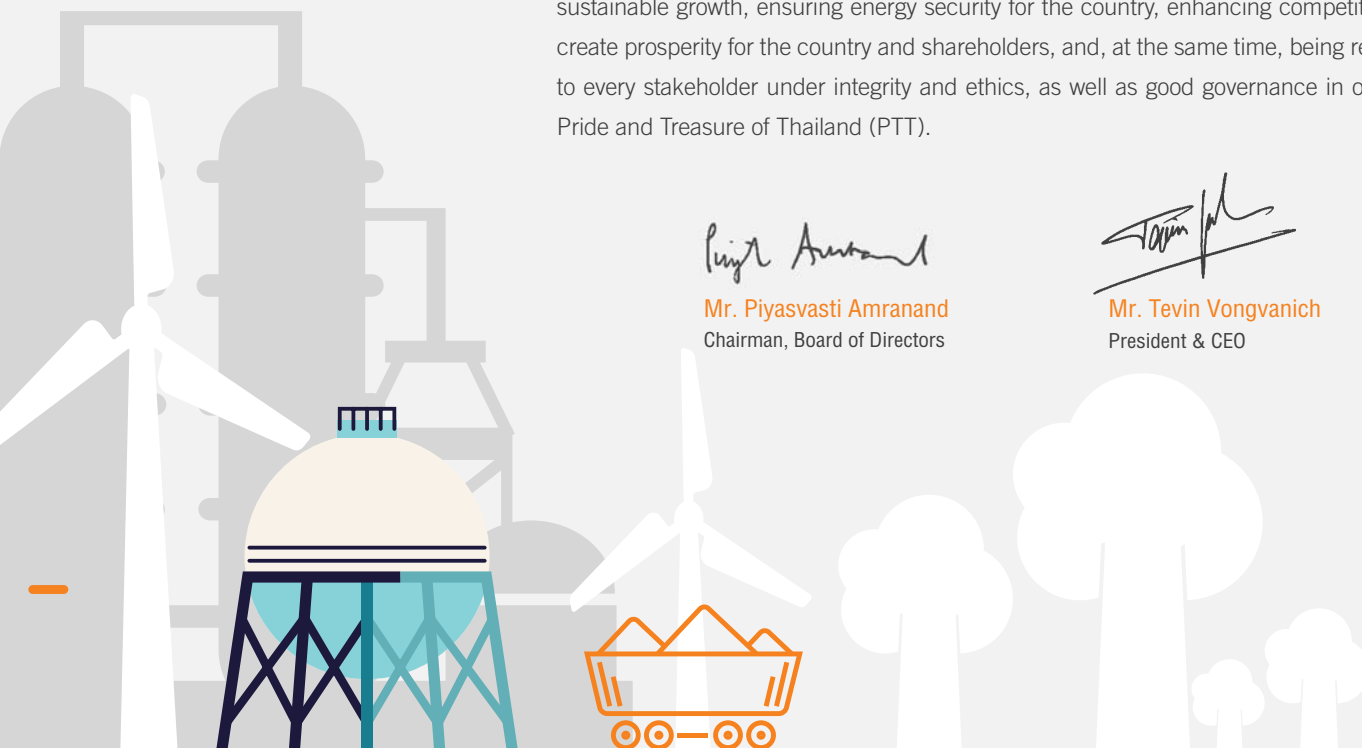
The aforementioned performance is on the 'Pride and Treasure of Thailand' or 'PTT' strategic framework, which focuses on creating business success to make PTT the country's treasure. It also stresses PTT's responsibility to society, community and environment as well as balancing every stakeholder in order to be pride of Thais.

PTT's success can be reflected from the awards and achievements in 2017 such as the "Corporate Improvement Excellent Award" granted by HRH Princess Maha Chakri Sirindhorn at the Thailand Corporate Excellence Award 2016, which awarded to corporates that are excellences in many areas in order to leverage the corporate performance. The achievements also include the State Enterprise of the Year Award 2017 (the 2nd consecutive year), which PTT won the Excellence in Innovation award for the 8th consecutive year from the Bioplastic compound-based silver skin of coffee (Bio SSCMB) and the Excellence in Social and Environmental Responsibility from the "Natural and Clean Energy for the Community". PTT was also listed in the Down Jones Sustainability Induces for the 6th consecutive year. In fact, this year marked the first in which PTT has the highest scores in Industry Leader category in Oil & Gas and Upstream & Integrated (OGX). Other awards include Sustainable Shares from IOD and SET, and the Excellence CG Scoring for the 9th consecutive year. These awards are resulted from all executives' and employees' dedication and commitment as well as good governance and earnestness of PTT board of directors.

On behalf of PTT Board of Directors, may we express our heartfelt appreciation to all shareholders and stakeholders for the continually trust and support for PTT. We reassure here that the Board, the management and all employees determine to gear PTT towards sustainable growth, ensuring energy security for the country, enhancing competitiveness to create prosperity for the country and shareholders, and, at the same time, being responsible to every stakeholder under integrity and ethics, as well as good governance in order to be Pride and Treasure of Thailand (PTT).

Mr. Piyasvasti Amranand
Chairman, Board of Directors

Mr. Tevin Vongvanich
President & CEO



Report of the Audit Committee

04



K. Kittayarak

Prof. Dr. Kittipong Kittayarak
Chairman of the Audit Committee

Dear Shareholders

PTT current Audit Committee consists of three knowledgeable independent directors, chaired by Professor Dr. Kittipong Kittayarak, with Mrs. Nuntawan Sakuntanaga and Mr. Vichai Assarasakorn serving as members. Mr. Chalot Boonlai, Executive Vice President, Office of Corporate Audit serves as secretary to this committee.

The committee executed its Board-assigned duties in line with its own charter, which agrees with SEC's best practices. It reviewed and pushed for PTT's compliance with corporate governance, sufficient risk management and internal control systems, efficient and effective internal audit, and a systematic structure and business processes. It ensured PTT's emphasis on being a transparent organization while upgrading the quality of PTT Group's internal audit to develop the Office of Corporate Audit into a trustworthy partner to supplement long-term value for PTT with due regard for satisfying stakeholders' comprehensive needs. Below are the highlights:

- Forging a corporate culture of Governance, Risk Management & Control and Compliance (GRC) and driving the Three Lines of Defense concept. To this end, it advocated proactive internal audit, in which the internal auditor communicated and educated to executives and the workforce on corporate governance, risk management, internal control, and compliance in line with the criteria, implementation of the anti-corruption policy and internal audit processes through description, video clips, and books to publicize the lessons learned from the past audits. GRC serves as a key tool for executives to supervise and direct business for transparency to accomplish business objectives under business ethics. Besides, the committee pushed PTT to improve complaint-handling and whistleblowing for greater efficiency, effectiveness, and fairness to all.

- Pushing for prepared personnel, regarded as a vital business resource so that internal auditors may become knowledgeable and competent, equipped with essential skills required to accommodate volatile business circumstances. Internal auditors must be able to leverage IT systems well. Finally, the committee valued the development of internal auditors to provide them with competencies for professional and efficient audits.

- Advocating the leveraging of IT for optimal benefit to PTT by linking the work of the 1st Line of Defense (operators), the 2nd Line of Defense (oversight units), and the 3rd Line of Defense (the internal auditors) for greater efficiency and effectiveness in operation and oversight, while preventing non-compliance with the law or PTT's regulations as well as preventing the occurrence of corrupt practices.

- Upgrading internal audit by focusing on internal auditors' professionalism and credibility to raise the efficiency and effectiveness of their work to keep pace with business and the tide of change in the present digital world. Valuing risks could significantly affect the corporation, particularly strategic ones and risk aspects that attract the public. Focusing on audit to improve business efficiency, which is a link for the convergence of business units and the internal audit function. Finally, encouraging the application of IT tools and system for greater audit efficiency matching the greater volume of data.

This year the committee held 17 meetings, where consultations were held with the management, the internal auditor, and the external auditor as highlighted below:

1. Review of financial statements: With the management, Office of Corporate Audit, and external auditor, the committee reviewed PTT's quarterly and annual financial statements and consolidated financial statements this year as well as connected transactions, related party transactions, or those with potential conflicts of interest. The committee asked the external auditor about the accuracy and completeness of the financial statements, adjustment of key account entries affecting the statements, adequacy and suitability of account recording, audit scope, information disclosure that was accurate, complete, and adequate, as well as its own freedom. All these elements ensured that the preparation of the financial statements followed legal requirements and accounting

standards under generally accepted accounting principles that are credible and timely, and that adequate information was disclosed in such statements for the benefit of users.

The committee met exclusively with the external auditor team on one occasion in the absence of the management to consult them about audit plans, freedom of execution, and their professional views with a focus on accurate, complete, and adequate presentation of data.

2. Review of risk management: Each quarter, in conjunction with the management, the committee reviewed the efficiency and suitability of risk management processes resulting from inside and outside PTT, including the risk management policy, plans, and management approach that affect PTT Group's operations and other event risks. It provided recommendations for improvement of these, focusing on corporate strategic risks; management and grooming of personnel to accommodate volatile business circumstances; cybersecurity management; Big Data exploitation; the need for investment vetting in PTT Group's megaprojects; and management of aspects of public interest. The committee supported the management's development of a systematic work plan to be ready to address unforeseen events.

3. Review of the effectiveness of internal control: The committee valued the forging of awareness among the management and employees of corporate governance, risk management, internal control, and compliance (GRC). It promoted the GRC corporate culture so that PTT may command sound management practices together with efficient and effective business operations under the Three Lines of Defense concept, which stressed everybody's understanding and strict compliance with regulations and their own job responsibilities. The focus was on prevention and problems faced by the 1st Line of Defense and on professionalism and systematic work. Every quarter it reviewed PTT's internal control system with the external auditor and the Office of Corporate Audit by reviewing operations; resource consumption; stewardship of properties; prevention or reduction of errors or damage, losses, waste, or corrupt practices; credibility of financial reports; compliance with laws, regulations, and Cabinet resolutions. The external auditor agreed that no significant problems or material shortcomings had been detected.

This year's assessment outcomes of internal control under the Audit Commission Regulations on the Definition of Internal Audit Standard, B.E. 2544 (2001), found that PTT's internal control was adequate and effective for its businesses. Finally, all executives cooperated by responding to the internal control assessment questionnaires.

4. Review of good governance: This year the committee focused on the management policy in support of systematic corporate governance and supported application of the IT system in conducting corporate governance and audit for greater job efficiency and effectiveness, while preventing non-compliance with the law or PTT's regulations, including minimization of the probability of corruption. It pushed for the Internal Control Mindset to forge awareness of the prevention and resistance to corrupt practices among executives and employees through ongoing seminars and training. The committee also reviewed compliance with relevant laws and regulations, as well as defined business processes, and related party transaction and connected transactions among PTT Group to ensure sensible conformance to normal business conditions. Finally, the committee reviewed the process of complaint-handling and whistleblowing and provided recommendations on process improvement to raise efficiency and effectiveness and ensure alignment with PTT's corporate governance and business philosophy. These included careful consideration of complaints for fairness to all parties, equipped with suitable protection of complainants and whistleblowers.

The committee held one meeting with the Management Committee, counseling them on the actions needed to ensure PTT's Pride of Thais goal achievement, anti-corruption actions, social responsibility activities, and comprehensive due regard for stakeholders. It also accelerated corrective actions in response to audit recommendations.

5. Review of internal audit: The committee provided recommendations on the upgrading of internal audit in manpower, processes, and tools and technology with a focus on professionalism and credibility of internal auditors. To this end, the efficiency and effectiveness of their work are enhanced to keep pace with the digital world's business and tide of change. PTT valued risks, particularly those that could significantly impact the corporation, especially strategic risks, including investment in projects of prohibitive value and business implementation of emerging IT systems, and emerging risks together with risk aspects of public interest. On these matters, PTT's focus was on audit for productivity improvement and application of IT tools and technology to audit work, as well as internal auditor development so that they may be competent enough to employ such systems. Also, the extension of CCMS (Continuous Control Monitoring and Auditing Systems) to aid screening and continuous monitoring of abnormalities (Red Flags) and potential frauds in various processes, to sales processes and the Order to Cash process, which is due for completion by 2018; constant improvement of the CCMS system for the Procure to Pay process for modernity and efficiency; and finally, the oversight for internal audit quality assessment and encouragement of internal auditors to qualify for international certificates of the audit profession.

The committee reviewed the Office of Corporate Audit's strategic plans, annual and long-term internal audit plans, and conformance to the plans and audit findings. To this end, it provided recommendations and monitored corrective actions for significant aspects of good governance and adequate internal control. It considered amending the charter for internal audit and reviewed the annual budget of the office, its personnel development, recruitment, rotation, and training plans. Also reviewed were the office's adequacy and suitability of resources, KPIs, and the annual merit consideration for the executive vice president in charge of this office.

6. Quality assurance of the Audit Committee: The committee did not only review and amend its own charter, but also assessed its own performance as a group and individuals (performance self-assessment and cross-assessment) in line with the best practices of the State Enterprise Policy Office to ensure efficient and fruitful performance. Assessment findings were regarded as excellent. Finally, the committee reported its performance outcomes to the Board every quarter, with remarks and views provided for process improvement of governance, risk management, internal control, and compliance with PTT's regulations.

7. Proposal of the external auditor for 2018: The committee endorsed the Office of the Auditor General of Thailand (OAG) as PTT's external auditor for 2018 for the Board's concurrence and the shareholders' final approval at the AGM 2018. Incidentally, in the absence of PTT's management, the committee reviewed with the external auditor the work scope, approach, and plans of the external auditor.

In summary, the Audit Committee performed its charter duties and responsibilities with competence, care, prudence, and adequate freedom while providing creative views and recommendations for the equitable benefit of all stakeholders. Its opinion is that PTT's financial statements were accurate, credible, and in line with generally accepted accounting standards. In addition, PTT commanded compliance with applicable laws and business obligations, together with good governance, adequate risk management and a suitable, effective internal audit system.

Report of the Nominating Committee

05



Air Marshal Boonsuib Prasit

Chairman of the Nominating Committee

Dear Shareholders

The Nomination Committee consists of three independent directors, chaired by Air Marshal Boonsuib Prasit, together with Mr. Chanvit Amatamatucharti and Mr. Thon Thamrongnawasawat as members. The Vice President of the Office of the President and Corporate Secretary serves as secretary to the committee. The committee performed Board-assigned duties with prudence, transparency, and fairness. The committee also amended its scope of work embracing current duties to be more comprehensive, practical, and align with PTT's business strategies with due regard for shareholders' and stakeholders' best interests. This year, the committee held a total of three meetings as described below.

- Nomination of directors to replace those who are due to retire by rotation from various professions with suitable qualifications as required by related laws and regulations, PTT Article of Association, and corporate governance principles. Those nominated candidates must be competent and suitably qualified for PTT's businesses, based on the analysis of PTT Board Skill Matrix, list of Director's Pool of Ministry of Finance and Thai Institute of Directors (IOD). Their working experiences and background are also taking into account

to ensure shareholder confidence. With aforementioned, the nominated candidates must possess free of the tarnished background and no conflicts of interest with PTT. The names of suitably qualified candidates were purposed to the Board for approval and subsequent endorsed by the Shareholder at the AGM. Notwithstanding, those names must get approval from the State Enterprise Policy Committee, according to the Regulations of the Office of the Prime Minister on Policy and Supervision of State Enterprises 2014.

- Nomination of directors to replace those who are resigning during the year and purposed to the Board for designation. Similar to the aforementioned, the name of nominated directors must get approval from the State Enterprise Policy Committee, according to the Regulations of the Office of the Prime Minister on Policy and Supervision of State Enterprises 2014.

- Selection of suitable directors to perform duty as specific committee, by considering composition of each committee, qualifications, expertise, competencies, related skills, and suitability. Then, purposed to the Board for approval, except the Nomination Committee, itself, which directly appointed by the Board of Directors.

- Amendment of PTT Board Skill Matrix to be more diversified, modernize, and suitable with PTT's businesses by adding essential skills, knowledge, familiarity that cover both education and experiences so as to achieve PTT's mission and business strategies, in both short term and long term, together with the state enterprise strategic plan with a primary objective of driving the company toward its goals and mission.

- Revision of its duties and scope of works to be more thoroughly, suitable, and keep up with times and situations as well as compatible with PTT's Good Corporate Governance.

Finally, this year the Board allowed the minority shareholders with the opportunity to nominate directors, but none of the shareholders put forward at the 2018 AGM. For transparency, other details are described in this annual report.

Report of the Remuneration Committee

06



Mr. Boontuck Wungcharoen

Chairman of the Remuneration Committee

Dear Shareholders

PTT Board of Directors appointed the Remuneration Committee, which majority consists of independent directors, chaired by Mr. Boontuck Wungcharoen, together with Mr. Somsak Chotrattanasiri and Mr. Somchai Sujjapongse as members. The Vice President of the

Office of the President and Corporate Secretary serves as secretary to the committee. The committee performs their duties with prudence and sensible as well as considered and provided critical comments before purposed to the Board. This year, the committee held a total of three meetings, as described below.

- Considered the 2017 compensation for the Board and committees based on PTT's performance outcomes and business size, practices of peer-industry, listed companies, and leading worldwide companies, along with Board responsibilities and the outcome of Board assessment, as defined in the annual assessment forms. Then purposed to the Board for approval and subsequent endorsed by the shareholders at the AGM.
- Reviewed assessment guidelines of the performance of President & CEO so as to define his new compensation, based on factors linked to the agreement of annual performance assessment for state enterprises entered into between the State Enterprise Policy Office and PTT, together with his managerial ability, leadership, self-assessment, and assessment by the Board. Then purposed to the Board for approval.
- Envisaged and provided critical comment on the approach of organization restructuring at the macro-level in order to keep up with the change of energy situations, external factors with significant effect to business operations, and volatile business competition. This is, to strengthen PTT's business operation with sustainable growth and readiness for the New S-Curve business, namely new technology and digitization. While at the same time, upheld the transparency and auditability of the company as well as responding to public policies and sustainable management in conjunction with social and communities.

For transparency, the Remuneration Committee has disclosed the compensation of all directors and committee members, together with executives' compensation in this annual report.

Report of the Corporate Governance Committee

07



Gen. Chatchalerm Chalermsook
Chairman of the Corporate
Governance Committee

Dear Shareholders

The Corporate Governance Committee is made up of three independent directors, chaired by Gen. Chatchalerm Chalermsook (Chairman), together with Mr. Don Wasantapruet, and Mr. Thon Thamrongnawasawat as members. The Vice President, Office of the President and Corporate Secretary, serves as secretary to the committee.

The Board of Directors placed the core value on the business conducting with integrity, transparency, and accountability, thus the firm commitment to corporate governance, high ethical standard, the Code of Business Conduct, and PTT Group's frameworks for sustainability development, have been emphasized in order to elevate PTT's CG system effectively and sequentially towards confidence among stakeholders and PTT's sustainable growth.

To this end, the Board has assigned the committee to propose CG guidelines and oversee the conduct of the directors and the management so as to ensure conformance to CG principles, SET's CG principles, IOD's recommendation from the Corporate Governance Assessment Report, and together with the international principles of The Organization for Economic Cooperation and Development (OECD), the ASEAN CG Scorecard and the DJSI Corporate Sustainability Assessment. The committee's mandate also includes encompassing sustainability management and formulating the frameworks for PTT's anti-corruption tasks.

In 2017, five meetings were held by the committee as planned with the objectives to track and assess CG and anti-corruption tasks, public relations and corporate reputation as well as social, community, and environmental responsibilities and sustainable development plans, as highlighted below:

Information Disclosure and Transparency

- Completed the annual information disclosure form (Form 56-1), and the annual report, and regularly disclosed quarterly performances and key information for shareholders, investors, and the public, complete with essential, adequate, credible, and timely details through assorted channels, including SET's publicity channels and www.pttplc.com with Investor Relations Department and Corporate Communications and Branding Department as core units for information distribution.

- Developed the annual sustainability report for 2017 as the 10th consecutive year of economic, social, and environmental data disclosing under the Sustainability Reporting Standard (GRI Standard, which amended from Sustainability Reporting Guidelines version 4.0 (GRI G4), and Oil and Gas Sector Disclosure (OGSD) of the Global Reporting Initiative (GRI). The report presented updates on compliance with the 10 elements of the United Nations Global Compact (UNGC), Integrated Reporting (IR), and informed the summary of operations that in line with the UN's Sustainable Development Goals (SDGs) to indicate PTT's firm commitment to support the SDGs. The report was also constantly reviewed by a third party and published along with others reports from previous years on PTT's website, GRI's website, and UNGC's website. In addition, PTT advocated

companies in PTT Group, namely PTTEP, PTTGC, TOP, IRPC, and GPSC to prepare this report on compliance with SET's direction of convincing listed companies to use GRI in their information disclosure.

- Developed the quarterly PTT Bizway newsletter for shareholders to keep them informed and foster understanding.
- Developed the quarterly Happiness newsletter for debenture holders to keep them informed and foster relations.

Rights of the Shareholders

- Held the annual general meeting of shareholders (AGM) for the year and provided in advance adequate and timely information of date, time, venue, and agenda, as well as all information relevant to matters needing decisions at the meeting.
- Informed the shareholders about meeting protocols and distributed such information at PTT's website before sending out meeting notices so that shareholders may have adequate time to study details, together with facilitated their full exercising of meeting and voting rights. As a result, PTT scored "Outstanding" on the AGM Checklist assessment.

Equitable Treatment of Shareholders

- Allowed shareholders to propose additional agenda items and nominate directors for election in advance from September 1 to November 30, 2017, as required by PTT.
- Required all directors and executives to disclose their vested interests and their related parties for the year so that the Board can review those potential conflicts of interest and decide for the benefit of PTT.

- Required all directors, executives, and employees to report their conflicts of interest for the year. Also executives and employees are able to electronically report on the PTT intranet. No significant conflict was reported this year.

- Required all directors and executives to report their securities portfolios as required by law and assigned the Corporate Secretary to collect and propose to the Board every quarter.

- Ensured enforcement of the Insider Trading Guidelines by asking the directors and the management of PTT Group to refrain from PTT Group companies' securities trading. If such trading is necessary, they must notify the Corporate Secretary ahead of time for transparency.

Responsibilities of the Board

- Assessed Board performance (overall, self-assessment, cross-assessment, and subcommittee assessment), with "excellent" outcomes for the year.

- Attended training courses regularly to build capacity and develop expertise in directorship, such as courses hosted by the Thai Institute of Directors (IOD).

- Attended a site-visit on PTT Group companies and businesses in energy sector, in Thailand and abroad.

- Held one meeting among the independent directors.
- Held one meeting in absence of the management.

Recognition of Stakeholders

- Endorsed an action plan on PTT's CG and anti-corruption for the year, together with the annual goals for cascading the plan to all for implementation. Constantly monitored performance and provided recommendations to upgrade PTT's CG on a par with international standards.

- Provided oversight for the enforcement of the "Corporate Governance Handbook and Ethical Standards and Code of Business Conduct (Revision 4)."

- Provided oversight and preventive measures by rolling out a CG and anti-corruption system under the guidelines of PTT Group's Corruption Risk Management Handbook for anti-corruption risk assessment and suitable internal controls.

- Provided oversight for the report of gifts that cannot be refused or returned, in compliance with the "No-Gift Policy," to establish a higher standard expecting that all personnel will devote their best to their jobs without expecting anything in return while avoiding potential conflicts of interest.

- Provided oversight for the establishment of an anti-corruption operations center in state enterprises according to the National Anti-Corruption Commission (NACC) guidelines. To this end, the Corporate Governance Working Group (CGWG) has been elevated to the Corporate Governance Management Committee (CGMC) and serves as PTT's anti-corruption operations center for state enterprises.

- Advocated to PTT's business allies declaration to join CAC and run their operations with transparency and anti-corruption of all forms. This is to illustrate their intention to cooperate and move forward with PTT.

- Took part in activities regarding transparency and anti-corruption with external agencies, both public and private sectors, including the National Anti-Corruption Day and International Anti-Corruption Day, as well as preparing a PTT Masterplan and a Moral Promotion Workplan for submission to the National Moral Promotion Committee of the Department of Religious Affairs, Ministry of Culture.

Social Responsibility and Sustainable Development

- Defined a social responsibility approach in support of the sustainability management scope for PTT Group by committing to Corporate Citizenship that values participation by all sectors for the stewardship of environment and ecology; and sustainably improve the livings in communities and society where PTT has its business operated through more than 40 social projects. In 2017, projects encompassed three sectors:

Human resource development: Promoted development of human resources as part of national advancement through the improvement of education and enhancement of infrastructure for scientific and technological skills building at the Vidyasirimedhi Institute of Science & Engineering (VISTEC). Established proper knowledge and understanding about energy, petrochemical, and refinery businesses by organizing the Petroleum Camp Project for students with good behavior of secondary schools and institutions located around PTT businesses all over Thailand. At the same time, PTT also organized the 4th “Energy for Community Course” to create leaders of change in the energy sector and provided a chance for participants to develop and propose projects for implementation in their own workplaces.

Community development: Steadily emphasized the strengthen of community to upgrade standards of living and alleviate community problems through the “Rice Purchase from Farmers” Project for the second consecutive year to increase market channels for farmers with rice distribution difficulties. Provide knowledge regarding management skills for farmers as well as promoted farm-to-table purchasing between farmer and consumer. PTT also advocated energy self-sufficiency at the community level through a biogas project from pig farms and floating PV research at alternative energy learning centers: Tambon Tha Manao, Amphoe Chaibadan, Lopburi; Tambon Kham Khaen, Amphoe Manchakiri, Khon Kaen; and Tambon Sansai, Amphoe Prao, Chiang Mai.

Conservation of natural resources and environment: Supported community cooperation and networking partners from all sectors in the revival and protection of natural resources and biodiversity as well as disseminating information and instilled a sense of environmental responsibility through various projects in learning centers such as Pa Nai Krung (Forest in the City), Wang Chan Forest, and Sirinath Rajini Ecosystem Learning Center.

- Passed the assessment by RobecoSAM Corporate Sustainability Assessment and qualified as a member for a sixth consecutive year—one of the nine companies and only Thai company among 79 companies on DJSI World (Dow Jones Sustainability World Indices, and one of the two companies out of 19 companies in Dow Jones Sustainability Emerging Markets Indices (DJSI Emerging Markets) in the Oil and Gas Upstream & Integrated Industry (OGX) category. PTT achieved an “Industry Best” score on Materiality, Policy Influence, Supply Chain Management, Environmental Reporting, Environmental Policy, Biodiversity, Climate Strategy, Social Reporting, Labor Practice Indicators, Human Rights, and Social Impact on Communities.

Awards of Pride

Thanks to its firm commitment to operate businesses under CG principles and social responsibility. The continuity of sustainable development in 2017 brought about extensive acclaim from domestic and international level. Below are examples of prideful awards.

- NACC's Integrity Award, Honorable Mention
- NACC Award for State Enterprise with "Moral and Transparency Promotion Planning" in Integrity Culture and Work Integrity at the "Excellent" level
- NACC Integrity & Transparency Assessment (ITA) at the "very high" level for four years in a row
- An "Excellent" ranking of its CG report based on a survey of listed companies (Corporate Governance Report of Thai Listed Companies 2017) for nine consecutive years
- Corporate Governance Asia Annual Recognition Award 2016: Icon on Corporate Governance for 13 consecutive years
- The Asset Corporate Award 2017 (Platinum level) in its ninth consecutive year of assessment
- The Strongest Adherence to Corporate Governance Award, Most Consistent Dividend Policy, and Best Strategic Corporate Social Responsibility presented by the Alpha Southeast Asia Magazine

The Corporate Governance Committee remains committed to improve its efficiency in steering PTT's CG, social responsibility, and sustainable development practices to align with PTT's business strategies in pursuit of a Pride & Treasure of Thailand for the best interests of all stakeholders and greater international acceptance.

Report of the Enterprise Risk Management Committee

08

A handwritten signature in black ink, appearing to read 'Chanvit Amatamatucharti'.

Mr. Chanvit Amatamatucharti

Chairman of the Enterprise
Risk Management Committee

Dear Shareholders

The Enterprise Risk Management Committee consists of three directors, chaired by Mr. Chanvit Amatamatucharti, together with Mr. Thammayot Srichuai and Mr. Somkit Lertpaitoon as members. The Senior Executive Vice President, Corporate Strategy, in the capacity of Chief Risk Officer (CRO) and Chief Stakeholder Officer (CSO) serves as secretary of the Committee.

The committee has supported the Board's performance by following good governance principles in order to keep PTT's risk management efficient and effective for business goal achievement, while aligning with the corporate vision and directions as well as mitigating impacts of business uncertainty. This is, to ensure shareholders that PTT's risk management system can indeed handle all risks.

This year, the committee held a total of five meeting, the highlight of their performances can be summarized as follows.

1. Steered and managed risks to ease business impacts:

Defined proactive measures with a focus on lowering the probability of all risk events, while commanding passive measures where risk events may actually happen so as to ease impacts on corporate goals. Defined risk management plans to ease the impacts of those uncertainty situations such as oil price volatility by deploying hedging tools as well as risk management under the LPG price floating policy and LPG business liberalization by pushing such policy for the country's optimal results.

2. Oversaw corporate stakeholder management: This was intended to make such management complete and embrace such management for all stakeholders. To this end, key business plans were taken into consideration to reduce those possible impacts on each group of stakeholders, and subsequent used as plans and strategies for stakeholders management that suited with each circumstance. Finally, a scope for monitoring and assessing such management were laid down along with a review of ongoing stakeholder management plans.

3. Closely monitored risk management every quarter: Instituted leading KRIs (key risk indicators) and lagging KRIs. Counseled the management on the improvement of its practices by revising risk management plans to align with prevailing business strategies and circumstances. Finally, reported its performance to the Board.

4. Deliberated and commented on long-term obligation, business complication, and significant impacts on PTT:

This was done before proposed to the Board. To this end, the committee reviewed such special agenda items, including LNG procurement to meet the needs of LNG in Thailand and the management approach to the First Borneo Plantations (FBP) Project in Indonesia.

5. Screened the list of 2018 corporate risks and sought endorsement of the Board:

To this end, a list of risk items and the corporate risk management plans were integrated with the preparation of the 2018 enterprise plans. As a result, risk management plans became more explicit, in line with corporate's directions, goals, and business strategies. Implementation was cascaded across the corporation to address risks and promptly become poised for risk-handling.

Thanks to all personnel's value given to excellence in risk management and strategies, dedication, and cooperation, the year was regarded as a successful one for the risk management, with all risk contained to manageable levels. In summary, PTT's business performance and image were superior to those of last year.

Economic, Petroleum and Petrochemical Review

09

World Economic Review

The world economy during 2017 was found to grow at a faster rate than that of 2016, driven by advanced economies, particularly the US, where the economy expanded at an accelerated rate amid full employment. Meanwhile, economic recovery in the Eurozone strengthened and became more broad-based amid easy financial conditions. As for emerging markets and developing economies, particularly China, despite ongoing reforms towards sustainable growth, economic activity accelerated slightly in 2017, supported by strong exports and resilient property market. The International Monetary Fund (IMF) in January 2018, estimated global growth for 2017 at 3.7% against a 3.2% growth in 2016 (Figure 1).

Figure 1

Global Economic Growth 2015 - 2017

Unit: % yoy

Source: IMF as of January 2018

- Global Economy
- Advanced Economies
- Emerging Market and Developing

Figure 2

World Oil Demand 2015 - 2017

Unit: Million barrels/Day

Source: IEA as of December 2017



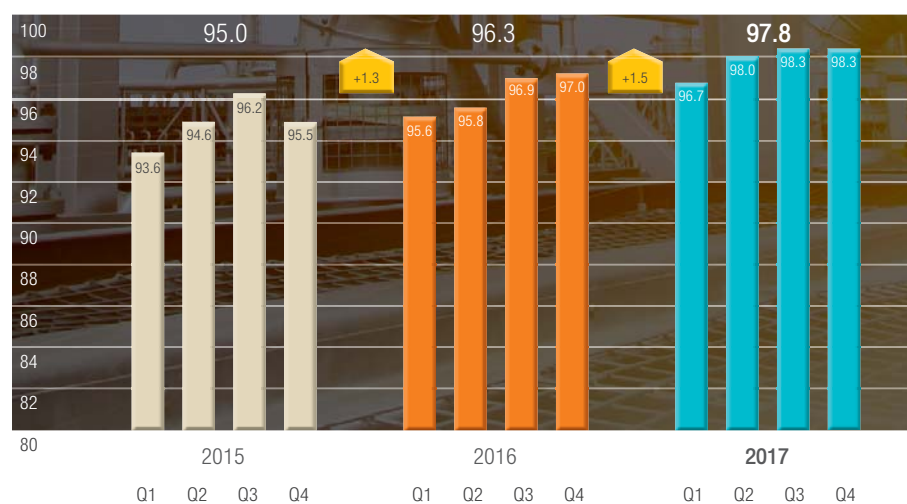
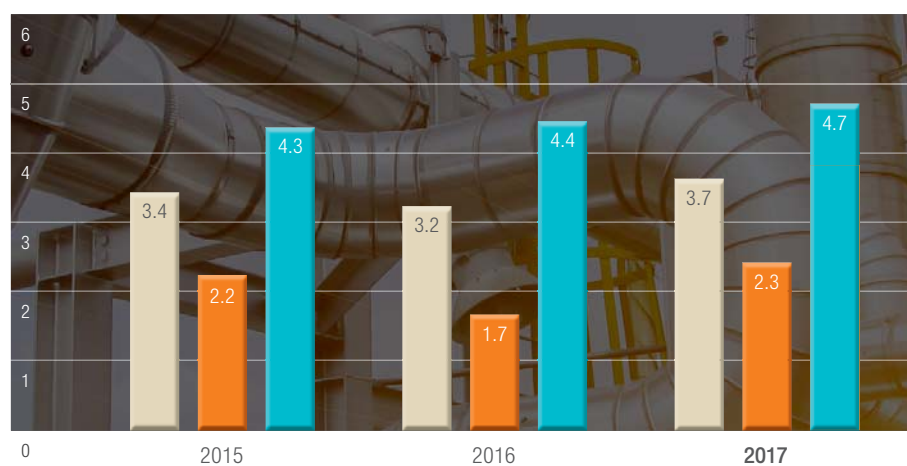
Petroleum and Petrochemical Review

World oil demand in 2017 increased by 1.5 million barrels per day, an acceleration in growth relative to 2016 due to the recovering world economy. The International Energy Agency (IEA) in December 2016 expected global oil demand for 2017 to register 97.8 million barrels per day (Figure 2).

The higher demand, coupled with tight supply caused by combined production cuts of 1.8 million barrels per day by both OPEC and non-OPEC producers throughout 2017, interruption to production in the North Sea and Venezuela, and geopolitical conflicts in the Middle East resulted in the Dubai crude price averaging USD 53.2 per barrel in 2017, higher than the 2016 average of USD 41.3 per barrel, despite rising US shale oil output. The price of finished products increased along the lines of the crude oil price. The price of gasoline with octane 95 averaged USD 68.0 per barrel with

World oil demand in 2017 increased by

+1.5
million barrels per day



the spread against the Dubai crude price remaining stable amid demand staying at a high level. Supply was, moreover, interrupted by Hurricane Harvey and refinery accidents in Europe and China. The overall supply in China was reportedly higher, though. Diesel price averaged USD 65.7 per barrel, with higher spread against the Dubai crude price supported by demand in the economic sector. Fuel oil price averaged USD 50.8 per barrel, with higher spread against the Dubai crude price amid higher demand in the marine sector and decreased supply from Russia and Venezuela. LPG CP price stood at USD 485 per ton (Figure 3).

Dubai crude cracking margin in Singapore averaged USD 7.1 per barrel, higher than the 2016 average of USD 6.1 per barrel.

Figure 3

Dubai Crude Oil and Petroleum Products Prices 2015 - 2017

Unit: USD/barrel

	2015	2016	2017
Dubai Crude Oil	51.0	41.3	53.2
Gasoline 95	69.3	56.2	68.0
Diesel	64.6	52.1	65.7
Fuel Oil	46.0	36.3	50.8

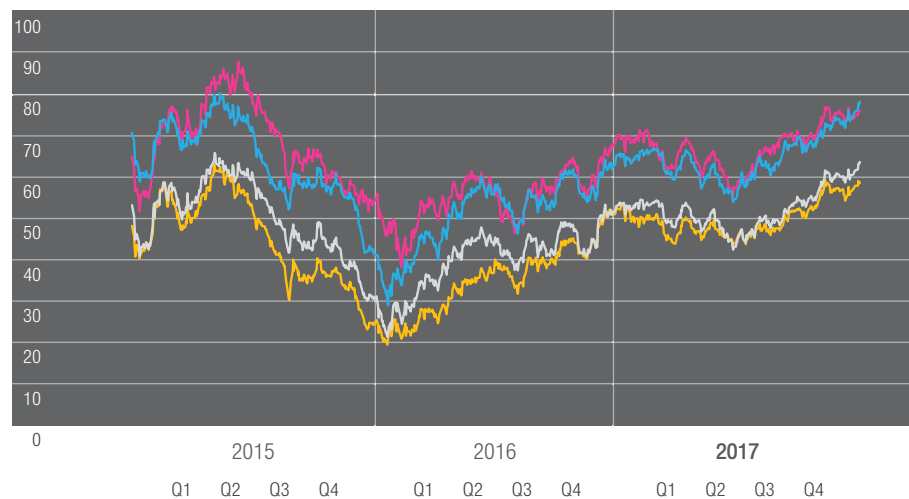


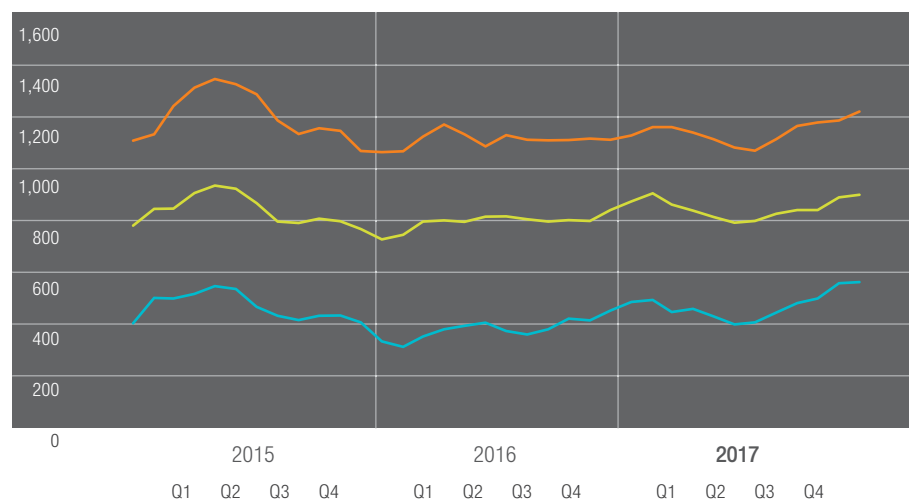
Figure 4

Prices of Petrochemical Products in Asia Market 2015 - 2017

Unit: USD/ton

Source: ICIS/ Platts

	2015	2016	2017
High-Density Polyethylene	1,236	1,132	1,168
Paraxylene	843	794	854
Naphtha	477	383	484



Prices of petrochemical products for 2017 increased along the lines of crude and naphtha prices and the higher demand spurred by better economic conditions. High density polyethylene (HDPE) prices were also supported by tight supply in China, an effect of the policy to ban imports of recycled plastics coupled with delayed construction of new HDPE plants. As a result, HDPE price averaged USD 1,168 per ton in 2017. Meanwhile, paraxylene (PX) prices were continuously pushed up by higher demand for polyester and delayed construction of new PX plants, causing PX prices to average USD 854 per ton (Figure 4).

Forecast that
the Thai economy
in 2017 would expand



by **3.9%**



Thailand's better economic
fundamentals resulted in
the average exchange rate

33.9
THB/USD

Thailand Economic Review

The Thai economy in 2017 expanded at a faster rate than in 2016, benefiting from rising merchandise exports following continuous improvement in external demand and the relocation of production bases of some products to Thailand. The tourism sector, specifically the number of Chinese tourists, expanded strongly. However, the push from public sector was found much weaker because a number of small-scale public investment projects were reaching their final stages, while large-scale projects were just getting started. Private consumption continued to expand at a gradual pace given some improvements in income. As for private investment, growth remained weak amid high excess capacity in several industries. According to the Office of National Economic and Social Development Board (NESDB), the Thai economy in 2017 expanded by 3.9%, compared with a 3.3% growth in 2016. As for the stronger baht, investors' negative view towards US dollar and Thailand's better economic fundamentals resulted in the average exchange rate of 33.9 bahts per US dollar for 2017 (Figure 5).

Figure 5

Thai Economic Growth 2015 - 2017

Source: Office of the National Economic
and Social Development Board (NESDB)/
Bank of Thailand (BOT)

	2015	2016	2017
GDP (% yoy)	3.0	3.3	3.9
Exchange rate (THB/USD)	34.3	35.3	33.9

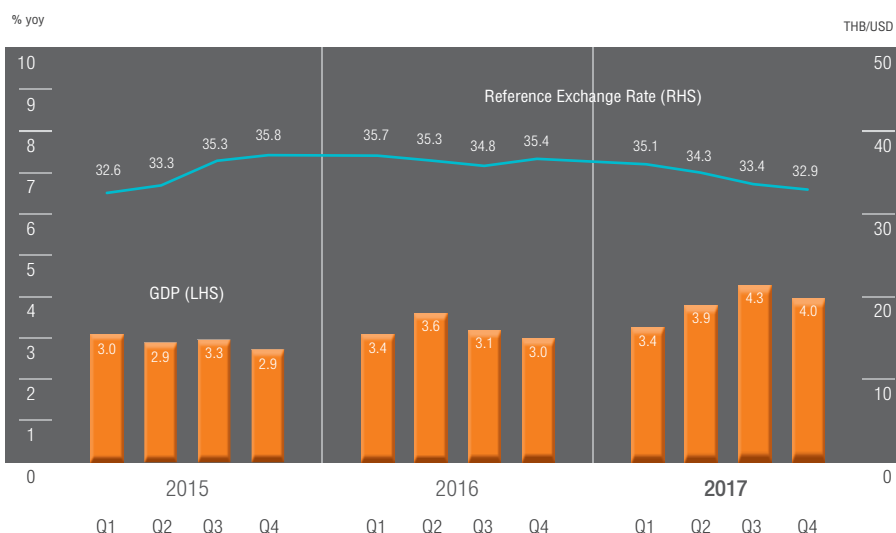
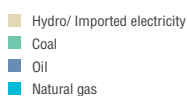


Figure 6

Thailand's Commercial Primary Energy Consumption 2015 - 2017

Unit: MBOED

Source: Energy Policy and Planning Office



Note:

Excluding renewables

2017: forecast

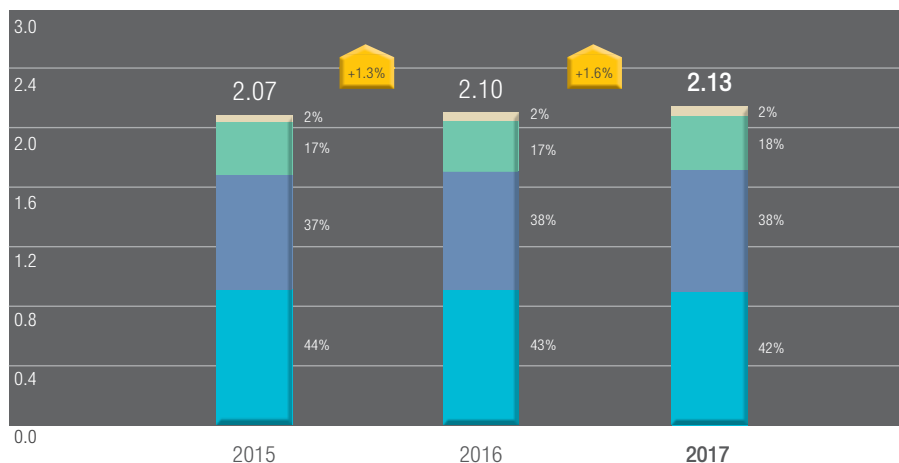


Figure 7

Petroleum Product Consumption 2015 - 2017

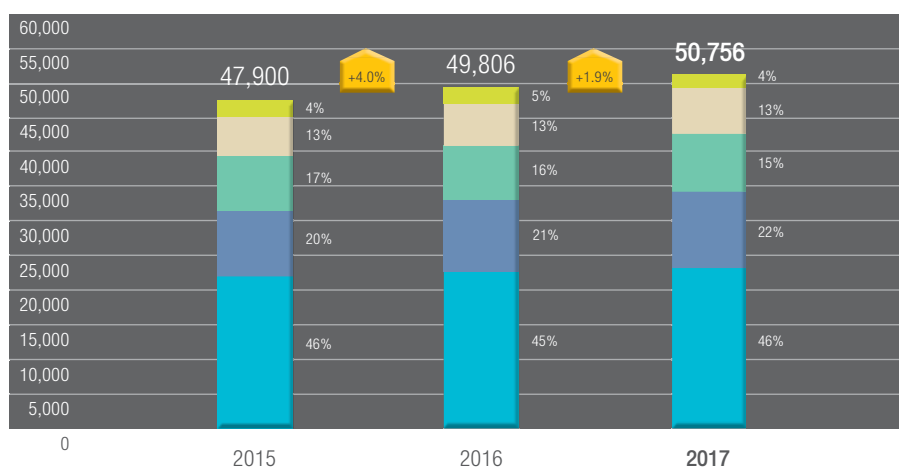
Unit: ML

Source: Department of Energy Business



Note:

* Excluding LPG used as Feedstock in Petrochemical Industry



Domestic Petroleum Review

Consumption of primary energy (excluding renewables) in 2017 was 2.13 million barrels per day, an increase of 1.6% from the previous year (Figure 6). Demand for oil rose by 2.3% and demand for natural gas fell by 0.7%.

Local consumption of refined products in 2017 increased by 1.9% (Figure 7). Demand for gasoline grew by 3.3% and diesel by 2.7%. Consumption expanded significantly during the second half of the year as a result of economic expansion. Consumption of aviation fuels shot up by 3.9% due to the increased number of tourists and flights. LPG consumption fell by 1.7%. Use of LPG continuously dropped in the transport sector but expanded well in the industrial sector. Demand for fuel oil fell by 6.8%.

Regarding supply and distribution, total petroleum supply for 2017 recorded 2,029.12 million barrels per day, up 0.93% (Figure 8). Of the total supply, oil accounted for 59% and natural gas 41%. Imported crude took 87% of the total crude supply, while imported natural gas was 27% of the total gas supply. Total sales of petroleum products amounted to 1,746.08 million barrels per day, an increase of 1.14%, comprising refined oil and natural gas of similar volumes. A total 229,590 barrels per day of oil was exported, an increase of 11.35%.

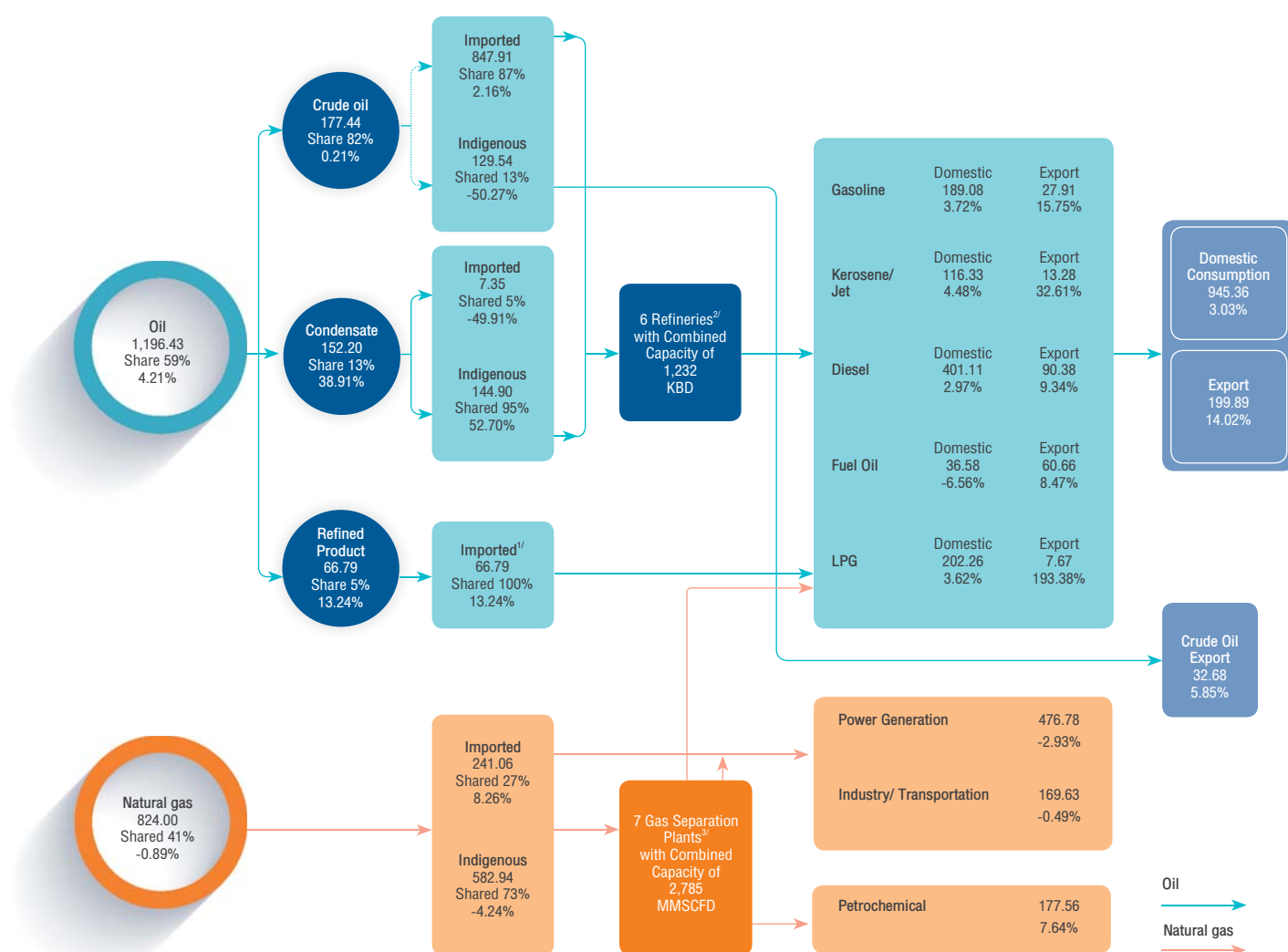
Figure 8

Thailand Petroleum Balance 2017

Unit: KBD

Procurement

Domestic Consumption/ Export



Total		Procurement		Domestic Consumption		Export	
		2,020.44		1,769.33		232.57	
		0.89%		1.44%		12.79%	
				Refined Products	945.36	Refined Products	199.89
				Natural Gas	823.17	Crude Oil	32.68
					-0.32%		5.85%

Source: Energy Policy and Planning Office, Department of Energy Business, Department of Mineral Fuels, and PTT

Note:

1/ Including LPG

2/ Capacity includes those of BCP, ESSO, IRPC, PTTGC, SPRC, THAIOIL and excludes PTTGC's condensate splitters & Fang refinery

3/ Capacity includes those of PTT/GSP 1 - 6, PTT/ESP and PTTEP Siam/ Phalang Phet. The Petroleum Procurement and Domestic Consumption/ Export exclude bitumen.

2018 Outlook

World Economic Outlook

Global economic growth is projected to pick up slightly in 2018, with rising growth expected in the US on the back of strong labor market and the positive effects of tax reform. Meanwhile, economic recovery is expected to slow slightly in the Eurozone amid less expansionary fiscal stance in several economies. In China, growth is expected to slow as the government pushes through reforms. Downside risks to the world economy include surprising timing and pace of monetary policy normalization, intensifying inward-looking policies, increased geopolitical tensions and terrorism. The IMF in January 2018 forecasted global growth for 2018 at 3.9%.

Petroleum and Petrochemical Outlook

According to IEA's estimates in December 2017, world demand for oil in 2018 is expected to rise by 1.3 million barrels per day to 99.1 million barrels per day, led by emerging markets and developing countries, particularly China and India. Meanwhile, oil demand in advanced economies is likely to stay comparable to the previous year. As for crude oil supply, inventories are expected to draw closer to the industry's five-year average on the back of continued OPEC and non-OPEC oil output cuts, production cap in Libya and Nigeria, and geopolitical conflicts in the Middle East. Nevertheless, price-suppressing factors remain, including rising US shale oil output in response to crude prices. It is expected that the Dubai crude price in 2018 will average USD 60 - 65 per barrel while Dubai crude cracking margin in Singapore will be around USD 7 - 8 per barrel.

Petrochemical prices for 2018 are expected to stay high. The HDPE price is likely to climb to USD 1,205 per ton following an upward trend in ethylene price from a still tight market in China due partly to the country's environmental measure that bans imports of recycled polymers. Nevertheless, the first wave of newly constructed plants in the US could provide a downward pressure on the price during the latter half of the year. The PX price is expected at USD 887 per ton following high demand for polyester and the ban on imports of recycled polyethylene terephthalate (PET) in China, despite a downward pressure from new plants coming online.



World demand
for oil in 2018 is
expected to rise by

+1.3
million barrels per day

Consumption of
primary energy
in 2018 will see an increase of
2.0% - 3.0%



Thailand Economic Outlook

The Thai economy is expected to maintain its growth momentum in 2018, mainly driven by public spending, particularly on the Eastern Economic Corridor (EEC) project, which could help crowd in private investment. Merchandise exports are expected to still expand but at a slower pace due to the high base effect, while the number of tourists is expected to rise further as a positive result of the world economy. As for private consumption, growth is expected to continue at a gradual pace amid slowly rising household income and high household debt. The baht is likely to register an annual average of around THB 31.25 - 33.25 per US dollar. Risks factors to be monitored for the Thai economy include international trade and monetary policies of developed economies, and delays in disbursement of government funds. The NESDB, in February 2018, projected the Thai economy to expand by 4.1%.

Petroleum Outlook for Thailand

Consumption of primary energy (excluding renewables) in 2018 will see an increase of 2.0% - 3.0% from that of 2017, in keeping with the country's economic growth. The Ministry of Energy expected that the consumption of refined products, namely products in the gasoline group and diesel as well as aviation fuels, will be on a rise. On the contrary, LPG consumption in the transport sector will decrease. Fuel oil used in the power generation and industrial sectors is also likely to decline. However, demand for natural gas is predicted to stay unchanged from the previous year.



Nature of Business & Performance Summary

10

Petroleum Exploration and Production (E&P) Business:
Conducted through PTT Exploration and Production Plc. (PTTEP).

Implemented
36 projects
in **10** countries

International Trading Business Group:
Procurement of crude oil and condensate from indigenous sources

10,329 billion liters

from indigenous sources

95% of the national output

Lubricating Oil Sales:
Continued succeeded in maintaining its top position, with a market share of **34.5%**
Exported lubricating products to 39 countries, developed 8 new products.

GAS CHAIN

Gas Business Group:
Engages in natural gas supply procurement, wholesale and retail gas sale, and gas-related value-added businesses.

Supply procurement totaled
4,725
MMCF/D

INFRASTRUCTURE BUSINESS

Infrastructure & Sustainability Management Business Group:
Accommodate PTT's rapid business growth, promote management connectivity of PTT's core business groups, and new business opportunities beyond the infrastructure service business

OIL CHAIN

Fuel sales:
Sold
20,529
million liters of fuel
Market share of **40.5%**
1,627 service stations across the country.

PTT is a fully integrated national petroleum and petrochemical company with a vision to become Thai premier multinational energy company with a mission to look after all of its stakeholders which are country, community and society, shareholders, customers, business partners, and employees, in a balanced way. PTT's aspiration is to be the "Pride and Treasure of Thailand," achieved through the SPIRIT corporate culture where the employees are cultivated to have high moral conscience as well as to be brilliantly smart.

PTT's operations cover the business value chain from upstream to downstream with a focus on incremental value addition and energy innovation.
As an operating and holding company, PTT conducts business directly and through PTT Group companies.

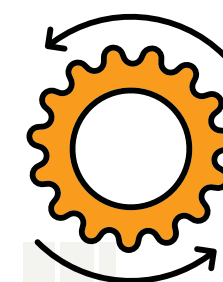
PETROCHEMICAL CHAIN

Petrochemical and Refining Business:
PTT invests in this business through 9 PTT Group companies. The scope of business ranges from fuel processing, production and sale of upstream, intermediate, and downstream petrochemicals together with various polymers, worldwide marketing business, and integrated logistics services.
Net profit
THB **81,049** million

NEW BUSINESS

Retail and Non-Oil Businesses:
are vital for the survival of the business. Higher margins than fuels.

Coal Business:
Sold a total of
8.3
million tons of coal
Net profit
USD **89** million



PTT-operated Businesses

Gas Business Group



PTT engages in natural gas supply procurement, wholesale and retail gas sale, and gas-related value-added businesses through Group companies. Supply includes indigenous gas, imports, and liquefied natural gas (LNG) from neighboring countries to ensure that they are sufficient to meet the demand of major power producers through PTT's transmission pipelines, industrial users through distribution pipelines, distribution to the transport sector through NGV service stations, products derived from gas separation plants (GSPs) to add value in the gas obtained from the Gulf of Thailand as a petrochemical feedstock, and sells LPG for households, industry, and transportation.



The Gas Business Unit invested in LNG-receiving terminals through PTT LNG Co., Ltd., a wholly-owned subsidiary of PTT, to provide service for LNG storage vessels and LNG re-gasification in order to accommodate PTT's LNG imports.

The structuring of wholesale and retail gas sales prices comes under the Energy Industry Act, B.E. 2550 (2007). As a rule, the natural gas supply and wholesale business structures sales prices for power producers, together with gas transmission management, with a constant return as set by the public sector, whereas the price of the gas distributed to industrial customers is up to world fuel oil prices so as to be competitive with alternative fuels, namely domestic retail fuel oil. For GSPs, products are sold as petrochemical feedstock, in turn based on petrochemical and petroleum prices, tied to world markets. As for LPG sold domestically as a fuel, the National Energy Policy Council (NEPC) decided on December 8, 2016, and July 31, 2017, to endorse the approach for liberalizing the LPG business, abolishing domestic LPG price control, from the LPG Pool Price system. This later caused the public sector to abolish ex-refinery price-setting for

domestic producers and ex-LPG terminals. Instead, parity prices with import prices are to be announced. However, at PTT's GSPs, prices will continue to be defined equally to cost by using the Oil Fund to maintain price levels; contribution to the fund is to be at USD 20 per metric ton for LPG produced in Thailand, which must first secure export approval.

Since October 2017, the public sector has stopped requesting cooperation from PTT in aiding low-income LPG household users, which will now receive assistance through the Public Welfare Card Project. However, PTT was asked to continue helping stalls and street hawkers to ease impacts from the national LPG price restructuring.

The gas business unit's success in 2017 resulted from gradually rising prices of world oil and petrochemicals, whereas domestic gas costs are more stable. It also came from relentless process efficiency improvement at GSPs to prune operating expenses. Business formats have been added with a greater focus on serving third parties and modifying equipment procurement strategies, which enabled the business unit to gain more revenue. This year's highlights of the Gas Business Unit are summarized below;

> Natural gas procurement

Supply procurement totaled 4,725 MMCF/D, a 0.9% fall from last year at 4,762 MMCF/D, consisting of 3,342 MMCF/D from indigenous sources and 1,378 MMCF/D from import, or an equivalent indigenous/import ratio of 71 : 29.

Supply procurement with indigenous/ import
ratio of

71: 29

> Gas sales to power sector

Sales to this sector totaled 2,734 MMCF/D, about 58% of total sale drop by 2.9% from last year (at 2,816 MMCF/D), due to the decline in demand for power due to higher penetration rate of alternative energy. Sales were completed to EGAT at 757 MMCF/D, or 28% of the total; to 10 independent power producers (IPPs) at a total of 934 MMCF/D, or 34%; and to 62 small power producers (SPPs) at 1,043 MMCF/D, or 38%.

> Gas sales to industrial sector

Sales to this sector totaled 727 MMCF/D, equivalent to 15% of the total sales, an increase of 1.7% from 2016 (at 715 MMCF/D). A total of 358 entities in this sector: 327 in the industrial group, 30 in the self-power-generating group, and one in the commercial group. Accounting for the sales rise was investment expansion in gas distribution system extension in the Rojana Industrial Park, Prachin Buri, in Hemaraj Industrial Estate, Chon Buri, and in Asia Industrial Estate Suvarnabhumi, Samut Prakan.

> Gas sales to transport sector

Sales to the transport sector averaged 268 MMCF/D or 6% of the total sales, recording a 6% decline from last year (285 MMCF/D) due to the plunge in world oil prices, and in turn falling gasoline and diesel retail prices. In the meantime, with the public sector's policy of NGV price floating and increase in wobbe index, the sales prices in this sector rose this year, causing more consumers to return to gasoline and diesel consumption.

> Sales of products from GSPs

GSPs processed 996 MMCF/D of natural gas this year, or 21% of total sales, a 5.3% surge from last year (946 MMCF/D) because this year GSP Unit 6 gained additional 40 MMCF/D in capacity, beginning in the fourth quarter, prompting the GSPs to sell more products. PTT also focuses on Productivity Improvement of Gas Separation Plants (GSP) to cut cost and strengthen financial discipline, resulting in higher in turnover by running Gas Separator Unit effectively and efficiently.

Natural Gas Sales

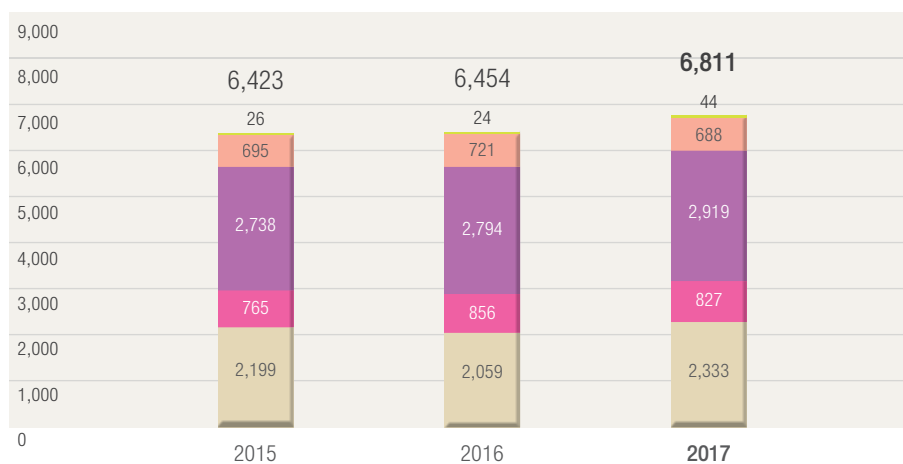
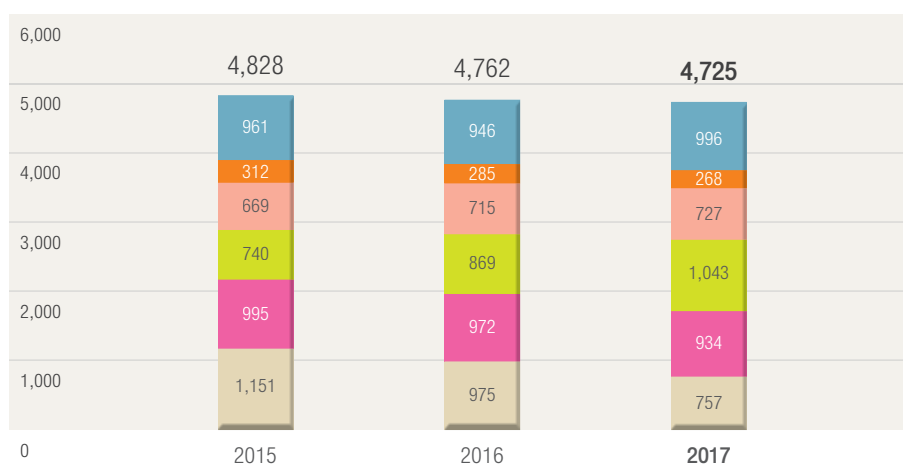
Unit: MMCF/D at 1,000 BTU/CU.FT.



Products from Gas Separation Plants

Unit: thousand tons





Natural Gas Transmission Pipeline System and Gas Separation Plants



Oil Business Group



The business unit distributes quality petroleum products at fair and suitable prices in three core products: (1) liquid fuels and LPG (2) lubricating oil and other lubricating products (3) retail non-oil products. All these are sold through three major distribution channels:

1) Retail Market: sale of products and services to consumers, both inside and outside service stations in 2017, PTT leveraged its service station format from PTT Life Station to Living Community filled with engagement among people and good responses to various needs of consumers. To elaborate, PTT Friendly Design represents PTT's care for all to access and use its services in all corners conveniently and safely, the "Yaek Lak Yim" (sorting for smile). The project promotes participation of consumers' in sorting of garbage so that the income from selling sorted garbage will bring community smiles. The "PTT Compact Model", currently numbering 45, was designed for secondary roads linking provinces and amphoe (districts) to raise the standard of services for consumers in every corner of the country. In addition, PTT created new PTT-run retail businesses and pursued SME business partners to jointly develop products and services, create jobs, and extend care for Thais to grow together in a sustainable way. In 2017, PTT and KBank supported Hua Seng Hong Dim Sum entrepreneurs to promote Thai SMEs in coming up with jobs in the form of QSR (Quick Service Restaurant), provided space for communities to put quality products on sale direct to consumers at service stations, and joined hands with Thailand Post in developing community product distribution channels through the E-commerce system at service stations, thus supporting distribution of community, OTOP, and SME products extensively and internationally—which represents another collaboration in completing the spectrum of services at PTT service stations.



PTT also relentlessly engaged its consumers through the PTT Blue Card, whose membership has risen to some 2,800,000. It has developed customized relationship for each group of members with basic characteristics and different needs by analyzing in-depth data from Big Data. Also launched was the PTT Blue Card Mobile Application on both Android and iOS systems, under which members earn privileges from leading stores through their smartphones.

2) The commercial market sold to civil servant groups, state enterprise workers, industries, aircraft, ocean liners, and fishing vessels for use in their businesses, and exports.

3) Sale of products to customers under Article 7 and Article 10 of the Fuel Trade Act.

Moreover, the business unit manages investments in businesses along with related domestic and overseas businesses through PTT Group companies, most of which are wholly owned by PTT, and is engaged in domestic and overseas oil businesses, such as retail sales and service stations, lubricating oil blending and bottling.

The oil business has become more liberalized and highly competitive under regulation by several laws, including the Commercial Competition Act B.E. 2542 (1999), the Fuel Control Act B.E. 2542 (1999), and the Fuel Trade Act B.E. 2543 (2000) as of December 2017, PTT is one of the 47 Article 7 traders registered with the Department of Energy Business. Its performance outcomes are subjected to the fluctuating world oil price, the state of economy affecting consumers' purchasing power, and the success of retail business growth, which is consistently healthy.

The business unit's success in 2017 resulted from marketing excellence strategies to cater to the diverse needs of consumers. PTT continued to occupy the pole position in the domestic fuel retail market for 25th consecutive years, with a 40.5% market share, 0.1% higher than last year. For the lubricating oil market, PTT also succeeded in maintaining its top position for nine straight years, with a market share of 34.5%. This year's business performance highlights appear below:

> Fuel sales

In 2017, PTT sold 20.529 billion liters of fuel, an increase of 426 million liters from 2016. Sales consisted of 4.614 billion liters of gasoline, 8.238 billion liters of diesel, 3.264 billion liters of jet fuel and kerosene, 1.404 billion liters of fuel oil, and 3.009 billion liters of LPG.

Lubricating
oil market:

Maintained
its top position for **9**
straight years,
with a market share of
34.5%

Domestic fuel
retail market:

Continued to occupy
the pole position for **25th**
consecutive years,
with a market share of
40.5%



The year's average marketing margin (gross profit for Article 7 traders and service station owners) was THB 1.68 per liter, against the suitable margin of THB 1.8 - 2.2 per liter, based on the coverage of operating expenses and appropriate financial returns for Article 7 traders and service station owners.

As of December 2017, PTT operated 1,627 service stations across the country, or 6.4% of the total. It managed 11 jet (aviation) fuel stations, 20 oil terminals (PTT owned 9 and used external services for the rest), 4 LPG terminals (of which PTT owned 3 and used external services for the rest), 5 petroleum terminals, and 4 LPG-bottling plants.

> Lubricating oil sales

PTT is determined to globalize PTT Lubricants, a Thai brand, by seeking to maintain its domestic lubricating oil market leadership in parallel with customer growth to international markets, particularly Southeast Asia, South Asia, and China. It has exported its lubricating products to 39 countries. This year, it developed eight new products to address customers' needs and step up to technological and environmental leadership.

> Retail business sale

PTT has attentively selected non-oil retail business to satisfy diverse needs of customers and fulfill PTT Life Station concept for each area by considering various factors. Non-oil business is an essential part of a key success, in which its margin are higher than fuels. The business also keeps PTT ahead in competitive markets. In December 2017, there were 1,468 7-Eleven convenience stores (up by 118), 2,123 Café Amazon outlets (up by 406), 14 Texas Chicken restaurants (up by 5), 34 Hua Seng Hong Dim Sum restaurants (up by 29) and 117 automotive businesses (down by 7).

In response to the government's National e-Payment policy, PTT and KBank introduced the QR Code Payment innovation to PTT's retail outlets for consumers' new experience in buying products and services more conveniently and confidently by using Dynamic QR Code payment instead of cash. This means accuracy and freedom from fees.

Because of modern lifestyles' need for quicker access to goods and services, PTT developed the Drive Thru service at its Café Amazon coffee shops, starting at the Rama II (outbound) service station to ease coffee lovers' and motorists' access, bypassing the need to find parking space and saving travel time.


The domestic PTT Life Stations having garnered excellent responses from consumers, the format of domestic PTT service stations has turned into prototype service stations that are being constructed in neighboring countries to drive this Thai brand as a quality brand for regional acceptance, which boosts Thai pride. In 2017, 33 PTT service stations were added in neighboring countries, including the round-the-clock service station called the Niakwan Branch in Phnom Penh, Cambodia.

To make knowledge management sustainable and efficient, PTT founded the Oil Business Academy (OBA) as its main mechanism for transferring essential core business knowledge to the personnel of PTT, business partners, and customers to improve their competencies and groom them for domestic and overseas business growth. Also, the Amazon Inspiring Campus (AICA) centralizes efforts to develop personnel preparedness in the Café Amazon by focusing on standardization and service quality through a team of auditors and training courses for franchisees and baristas, not to mention the introduction of novel product lines or development of essential knowledge for PTT's business partners and customers.


> Oil Business Unit infrastructural investment


Relentlessly, PTT values investment for national energy security by developing an infrastructural master plan for the Oil Business Unit and mapping out a systematic plan for the network of terminals and transport systems, including the capacity expansion of the Surat Thani Oil Terminal to accommodate the South's rising oil demand.

Petroleum, Oil, LPG Terminals, and Aviation Fuel Station Map



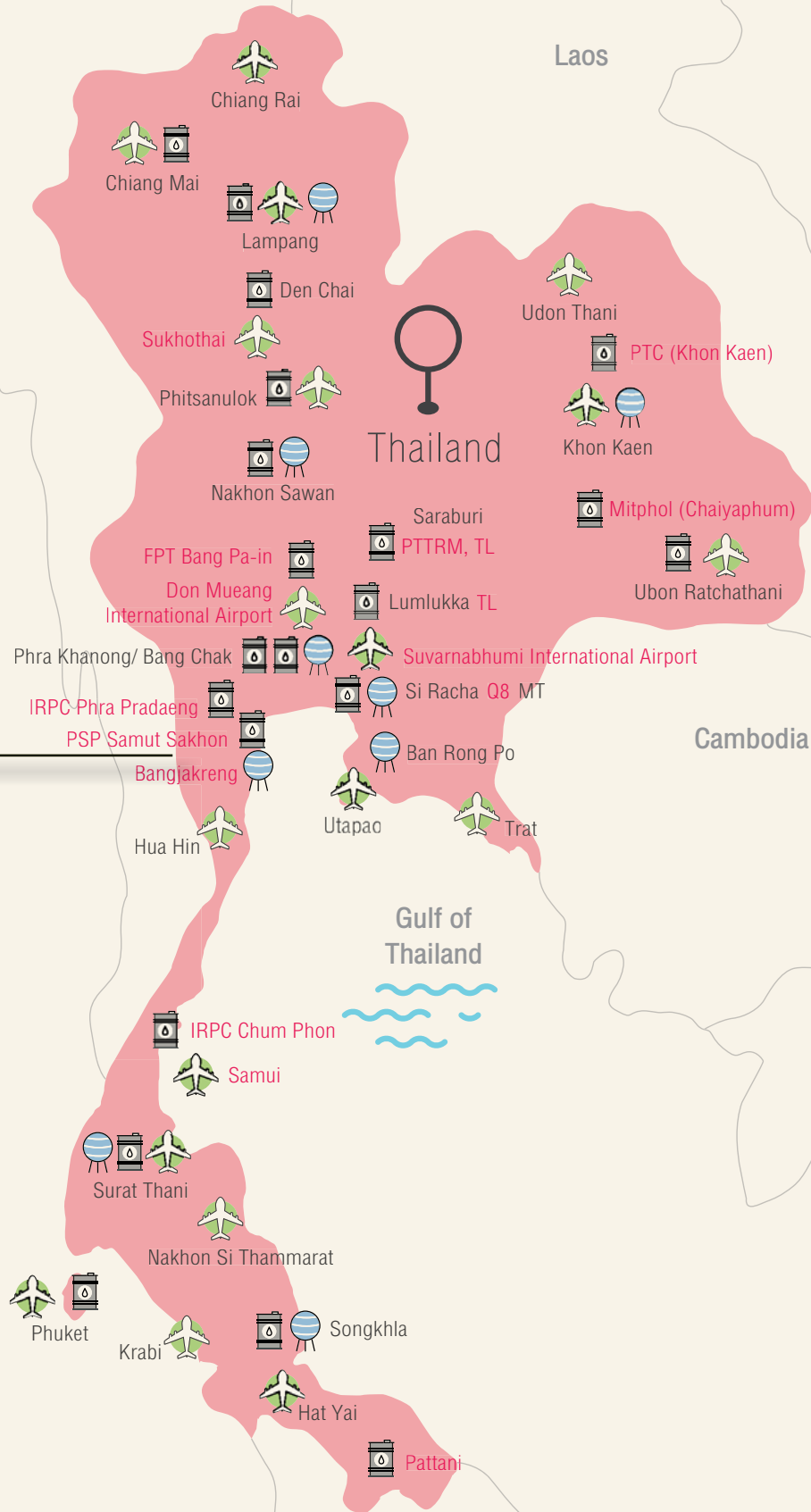
 LPG Terminal

 PTT Oil Terminal

 PTT Aviation Fuel Station

[XXX] External Terminal

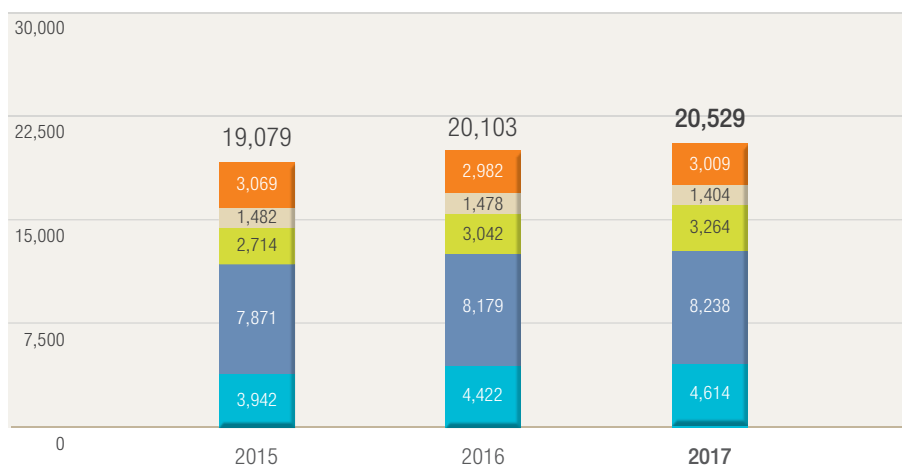
[XXX] PTT Terminal



Domestic Petroleum Product Sales

Unit: million liters
Note: Excluding LPG for Petrochemical Feedstock

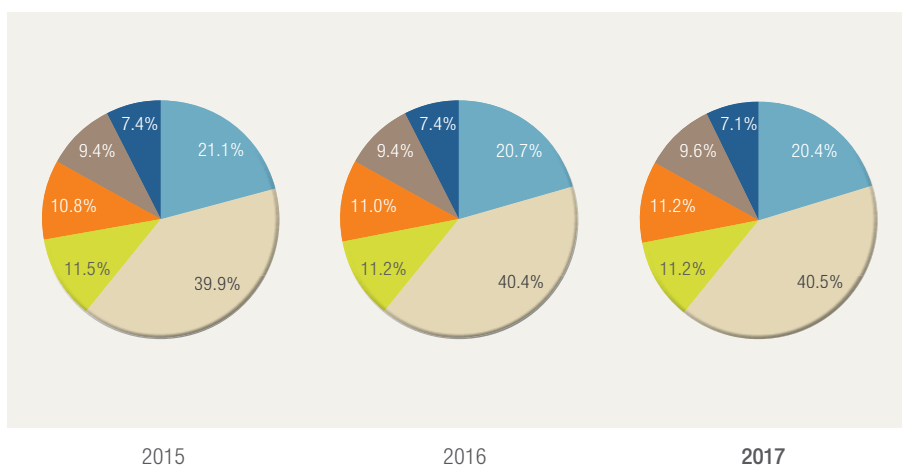
- LPG
- Fuel oil
- Jet fuel/ kerosene
- Diesel
- Gasoline



Domestic Market Share

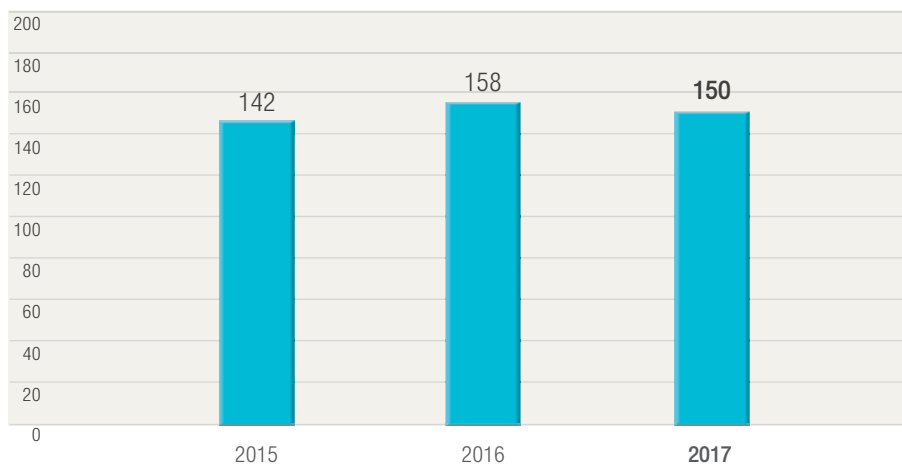
Unit: %
Note: Pie charts indicating market share of all products

- PTT
- Esso
- Bangchak
- Shell
- Chevron
- Others



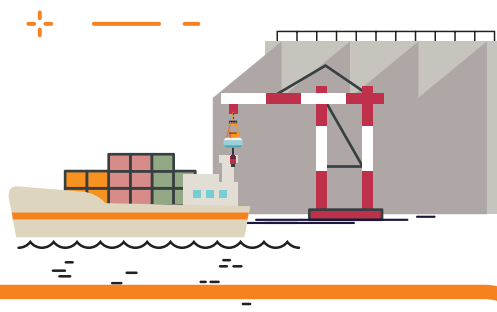
Domestic Lubricant Sales

Unit: million liters
Source: Department of Energy Business, Ministry of Energy





International Trading Business Unit



It operates fully-integrated international trading businesses to enhance national energy security in parallel with the expansion of trading bases to all regions of the world. The business unit covers, procurement, import, export, and international trade in several products including: crude oil, condensate, LPG, petroleum and petrochemical products, chemical solvents, coal, and palm products like crude palm oil, refined palm oil, and palm kernel shells. It is also in charge of price risk management and international shipment in order to achieve its aim to become the leading multinational trading company, enhance energy security for the Kingdom, and strive for Thai pride in the international trade arena.

Performance of the business unit hinges on the pursuit of opportunities on growing commercial trading internationally. It has appointed subsidiaries and representative offices in commercial hubs around the world including Singapore, Dubai; United Arab Emirates, Shanghai; China, Jakarta; Indonesia, and London; UK. Today, the business unit is managing business transactions around the world. Since international trading transactions are high in value, it needs a risk control system under the best practices adopted by leading international trading houses. To elaborate, panels set policies and steer assorted risk management and clearly divide work structure and roles (Front-Mid-Back) for checks and balances, and information technology for transactions to enable quick, transparent, and efficient control.

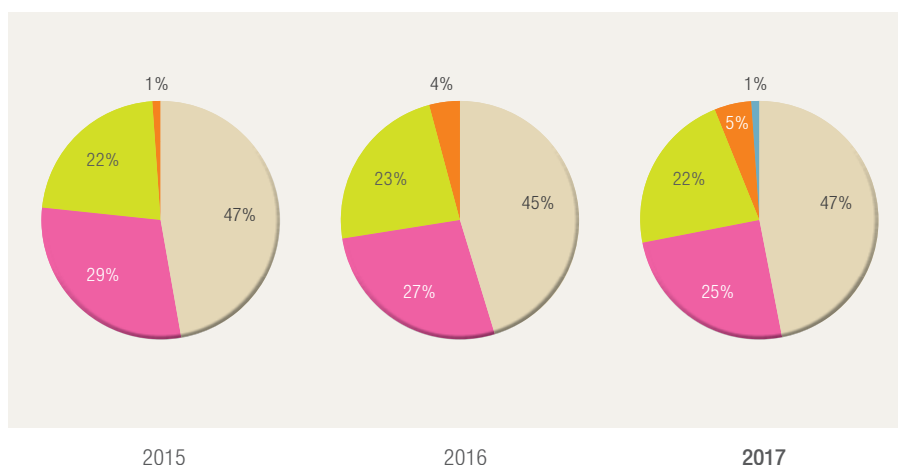
The success of the International Trading Business Unit in 2017, stemmed from the relentlessly expanded networks all over the regions, coupled with the operations of affiliates and representative offices located in strategic trading points. The Global Book Portfolio management format also creates efficient trading transaction management in line with the leveraging of expertise, skills, and experience in international transport service and efficient risk management. This year's highlights are as follow:

1) Adequate National Energy Supply

The International Trading Business Unit is mainly responsible for securing crude and condensate for PTT Group's refineries in order to enhance energy security and value addition to Thailand's natural resources. It sources energy from both domestic and overseas and allocates them to oil refineries and petrochemical complexes in suitable proportions and quality. This year, the business unit procured 10.329 billion liters (95% of the national output) from indigenous sources with greater diversity of supply from abroad to ease political security risks associated with importing from Middle East producers. These new sources in Asia-Pacific, Africa, and the US ensure that Thailand will continuously to have an uninterrupted supply of crude oil throughputs to the refineries. This year a total of 31.211 billion liters (58% of Thailand's total import) was imported.

Top Crude Oil Importing by Region

■ Asia-Pacific
■ Africa
■ US
■ Middle East
■ Domestic



The business unit also imported petroleum products to accommodate periodically rises in national energy demand. This included imports of GBASE for gasohol production, LPG for the industrial, transport, and household sectors, and fuel oil for reserve power generation. This year a total of 1.26 billion liters (33% of Thailand's total imports) was imported.

2) Value Addition to National Product Surplus

Another instrumental role of the business unit is to provide energy balance and create economic prosperity for Thailand from achieving through its establishment of collaboration among refineries, petrochemical complexes, and PTT's GSPs in exporting petroleum and petrochemical products beyond national demand. This includes fuel oil, low-grade diesel, LPG, NGL, olefins and aromatics products. The aim is to add value and remit export revenue to Treasury. This year the business unit exported 4.059 billion liters of miscellaneous petroleum products or about 36% of Thailand's total exports along with 1.865 billion liters of petrochemical products.

3) Expansion of Trading Bases Worldwide

Besides the mission of enhancing national energy security through the product procurement and value addition to surplus products by exporting, the business unit focuses on expanding international trading to all regions. This is done through affiliated companies and representative offices located in strategic energy trading locations both eastern and western hemispheres. This would track intelligence and movement round the clock. These offices closely coordinate with PTT's customers and business partners and pursue opportunities for adding value and extending trading transactions in new regions. The business unit leverages the Global Book Portfolio management for trading transaction efficiency and maximum value addition for PTT Group. This year the out-out trading amounted to 32.298 billion liters, a 9% rise over last year.

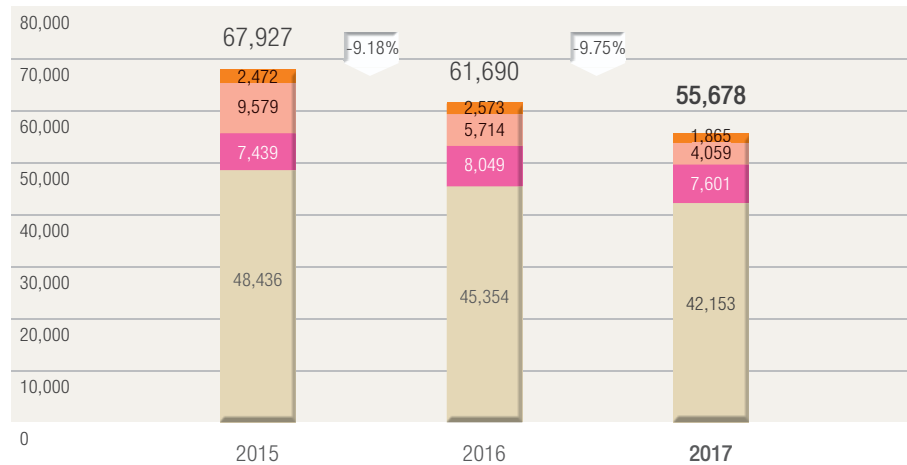


International Trading Volumes

Unit: million liters

Note: Excluding trading through PTT's affiliates

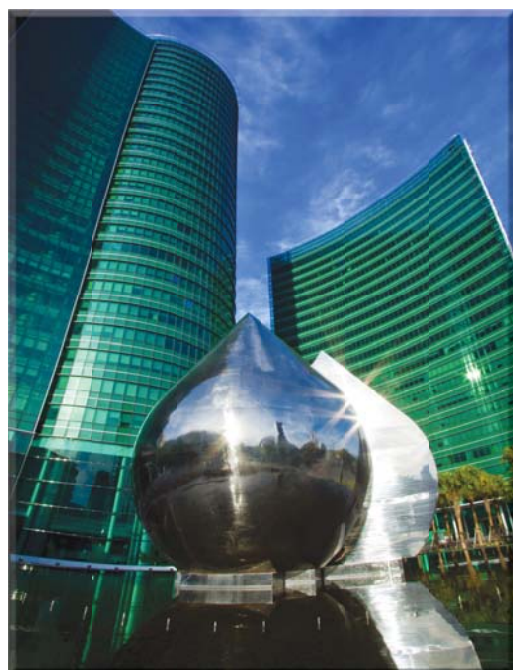
■ Petrochemicals
■ Petroleum products
■ Condensate
■ Crude oil



In 2017, the business unit posted a trade total of 55.677 billion liters of petroleum and petrochemical products, dropping 6.013 billion liters (9.75%) from last year due to the declining trading volumes with regional national oil companies. This was because importers' countries turned to a policy of indigenous energy self-reliance. Trading was made up of 42.153 billion liters of crude oil, 7.601 billion liters of condensate, 4.059 billion liters of petroleum products and LPG, and 1.865 billion liters of petrochemicals and solvents. There was trading in other commodity markets including crude palm oil, refined palm oil, and palm kernel shells. The total trade volume was 52 million kilograms.

The year, incorporating transactions undertaken by international trading units of affiliated companies, 76.236 billion liters, a 2.4% rise or 1.769 billion liters from last year. The total trade volume undertaken through affiliated companies amounted to 22.902 billion liters, a 44.4% rise from last year. This was a result of commitment to expanding trading bases abroad to enhance national energy security and bringing pride to Thais in international levels.

Infrastructure & Sustainability Management Business Unit



The business unit focuses on managing stakeholders in a balance of transparent manner and with good governance in response to public policies of segregating gas transmission from the Gas Business Unit in order to accommodate audit. This policy is also to accommodate PTT's rapid business growth, promoting management connectivity of PTT's core business groups, and new business opportunities beyond the infrastructure service business such as, investment and construction of new projects, management of PTT's properties and adding value to them including land, buildings, and facilities. The mission is also to set PTT ready for running the infrastructure and public utility businesses as a one-stop service, enabling PTT's personnel to competently accommodate a professional project management center of excellence to be ready for domestic and overseas growth.

Infrastructure and Sustainability Management Business Unit consists of the following departments:

1) Sustainability Management Department consists of Quality Security Safety Health and Environment (QSSHE), PTT Group Sustainability Management and PTT Group Excellence Transformation.

2) Engineering and Project Management Department consists of engineering, construction, property management, estimation of projects regarding safety, environment, society, community, and building regulations to support PTT projects.

3) NGV Marketing Department consists of NGV business development and strategies, marketing divisions (NGV sales and service station management, marketing, customer services, sales support, engineering, station maintenance, project management)

4) Natural Gas Distribution Through Transmission Pipeline Department consists of offshore gas distribution which connects to gas fields in the Gulf of Thailand, eastern onshore gas distribution from the Gulf of Thailand, eastern onshore gas distribution from Yadana, Yetagun, and Sotika gas fields located in Thailand-Myanmar border and distribute gas to power generators, natural gas separation plants, NGV stations, and industrial plants.

There are other departments related to Infrastructure and Sustainability Management Business Unit namely gas transmission pipeline asset management, property development, office building service, innovation and technology development by Innovation Institute, and PTT Group's infrastructure investment management.

In 2017, the infrastructure business unit succeeded in connecting and managing PTT's core businesses from raising the efficiency of mechanisms and simplifying management and service provision among PTT and PTT Group. They undertook continual R&D with a focus on enhancing the technology base structure and researchers' caliber to become experts in assorted disciplines, and establishing mechanisms for process connectivity between PTT RTI and the business group. This year, there were 31 patent landscape services added for IPs of various agencies.

The Gas Business Unit succeeded in several major infrastructures of natural gas transmission pipelines as follows:

- The Offshore Compressor Project has been installed, and the compressor unit is already tested.
- Nakhon Ratchasima Natural Gas Transmission Pipeline Project (Phase 1) has been conducted. The 111-Kilometer pipeline is laid, and the block valve station has been installed on December 20, 2016. For the phase 2, the project is under construction with partial pipeline laid covering 17 kilometers as in December 2017. The project is expected to be completed by 2018.
- The 4th Midline Compressor Project has been established and installed. The station and compressor unit are already tested.
- The 5th Natural Gas Transmission Pipeline Project (Running from Rayong to Sai Noi – Northern and Southern Bangkok Power Plant, Phase 1) has been operating on engineering plan and landscape survey on laying the pipeline. In phase 2, the project is on the process of bidding for contractor and is expected to be completed in 2021.
- The Natural Gas Transmission System Project (From the Ratchaburi – Wang Noi No. 6 block valve station to Ratchaburi province) has been continuously operating on engineering plan and examination as well as preparing construction for the block valve station in the pipeline route. The project is expected to be finished in 2020.
- The Gas Compressor Station Project on Natural Gas Transmission System (Wang Noi – Kaeng Khoi) is on the process of engineering plan. The project has already started and is expected to be completed in 2019.

Businesses Invested through PTT Group Companies

Petroleum Exploration and Production (E&P) Business



This is conducted through PTT Exploration and Production Plc. (PTTEP). E&P activities and domestic petroleum pricing structures are governed by the Petroleum Act B.E. 2514 (1971) under the supervision of the Petroleum Committee.

PTTEP operates domestic and international petroleum E&P and invests in associated businesses to explore petroleum which is crude oil and natural gas to ensure Thailand's energy security. It sells petroleum outputs from domestic and regional projects mostly in form of natural gas primarily to the domestic market.

PTTEP's performance is subject to the world oil price, petroleum exploration and field development success, efficient cost management of E&P projects, investment opportunities, and corporate competency development.

The success of the E&P business in 2017 was from PTTEP's policy on cost reduction and efficiency improvement under the SPEND SMART to Business Sustainability Project. The project, conceptualized around the New Thought, New Actions, New Achievement concept, enabled PTTEP

manage its business with lower costs and increased its competitiveness for sustainable growth. Cost per unit was USD 29.05 per barrel of crude oil equivalent (BOE) in this year, which was lower than USD 30.46 per BOE in 2016. In 2017, PTTEP posted sales revenue of USD 4.281 billion, a 2% increase from last year, mainly due to the average selling price which increased to USD 39.20 per BOE company to USD 35.91 per BOE in 2016. The average sales volume was 299,206 BOE per day lower from 2016 at 319,521 BOE per day.

In 2017, PTTEP posted a recurring net profit of USD 836 million and losses from non-routine transactions of USD 242 million. A reason of the loss on impairment of assets under the accounting standard was from the adjustment of the investment plan of the Mariana Oil Sands project. This did not affect PTTEP's cash in hand and cash flow. Tax benefits were related to the exchange rate from the Baht appreciation against the US dollar during the year, resulted in PTTEP earning a net profit of USD 594 million. At the end of 2017, PTTEP maintained its strong financial position at USD 19.22 billion in total assets, USD 7.703 billion in total liabilities and USD 11.517 billion in equity.

Projects in Thailand

PTTEP has implemented 16 domestic projects, in which most are in production phase at the Gulf of Thailand and onshore. Key activities of the Bongkot project were the expansion of condensate production to compensate on lower natural gas demand from buyers as well as the preparation to participate in the Bongkot concession bidding. The concession will be expired during 2022 - 2023. The S1 Project progresses with continual production well drilling. More exploration wells



will be drilled in 2018 in order to increase future production. In 2017, the average sales volume in Thailand was 230,504 BOE per day, accounting for 77% of its total sales volume. Regarding the Ubon Project, which is under the Contract 4 Project, PTTEP is under discussion with operational partners to develop and plans on producing commercial petroleum by 2022 with a capacity of 25,000 - 30,000 barrels per day.

Projects in Southeast Asia

PTTEP has 13 projects in located in Myanmar, Vietnam, Malaysia and Indonesia. In 2017, all Southeast Asian projects posted had an average sales volume roughly at 55,371 BOE per day or 19% of PTTEP's total sales volume.

For those projects in the production phase, PTTEP has been actively involved in ones such as the Zawtika Project located at offshore Gulf of Martaban, Myanmar. This project is able to maintain a consistent production target with an average natural gas sales volume of 301 MMCF/D (about 47,747 BOE per day). The Vietnam 16-1 project, located at off the Southeastern coast of Vietnam, produced on average 21,087 barrels of crude oil per day, and average natural gas sales volume was 2 MMCF/D (about 486 BOE per day).

Most of projects in the exploration phase are located in Myanmar both onshore and offshore. The Myanmar M3 project, located at offshore the Gulf of Martaban, is currently under negotiation for a commercial development framework with Myanmar government. The Myanmar MD-7 Project is undergoing a geological study to evaluate the petroleum potential. The Myanmar M11 Project, Myanmar MOCE 3 and Sarawak SK 410B Project in Malaysia are undergoing geological and petroleum exploration studies to prepare for exploration well drilling in 2018. Vietnam B, Vietnam 48/95 and Vietnam 52/97, located at off the coast of Vietnam, are in the process of negotiation for a commercial agreement to support the final investment decision (FID). It is expected that commercial petroleum production will be begun in late 2021.

Project in Australasia

PTTEP has one project in the region, namely the PTTEP Australasia project, which is located at the Australian states. It comprises 12 concession blocks.

The production phase is in Montara. The project meets the sales plan with an average of 10,580 barrels per day in 2017.

In the exploration phase, the Cash Maple Project has completed a Pre-Front End Engineering Design (FEED) Study and is now preparing for a FEED Study. This project is expected to be completed by 2018.

Projects in the American Continent

PTTEP has three projects in the exploration phase in Canada and Brazil. The development plan of the Mariana Oil Sands project in Alberta, Canada, has been adjusted to identify an appropriate project management.

In Brazil, there are two joint-ventured projects, namely the Barreirinhas AP1 Project in Barreirinhas basin, off the northeastern coast and Brazil BM ES23 in the Espirito Santo basin off the eastern coast. Both projects are currently undergoing geological and petroleum potential studies.

Projects in Africa and Middle East

PTTEP has three projects in the region, located at Algeria and Mozambique.

For the production phase, PTTEP has produced crude oil from the Algeria 433 A and 416 B projects in 2017. The average production of these was 17,360 barrels per day.

In the exploration phase, PTTEP has concluded exploration on the Hassi Bir Rekaiz Project, located at the eastern part of Algeria. The project submitted a development plan to the Algerian government in December 2017, and it is expected to get an approval by the first quarter of 2018. Phase I is expected to commercialize at of 10,000 - 13,000 barrels per day in 2019, and investment to increase the total capacity at 50,000 barrels per day in on the table at the moment. Mozambique Rovuma Offshore Area 1 is located at offshore Mozambique. Major progress in this year included the negotiation with the Mozambique government for an approval of the legal and contractual framework, the approval for the management of marine concessions and port, and the commencement of community resettlement. This project is currently seeking approval of the plan of development from the Mozambique government. Approval is expected by early 2018. The project also accelerated the negotiation for long-term LNG contracts with buyers and negotiation for project finance with financial institutions. It is expected to produce commercial petroleum in 2023 with a capacity of 12 million tons per year.

Portfolio Management

PTTEP aims to manage its investment by taking into account risks, valuation factors and impacts on investment to keep up with changing industrial conditions so that PTTEP may add value and promote future sustainable growth under the following directions:

(1) Keep up output volumes of current projects with low operating costs to maintain profitability by increasing the condensate volume from Gulf of Thailand projects and increasing production under the S1 Project, in Myanmar, and Montara in Australia.

(2) Increase petroleum reserves in the short and long terms. PTTEP is well prepared and ready to participate in the upcoming concession bidding in the Gulf of Thailand, both Bongkot and Erawan, organized by the Ministry of Energy. PTTEP has accelerated development projects awaiting final decision, such as the Mozambique's Rovuma Offshore Area 1, Algeria's Hassi Bir Rekaiz Project, Vietnam B, Vietnam 48/95, Vietnam 52/97, and Contract 4 Project (Ubon). In addition, PTTEP looks for acquisition opportunities with a focus on assets that are in the production phase or those that will start production where PTTEP has expertise in Southeast Asia and other high-potential regions. The emphasis is on projects with relatively low project risks and petroleum market support and attractive returns. In addition, PTTEP has developed exploration plans in current acreage, especially Myanmar and Malaysia, and continues looking for opportunities to explore more in other strategic areas.

(3) Extend cooperation in investment and operation in the global LNG value chain with PTT for business growth and Thailand's energy security. This is reflected through the success of PTT Global LNG Co., Ltd., a joint venture between PTTEP and PTT, in acquiring 10% equity in MLNG Train 9 in Malaysia. It is an LNG liquefaction plant with 3.6 million tons per year in production capacity in 2017.

This year PTTEP has concluded portfolio rationalization, such as the selection of Total E&P Myanmar (TOTAL), a company with extensive experience and expertise in exploring and developing petroleum resources around the world, into a joint venture in the Myanmar MD-7 Project. Currently, PTTEP is awaiting approval from the Myanmar government for the relinquishment of exploration blocks of the Myanmar's PSCG and EP2 Projects.



Infrastructure Business



• Power and Public Utility Business:

Global Power Synergy Plc. (GPSC), PTT Group's power-business flagship, also produces public utilities (electricity, steam, and demineralized water) for industrial users, and operates an IPP for EGAT. District Cooling System and Power Plant Co., Ltd. (DCAP) generates power and chilled water for Suvarnabhumi Airport. Thaioil Power Co., Ltd. (TP) generates power for EGAT while distributing power and steam to Thaioil and Subsidiaries' customers.

GPSC's successes stemmed from the efficient management resulted in the lower turnaround fees from Sriracha Power Plant's reserve shutdown. Also, the utilities plants in Rayong successfully operated with high efficiency, and the income was recorded from the insurance compensation paid for GTG12's incident that happened in last year. Moreover, the affiliates' performances exceeded expectations, and GPSC successfully lowered its operating expenses and consultant fees.

According to their consolidated financial statements this year, GPSC and its affiliates posted THB 3.175 billion in net profit, about 17.6% or THB 475 million higher than that of last year (THB 2.7 billion).

• Engineering Service and Technical Consultancy Business

PTT Energy Solutions Co., Ltd. (PTTES) represents a consultant company providing engineering technical advice and engaging in assorted undertakings. PTT Maintenance and Engineering Co., Ltd. (PTTME) engages in engineering, construction design, and project construction together with assorted maintenance for petrochemical and all other plants. On July 3, 2017, PTT transferred all its 40% shares to PTTGC.

• Asset Management Business

Energy Complex Co., Ltd. (EnCo) provides office space, physical resource management services, and supports integrated property business development for PTT Group.

Coal Business



Affiliate PTT Energy Resources (PTTER) used to invest in the coal business and coal mining business in Indonesia through Sakari Resources Limited (SAR), which produced and sold coal primarily to Asian countries, including Hong Kong, Taiwan, South Korea, Japan, China, Malaysia, Indonesia, and Thailand. In 2017, PTT had a policy to let PTT Global Management Co., Ltd. (PTTGM), served as the investment flagship of PTT worldwide, restructuring investment by transferring the entire coal business to PTTGM.

In 2017, the business sold a total of 8.3 million tons of coal, down from 2016 (9.8 million tons). The net profit from the coal business amounted to USD 89 million, a sharp improvement from 2016 (USD 16.3 million) due to a rise in the world NEWC (Newcastle reference price) over 2016. In 2017, SAR focused on operational excellence, curbed mining expenses, and kept continuously operating while adjusting its sales and marketing plans to cope with change in the market situation. It also revised its coal production plan to suit its coal reserves and change in coal quality so as to raise its profitability.



Petrochemical and Refining Business



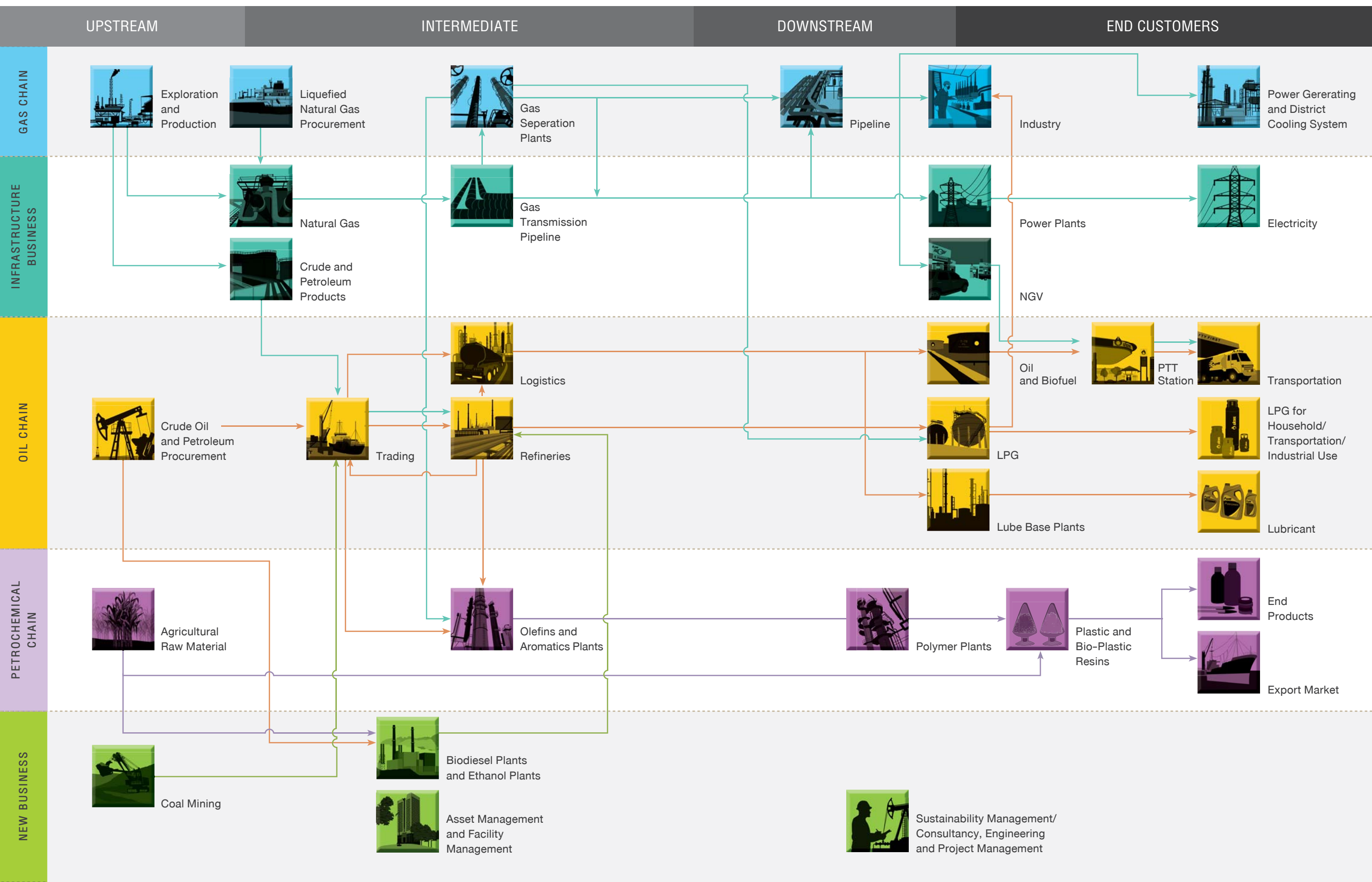
PTT invests in Petrochemical and Refining Business through nine PTT Group companies, namely Thaioil Plc. (TOP), IRPC Plc. (IRPC), PTT Global Chemical Plc. (PTTGC), HMC Polymers Co., Ltd. (HMC), PTT Asahi Chemical Co., Ltd. (PTTAC), PTT MCC Biochem Co., Ltd. (PMCC), PTT Polymer Marketing Co., Ltd. (PTTPM), PTT Polymer Logistics Co., Ltd. (PTTPL), and PTT Tank Terminal Co., Ltd. (PTT Tank). The scope of business ranges from petroleum refinery, production and sale of upstream, intermediate, and downstream petrochemicals together with various polymers (involving olefins and aromatics), worldwide marketing business, and integrated logistics services, in addition to jetty terminal and tank services. The petrochemical and refining business evolved new product capacities and services to increase value to this business, add trade and service channels while pursuing new investment opportunities to ultimately enhance PTT Group's competitiveness.

On July 3, 2017, PTT restructured its shareholding in PTT Group companies associated with the propane and bioplastics business as well as related service businesses. All PTT shares in HMC, PTTAC, PTTMCC, PTTPM, PTTPL, and PTTME were therefore sold to PTTGC (PTT Group's petrochemical flagship) to enhance the company's competitiveness and its opportunity to extend the industry and business, minimize redundancy, and raise the efficiency of supply chain management for secure, sustainable strength and growth.

The performance of the group is primarily subjected to the world economy, feedstock prices, and product prices in global market, which are a function of world supply and demand, and year-end inventory (stocks).



Creates Value through Business Chain



The success of the petrochemical and refining business in 2017 resulted from higher output and sales volumes as well as the overall improved spreads. Also contributing to this was efficiency improvement across the organization and cost reduction from Productivity Improvement activities and initiatives which capture synergy value under the Petrochemical and Refining Integrated Synergy Management (PRISM) and PTT Group Operational Excellence. It resulted from the application of Best practices, Group Logistics Management (GLM) and Value Chain Optimization (VCO). Consequently, the net profit of the entire business group in 2017 amounted to THB 81,049 million, an increase of THB 18,500 million from last year,

This year the feedstock from the petrochemical and refining business units that provided to PTT Group's oil refining totaled 669 KBD (thousand barrels per day), a 6% rise from last year, mainly due to the refinery's annual turnaround. Total petrochemical sales topped 7.467 million tons, a 5% drop, as the second aromatics complex of PTTGC underwent planned repair from June 4 to July 18. Note that the petrochemical sales volumes of HMC and PTTAC included only the volumes from January 1 to June 30, 2017 due to PTT Group's shareholding restructuring as mentioned above.

A summary of investment portfolio adjustment, expansion, and capacity rise by PTT and its petrochemical and refining group appears below:

PTT

- According to SET, PTT disposed of its remaining common shares of Star Petroleum Refining Plc. (5.41% of all SPRC shares sold) after selling some in 2015 to align with PTT's strategic direction.

PTTGC

- Global Green Chemicals Plc. (GGC), PTTGC's biochemical flagship, underwent its IPO on SET, on May 2, 2017 as the first date of share trading.

- The Propylene Oxide (PO) and Polyols & PU System Projects—both extending the downstream business to the high-value polyurethane industrial group—saw PTTGC form a subsidiary and a joint venture to undertake investment in the first project with a capacity of 200,000 tons/year and the second project with capacities of 130,000 tons/year of polyols and 20,000 tons/year of PU System.

- The mLLDPE project, with a capacity of 400,000 tons/year, was designed to add value to the company's ethylene. It is under construction and due for commercial operation by the first quarter of 2018.

IRPC

- The Upstream Project for Hygiene and Value Added Products (UHV) consisted of the following subprojects:

- > Gasoline Maximization Project, designed to add 25 million liters/month of gasoline capacity, started commercial operation in November 2017.

- > UHV Catalyst Cooler Project was designed to enhance process capability by using heavy crude as feedstock, while minimizing temperature constraints in the catalyst regenerator. An engineering design company has been named and machinery procured, with construction set to be completed by the first quarter of 2019.

- The fully Integrated Polypropylene Project, designed to add PP capacity by 300,000 tons/year, consisted of the two following subprojects:

- > PP Expansion (PPE), with 160,000 tons/year in capacity, to boost its capacity to 635,000 tons/year, went on commercial operation in September 2017.

- > PP Compounding (PPC), with 140,000 tons/year in capacity and using in-line (one-step) compounding, was designed to bring IRPC greater production cost advantage. Commercial operation began in December 2017.

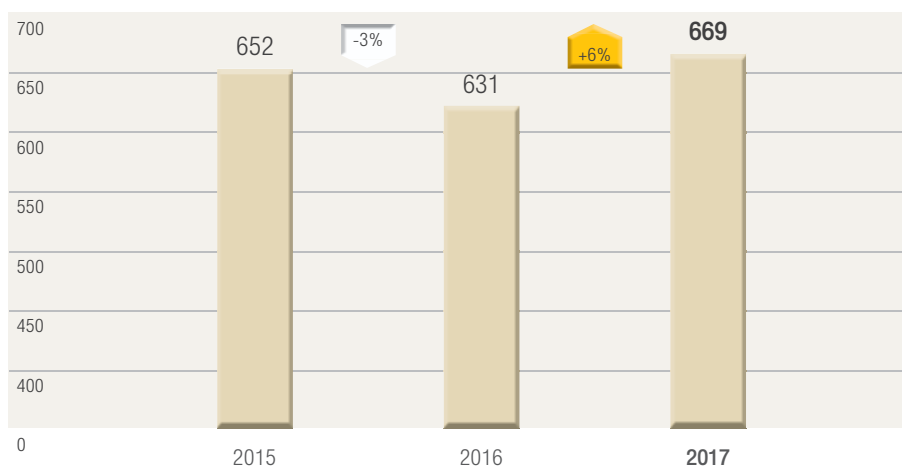
TOP

- The Lorry Expansion Project raised the capacity of oil distribution to its lorries from 12 to 17 million liters/day (41%), with commercial operation began in the first quarter in 2017.

- The Clean Fuel Project (CFP) was designed to raise TOP's capability of adding value to low-value products while enhancing its ability to refine crude oil of different grades, thus hiking TOP's competitiveness and maintaining its market leadership. The project is under the construction bidding stage. A final investment decision is expected by the third quarter of 2018.

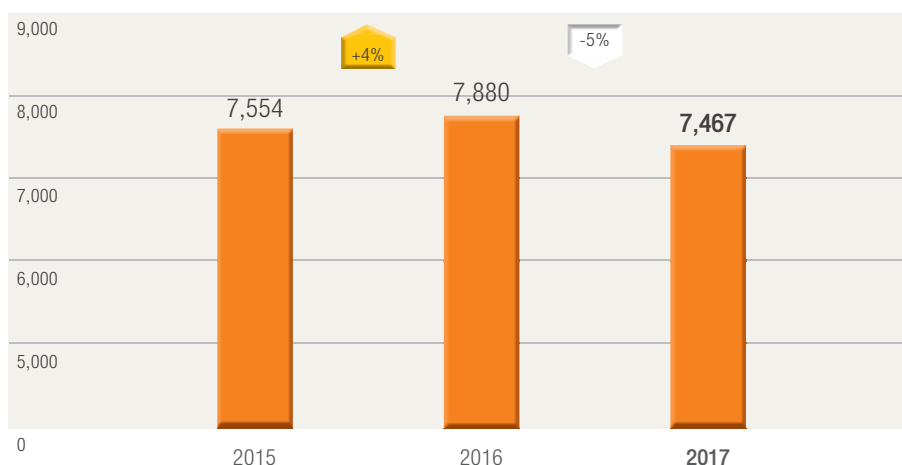
Total Feedstock for Refineries in PTT Group

Unit: Kbpd



PTT Group's Total Sales Volume of Petrochemical Products (Olefins, Aromatics, and Polymers)

Unit: KT/year



PTT 2017 Milestones

January

- PTT formulated and developed new lubricants namely Hino Premium CNG & Dynamic NGV lubricants, PTT Challenger Synthetic 4T, PTT Steelcool WO1, PTT Fork Oil E200 and Synthetic Gear LS 75W-90.
- PTT's EV Wall Charger was successfully developed. Testing and evaluation are in progress.
- PTT replaced conventional LED light bulbs at the staircases of its buildings with LED sensors, trimming power consumption by 45,780 kWh/year (48%) and saving THB 180,000 per year.



February

- PTT signed a Memorandum Of Understanding (MOU) with Nava Nakorn Plc. to study natural gas service partnership, the dawn of collaboration in gas supply services with industrial plants in Nava Nakorn Intelligent Industrial Estate, Nakhon Ratchasima.
- PTT started delivery of commercial gas to SPP customers Advance Agro Asia Co., Ltd., at a daily contract quantity (DCQ) of 16 million cubic feet per day (MMCFD) and Carabao Tawan Daeng Co., Ltd., at a DCQ of 0.4 MMCFD.
- PTT exported lubricant products to Djibouti for the first time, the 37th country to which PTT had supplied its lubricants.
- PTT and the Royal Thai Navy (RTN) signed a memorandum of understanding to jointly study the application of fuel and lubricant products to further develop suitable lubricants for RTN to extend service periods and oil change cycles. It also generated RTN's pool of knowledge on fuel products and lubricants.
- PTT Philippines Corporation (PTTPC) and Cebu Air, Inc., signed a procurement contract for 267 million liters of Jet A1 for domestic and international flights of Cebu Pacific in 2017. This has been the largest airline in the Philippines for over 17 years.
- PTT launched "What's Your Challenge?" campaign to promote PTT Challenger, a member of the lubricant family for motorcycles, formulated and developed in response to all challenging driving conditions and needs.
- PTT handed over the "Clean Energy for Ban Ton Phueng Village Project", located at a village of the same name in Tambon Sam Muen, Tak. The project installed hydraulic ram pumps, the prototypes of such pumps in mountainous areas with a permeating water reservoir. It was the third site in the "Natural Energy, Clean Energy for the Community Project" to use energy from water source to supply water, replacing the use of electricity or oil. The project gave the community year-round access to sufficient water.

March

- PTT signed a contract to purchase crude oil from Brunei Shell Petroleum Company for seventh consecutive year to enhance National Energy Security.



- PTT secured approval of the Board of Investment (BOI) on the exemption of import duties for the extension of the first onshore gas pipeline in Rayong, Chon Buri and Saraburi. This helped in lowering the project capital and fuel costs and would consequently reduce electricity charges for the public.
- PTT and SVL Corporation, an integrated logistics provider, joined a business cooperation program to use PTT lubricants in all SVL Group vehicles.

April

- PTT received the first LNG cargo, a volume of 0.16 million cubic meters from a long-term purchase agreement with BP Singapore Pte. Ltd., and Shell Eastern Trading Co., Ltd., for 0.13 million cubic meters, at the LNG-Receiving Terminal in Map Ta Phut, Rayong.
- PTT signed the North Bongkot Gas Sales Agreement Amendment No. 9 for producers to maintain its production capacity until December 31, 2019.
- PTT started the delivery of commercial gas to NGK Ceramics Co., Ltd. of Asia Industrial Estate Suvarnabhumi at a DCQ of 0.22 MMCFD.
- PTT and the Department of Internal Trade, Ministry of Commerce, launched the Noo Nitch restaurant chain project at PTT service stations to improve travelers' quality of lives through delicious, quality, clean and economical food in which helping in setting a standard for SME entrepreneurs.



- PTT cooperated with the Bank for Agriculture and Agricultural Cooperatives (BAAC) to reduce burdens on farmers who hold Farmer Credit Card by offering them THB 0.30 discount per liter on PTT fuels if they paid bills through the card at PTT service stations nationwide and they would get another 10% discount when they purchased any PTT lubricants from May 1 to December 31, 2017.

May



- PTT signed a long-term LNG contract with Petronas LNG Ltd., which will deliver 1 million tons per year from 2017 to 2018 and 1.2 million tons per year from 2019 onwards. On July 20, 2017 PTT took the first LNG shipment from Petronas at 0.14 million cubic meters at Map Ta Phut, Rayong.
- PTT started delivery of commercial gas to Gulf VTP Co., Ltd., an SPP customer, at a DCQ of 18 MMCFD.
- PTT accepted the “No. 1 Brand Thailand 2017” award for seventh consecutive year, presented by the Marketeer magazine, and also won a Gas Station Award. Café Amazon won a Coffee Shop and Lubricant award while PTT lubricants were recognized in the Engine Oil Car category.
- PTT signed a master franchise agreement in Lao PDR with PTT (Laos) Ltd. (PTTLAO) to increase business opportunities, while Laotians would be able to engage in businesses with PTT to create career opportunities and income. This move would also benefit the neighboring country's overall economy with products and services from PTT which are of international quality standards at fair prices.

June



- PTT completed the construction of LNG Terminal 1, Phase 2, poised to support 10 million tons of LNG per year.
- PTT entered into a crude oil purchase agreement with Rosneft Trading S.A. (Switzerland) (RTSA), a subsidiary of Rosneft, the national oil company of Russian Federation. A five-year framework would provide Thailand alternative energy sources apart from crude oil retrieved from the Middle East and further expand PTT's trade transactions to the West.
- PTT and PTTEP jointly established PTTGL for new LNG business opportunities.
- PTT started delivery of commercial gas to SPP customer Rojana Power Co., Ltd. (Project 3)/ Bangpa-in Cogeneration Co., Ltd. (Project 2) at a total DCQ of 36 MMCFD.
- PTT firstly exported lubricants to Afghanistan, the 38th country that PTT has supplied lubricants.
- PTT and TMB launched the PTT Top Up Cash Card for fuel purchases at PTT service stations without extra fee. Users can set a card limit and fuel type, enhancing convenience, safety, and auditability. Financial planning can become more convenient.
- PTT followed the government's policy to ease low-price problems for agricultural produce by providing farmers with additional distribution channels. "Thai People Power for Thai Farmers Project" offered farmers an opportunity to distribute and sell their products directly to consumers at PTT service stations nationwide with free of charge. This project not only met consumers' needs, but also made it easier to shop. The pilot project started by allowing pineapple farmers to sell their products at seven PTT stations in Lampang and Uttaradit to distribute surplus pineapples in the North.
- PTT Group launched "PTT Group EV Bus", with General Anantaporn Kanchanarat, Minister of Energy, presiding over the ceremony.

July



- The Energy Regulatory Commission (ERC) endorsed the collection of natural gas service fees in variable costs of gas transmission systems for offshore Rayong (Area 1), offshore Khanom (Area 2), onshore (Area 3), and onshore Chana (Area 4). Besides these fees, adjustment to the service fee rates for storage and gasification for variable costs for 2017 was to be enforced on PTT LNG Co., Ltd.
- PTT began delivering gas to SPP customers Gulf TS1 Co., Ltd. / Klongluang Utilities Co., Ltd. at a combined DCQ of 34 MMCFD and to industrial plants NS-OG Energy Solutions (Thailand) Co., Ltd./ Kabinburi Glass Industry Co., Ltd. at a combined DCQ of 4.12 MMCFD.
- PTT received the Asia Marketing Company of the Year 2017 award after the Marketing Association of Thailand (MAT)'s nomination to represent Thailand in The Asia Marketing Excellence Award contest, organized by the Asia Marketing Federation (AMF). This acclaim reflected marketing excellence, prominence, innovation, branding, and market leadership in Asia.
- PTT accepted the Drive Award 2017, an outstanding award for marketing excellence, presented by the MBA Alumni Association of the Faculty of Commerce and Accountancy, Chulalongkorn University. This award generally goes to leading national entities whose management concepts prove outstanding, equipped with innovations that drive them to mobilizing the national economy while bringing about social changes, recognized by the public.
- With the Minister of Energy presiding over the ceremony, PTT signed the "Integrity Pact" for the second segment of the Fifth onshore gas transmission pipeline project. With independent observers and experts' attendance, the agreement was jointly signed with those prospective price bidders.
- PTT won the National Environment Board's endorsement of its EIA of the RA#6 - Ratchaburi Gas Transmission Pipeline Project and the Fifth Onshore Gas Transmission Pipeline Project.



August

- PTTLNG with Samsung Engineering (Thailand) Ltd. and CAZ (Thailand) Ltd. signed an agreement on in-plant power generation, the first time for Thailand to exploit surplus cold air resulting from LNG conversion in 21% efficiency improvement of a power plant system while easing marine environmental impacts.



- PTT signed an agreement extending the delivery of gas supply to SPP customer Glow Energy Plc. for a DCQ of 66 MMCFD.
- PTT began delivering commercial gas to industrial plant users McKey Food Services (Thailand) Co., Ltd./ Kanayama Kasei (Thailand) Co., Ltd./ Asian Insulators Plc. at a combined DCQ of 0.53 MMCFD.
- PTT and the Rubber Authority of Thailand signed a memorandum of understanding on collaboration for the use of PTT's FIT Auto service centers in support of the Pracharath Wheel Tire Project, under which PTT would forego service fees for tire installation and wheel alignment and switch to the TH TYPE variety at FIT Auto centers nationwide.



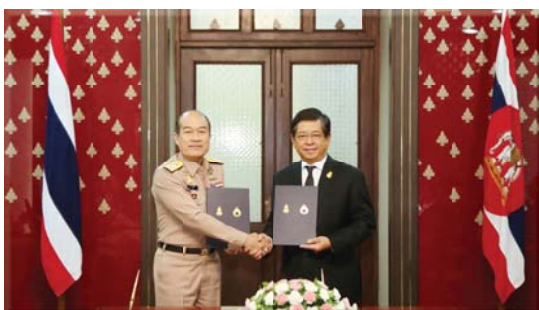
- PTT accepted Thailand Labour Management Excellence Awards 2017 as the year's outstanding model operators for safety, occupational health, and work environment for a total of 63 awards and three awards for safety officers. For 21 consecutive years (a national record), Surat Thani Petroleum Terminal had garnered this award.
- PTT with S&P Global Platts staged a seminar on the oil and petrochemical markets, including LNG and the tanker market, to share expertise and views on market outlooks among senior executives of government agencies, the Institute of Industrial Energy, and the Petroleum Institute of Thailand. Some 200 attended the seminar.



- PTT increased its equity in PTT International Trading London Ltd. to accommodate growth in international transactions in the West.
- PTT accepted the 2017 Outstanding State Enterprise for innovation with its Bio-SSCMB (bioplastic compound-based silver skin of coffee), presented by the State Enterprise Policy Office.

September

- PTT joined hands with BAAC to allocate space in PTT service stations across the country to add goods and quality product distribution channels. This helped farmers release their seasonal products directly to consumers, thus strengthening the agro-economy.
- PTT signed a memorandum of understanding on parchment coffee seed trading under a process of coffee planting and producing under natural resource conservation between the Pang Khon and Akha Pang Khon coffee community enterprises and Sarn Palung Social Enterprise Co., Ltd. (PTT Group companies) together with Café Amazon located at Ban Pang Khon, Tambon Huai Chomphu, Chiang Rai. This collaboration promoted social enterprises such as the development of coffee planting and production with an efficient natural resource management system, procurement of raw coffee seeds, improvement of distribution channels, and support of local community employment for self-development under mutual support.
- PTT and RTN signed a memorandum of understanding on cooperation in energy and services involving fuels and related businesses at the U-Tapao Airport in support of the Special Eastern Economic Corridor: Eastern Aviation for concrete success under the Thailand 4.0 policy and strategic plan.



- PTT and BAAC signed an agreement called “PTT-BAAC Join Forces to Help Farmers” to form business networks and assist farmers and communities across the nation by providing goods distribution channels through PTT service stations, providing income to stimulate the grassroots economy, and upgrade Thai farmers’ skills through theoretical and practical knowhow on lubricant application for agricultural machinery for farmers’ earnest application.



- PTT began delivery of commercial gas to SPP customer Gulf TS2 Co., Ltd., at a DCQ of 18 MMCFD and industrial customer Nikkei MC Aluminum (Thailand) Co., Ltd., at a DCQ of 0.4 MMCFD.
- PTT garnered an award on service innovation from Deputy PM Vissanu Krea-ngam at the event of “2017 National Public Service Sector Excellence Award” for its mobile application from entered the Market and Customer Service Unit, NGV Marketing.

October

- PTT and GPSC signed an agreement on the “Natural Gas Market & Total Energy Solution Project” to develop markets for natural gas and electricity in Cambodia to extend PTT Group’s integrated energy businesses in ASEAN.
- PTT joined in the GSA signing ceremony with WHA Eastern Seaboard NGD 2 Co., Ltd., governing the Hemaraj Eastern Seaboard Industrial Estate 2 in Amphoe Si Racha, Chon Buri, under the natural gas liberalization policy of the public sector designed for enhancing energy security for the industrial sector.



- PTT began delivery of commercial gas to SPP customer Banpong Utilities (Project 1 and Project 2) Co., Ltd., at a DCQ of 17 MMCFD.

- PTT coordinated with transport-related state enterprises during the Royal Cremation Ceremony for HM the late King Bhumibol, namely State Railway of Thailand, Bangkok Mass Transit Authority, and Transport Co., Ltd., under the “Joining Forces to Provide Free Services Project”. These agencies and PTT agreed to sponsor fuels for the public transportation the last farewell to the beloved late king.



- PTT won awards at the “2017 World Branding Awards Ceremony”, as to recognize the greatest brands globally. Its service stations and Café Amazon outlets were selected by World Branding Forum for the Brand of the Year (National Tier 2017 - 2018) for Petro/ Gas Station and Retailer-Coffee categories.
- PTT and CPC Trade and Services Co., Ltd., signed an agreement on the “Market Development Project for Closed-System Pulverized Coal throughout Industrial Supply Chain Project”. This project stemmed from efforts to extend the pilot-scale Pulverized Coal Project, which PTT and the industrial sector conducted in 2015 to study the possibility of production, storage, transport, and application of closed-system pulverized coal for new fuel alternatives. This was to address the need for energy and reduce production costs in the industrial sector via clean coal technology. Since then, this project has been proved with cost effectiveness and accepted by the industrial sector, leading to widespread pulverized coal application.

November

- PTT and Thailand Post launched a new channel to aid community goods distribution by developing E-commerce channels at PTT service stations, thus supporting communities in distributing their goods and community products, OTOP and SMEs' goods—across regions as well as across national borders.
- PTT and KBank sponsored the Hua Seng Hong Dim Sum franchise to enable all to own businesses and promote Thai SMEs' sustainability.
- PTT and Efuel Service Sdn. Bhd. signed the “PTT Lubricants Distributorship Agreement”, which granted distributorship rights to the company, which now served as PTT's first lubricant distributor in Malaysia.
- PTT inaugurated its lubricant export to the Republic of Fiji, covering both gasoline and diesel engine lubricants.
- PTT launched its PTT Challenger Superbike Racing 10W-50 and 10W-60, the best of superbike (600 cc and bigger) lubricants for sport and touring types, the very first time in Thailand.
- PTT received the outstanding marketing award (MAT Award 2017, Silver) in the Industrial: Chemical category from the Marketing Association of Thailand under the “What's Your Challenge?” campaign.
- PTT began delivery of commercial gas to SPP customer Gulf TS3 Co., Ltd., and IRPC Clean Power Co., Ltd. (Project 1 and Project 2), at a total DCQ of 53 MMCF/D.
- PTT completed its construction and testing of a midline gas compressor station of the Fourth Gas Transmission Pipeline.



December

- PTT began delivery of commercial gas to industrial user Wan Thai Foods Industry (Bangchan) Co., Ltd., and APC Industries Co., Ltd., at a total DCQ of 0.32 MMCF/D.
- PTT won an honorary certificate for promoting universal design in 2017 as a recognition in designing and creating the “friendly design” logo. To elaborate, PTT presented its concept of PTT service stations in “PTT Friendly Design” a symbol of care for consumers of all genders, ages, and physical conditions, to be able to access all areas conveniently and safely.

- PTT won the Thailand Automotive Quality Award 2017 (TAQA) in the automotive product category: group of fuels and service stations for eight years consecutively, underscoring consumers' confidence and high satisfaction with the products and services of PTT brand.
- PTT joined with KBank in responding to the National e-Payment Policy by introducing the QR Code Payment innovation to PTT's retail outlets. It enhanced consumers' convenience and confidence with new experiences in buying goods and services with a Dynamic QR Code. This allows consumers to scan the code and pay without cash and amount stating to avoid inaccurate sum. Moreover, there is no fee and no limit in number of usage.
- PTT joined with TMB Bank to launch the PTT Fleet Card for government agencies and state enterprises which normally required to deduct and remit a withholding tax on each purchase of fuels at service stations. From now on, they can appoint TMB Bank to represent them on this matter and remit tax on their behalf, thus streamlining their work processes and procurement of fuels at over 1,500 stations across the country.
- PTT signed an agreement on collaboration in joint personnel development with the Faculty of Logistics, Burapha University, for the second year. The agreement focused on developing a curriculum on personnel development. Also, it developed a simulation model of web-based international trade situations to serve as an essential tool for raising efficiency and promote learning in a "virtual reality" environment.
- PTT completed the installation and testing of an offshore gas compressor.
- PTT signed an Memorandum of Association (MOA) with the Ministry of Science and Technology, represented by NSTDA, to develop Wang Chan Valley as the major base for EECi.
- PTT completed its conceptual design of "Natural Innovation Park/ Eco-City" and prepared a land title deed schematic for the EECi Project for the declaration of Wang Chan Valley as an EECi zone.



Collaboration for Shared Sustainability



11

There are several key elements for community, social, and national progress. One of them is the collaboration from all across the board. PTT volunteers to be a driver of Thai society for such progress by applying sustainable development goals (SDGs)—a consensus of the world community to frame development and implementation—in deciding its social engagement to cover all aspects ranging from education and youth capacity building, promotion of a good quality of life, provision of suitable access to alternative energy, conservation of natural resources and environmental rehabilitation (on land and marine), reforestation and forest stewardship to reduce greenhouse gases which cause climate change to the stimulation of awareness and collaboration from various sectors. PTT's ultimate aim is to jointly pursue a sustainable society.



"Water, Forest and Khung Bang Kachao Conservation Project"



“Water, Forest and Khung Bang Kachao Conservation Project”

To carry on with H.M. the Late King Bhumibol Adulyadej’s aspiration and follow his remarks on the conservation of the Bang Kachao Riverbend area, located on 11,800 rai of land in Pra Pradaeng District of Samut Prakarn as a complete ecology area, PTT Group initiated a project on conservation of Water, Forest and Khung Bang Kachao. The project also gave strong support for promotion of the community economy under the Sufficiency Economy philosophy. The campaign has been managed with participation of the community and partnership networks recognized as the Chaipattana Foundation, Ministry of Energy, the Royal Forest Department, local government parts, Kasetsart University and the cooperation of Bang Kachao community. The cooperation of various parties is operated for four implementations; the environmental development, the quality of life development, the community’s economy support, and the human resource development.

In 2017, PTT constantly cooperated with the other parties to renovate King Bhumibol’s 80th Birthday Anniversary Park, restoring green areas, expanding seedling, preserving mangrove forest, and researching the causes of scouring of the Riverbend area. Another activity was “Kla Pun Dee”, in which PTT and the parties jointly supported for youth development cooperating with local school networks. The purpose was to inspire the change of new-generation leaders. In addition, the Identity of Khung Bang Kachao community has also been kept studying in various aspects in order to be applied as long-term knowledge for the sustainable development.

Intellect Breeds Development, Human Beings Breed the Future

To date, several instances have reminded us to recognize the force of science and technology (S&T) that do not only bring change to the world and human lives, but is also a key national development tool. Yet, the trigger, of S&T progress and full application is human beings, who learn, extend, and create good things from them. That is why PTT values human resource development. The crucial goal is to move Thailand forward and produce manpower who is skilled in S&T. PTT begins with the cultivation of sound physical and mental foundations.

VISTEC and KVIS: Space for Thinkers and Doers

PTT has created space for the preparation of “saplings” for Thailand’s future. The mainstays of S&T development in the forms of thinkers and doers who are ready to serve society are Vidyasirimedhi Institute of Science and Technology (VISTEC) and Kamnoetvidya Science Academy (KVIS).

VISTEC has offered three batches of master’s and doctoral degree studies in molecular science and energy science disciplines with a total enrollment of 156 master’s, doctoral, and postdoctoral research students. It is also committed to producing research that evolves into assorted public-service innovations, including:



VISTEC

- **Advanced Functional Materials:** These materials raise reaction efficiency, ease environmental impacts, and trim industrial production costs. VISTEC also develops capsules and ingredients of drugs or chemical precursors for efficient activation and reactions.
- **Energy Science and Applied Technology:** This includes development of composites for energy storage, catalysts to improve bio-oil quality, zeolite (a key catalyst in the petrochemical industry's refining processes), the design and development of ionic conductors, and the development of forms of molecular reactions with greater efficiency.
- **Biologically Inspired Engineering and Sustainable Technology:** Research development for sustainability of applied natural materials, including the design of scrubbers for wastewater treatment of pig farms by using locally available and low-cost materials (including spathe and nylon mosquito wire screen), development of adsorbents from paper waste, development of specialized catalysts for biodegradable polymer production for specific purposes, development of catalysts to convert carbon dioxide into chemicals, fuels, and products of value while lowering global warming.
- **Data Science and Engineering:** This research development effort for digital data management and exploitation is made by connecting various instruments to the Internet of Things and applying them to engineering, sports science, architecture, urban design, public health, data management, education, and industry.



KVIS



KVIS has enrolled three classes of high-school students (for academic years 2015 - 2017), each with 72 students. Besides incubation of S&T saplings at the school, it extended the scope of S&T and innovation development promotion to the outside by joining the Ministry of Science and Technology in staging a Youth Greenovation Awards 2017 event for a trophy bestowed by HRH Princess Maha Chakri Sirindhorn. This allowed youths at the lower and upper secondary levels as well as those vocational students or equivalent to showcase their creativity for inventions that can be used in daily life and are environment-friendly. The youth teams that won the royal trophies this year were as follows:

- **Lower secondary:**
“Energy Converter Kit for Tourists”,
Chulalongkorn University
Demonstration Secondary School, Bangkok
- **Upper secondary:**
“DIY Filaments for 3D Printer”,
KVIS, Rayong
- **Vocational:**
“Coral-conserving Buoys Maintained by Wave Energy”,
Surat Thani Technical College, Surat Thani.

Schools of the 21st Century

Petro Camp to Petro Champ



Schools of the 21st Century: Making Great Strides Together

PTT provides educational opportunities to youths living around its sites to acquire quality and standard education by running a project on schools of the 21st century to develop schools attached to the Office of the Basic Education Commission (BEC) so that they may serve as prototype schools for nationwide educational reform. The project scope included executives' organization mobilization, teacher caliber development, surroundings and instructional media development, and collaboration with parents and communities in upgrading the surroundings conducive to the development of students' intellect and behavior. The project also focused on youth development to acquire essential characteristics namely analytical thinking, calculation, languages, and technology in parallel with life skills, all of which would groom youths for upcoming economic and social changes so that they will become smart and conscientious adults. This year, PTT Group operated its second consecutive year of this project to successfully develop two prototype schools in Rayong and five other network schools. All of them were invited by BEC to serve as prototype schools for 3,000 others across the country.



Petro Camp to Petro Champ

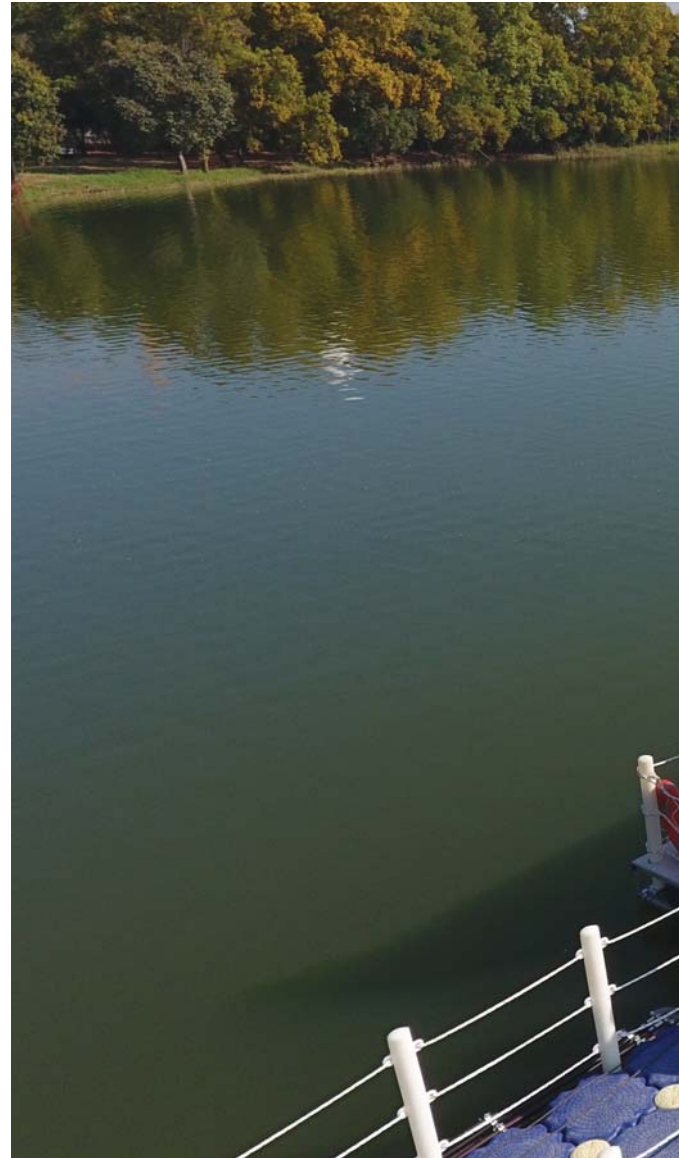
To promote youths' mastery of petrochemical, refining, and energy matters together with innovation creativity, PTT has been running the Petro Camp for 12 years. This year, 55 students from 13 schools all over Thailand passed PTT's selection for participating in camp activities to learn academic subjects and engage in practical activities dealing with science, petroleum, and the environment. With King Mongkut University of Technology Thonburi (KMUTT), PTT selected youths under this project to pursue undergraduate studies in Chemical Engineering and Environmental Engineering, Faculty of Engineering, KMUTT, and funded scholarships for their entire four years of the studies. To date, 55 scholarship recipients have joined the project, and 27 have graduated. Some are pursuing with master's degree studies in energy technology and engineering; others are working as quality engineers for the public sector and private sector.

Strengthen Communities in Pursuit of Energy Independence

Recognizing the diminishing role of fossil fuels today along with the development and promotion of alternative energy in various forms, PTT initiated a project to develop community energy, while valuing activities to heighten quality of life in communities.

Clean Energy for Communities

PTT officers' stewardship of gas pipeline transmission systems and surrounding communities has enabled PTT to become aware of problems concerning communities' access to basic public utilities, notably clean water for consumption and agriculture. That is why PTT consolidated its 30 years of expertise and skills in engineering and energy in improving communities' quality of life by engaging in a project on natural energy, clean energy for communities. Specifically, it investigated, designed, and developed Hydraulic Ram Pumps that require no electrical power or fuels to overcome water shortage problem. After the success, this project was further developed and a water management model was created for various areas with different terrains. This year, it reached out to 14 locations across the country, enabling communities and related sectors to access and exploit clean water totaling 190,431 cubic meters, encompassing the household and agricultural sectors together with forest fire prevention.



Clean energy for communities



Floating PVs: From the Sky to Communities

With the cooperation of Chaipattana Foundation, PTT undertook research on Floating PV to manage water at the Rama IX reservoir, a royal initiative, and extended the solar farm idea to communities by promoting their reliance on renewable energy—a pristine energy from nature—in place of fossil fuels. This year, PTT extended floating PVs for agricultural water pumping to key community networks in five areas: Tambon Dong Khi Lek, Amphoe Mueang, Prachin Buri; Tambon Tha Manao, Amphoe Chai Badan, Lop Buri; Tambon Lam Sin, Amphoe Si Nakharin, Phatthalung; Tambon Kham Kaen, Amphoe Mancha Khiri, Khon Kaen; and Tambon Mae Tha, Amphoe Mae On, Chiang Mai. These communities generated a total electricity of 114,690 units a year, while trimming community expenses on energy by THB 771,496 and trimming carbon dioxide emission by 67.64 tons per year.

Biogas from Pig Farms, Value from Waste

At Tambon Tha Manao, Amphoe Chai Badan, Lop Buri, PTT ran a project on a biogas system from pig farms to solve odor problems from the farms and leverage manure to produce biogas for community uses in place of LPG and charcoal. In 2016, it extended the expertise derived at Tambon Tha Manao to two other areas, namely Tambon Kham Kaen, Amphoe Mancha Khiri, Khon Kaen, and Tambon San Sai, Amphoe Phrao, Chiang Mai. Today, all three communities (183 households) have become prototype communities in local energy management. The farm expense was lowered, generating THB 1.12 million annually while carbon dioxide emission was trimmed by 1,287 tons.



Natural Conservation Force for the Breath of All

Recognizing that the effective protection of natural resources calls for network formation and spreading of proper knowledge, PTT undertakes CSR to restore fertility and the ecology along with biodiversity.

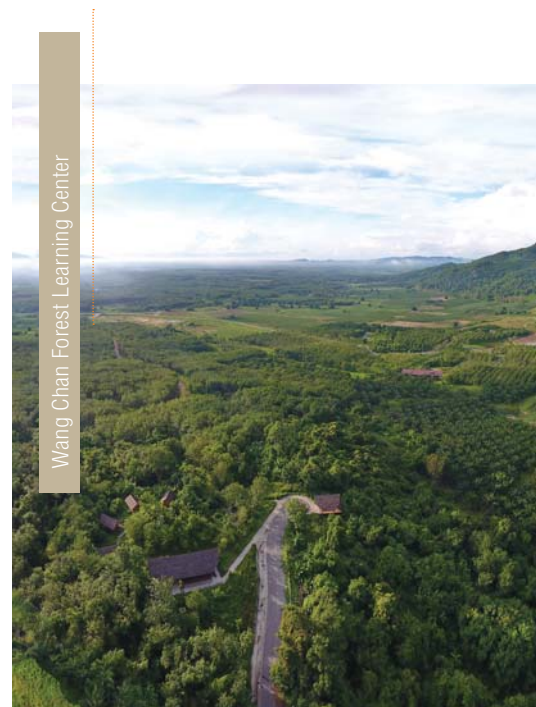
PTT Reforestation Institute for Forests and Human Lives

PTT Group extended its ongoing mission for forest stewardship under the “Reforestation in Honor of H.M. the King Project on the Occasion of the 50th Anniversary of the Accession to the Throne” during 1994 - 2002, covering the area of 1,012,401 rai. New forests were added under the “Reforestation Project to Rehabilitate the Ecology and Combat Global Warming”. Two phases were involved: 42,349 rai (2003 - 2012) and 105,268 rai (2013 - 2017). This year, a total of 2,587 rai has been reforested, made up of:

- > Watershed forests, Nan: 400 rai
- > Community forests, Khon Kaen, Yasothon, and Roi Et: 1,561 rai
- > Mangrove forests, Rayong and Chumphon: 626 rai.

Besides its mission to plant trees and look after forests, the institute compiled knowledge about afforestation and forest rehabilitation transferring to the public through the following learning centers:

- **Wang Chan Forest Learning Center:** Located in Tambon Pa Yup Nai, Amphoe Wang Chan, Rayong. This Eastern Region center compiles assorted expertise and innovations on rehabilitating forests, notably the “agroforestry” integrated rehabilitation, in which perennial trees, field crops, and garden plants are planted along with mixed rice farming in the same area. This is a form of forest rehabilitation that was made as a demonstration plot in response to sustainable economic, social, environmental, and ecological



objectives under the Sufficiency Economy Philosophy. Restored annually since 2015, these were traditional ways of rice farming by Wang Chan residents of Rayong, starting from planting to harvesting. This year, visitors to the center numbered 66,795.

- **Metro Forest Project:** Located on 12 rai on Sukhaphiban 2 Road in Khet Prawet, Bangkok. This project was designed under the “PTT Green in the City” concept, complete with facilities in a perfect blended with the surroundings and are energy-saving. These facilities are green innovations in line with the Thailand 4.0 Model that are sustainable and environmentally friendly, as well as with the format of study urban forest. This year the project attracted 117,420 visitors.
- **Sirinath Rajini Mangrove Ecosystem Learning Center:** This learning center is located in Prachuap Khiri Khan, a collection of knowledge about the rehabilitation of deserted shrimp farm areas into fertile mangrove forests. It is also a national learning center of mangrove forest ecology and a prototype area for sustainable forest management in conjunction with communities, public and private sectors. This year, it attracted 53,045 visitors, generating THB 360,640 for communities from organized tour programs. In addition, PTT erected a natural classroom project to convey knowledge about mangrove forests through a workshop (a nine-month continuing program) for 1,291 students of schools in the center’s network.



Metro Forest Project



Sirinath Rajini Mangrove Ecosystem Learning Center

Vetiver: Wonder Grass, Its Development and Campaign Following a Royal Initiative

Though merely a type of grass, vetiver is incredibly useful to human beings, ranging from the ability to conserve soil to the creative use as handicrafts.

PTT and its network jointly extended their investigation of vetiver uses for sustainable soil and water conservation by promoting vetiver conserver networks at local, regional, and national levels. At the same time, they developed the caliber of the networks through management training, the development of brand and logo, V-STRONG Network of vetiver conservers, and promotion of handicrafts from vetivers for modernity, suitability, and customers' needs.



Vetiver

Innovation for a Sustainable Future

12

PTT is fully committed to relentlessly promoting and supporting the corporate value of innovation, creating an inspirational atmosphere of creativity and innovation for the entire workforce. Every employee is encouraged to submit creative ideas and innovations to compete with others in the annual PTT Innovation Award to win prizes, obtain more inspiration and become a role model for other employees.

Besides the PTT Innovation Award, employees are routinely connected to the social media and publications, sharing and exchanging research outcomes and findings from both internal and external sources. These varied media sources include innovation exhibitions such as PTT We Can Corner, publications with articles on innovation such as PTT Spirit Bulletin, group communications on assorted activities via PTT What's new, E-mail and posters. Especially in 2017, PTT Group Innovation Expo was organized to introduce the corporate value of innovation to school and university students as well as to publics for the first time. Moreover, more than 30 pieces of PTT's innovations were publicized to society. These innovations were specifically designed under the policy of PTT's President & CEO, Mr. Tevin Vongvanich, to focus on value creation for all stakeholders including society, communities, environment, people and the nation. The exposition was graciously presided by General Anantaporn Kanjanarat, Minister of Energy who was welcomed by PTT's President & CEO.



Outstanding innovations originated by the creativity of PTT staffs
with added value to PTT and stakeholders include:



BIO-CELLULOSE COMPOSITE WOUND DRESSING

Commercial Innovation for Society

Bio-Cellulose Composite Wound-Dressing –

The wound-dressing product was generated from nano-meter-diameter cellulose derived from specific micro-organisms discovered by PTT researchers. The discovery was achieved from bio-cellulose composite studies, leading to suitable properties for wound-dressing material and cost-saving in production processes for other technological developments. This bio-cellulose composite product provides significantly higher healing properties than other competitors' in the market. Currently, Bamrasnaradura Infectious Diseases Institute is taking the product to the commercial test period with actual patients. Once completed, PTT will seek FDA (Food and Drug Administration) certification and develop a business model for a commercial launch in the future.



Award:
Gold Medal
the 45th International Exhibition
of Inventions of Geneva 2017
Switzerland



Commercial and Environmental Innovation

Bio SSCMB (Bio Silver Skin Coffee MasterBatch).

The bioplastic compound product was derived from bioplastic raw materials from PTT Group, blended with coffee grounds, representing waste from the coffee-roasting process at Café Amazon's roasting plant. With its unique coffee smell and natural wooden-like texture, this bioplastic product fits well with the needed applications.



**BIO SSCMB
(BIO SILVER SKIN
COFFEE MASTERBATCH)**



Award: Outstanding Innovation awards at State-Owned Enterprise Awards 2017



Award: Best Initiative in Innovation from The Asset Magazine Awards 2017



Award: Gold and special recognition awards from the 45th International Exhibition of Inventions of Geneva 2017, Switzerland

Social and Environmental Innovation

Hydraulic Ramp Pump PVC-Model - The hydraulic ramp pump was developed from the co-generation of local knowledge and modern hydraulic engineering by using cheap and commonly available PVC materials. This highly efficient invention was created to pipe water from lowland to high ground waterworks for drought communities by using pure mechanical forces without electricity or other energy sources.



**HYDRAULIC RAMP
PUMP PVC-MODEL**



Award: Outstanding State Enterprise Award on business for public and environment 2017, presented by The State Enterprise Policy Office

DIESEL EURO V FOR WINTER



Commercial Innovation

Diesel Euro V for Winter - With aims to comply with the Euro V diesel standard having CFPP under -15°C , PTT researchers and Government and Industrial Marketing Department teamed up to successfully develop the Diesel Euro V for Winter with product within six months. This product is intended to export to where the temperatures are below zero. This successful development demonstrated PTT's capability in product development comparable to other global leading energy companies. This results in sales of over 2 million liters per year. It provides technological insights to develop other special-grade oil products to be used in gasoline engines in order to meet the demand of gasoline users such as Euro V gasohol 91.



Award: Silver Award from PTT Innovation Award 2016, Best for Oil Recognition Award 2015 from PTT Oil Unit, and PTT Group R&D Achievement Award 2015.



With full and continuous support and promotion, PTT has been well accepted domestically and internationally as a leading innovative organization, as demonstrated by innovations and numerous awards granted to this Thai premier multinational energy company, a truly valuable asset and national pride, **"Pride and Treasure of Thailand"**.



Financial Status and Performance

PTT and Its Subsidiaries' Performance

Unit: THB million

	2016	2017	% Increase/ (Decrease) (%)
Sales revenue	1,718,846	1,995,722	16.1%
Earnings before interests, income tax, depreciation and amortization (EBITDA)	312,526	345,395	10.5%
Share of net income (loss) from investments in joint ventures and associates	4,143	7,310	76.4%
Gain (loss) on foreign exchange	4,473	13,650	> 100%
Operating income	183,792	229,106	24.7%
Income taxes	26,593	28,306	6.4%
Net income	94,609	135,180	42.9%

PTT Sales revenue and its subsidiaries in 2017 was THB 1,995,722 million, increasing by THB 276,876 million or 16.1%. The revenue went up in most of all business groups, especially from international trading and petrochemical and refining business from an increase in average selling prices of petroleum and petrochemical products both olefins and aromatics as following the rise in average Dubai crude price from USD 41.3 per barrel to USD 53.2 per barrel or 28.8%. However, exploration and production business's sales revenue decreased from strong THB appreciation and lower sales volume despite higher selling price following crude oil price. In 2017, earnings before interest, taxes, depreciation and amortization (EBITDA) of PTT and its subsidiaries was THB 345,395 million, increasing by THB 32,869 million or 10.5%. It was mainly from petrochemical and refining business that could do better performance on refining business following higher gross refining margin excluding stock gain/ (loss) (Market GRM) from higher fuel oil and diesel crack spreads despite lower stock gain compared to 2016. Moreover, performance of PTT's Gas Separation Plants (GSP) increased from the rise of product selling prices which were referenced to the global petrochemical product prices while feed gas cost declined. Sales volume also increased after Ethane Separation Plant (ESP) and Gas Separation Plant (GSP6) had major turnarounds in 2016. Gas business had better performance from PTT's Natural Gas Supply and Trading (GSM) and Natural Gas Distribution (NGR) business units.

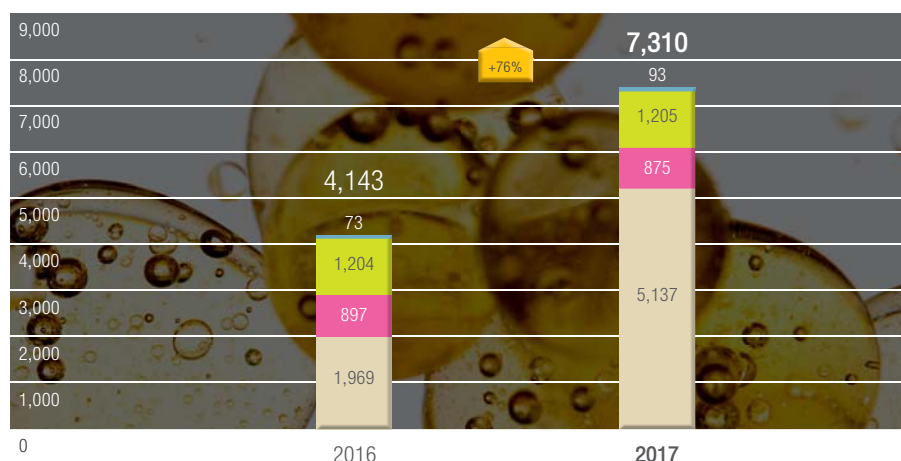
Depreciation and amortization expenses decreased by THB 12,445 million or 9.7% from THB 128,734 million in 2016 to THB 116,289 million in 2017. This was mainly from the increase in petroleum reserves of PTT Exploration and Production Public Co., Ltd. (PTTEP).

Figure 1

Share of Net Income from Investments in Joint Ventures and Associates

Unit: THB million

- Others
- Gas
- Oil
- Petrochemical & Refining



In 2017, share of net income from investments in joint ventures and associates was THB 7,310 million, increasing by THB 3,167 million or 76.4% from THB 4,143 million in 2016. This was mainly from the rise in PTT Asahi Chemical Company Limited (PTTAC)'s average selling prices.

In 2017, PTT and its affiliates gained on derivatives of THB 693 million, increasing by THB 9,675 million from loss on derivatives of THB 8,982 million in 2016. This was mainly from financial and oil price hedging derivative contracts of PTTEP, IRPC Public Company Limited (IRPC), and PTT.

Gaining on foreign exchange increased by THB 9,177 million from THB 4,473 million in 2016 to THB 13,650 million in 2017. This was mainly from higher realized gain on foreign exchange of PTT from foreign currency trade receivable, trade payable and loans settlements. Due to THB appreciation against US Dollar, PTT and most of all affiliates had unrealized gain on foreign exchange rate from foreign currency loans.

In 2017, PTT and its subsidiaries had non-recurring items from loss on impairment amounting to THB 24,848 million. This was mainly from loss on impairment of PTTEP's assets from exploration and production project overseas of THB 18,505 million, PTT Global Management Company Limited (PTTGM)'s loss on impairment of coal business of THB 4,229 million and PTT Global Chemical Public Company Limited (PTTGC)'s loss on impairment of THB 2,296 million. Moreover, there was gain on disposal of investments at THB 2,674 million mainly from disposal of investment in Star Petroleum Refining Public Company Limited (SPRC) as well as PTT had dividends income from investment in mutual fund at THB 4,310 million.

Corporate income taxes increased by THB 1,713 million or 6.4% from THB 26,593 million in 2016 to THB 28,306 million in 2017. This was mainly from better performance of petrochemical and refining business. Meanwhile, corporate income taxes of PTTEP decreased due to tax saving from the effect of THB appreciation against US Dollar. In 2017, PTT and its subsidiaries net income was THB 135,180 million, increasing by THB 40,571 million from THB 94,609 million in 2015.

Summary of Non-Recurring Items for 2017 Until Present are as Follows:

January 2017

In response to the recent news on the admission of Rolls Royce Energy System Company (Rolls-Royce), a major producer of aircraft engine and industrial machinery in the United Kingdom, on bribery payment at energy companies in Thailand including PTT's six projects during the year 2000 - 2013:

- PTT had informed that we place high importance on transparency in conducting our business in compliance with good corporate governance. PTT has set up a committee to investigate the facts behind the past engine procurements from Rolls-Royce in the aforementioned projects in order to further report to the Board of Directors within 30 days.
- PTTEP has immediately set up Fact-finding Committee to investigate the process of procurement and services with Rolls-Royce during that period. Results of the investigation will be reported to the Board of Directors within 30 days.

March 2017

- PTT has entered into Inter-Company Borrowing and Lending (ICBL) with Global Power Synergy Public Co., Ltd. (GPSC) in order to enhance liquidity management and financial collaboration in PTT Group.

April 2017

- PTT made general tender offers to repurchase two series of the Company's USD bonds (PTTF358A and PTTF420A) which were issued and offered for sale overseas. The total amount of repurchase was USD 81.15 million in principal amount of the bonds. Consequently, the total aggregate principal amount of the two series of bonds remain outstanding at USD 868.85 million.
- After March 17, 2017, the Board of Directors of PTT has approved the PTT business restructure consisting of a transfer of the oil business unit, the assets and liabilities of such business unit, and the shares of companies related to the oil business unit from PTT to PTT Oil and Retail Business Company Limited (PTTOR) (previously named as PTT Retail Business Company Limited). On April 28, 2017, three-quarters of all votes by shareholders approved about the restructuring PTT oil business at shareholder's meeting. The Meeting also acknowledged the possibility of the plan for the initial public offering of ordinary shares of PTTOR (IPO) including an offer on PTTOR's ordinary shares to PTT's existing shareholders who have the rights to subscribe for such allocated shares. However, PTTOR will not offer such shares to shareholders who will cause PTTOR to be subjected to rules and regulations of foreign countries (Preferential Share Offering); and the listing of PTTOR on the Stock Exchange of Thailand in the future (the IPO Transaction).
- The shareholders' meeting of PTT approved dividend payment for the year 2016 at THB 16.00 per share, costing approximately THB 45,705.15 million. On August 19, 2016, PTT paid an interim dividend for the operating results of the first half of 2016 at THB 6.00 per share. The remaining dividend for the second half of 2016 was at THB 10.00 per share which would pay on May 15, 2017.

May 2017

- GPSC's Board of Directors has approved to enter into the License and Services Agreement with 24M Technologies Inc. (24M), which 24M agreed to grant GPSC license to use the 24M Proprietary Technology to manufacture and sell batteries in ASEAN.
- The Board of Directors of PTT has given an approval for PTT Green Energy Pte., Ltd. (PTTGE SG) to dispose of PTTGE SG's investment in Chancellor Oil Pte., Ltd. (CO) which is the shareholder of PT. First Borneo Plantations (PT FBP) and to sell PTTGE SG Sale Shares and Loans to PT Bentala Agro Lestari (Bentala), as purchaser. On May 10, 2016, PTTGE and Bentala, as well as other relevant parties, have entered into the new shares sale and purchase agreement accordingly.
- On May 23, 2017, PTT PMMA Company Limited (PTTPMMA), a wholly owned subsidiary of PTT, has changed the company name to PTTGM. The company has already registered the name change to Department of Business Development, Ministry of Commerce.

June 2017

- PTT jointed with PTTEP Business Center Company Limited (a subsidiary of PTTEP) on establishment of PTT Global LNG Company Limited (PTTGL) with equal shareholding at 50% to carry out business related to Liquefied Natural Gas (LNG) known as the first step of investment expansion in full integrated LNG value chain.
- PTTEP Siam Limited (PTTEPS), a subsidiary held by PTTEP and the operator of S1 Project, has temporarily ceased all operations in particular the land reform areas for 23 days. As on June 1, 2017, the Supreme Administrative Court of Thailand revoked the Agricultural Land Reform Committee's order to allow the use of natural resources in areas of land reform for any purposes other than agriculture. As a result, there was a decrease of an average crude oil sales volumes approximately at 15,000 barrels per day, liquefied petroleum gas (LPG) sales volumes approximately at 130 tons per day and natural gas sales volumes of approximately 10 million standard cubic feet per day.
- On June 22, 2017, PTT ICT Solutions Company Limited (PTT ICT), a subsidiary of PTT, which PTT owned 20%, providing information technology and communications services, has changed the company name to "PTT Digital Solutions Company Limited" (PTT DIGITAL).

July 2017

- On July 3, 2017, PTT and PTTGM already transferred shares and assets of Target Entities of HMC Polymers Company Limited (HMC), PTT Asahi Chemical Company Limited (PTTAC), PTT MCC Biochem Company Limited (PTTMCC), PTT Polymer Marketing Company Limited (PTTPM), PTT Polymer Logistics Company Limited (PTTPL), PTT Maintenance and Engineering Company Limited (PTTME) and the Projects' Study Results of PTTPMMA to PTTGC. The total transfer value after adjustments is THB 25,061,382,583.55 (including VAT).
- PTT have received the Statement of Claim on the Montara Incident on oil leakage filed by the Ministry of Environment and Forestry of the Republic of Indonesia seeking approximately USD 2.1 billion of damages. PTT will proceed to defend against this lawsuit, both on factual and legal aspects.
- PTT Global LNG Company Limited (PTTGL) established PTTGL Investment Limited (PTTGLI). PTTGLI has signed the Share Sale and Purchase Agreement (SSPA) with Petroliam Nasional Berhad (PETRONAS) to acquire 10% equity stakes in PETRONAS LNG 9 Sdn Bhd (PL9SB), a subsidiary of PETRONAS. The total consideration of transaction is approximately USD 500 million.
- During PTTGC had planned on maintenance shutdown of Aromatics plant unit 2 in Rayong Province, xylene has leaked while doing the plant test run on July 12, 2017. However, PTTGC was able to control the situation and went back to normal within 3 hours.
- Committee on Energy Policy Administration (CEPA) resolved to fully liberalize LPG effective on August 1, 2017.

August 2017

- PTTGC will postpone the maintenance of olefins unit 1 (which had existing maintenance plan during August to September 2017 for 17 days) by combining with the shutdown of 5 years major turnaround interval in Q4/2018. As a result, the extended production unit; Oleflex and HDPE 1/1 will not require plant shut down for 29 days and 15 days respectively during August and September 2017.
- PTTGC has established GC Oxirane Co., Ltd. to operate Propylene Oxide (PO) project which will be 100% held by the company. PO project will build a plant with nameplate capacity of 200,000 tons per year where propylene will be the main feedstock. It has been planned to commercial operate by 2020. Besides, the company also established GC Polyols Co., Ltd. for investment in Polyols & PU System project. PTTGC has signed Joint Venture Agreement in GC Polyols Co., Ltd. by holding 82.1% with Sanyo Chemical Industries, Ltd. holding 14.9% and Toyota Tsusho Corporation holding 3%. The project will be constructed and operated polyols plant with the capacity of 130,000 tons per year and PU System of 20,000 tons per year. It is expected to be commercial operated by 2020. The total investment of both projects is approximately USD 887.4 million or equivalent to THB 32,000 million.
- On August 18, 2017, PTT's Board of Directors approved PTT to withdraw its investment in Keloil-PTT LPG Sdn. Bhd. (KPL) by selling its all 2,160,000 shares that PTT holds at of 1 Ringgit to Keloil Bottling Sdn.Bhd. (KBSB) because KPL has ongoing operating losses.
- PTT's Board of Directors approved to establish Sarn Palung Social Enterprise Co., Ltd., the joint venture among PTT Group companies. The initial registered capital is THB 10,000,000. The establishment of the company is to support execution of social enterprise of PTT group companies.

September 2017

- On September 5, 2017, CEPA resolved to adjust NGV selling price in gas quality adjustment for 0.4553 THB/kg. This resulted in an increase of operating cost in NGV price from 3.4367 THB/kg to 3.8920 THB/kg which will be effective on September 16, 2017. The price increase will be adjusted 2 times in September, and October.
- Business Services Alliance Co., Ltd. (BSA) (a subsidiary of PTT in which PTT owned 25%) established a new company under BSA named Business Professional Solutions Co., Ltd. (BPS), with registered capital of THB 5 million to carry out PTT's businesses in the future.
- GPSC issued and offered unsubordinated and unsecured debentures in Thai Baht not exceeding THB 5,000 million to institution investors and/ or high net worth investors.

October 2017

- PTT issued a notice (the Redemption Notice) for a full redemption of the USD denominated 3.375%. Notes due 2022 issued and offered by the company to investors outside Thailand which are currently listed on the Singapore Exchange. The Company will redeem all outstanding aggregate principal amount of the Notes, or USD 500 million.
- PTTEP has made a decision to revise the project's development plan which involves delaying the project's Final Investment Decision (FID). This revision to the project's development plan will result in the company recognizing an impairment loss on the asset approximately USD 550 million in the third quarter of 2017.
- PTTEP has established a subsidiary to participate in the bidding for exploration and production rights in Mexico. The newly established subsidiary, PTTEP Mexico E&P Limited, S. de R.L. de C.V., has a registered capital of 3,000 Mexican Pesos, consisting of 3,000 ordinary shares at 1 Mexican Peso each.

November 2017

- On November 16, 2017, PTT disposed of all ordinary shares of Star Petroleum Refining Public Company Limited (SPRC), amounting to 234,562,369 shares or equivalent to 5.41% of the total issued shares of SPRC, totaling THB 3,706,085,430.20, through the Stock Exchange of Thailand.
- On November 15, 2017, IRPC Clean Power Company Limited (IRPC-CP), which GPSC and IRPC hold 51% and 49% respectively, under the Small Power Producer scheme with the total installed capacity of 240 megawatts for electricity and 180 - 300 tons per hour for steam, has commenced the Commercial Operation Date (COD) Phase 2. IRPC-CP Phase 2 has installed capacity of 195 megawatts which the Company held 51% stake or 99.4 equity megawatts, to supply electricity to Electricity Generating Authority of Thailand (EGAT).
- The Board of Directors Meeting of PTT and GPSC passed the resolution on approval of land purchase and services from PTT for the Central Utility Plant's expansion phase. The land area is 35 Rai, 3 Ngan, 60.2 square Wa, located in Asia Industrial Estate at Rayong Province at the price of THB 269,253,750 with services fee for 15 years of THB 11,404,800. The transaction is expected to be completed 2017.

December 2017

- PTT's board of directors on the meeting held on December 22, 2017 has approved the five-year investment plan (Year 2018 - 2022) in an amount of THB 341,962 million.
- PTTEP announced the estimated total expenditure for PTTEP and its subsidiaries in 2018 at USD 3,103 million. Of which, USD 1,332 million is Operating Expenditure and the remaining USD 1,771 million is Capital Expenditure.
- On December 15, 2017, Ichinoseki Solar Power 1 G.K. or ISP1, with total installed capacity of 25.881 megawatts for electricity, which GPSC held 99% stake in ISP1 or 25.62 equity megawatts. ISP1 has commenced the Commercial Operation Date (COD) to supply electricity to Tohoku Electric Power Co.,Inc under power purchase agreement of 20.8 megawatts at Feed in Tariff of 40 JPY per kilowatt-hour for a period of 20 years.

January 2018

- On January 31, 2018, PTTEP and PTTEP International Limited (a wholly-owned subsidiary of PTTEP) have signed an Agreement for the Assignment and Transfer of the 22.2222% stake in the Bongkot Project, consisting of Blocks B15, B16 and B17 from Shell Integrated Gas Thailand Pte. Ltd. (Shell) and Block G12/48 from Thai Energy Company Limited (a wholly-owned subsidiary of Shell). The transaction value before tax is approximately USD 750 million. The completion of transaction is subject to the completion conditions as prescribed in the agreement with an expected closing date within the second quarter of 2018.
- On January 23, 2018, PTTGC has signed Engineering, Procurement and Construction Agreement for the Olefin Reconfiguration Project. The total investment is approximately USD 985 million or equivalent to THB 35,657 million (at THB 36.2 per USD). The new olefins plant has been planned to commercial operate within 2020.
- On January 29, 2018, the Board of Directors of PTTGCA America LLC (PTTGCA), a 100% subsidiary of the company, approved the execution of Heads of Agreement (HOA) between PTTGCA and a subsidiary of Daelim Industrial Co., Ltd., a leading construction and petrochemical company of Republic of Korea to conduct a feasibility study including Front-End Engineering Design (FEED) of the Petrochemical Complex project in the State of Ohio, United States of America and secure sources of fund for the development of the project which is capable of producing ethylene and its derivatives with 1.5 MTPA production capacity.

February 2018

- PTTEP announced that on January 31, 2018, PTTEP Mexico E&P Limited, S. de R.L. de C.V. (PTTEP MEP), a wholly-owned subsidiary of PTTEP, and its consortium have been selected as the successful bidders of 2 exploration blocks from Mexico Bidding Round.

Overall Performance of PTT and Its Subsidiaries

PTT and its subsidiaries' financial performance comparison between 2017 and 2016 by each business group:

Unit: THB million

	2016	2017	% Inc. (Dec.)
Sales revenue	1,718,846	1,995,722	16.1%
• Exploration&Production	150,217	147,725	(1.7%)
• Gas ^{1/}	457,986	465,638	1.7%
• Coal	16,307	19,575	20.0%
• Oil	484,429	547,296	13.0%
• International trading	748,429	935,616	25.0%
• Petrochemical & Refining	785,362	950,727	21.1%
• Others	4,497	4,954	10.2%
EBITDA	312,526	345,395	10.5%
• Exploration & Production	107,464	105,468	(1.9%)
• Gas	72,082	89,402	24.0%
• Coal	4,178	6,114	46.3%
• Oil	22,918	19,598	(14.5%)
• International trading			
• Excluding effect of FX and derivatives	2,865	527	(81.6%)
• Including effect of FX and derivatives	5,024	5,387	7.2%
• Petrochemical & Refining	102,623	124,059	20.9%
• Others	670	(315)	< (100%)
Depreciation and amortization expenses	128,734	116,289	(9.7%)

1/ Including infrastructure business

	2016	2017	% Inc. (Dec.)
Operating Income	183,792	229,106	24.7%
• Exploration & Production	33,945	49,699	46.4%
• Gas	53,966	70,514	30.7%
• Coal	2,243	4,224	88.3%
• Oil	19,477	15,454	(20.7%)
• International trading			
• Excluding effect of FX and derivatives	2,832	494	(82.6%)
• Including effect of FX and derivatives	4,991	5,354	7.3%
• Petrochemical & Refining	71,951	89,539	24.4%
• Others	(348)	(1,359)	< (100%)
Share of net income from investments in joint ventures and associates	4,143	7,310	76.4%
Loss on impairment of assets	7,203	24,848	> 100%
Gain on foreign exchange	4,473	13,650	> 100%
EBIT	184,183	242,014	31.4%
Finance costs	28,887	29,086	0.7%
Income taxes	26,593	28,306	6.4%
Profit for the period from continuing operations	94,040	135,187	43.8%
Profit for the period from discontinued operations - net of tax	569	(7)	< (100%)
Net income	94,609	135,180	42.9%
Earnings per share (Baht/share)	32.68	46.74	43.0%
• Continuing operations	32.48	46.74	43.9%
• Discontinued operations	0.20	-	(100.0%)

Segmentation Performance of PTT and Its Subsidiaries

The details of revenue, EBITDA and operating income by segmentation of 2017 are as follows;

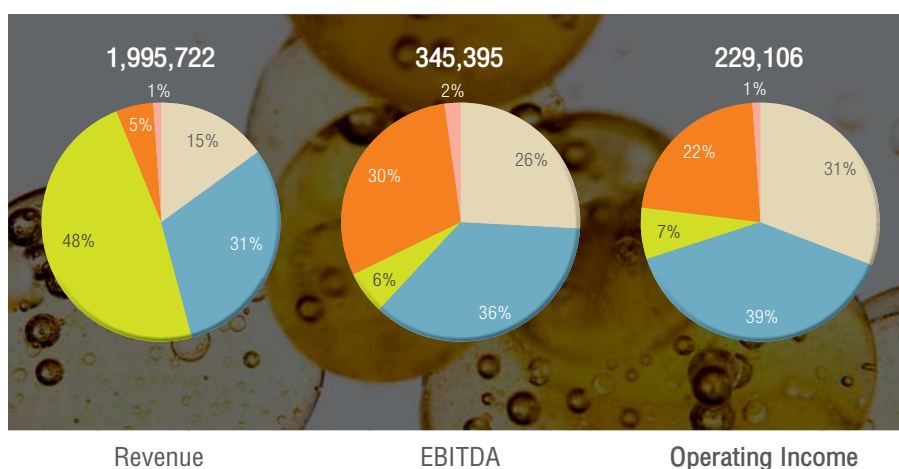
Figure 2

The details of Revenue, EBITDA and Operating Income of 2017

Unit: THB million

- Gas
- Petro & Refine
- Oil & Trading
- PTTEP
- Other*

* Including coal and others.



Upstream Petroleum and Gas Business Group

Petroleum Exploration and Production Business: PTT Exploration and Production Public Co., Ltd. (PTTEP)

	2016	2017	% Inc (Dec.)
Average selling price (USD/BOE)	35.9	39.2	9%
Average sales volume (BOED)	319,521	299,206	(6%)

In 2017, sales revenue of PTTEP was THB 147,725 million, decreasing by THB 2,492 million or 1.7% from 2016. The reason was mainly because of the strong THB appreciation; although, average selling prices increased by 9% from USD 35.9 per BOE in 2016 to USD 39.2 per BOE in 2017. Also, average sales volume decreased by 6% from 319,521 BOED in 2016 to 299,206 BOED in 2017. The decrease was primarily from the PTTEP Australasia Project from lower crude sales volume and Sinphuhorm Project from buyers.

EBITDA in 2017 was THB 105,468 million, decreasing by THB 1,996 million or 1.9% which was mainly from lower gross profit by THB 2,809 million as aforementioned.

Operating income in 2017 was THB 49,699 million, increasing by THB 15,754 million or 46.4% due to the decline in depreciation and amortization expenses by THB 17,750 million from an increase in petroleum reserves.

Gas Business Group

The Details of all product sales volume from GSPs are as follows:

Unit: Ton

	2016	2017	% Inc (Dec.)
LPG	2,794,203	2,919,061	4.5%
Ethane	2,058,987	2,333,234	13.3%
Propane	856,286	826,526	(3.5%)
NGL ^{1/}	745,054	732,192	(1.7%)
Total	6,454,530	6,811,013	5.5%

Note:

1/ include Pentane

Details of reference product prices of GSPs are as follows:

Unit: USD per ton

	2016	2017	% Inc (Dec.)
LPG ^{1/, 4/}	336	485	44.3%
Ethylene ^{2/}	1,037	1,092	5.3%
Propylene ^{2/}	705	824	16.9%
HDPE ^{2/}	1,132	1,168	3.2%
PP ^{2/}	1,046	1,155	10.4%
Naphtha ^{3/}	354	449	26.8%

Note:

1/ Contract Price (CP) 50:50

2/ South East Asia - Spot Price

3/ MOP Singapore (MOP'S)

4/ NEPC acknowledged the progress of LPG liberalization based on the approval of CEPA on December 2, 2016 for government LPG liberalization roadmap that have 2 phases. Phase 1: Before completing the liberalization (Year 2017), liberalized only the LPG imports segment, while Refinery and Gas Separation Plant prices were still regulated through oil fund. Phase 2: LPG fully liberalization effective on August 1, 2017 with no selling price setting of LPG ex refinery and EPPO will only announce the reference price to regulate domestic LPG retail price. However, EPPO will have mechanism to monitor if LPG import price has material deviation from LPG ex GSP and will suggest CEPA to consider the case on a monthly basis.

In 2017, sales revenue of gas business was THB 465,638 million, increasing by THB 7,652 million or 1.7% from 2016. This was mainly from higher sales revenue of PTT's GSP business unit, from the rise in product selling prices, referring to the global petrochemical product. Moreover, the GSP's sales volume increased from 6,454,530 tons in 2016 to 6,811,013 tons in 2017 or 5.5% mainly from Ethane and LPG, as a result of major turnarounds of PTT's ESP and GSP 6 in 2016 and maintenance shutdown of PTTGC.

Sales revenue of PTT's GSM and NGR business units decreased due to the drop in average selling prices in line with decreasing in gas price, except for selling prices to industrial customers. Also, the average natural gas sales volume (calculated at heating value of 1,000 BTU per cubic foot) decreased by 37 MMSCFD or 0.8% from 4,762 MMSCFD in 2016 to 4,725 MMSCFD in 2017 primarily caused by lower demand of power from customers.

EBITDA and operating income of gas business group in 2017 was THB 89,402 million and THB 70,514 million, increasing by THB 17,320 million and THB 16,548 million respectively. This was mainly from PTT's GSM and NGR and GSP due to higher gross margin.

However, NGV losses increased from the lower sales revenue that decreased more than the decline in cost of sales. NGV selling price of taxi and public cars still capped at THB 10.00 per kilogram.

The overall performance of infrastructure business slightly increased compared with 2016 from better performance of GPSC due to lower gas cost and higher share of net income from investment in affiliates both in Bangpa-in Cogeneration Company Limited Phase 2 (BzIC2) and Nava Nakorn Electricity Generating Company Limited (NNEG), recognized for the first full year performance.

Coal Business

	2016	2017	% Inc (Dec.)
Newcastle index price (USD per ton)	66.1	88.5	33.9%
Average selling price (USD per ton)	47.2	70.3	48.9%
Sales volume (million tons)	9.8	8.3	(15.3%)

Sales revenue in 2017 was THB 19,575 million, increasing by THB 3,268 million or 20.0% due to the average selling prices which rose by USD 23.1 per ton or 48.9% from USD 47.2 per ton to USD 70.3 per ton following the increase of Newcastle reference prices by 33.9% due to lower supply from the effect of Chinese Economic Reform. However, sales volume in 2017 decreased by 1.5 million tons or 15.3% from 9.8 million tons in 2016 to 8.3 million tons due to mudslide incident at Sebuk causing production suspension since January 2017. Currently, Sebuk has resumed its production since November 2017.

EBITDA in 2017 was THB 6,114 million, increasing by THB 1,936 million or 46.3% mainly from higher gross margin by THB 2,548 million following higher average selling prices as aforementioned. Operating income in 2017 was THB 4,224 million, increasing by THB 1,981 million, compared with the previous year in line with higher EBITDA.

Downstream Petroleum Business Group

Oil Business Group

Unit: Million liters

	2016	2017	% Inc (Dec.)
Average sales volume	26,464	26,006	(1.7%)

Sales revenue of oil business in 2017 was THB 547,296 million, increasing by THB 62,867 million or 13.0% mainly from the increase in product selling prices following the rise in global oil price. Whereas, sales volume decreased by 458 million liters or 1.7% from 26,464 million liters, equivalent to 454,795 barrels per day in 2016 to 26,006 million liters or equivalent to 448,159 barrels per day in 2017 from LPG.

EBITDA in 2017 was THB 19,598 million, decreasing by THB 3,320 million or 14.5% due to the drop in stock gain in 2017 though margins of non-oil, gasoline and aviation fuel increased. As a result, operating income in 2017 was THB 15,454 million, decreasing by THB 4,023 million in line with the decrease in EBITDA as aforementioned.

International Trading Business Group

Unit : Million liters

	2016	2017	% Inc (Dec.)
Average sales volume	74,627	75,638	1.4%

Sales revenue of international trading business was THB 935,616 million in 2017, increasing by THB 187,187 million or 25.0%, which resulted from the rise in product selling prices in accordance with global oil prices. The sales volume in this period increased by 1,011 million liters or 1.4% from 74,627 million liters or equivalent to 1,282,509 barrels per day in 2016 to 75,638 million liters or equivalent to 1,303,442 barrels per day in 2017 from the increase in Out-Out Trading of crude oil and petrochemical products as a result of the marketing expansion to western countries.

EBITDA, adjusted the effect of foreign exchange rate and derivatives, in 2017 was THB 5,387 million, increasing by THB 363 million or 7.2%, from higher margin of domestic crude and condensate together with the increase in Out-Out Trading. Consequently, operating income, which adjusted the effect of foreign exchange rate and derivatives of international trading business in 2017, was THB 5,354 million in line with the rise in EBITDA.

Petrochemical and Refinery Business Group

Unit: USD per ton

	2016	2017	% Inc (Dec.)
HDPE	1,132	1,168	3.2%
PP	1,046	1,155	10.4%
BZ – Cond	262	357	36.3%
PX – Cond	395	380	(3.8%)

Unit: USD per barrel (USD/BOE)

	2016	2017	% Inc (Dec.)
Market GRM	4.49	5.74	27.8%
Inventory gain (loss)	1.24	1.05	(19.2%)
Accounting GRM	5.12	6.40	25.0%
Refinery Utilization rate (%)	94.3%	100.0%	6.0%

Note:

GRM is calculated from refineries of TOP, IRPC and PTTGC.

In 2017, sales revenue of petrochemical and refining business was THB 950,727 million, increasing by THB 165,365 million or 21.1% mainly from the rise in average petroleum and petrochemical product prices in both aromatics and olefins following the increase in crude oil prices. Aromatic prices increased, especially Benzene (BZ) from higher global demand comparing with the previous year, following improved economy, and lower inventory in China as well as a growing market in Styrene monomer (SM). For Olefins, Polyethylene (PE), and Polypropylene (PP) prices increased in most of all products following crude oil price. Ethylene glycol (EG) prices intensively increased regarding higher demand of Polyester and Polyethylene terephthalate (PET) bottle.

Sales volume of refining business rose mainly from higher utilization rate at 6.0% from 94.3% in the previous year to 100% from PTTGC's refinery major turnarounds last year. Overall sales volume of olefins and aromatics increased in 2017.

EBITDA of petrochemical and refining business in 2017 was THB 124,059 million, rising by THB 21,436 million, while operating income was THB 89,539 million, increasing by THB 17,588 million, mainly from

- Overall refinery performance increased from higher Accounting GRM in all refineries from USD 5.12 per bbl in 2016 to USD 6.40 per bbl in 2017 from increasing in Market GRM and higher product crack spreads especially fuel oil and diesel.
- Overall olefins petrochemical performance rose from better performance of PTTGC due to an increase in PE product prices and MEG spreads.
- Aromatics petrochemical performance decreased resulting from lower Paraxylene (PX) spread, while BZ spread improved compared with last year.

Share of net income from joint ventures between associates of petrochemical and refining business increased by THB 3,168 million from 2016 mainly from PTTAC with higher Acrylonitrile (AN) and Methyl Methacrylate (MMA) product prices compared to the previous year following an economic expansion.

Net income was THB 135,180 million in 2017, increased by THB 40,571 million or 42.9% from 2016.

In 2017, net income of PTT and its subsidiaries was THB 135,180 million, increasing by THB 40,571 million or 42.9% from THB 94,609 million in 2016 since PTT and its subsidiaries' performance improved in most businesses both in PTT's own operations, especially in Gas business group and PTT's affiliates mainly from petrochemical and refining business. This caused by the higher global crude oil price and the increase in Accounting GRM, resulting from Market GRM; although, stock gain decreased. Petrochemical prices increased resulting in higher Market Product to Feed Margin: Market P2F. For Gas business, performance improved from low feed costs of natural gas while referenced product selling prices increased. Performance of exploration and production business increased from higher oil price and decreasing depreciation, depletion and amortization expenses from an increase in petroleum reserves. There was higher gain on foreign exchange due to the effect of THB appreciation against US Dollar and higher gain on derivatives in this period; even though PTTEP, coal business of PTTGM and PTTGC recorded loss on impairment of assets.

Review of Business Assets

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**As of December 31, 2017,
the core assets employed
by PTT and its subsidiaries
in their businesses**

Net value after accumulated depreciation
and allowance for impairment



THB

1,076,906

million

Net intangible assets



THB

32,108

million

Net exploration
and evaluation assets



THB

108,760

million

Details appear in the Notes to the financial statements
for PTT and its subsidiaries for the year ended December 31, 2017:
Note 17 (property, plant & equipment)
Note 19 (intangible assets)
and Note 20 (exploration and evaluation assets)



Recognizing the value of risk management under changing circumstances that may affect businesses due to internal and external factors, PTT has relentlessly complied with the principles and approach of COSO-ERM (Committee of Sponsoring Organization of the Treadway Commission), which is an international standard on risk management. PTT regards risk management as a critical component of all its business processes, that must be connected at all levels, so it has designed an enterprise risk management policy for everyone to observe. An Enterprise Risk Management Committee (ERMC) and a Corporate Plan and Risk Management Committee (CPRC) were appointed to steer overall risk management for maximum efficiency.

Corporate risks must be systematically managed through the various management committees. Risk management must be integrated with the formulation of enterprise plans to ensure effectiveness and efficiency in line with corporate goals and strategies. Operational risks fall under the supervision of executives responsible for a given function. All units are responsible for managing and controlling risks to manageable levels, and this has been assigned in the job descriptions of all units.

Investment in PTT stocks calls for investors' consideration of key risk factors arising from PTT's business conduct. Besides the risk factors available in this document, other risk factors exist, either unknown to PTT at this time or currently seen by PTT as having no significant effects on its businesses. As for data on risks in reference to government or domestic economic data, they have been obtained from public information released by the government and other sources without PTT's verification. Investors should therefore exercise with caution.

Continuing and emerging risks that will prevail under changing circumstances fall into the aspects as seen below.

1. Strategic Risks

1.1 Business Strategy Implementation

With the rapid advance in innovation and technology, disruptive technology becomes established and significantly impacts customers' needs and transforms business world. PTT values the determination of PTT Group's business strategic directions to accommodate changing directions of the economy, society, energy, technology, and consumers' behavior that align with global megatrends. If PTT's strategies cannot promptly accommodate such change, it could suffer from impacts on businesses and performance outcomes.

A new strategy of establishing a New S-Curve has therefore been devised to pursue opportunities and develop new forms of businesses to handle upcoming changes. A new set of vision and future business strategies have been mapped out by a Top Executive Thinking Session (TTS) and a Strategic Thinking Session (STS) among senior PTT Group executives. As a result, business strategies are comprised into five-year business plans, which are then integrated with risk management plans.

In addition, PTT holds a meeting of PTT Group executives every month to monitor all affiliates' performance and share ideas to amend short-term business plans and strategies to ensure planned performance outcomes.

1.2 Diminishing Natural Gas Outputs and Continuity of Gas Production

With depletion of natural gas reserves in the Gulf of Thailand and Myanmar, some gas fields have entered post-guaranteed delivery periods. The Erawan and Bongkot fields in the Gulf of Thailand are also approaching the end of their gas sales agreements and concessions between 2022 and 2023. These fields account for about 2.11 billion cubic feet a day of contractual quantities or roughly 45% of Thailand's current gas demand. An awaited bidding round on these fields, if delayed, could affect continued gas production. Risks exist that PTTEP will lose out in this bidding, which would impact PTT's performance outcomes.

So, to accommodate the likely fall in gas supply, PTT's has secured more long-term LNG supply. Incidentally, in LNG supply agreements, certain contractual purchase volumes will be set. If there is a failure to take those volumes, it will lead to Take-or-Pay burden. PTT has put in place infrastructure to accommodate LNG imports as well as the construction of an LNG terminal, and the feasibility study of FSRU (floating storage regasification unit) construction with Myanmar government.

Besides the diminishing gas supply, one foresees rising costs of developing domestic gas fields, which could cause gas separation plants to lower their capacities to justify production costs. As a result, the volume of products, including LPG used as a fuel and petrochemical feedstock, is not enough compared to domestic demand. This implies a need for more LPG imports, inevitable procurement, and import of other suitable petrochemical feedstock. PTT has not only investigated the feasibility of using alternative feedstock and their import, but also investigated the readiness of infrastructure by reviewing their economic effectiveness and PTT Group's supply chain for optimal solutions.

1.3 Investment Management Efficiency

PTT not only continuously grows its businesses, but also seeks new investments by itself and by PTT Group. As a result, PTT has risks of lower-than-targeted returns on investment, project delays, and project cost overruns.

PTT has therefore developed investment criteria by PTT Group companies and applied PTT's affiliate governance approach to screen decisions, monitor, and steer PTT Group's investment. The process is known as SIM (Strategic Investment Management), in which an Investment Administration Committee, made up of executives with assorted expertise to screen investment, monitor, and report on PTT's investment to support decision-making by the PTT Management Committee (MC) and the Board to ensure PTT's efficient capital investment. In addition, PTT regularly monitors and analyzes the group's investment portfolios to improve performances and revise investment plans. It also develops a critical path management to lower project risks to the lowest levels so that projects can be completed in time, within budget, with suitable characteristics, and in compliance with laws and regulations.

1.4 Personnel Development to Accommodate Business Growth

PTT has been experiencing a rapid business expansion due to the domestic and overseas growth in investment together with its pursuit of new business opportunities through new investment, the introduction of advanced digital technology and innovations to business operations. Therefore, if PTT cannot groom skillful, experienced personnel in time and in adequate supply, this could harm its businesses and long-term goal achievement.

PTT has prepared its personnel to accommodate strategic execution of each business unit through their competency and skill development, designing a structure that supports execution, identifying the number of those needed to accommodate each business unit for a given period, and administering personnel through the technical career management mechanism. For each technical career path, a manpower requirement plan is prepared, in which key positions are stated along with individual development plans.

PTT's Young People to Globalization (YP2G) Project grooms personnel for overseas and/or domestic posting. A Functional Academy was also set up to develop technical and functional skills. PTT Leadership and Learning Institute (PLLI) develops personnel for their highest potential by focusing on leadership development and promoting learning. These moves ensure that PTT will constantly command an adequate supply of quality executives and employees.

1.5 Reputation Risks

Varied expectations of stakeholders, coupled with today's technological advancements, accelerate communications, thus causing events and news issues harming PTT to ripple in a matter of seconds. Some of the information may undo its image and the public's confidence in PTT.

To mitigate these impacts, PTT defines a mission for balanced stewardship of stakeholders and aspires to become an organization of pride focusing on transparent business and balanced stewardship of stakeholders, and to yield suitable returns to its shareholders. We refer to "PTT is Pride and Treasure of Thailand". In 2017, the scope of PTT stakeholder management has been integrated with the process of corporate strategic plan formulation. The scope of duty has been extended to the Enterprise Risk Management Committee to also oversee and monitor stakeholder management tasks. In addition, PTT commands tools for managing and handling complaints. To elaborate, the unit that handles each complaint is to coordinate with the responsible unit in resolving the complaint and track corrective actions, including reporting the summary of causes, impacts, recommendations, and updates on complaint resolution to supervisors respectively. Finally, it is to provide periodic feedback to complainants until the closure of the complaint.

Moreover, PTT Group's core value (SPIRIT) was created for all executives and employees to work together and become good and great persons, responsible for the company and society. PTT Group sets future business directions to strike a balance and establish common value supplementation among business, society, and the environment under the Social Enterprise (SE) concept. PTT focuses on the anti-corruption policy and engages in transparent business under corporate governance approach.

2. Operational Risks

2.1 Price Volatility of Petroleum and Petrochemicals

PTT Group's raw material prices and sales prices of natural gas, condensate, crude oil, petroleum products, petrochemicals, alternative energy, and the Spread prices in domestic and overseas are subject to high volatility of the world market. This could affect PTT Group's future performance and returns on investment.

For higher efficiency of price risk management, PTT defined a risk mitigation plan to sustain the impacts of volatile energy prices. PTT formulated scenario planning for various oil prices to promptly handle future changes and uncertainty. PTT Group management has appointed a Price Strategy and Risk Management team under the Petrochemical and Refining Integrated Synergy Management (PRISM), to analyze global oil price movement and jointly optimize risk management of feedstock and product prices, as well as prices of crude oil and refined products, within the group. Today, to manage price risks, the group engages in hedging through short-term and long-term derivative contracts with business partners. To this end, meticulous, prudent data analyses are conducted, while suitable risk management tools are chosen to fit periods and objectives, including the swap or option tools.

Also, a structure and process are implemented for supervising risk management with checks and balances on a par with international standards. Similarly, a Value at Risk (VaR) is defined for each commercial transaction. A risk status summary report is regularly required for relevant executives and units to control and monitor PTT Group's price risks beyond what is acceptable.

2.2 Compliance with Applicable Policies, Laws, and Regulations

The complexity of applicable laws today, as well as changing policies, laws, and regulations on the part of the public sector, could undermine PTT's businesses and harm its image and reputation; for instance, trade competition laws, laws on procurement and material administration, and the liberalization of the natural gas business.

To ensure that PTT's business is properly conducted under the law, PTT has announced its Compliance Policy for all directors, management team, and employees to execute. Also, structure and functional roles have been defined to steer such compliance under the "Three Lines of Defense". To this end, a Compliance Function was set up to centralize all compliance undertakings of PTT. Besides, PTT has monitored the issuance of legislation and upcoming acts to clarify obstacles faced by PTT while preparing to consult the authority about vague points. The intent is to enable PTT's businesses to comply with emerging laws.

2.3 Disruption of Production and Business Operations

With several PTT sites worldwide, PTT is exposed to disruptions of production and business operations resulting from human errors, malfunctioning machinery, natural catastrophes, threats of political instability, together with terrorist activities and other unexpected hazards. All could prove detrimental to PTT and could wreak damage on PTT's major infrastructure. To lower the likelihood and impacts of such threats, PTT activates PTT Group Business Continuity Management System Standard (BCMS) and PTT Group Security, Safety, Health and Environmental Management Standard (PTT Group SSHE MS) for business units, support units, and PTT Group to leverage in developing and linking up with both common systems to prevent value-adding activities under PTT's business chain from being disrupted. In addition, PTT reviewed, amended, and developed BCMS to ensure practical connection between business units and mount integrated corporate BCM drills under the "Black Swan" scenario to ensure BCMS recertification of ISO 22301.

Following best practices in the petroleum and petrochemical industries, PTT has subscribed to insurance policies to safeguard its core operating assets against business interruption, in addition to additional insurance coverage for suspension. But such subscription may not be all-inclusive, since no insurance company offers such comprehensive insurance. Or sometimes it could prove uneconomic to buy high-coverage insurance. While PTT believes that PTT Group companies have insurance policies that are up to industrial standards, PTT cannot control the ceiling amounts of PTT Group's insurance policies to cover possible damage. In other words, properties that are not significantly or fully covered, or insurance companies face severe financial problems causing them to go out of business due to such events, PTT's financial position, business performance, or business opportunities could be wrecked.

3. Financial Risks

3.1 Volatility of Thai Baht

Changes in the exchange rate between Thai Baht and the US dollar directly and indirectly affect the bulk of PTT's revenue because the prices of natural gas, petroleum, and petrochemical products are tied to the world (US\$-linked) market prices. In other words, PTT's revenue varies with Baht. Yet, changes in Baht value, to a certain extent, affects PTT's margin since the bulk of PTT's profits are in Baht currency and fixed, whereas the sales costs are in the dollar denomination, which is tied to the world market prices, as are like sales price.

Fluctuation of Baht affects PTT's net book profit/ loss because of PTT's and subsidiaries' outstanding foreign loans. The yen-denominated loans leverage financial derivatives (the participating swap) to convert loans into dollars to agree with the dollar-denominated revenue. That way, PTT manages to close most of the risks of yen fluctuation against the dollar.

To ease risks of Baht fluctuation, PTT has balanced its foreign currency loans with its foreign currency revenue (that is, taking a natural hedge) while managing its foreign currency deposits and purchasing forward foreign currencies for smart repayment and commercial transactions, including imported natural gas and crude oil and product export. PTT has also developed an effective finance policy, uniform guideline, and risk management practices for PTT Group which could affect PTT's financial positions.

3.2 Financial Support to PTT Group Companies

To promote relentless growth, PTT invests in new projects, expands its businesses, and adjusts its operation. Such investment may be undertaken through new companies or link-ups with strategic partners or through PTT Group companies, or all of these. Some of these companies may still be starting projects or facing business down-cycles or may not yet be financially stable, so shareholders and PTT will still need to extend cost overrun support to allow them to operate under strategies and business policies of PTT Group as a whole. Some of these companies may need cash deficiency support during commercial operations, which may result from force majeure, thus calling for financial help from the shareholders. Such financial help may be in the form of subordinated debt, equity, trade credit, or shareholder loan, or others.

PTT will consider extending loans or commercial credit, or both, to individual affiliates in the belief that such a policy and action would foster sustainable strength for PTT Group.

In extending such financial support to these affiliates through subordinated loans, commercial credit, or loans from the shareholders, PTT cannot guarantee that these companies can repay such loans or credit, that they will not face financial woes again, or that they will not need financial support from PTT again. Any of these possibilities could harm PTT's performance and financial position. Besides, if PTT or any members of PTT Group becomes a default party under any agreement on shareholder support, some creditors may accelerate debt repayment. Therefore, PTT has rights to raise its own shareholding or raise its shareholding to more than half or take over such company if it is considered more beneficial. If any of this happens, Thai accounting standards require PTT to consolidate the financial statements of the company since authorization effective date. In short, such consolidation puts PTT's overall financial position at risk.

3.3 Financing of Funds for Plan Execution

Businesses of PTT, in particular, petroleum exploration and production, natural gas transmission systems, gas separation plants, and the petrochemical businesses-require massive pre-paid capital investment. Although PTT closely monitors and manages business risks, the actual investment capital required could deviate from project plans.

Thanks to PTT's business conduct that focuses on fostering long-term growth and corporate governance, PTT plans to invest in prudent business expansion regarding sources of capital, particularly capital structuring that enables it to maintain crucial financial ratios at suitable levels on a par with peer companies. Continuous monitoring of factors for investment capital sourcing has assured that PTT can secure sufficient and suitable funds for future business expansion.

Capital Structure

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PTT's Securities

Common Shares

As of December 31, 2017, PTT's registered capital totaled THB 28,572,457,250, consisting of 2,857,245,725 common shares at THB 10 per share. These shares represented THB 28,562,996,250 of issued and paid-up share capital, or 2,856,299,625 common shares.

Bonds and Debentures

As of December 31, 2017, PTT's has THB 1 billion of domestic loans in terms of PTT bonds with the Ministry of finance guarantee, and THB 128,264 million of PTT debentures with no government guarantee, for a total of THB 129,264 million. Foreign loans were in PTT debentures of US dollar denominations not guaranteed by the ministry, equivalent to THB 28,539 million. A summary appears below.

Bonds and Debentures	Amount (THB million)	Redemption Date	Guarantee
PTT bonds guaranteed by the Ministry of Finance			
• Domestic bonds	1,000	2020	None
PTT debentures not guaranteed by the Ministry of Finance			
• Domestic debentures ^{1/ 4/}	128,264	2018 - 2110	None
• Foreign debentures ^{2/ 3/ 4/}	28,539	2035 - 2042	None
Total	156,803		
Grand Total	157,803		

Note:

1/ Fitch Ratings' national rating of long-term PTT debentures at 'AAA (tha)' with a stable outlook

2/ Moody's international rating of foreign PTT debentures at 'Baa1' with a stable outlook

3/ S&P's international rating of foreign PTT debentures at 'BBB+' with a stable outlook

4/ See details of domestic and foreign PTT debentures

Unsecured, unsubordinated domestic debentures

Symbol	Amount (THB million)	Annual Coupon Rate (%) (Payment Frequency)	Maturity Period (Years)/ Redemption Schedule
PTTC18DA	500	5.91 (every six months)	Eleven/ 2018
PTTC18NA	18,049 ^{1/}	(Year 1 - 4) 4.00, (Year 5 - 6) 4.40, (Year 7) 5.50 (every six months)	6 years, 9 months and 19 days/ 2018
PTTC195A	1,000	5.90 (every six months)	Fifteen/ 2019
PTTC195B	15,000	(Year 1 - 4) 4.10, (Year 5 - 6) 5.10, (every six months)	6 years, 11 months and 24 days/ 2019
PTTC195C	10,000	(Year 1 - 4) 4.10, (Year 5 - 6) 5.10, (every six months)	6 years, 9 months and 15 days/ 2019
PTTC20NA	22,000	4.75 (every six months)	6 years, 11 months and 19 days/ 2020
PTTC208A	4,118	5.95 (every six months)	Fifteen/ 2020
PTTC215A	1,030	6.53 (every six months)	Fifteen/ 2021
PTTC21NA	10,000 ^{4/}	4.00 (every six months)	6 years, 11 months/ 2021

Symbol	Amount (THB million)	Annual Coupon Rate (%) (Payment Frequency)	Maturity Period (Years)/ Redemption Schedule
PTTC21NB	4,200	3.50 (every six months)	6 years, 27 days/ 2021
PTTC222A	4,000 ^{2/}	4.50 (every six months)	Twelve/ 2022
PTTC239A	10,000	6.58 (once at the end of redemption period)	Ten/ 2023
PTTC243A	14,967	(Year 1 - 5) 5.00, (Year 6 - 8) 6.20, (Year 9 - 15) 6.80 (every six months)	Fifteen/ 2024 (redeemable after Year 8)
PTTC247A	9,400	Year 1 - 5) 4.25, (Year 6 - 10) 5.50, (Year 11 - 15) 5.75 (every six months)	Fifteen/ 2024 (redeemable after Year 10)
PTTC10DA	4,000 ^{5/}	5.90 (every six months)	100 years/ 2110 (redeemable after Year 50 and Year 75, and as defined in the terms on rights and duties of the issuers and the holders)
Total	128,264		

Unsecured, unsubordinated foreign debentures

Symbol	Amount (THB million)	Annual Coupon Rate (%) (Payment Frequency)	Maturity Period (Years)/ Redemption Schedule
USD Bond 2005	9,797	5.875 (every six months)	Thirty/ 2035
USD Bond 2012	18,742 ^{3/}	4.50 (every six months)	Thirty/ 2042
Total	28,539		

Note:

- 1/ PTT engaged in a cross-currency swap from Baht-denominated debentures worth THB 9 billion to dollar-denominated ones worth USD 285 million at LIBOR + a fixed interest rate per year on the dollar-denominated principal.
- 2/ PTT engaged in a cross-currency swap from Baht-denominated debentures worth THB 4 billion to dollar-denominated ones worth USD 120.55 million at LIBOR + a fixed interest rate per year on the dollar-denominated principal.
- 3/ PTT engaged in an interest rate swap from dollar-denominated debentures worth USD 500 million at a fixed rate to LIBOR + a fixed rate per year on the dollar-denominated principal. The interest rate swap will end on October 25, 2018.
- 4/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 6 billion at a fixed rate to THBFX + a fixed rate per year on the Baht-denominated principal. The interest rate swap will end on November 15, 2021.
- 5/ PTT engaged in an interest rate swap from Baht-denominated debentures worth THB 2 billion at a fixed rate to THBFX + a fixed rate per year on the Baht-denominated principal. The interest rate swap will end on December 2, 2027.

PTT warrants

PTT has issued and offered 60,000,000 warrants to the President, the management, PTT employees, and employees of PTT Group companies seconded to PTT, consisting of two batches: PTT-W1 (40,000,000 units), offered in 2005 with the last exercise date on August 31, 2010, and PTT-2 (20,000,000 units), offered in 2006 with the last exercise date on September 28, 2011. All warrants have been exercised, and no new ones have been issued.

Short-term bill of exchange

As of December 31, 2017, none was outstanding.

Shareholders

Below was PTT's shareholding structure as of September 5, 2017, the book closing date for the 2017 interim dividend payment.

Item	Shares (in million)	Value (THB million)	%
Registered Capital	2,857.2	28,572	-
Paid-up Capital (as of September 5, 2017)	2,856.3	28,563	99.967
• Ministry of Finance	1,459.9	14,599	51.111
• Vayupak Fund 1 by MFC Asset Management Plc.	187.2	1,872	6.554
• Vayupak Fund 1 by Krung Thai Asset Management Plc.	187.2	1,872	6.554
• Institutional and Public Investors	1,022.0	10,220	35.781
Unpaid Capital	0.9	9	0.033

PTT's top 13 shareholders are as follows (as of September 5, 2017):

No.	Name	Shares	%
1.	Ministry of Finance	1,459,885,575	51.111
2.	Thai NVDR Co., Ltd.	215,538,793	7.546
3.	Vayupak Fund 1 by MFC Asset Management Plc.	187,192,850	6.554
4.	Vayupak Fund 1 by Krung Thai Asset Management Plc.	187,192,850	6.554
5.	Chase Nominees Limited	58,955,946	2.064
6.	State Street Bank Europe Limited	37,678,797	1.319
7.	Social Security Office	36,409,800	1.275
8.	The Bank of New York Mellon	32,194,600	1.127
9.	GIC Private Limited	26,469,300	0.927

No.	Name	Shares	%
10.	HSBC (Singapore) Nominees Pte Ltd	24,274,801	0.850
11.	State Street Europe Limited	19,197,344	0.672
12.	People's Bank of China	18,041,900	0.632
13.	East Fourteen Limited-Dimensional EMER MKTS VALUE FD	16,766,050	0.672
Total		2,319,798,606	81.218

Note:

- Numbers 5 and 10 were nominee accounts. PTT's investigation at Thailand Securities Depository Co., Ltd. (TSD), found that the ultimate shareholder's name(s) could not be disclosed. However, the Ministry of Finance remained the sole majority shareholder on behalf of the state, which in part dictated PTT's management policy. The ministry nominated directors to the Board for approval by the shareholders. Other substantial shareholders, including Numbers 5 and 10, exercised no influence over PTT's management policy formulation, including director nomination.
- Shareholders of Thai NVDR Co., Ltd., who held non-voting depositary receipts (NVDR) in Item 2, were ineligible for voting at shareholders' meetings except when exercising their voting rights on delisting the shares from SET.

Dividend Policy

PTT

PTT pays out no less than 25% of its net income as dividends after deducting all provisional reserves required by law and by PTT. While the net income is based on the consolidated financial statements, dividend payment is subject to future investment plans, necessities, and suitabilities. Once the Board has decided on annual dividend payment, it seeks approval from the shareholders' meeting. An exception is for interim dividend payment, for which the Board can approve such payment and report to the next shareholders' meeting.

Subsidiaries

Concerning subsidiaries' dividend policy, each subsidiary may decide dividend payment by taking into account its remaining cash flow in relation to the investment capital. If the cash flow is substantial enough after legal provisions, the subsidiary may proceed with the payment.

PTTEP

Barring other necessity, the Board's policy is to propose to the meeting of the shareholders dividend payments not less than 30% of PTTEP's net income after deducting its annual income tax each year, with occasional interim dividend payment. PTTEP allows no subsidiary to pay dividends.

The Analysis of PTT and Its Subsidiaries' Consolidated Financial Position

As of December 31, 2017 Compared with December 31, 2016

Figure 3

The analysis of PTT and its subsidiaries' consolidated finance position

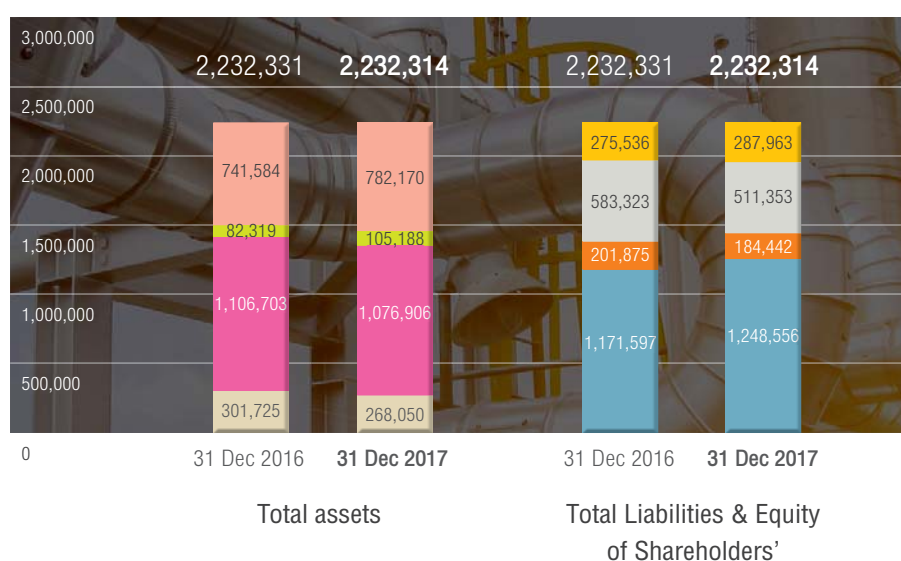
Unit: THB million

Total Assets

- Current assets
- Long-term investments
- Property, plant and equipment
- Other non-current assets

Total Liabilities & Equity of Shareholders'

- Other current liabilities
- Long-term loans (including current portion)
- Non-current liabilities
- Equity



Assets

As of December 31, 2017, total assets of PTT and its subsidiaries were THB 2,232,314 million, slightly decreasing by THB 17 million compared to December 31, 2016. The decrease was mainly from effects of the followings:

- An increase of THB 40,586 million or 5.5% in current assets was mainly from the followings:
 - > Net increase of THB 3,460 million in cash and cash equivalents and current investment mainly from PTT and its subsidiaries further invested in fixed deposit, certificate of deposit and private fund.
 - > An increase of THB 31,725 million in trade accounts mainly from the increase in sales volume and average selling prices from PTT International Trading Pte., Ltd. (PTTT) and PTT.

- > An increase of THB 5,401 million in other current assets from the increase in inventories of PTT and IRPC due to the increasing in crude and finished product inventories volume together with the increase in price following global market price.
- An increase of THB 22,869 million or 27.8% in long-term investments was mainly from an increase in long-term investment in debt securities of PTT and PTTGL investment in PL9SB in Malaysia.
- A decrease of THB 29,797 million or 2.7% in property, plant and equipment was mainly from depreciation expenses in this period and the effect of foreign currency translation though there was additional construction in progress assets of PTT Group. Some of which were onshore midline compressor and the 5th transmission pipeline project of PTT, LLDE Expansion, Olefins Reconfiguration and Methyl Ester 2 project of PTTGC, Polypropylene Expansion project (PPE), and Polypropylene Compound and Specialties project (PPC) of IRPC.

- A decrease of THB 33,675 million or 11.2% in other non-current assets was mainly from the decrease in exploration and evaluation assets of THB 28,690 million from PTTEP's recognition of loss on impairment in Marina Oil Sands project amounting to THB 18,505 million and currency translation differences amounting to THB 10,172 million.

Liabilities

As of December 31, 2017, PTT and its subsidiaries had total liabilities of THB 983,758 million, decreasing by THB 76,976 million or 7.3% from December 31, 2016, mainly from the followings:

- An increase of THB 12,427 million or 4.5% in other current liabilities primarily from other accounts payable due to the alteration of excise tax's filing and payment regulation. Also, trade accounts payable increased from higher price and volume.
- A decrease of THB 71,970 million or 12.3% in long-term loans (including the current portion) mainly from the redemption of debenture and the repayment of long-term loans amounting to THB 99,312 million mainly from PTT, IRPC, PTTGC, GPSC, and Thai Oil Public Company Limited (TOP). Moreover, the effect of foreign exchange caused the lower of long-term loans by THB 19,402 million. However, there were loans addition of THB 47,643 million in this period mainly from IRPC, PTTGC and GPSC.
- A decrease of THB 17,433 million or 8.6% in non-current liabilities mainly from PTTT's advance receivable and the drop in PTTEP's US Dollar provisions following the higher appreciation of THB against US Dollar.

Equity

As of December 31, 2017, PTT and its subsidiaries had total shareholders' equity of THB 1,248,556 million, increasing by THB 76,959 million or 6.6% from the year ended 2016, due to performance in 2017 of PTT and its subsidiaries which was THB 135,180 million. PTT had dividends payment from performance of 2H/ 2016 and 1H/ 2017 amounting to THB 51,413 million.

Liquidity

At the end of December 31, 2017, PTT and its subsidiaries had net cash decreased and equivalents amounting of THB 49,377 million. Cash and cash equivalents at the beginning of the period was THB 215,566 million. Cash and cash equivalents at the end of the period was THB 166,189 million. Details of cash flow by activities are as follows:

	Unit: THB million
Net cash provided by operating activities	306,100
Net cash used in investing activities	(180,525)
Net cash used in financing activities	(162,498)
Effects of exchange rates on cash and cash equivalents	(750)
Currency translation differences	(11,704)
Net decrease in cash and cash equivalents during the period	(49,377)
Cash and cash equivalents at the beginning of the period	215,566
Cash and cash equivalents at the end of the period	166,189



PTT and Its Affiliates

As of December 31, 2017

► E&P Business Group Percentage

PTT Exploration and Production Public Co., Ltd.	PTTEP	65.29
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► Gas Business Group Percentage

Trans Thai-Malaysia (Thailand) Co., Ltd.	TTM(T)	50.00
Trans Thai-Malaysia (Malaysia) Sdn.Bhd.	TTM(M)	50.00
PTT Natural Gas Distribution Co., Ltd.	PTTNGD	58.00
PTT LNG Co., Ltd.	PTTLNG	100.00
PTT Global LNG Co., Ltd.	PTTGL	50.00

► Oil Business Group Percentage

PTT (Cambodia) Limited	PTTCL	100.00
PTT Oil and Retail Business Co., Ltd.	PTTOR	100.00
Thai Lube Blending Co., Ltd.	TLBC	48.95
Petro Asia (Thailand) Co., Ltd.	PAT	35.00
Petro Asia (Maoming) Co., Ltd.	PA (Maoming)	20.00
Petro Asia (Sanshui) Co., Ltd.	PA (Sanshui)	25.00
Thai Petroleum Pipeline Co., Ltd.	THAPPLINE	40.40
Intoplane Services Co., Ltd.	IPS	16.67
Bangkok Aviation Fuel Services Co., Ltd.	BAFS	7.06
Fuel Pipeline Transportation Co., Ltd.	FPT	0.0000090
PTT Oil Myanmar Co., Ltd.	PTTOM	100.00

► International Investment Business Group Percentage

PTT Energy Resources Co., Ltd.	PTTER	100.00
PTT Green Energy Pte. Ltd.	PTTGE	100.00
PTT Global Management Co., Ltd.	PTTGM ^{1/}	100.00

► International Trading Business Group Percentage

PTT International Trading Pte. Ltd.	PTTT	100.00
PTT International Trading London Limited	PTTT LDN	100.00

► Petrochemical and Refining Business Group Percentage

PTT Global Chemical Public Co., Ltd.	PTTGC	48.89
Thai Oil Public Co., Ltd.	TOP	49.10
IRPC Public Co., Ltd.	IRPC	38.51
PTT Tank Terminal Co., Ltd.	PTT TANK	100.00

► Infrastructure Business Group Percentage

PTT Energy Solutions Co., Ltd.	PTTES	40.00
District Cooling System and Power Plant Co. Ltd.	DCAP	35.00
Thai Oil Power Co., Ltd.	TP	26.00
Global Power Synergy Public Co., Ltd.	GPSC	22.58
Energy Complex Co., Ltd.	EnCo	50.00

► Other Business Group Percentage

Business Services Alliance Co., Ltd.	BSA ^{2/}	25.00
PTT Digital Solutions Co., Ltd.	PTT DIGITAL ^{3/}	20.00
Dhipaya Insurance Public Co., Ltd.	TIP	13.33
PTT Regional Treasury Center Pte. Ltd.	PTTRTC	100.00
Sarn Palung Social Enterprise Co., Ltd.	PTTSE	20.00

Note:

1/ Former: PTT PMMA Co., Ltd.

2/ PTT holds 100% of BSA's ordinary shares. Thus, PTT's ownership interest in BSA is 100%.

3/ Former: PTT ICT Solutions Co., Ltd.

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Revenue Structure of PTT and Subsidiaries* by Product Line

Product/ Service	Operated by	% Shareholding	2015 (revised)		2016 (revised)		2017 (revised)	
			THB million	%	THB million	%	THB million	%
1. Natural Gas Products	PTT Plc.		468,792.56	22.78	367,696.92	21.17	356,916.23	17.45
	PTT Exploration and Production Plc. (PTTEP)	65.29	12,948.33	0.63	10,362.45	0.60	9,527.70	0.47
	PTT Natural Gas Distribution Co., Ltd. (PTTNGD)	58.00	7,966.37	0.39	7,343.61	0.42	9,815.40	0.48
	Global Power Synergy Plc. (GPSC)	22.58	-	-	78.42	0.01	62.24	-
Total Revenue from Natural Gas Products			489,707.26	23.80	385,481.40	22.20	376,321.57	18.40
2. Oil Products	PTT Plc.		643,755.90	31.28	550,266.24	31.68	604,353.66	29.55
	PTT Exploration and Production Plc. (PTTEP)	65.29	10,349.48	0.51	8,650.59	0.50	8,727.69	0.43
	PTT International Trading Pte. Ltd. (PTTT)	100.00	183,336.31	8.91	117,599.77	6.77	202,561.27	9.91
	PTT International Trading London Limited (PTTL LDN)	100.00	-	-	-	-	31,462.80	1.54
	PTT Global Chemical Plc. (PTTGC)	48.89	32,852.68	1.60	20,315.68	1.17	25,501.09	1.25
	Thai Oil Plc. (TOP)	49.10	140,262.71	6.82	112,309.11	6.46	149,568.69	7.31
	IRPC Plc. (IRPC)	38.51	110,141.22	5.35	93,424.70	5.38	100,292.75	4.90
	PTT (Cambodia) Limited (PTTCL)	100.00	6,396.54	0.31	7,036.15	0.40	9,104.02	0.45
	PTT Oil and Retail Business Co., Ltd. (PTTOR)	100.00	50,138.95	2.44	45,496.69	2.62	45,251.57	2.21
Total Revenue from Oil Products			1,177,233.79	57.22	955,098.93	54.98	1,176,823.54	57.55
3. Petrochemical Products	PTT Plc.		15,647.43	0.76	20,041.99	1.15	22,486.43	1.10
	PTT Global Chemical Plc. (PTTGC)	48.89	120,598.30	5.86	110,974.12	6.39	218,118.80	10.67
	Thai Oil Plc. (TOP)	49.10	15,174.03	0.74	23,639.62	1.36	26,835.75	1.31
	IRPC Plc. (IRPC)	38.51	50,773.08	2.47	48,387.04	2.79	57,607.06	2.82
	PTT Polymer Marketing Co., Ltd. (PTTPM ¹⁾)	-	75,349.14	3.66	71,598.25	4.12	-	-
	PTT International Trading Pte., Ltd. (PTTT)	100.00	30,185.37	1.47	44,198.35	2.54	59,722.95	2.92
Total Revenue from Petrochemical Products			307,727.35	14.96	318,839.37	18.35	384,770.99	18.82
4. Mining Products	PTT Energy Resources Co., Ltd. (PTTER ²⁾)	100.00	13,632.79	0.66	15,994.85	0.92	-	-
	PTT Global Management Co., Ltd. (PTTGM ²⁾)	100.00	-	-	-	-	19,250.09	0.94
Total Revenue from Mining Products			13,632.79	0.66	15,994.85	0.92	19,250.09	0.94
5. Utilities Products	PTT Plc.		-	-	-	-	1.32	-
	Thai Oil Plc. (TOP)	49.10	980.26	0.05	3,316.62	0.19	4,557.83	0.22
	IRPC Plc. (IRPC)	38.51	3,183.68	0.15	3,082.00	0.18	2,716.64	0.13
	Global Power Synergy Plc. (GPSC)	22.58	13,698.17	0.67	10,283.76	0.59	8,884.50	0.43
	Energy Complex Co., Ltd. (EnCo)	50.00	11.95	-	-	-	-	-
Total Revenue from Utilities Products			17,874.06	0.87	16,682.38	0.96	16,160.29	0.78

Product/ Service	Operated by	% Shareholding	2015 (revised)		2016 (revised)		2017 (revised)	
			THB million	%	THB million	%	THB million	%
6. Revenue from Non-Core Businesses	PTT Plc.		5,499.12	0.27	6,307.00	0.36	7,896.21	0.39
	PTT Oil and Retail Business Co., Ltd. (PTTOR)	100.00	4,833.04	0.23	5,127.76	0.30	5,120.13	0.25
	PTT (Cambodia) Limited (PTTCL)	100.00	105.72	-	338.92	0.02	623.20	0.03
Total Revenue from Non-Core Businesses			10,437.88	0.50	11,773.68	0.68	13,639.54	0.67
7. Revenue from Services	PTT Plc.		28.33	-	36.90	-	32.16	-
	PTT Exploration and Production Plc. (PTTEP)	65.29	4,044.20	0.20	2,345.22	0.14	2,626.92	0.13
	PTT Global Chemical Plc. (PTTGC)	48.89	2,804.83	0.14	6,350.31	0.37	1,614.36	0.08
	Thai Oil Plc. (TOP)	49.10	(133.00)	(0.01)	427.37	0.02	387.95	0.02
	IRPC Plc. (IRPC)	38.51	517.07	0.03	591.68	0.03	543.36	0.03
	PTT Oil and Retail Business Co., Ltd. (PTTOR)	100.00	564.52	0.03	493.11	0.03	464.30	0.02
	PTT Digital Solutions Co., Ltd. (PTT DIGITAL ^{3/})	20.00	262.48	0.01	50.33	-	84.31	-
	PTT Tank Terminal Co., Ltd. (PTT TANK)	100.00	715.82	0.03	756.29	0.04	727.46	0.04
	PTT Polymer Logistics Co., Ltd. (PTTPL ^{1/})	-	133.32	-	126.93	0.01	-	-
	PTT Energy Solutions Co., Ltd. (PTTES)	40.00	57.80	-	46.29	-	14.94	-
	Energy Complex Co., Ltd. (EnCo)	50.00	243.84	0.01	291.17	0.02	282.13	0.01
	Business Services Alliance Co., Ltd. (BSA)	25.00	6.94	-	118.63	0.01	114.39	0.01
	PTT Oil Myanmar Co., Ltd. (PTTOM)	100.00	2.46	-	8.87	-	6.28	-
Total Revenue from Services			9,248.61	0.44	11,643.10	0.67	6,898.56	0.34
8. Other Products	PTT Plc.		1.99	-	137.87	0.01	146.15	0.01
	PTT Green Energy Pte. Ltd. (PTTGE)	100.00	228.37	0.01	-	-	-	-
	Business Services Alliance Co., Ltd. (BSA)	25.00	4.44	-	4.71	-	5.58	-
	PTT Global Chemical Plc. (PTTGC)	48.89	-	-	134.70	0.01	-	-
	Global Power Synergy Plc. (GPSC)	22.58	-	-	-	-	591.73	0.03
	PTT Digital Solutions Co., Ltd. (PTT DIGITAL ^{3/})	20.00	-	-	11.30	-	-	-
	PTT International Trading Pte. Ltd. (PTTT)	100.00	-	-	2,937.85	0.17	988.45	0.05
	Thai Oil Plc. (TOP)	49.10	636.67	0.03	-	-	-	-
	IRPC Plc. (IRPC)	38.51	178.36	0.01	105.90	-	125.49	0.01
	PTT Oil Myanmar Co., Ltd. (PTTOM)	100.00	-	-	-	-	0.09	-
Total Revenue from Other Products			1,049.83	0.05	3,332.33	0.19	1,857.49	0.10
Total Revenue from Products and Services			2,026,911.57	98.50	1,718,846.04	98.95	1,995,722.07	97.60
9. Others								
9.1 Other Revenue			30,784.17	1.50	9,682.65	0.56	28,268.51	1.38
9.2 Gain/ Loss from Foreign Exchange			(5,992.73)	(0.29)	4,472.68	0.25	13,650.64	0.66
Total Other Revenue			24,791.44	1.21	14,155.33	0.81	41,919.15	2.04
10. Share of net income/ loss from investment under equity method			6,031.70	0.29	4,143.21	0.24	7,310.42	0.36
Grand Total			2,057,734.71	100.00	1,737,144.58	100.00	2,044,951.64	100.00

Remarks:

* Revenues of PTT and subsidiaries are net values derived from external parties.

1/ On July 3, 2017, PTT sold total investment fund in PTTPPL and PTTPM to PTTGC.

2/ On June 1, 2017, PTTER sold total investment fund, except East Mediterranean Gas Company S.A.E, to PTTGM.

3/ Previous name: PTT ICT Solutions Co., Ltd. (PTTICT)

Connected Transactions



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PTT's connected transactions resulted from the following agreements with their nature summarized below:

1. Transactions between PTT and state enterprises

Transaction

The Cabinet passed a resolution dated March 22, 2016, acknowledging the resolution of a committee on the consideration of privileges of state enterprises and agencies at Meeting No. 5/2558 (2015) on November 25, 2015, defining the privilege granted to PTT Plc. to sell to other government agencies and state enterprises besides EGAT 10,000 liters of fuels and more, from a compulsory to a voluntary basis. In 2017, PTT sold fuels to the following state enterprises which still insisted on buying fuels from PTT: EGAT, Bangkok Mass Transit Authority (BMTA), and State Railway of Thailand (SRT). If a state enterprise owe PTT outstanding payments, PTT is entitled to levy interests based on contractual conditions.

2. Transactions between PTT and subsidiary, PTTEP Plc.

Transaction

PTTEP and its subsidiaries produce and sell crude oil, natural gas, condensate and LPG. In 2017, PTT was the major buyer (87% by volume) of these. As for natural gas, the two reached a long-term deal of 25 - 30 years, stipulating annual minimum contractual quantities. PTT entered into an agreement with PTTEP for the supply of crude oil and condensate, whereas PTT sold jet fuels and high-speed diesel to PTTEP under world market prices, identical to those sold to PTT by its partners or under competitive standard reference prices and sensible conditions.

Normal Business Transactions or Supporting Normal Business Transactions

Item			Value as of December 31, 2017 (THB million)	Necessity and Sensibility
1.1	Sale of Petroleum Products		126,362.47	Pricing of petroleum products is tied to world market prices and identical to those sold to PTT by its project partners.
	LPG	88,981.10 metric tons		
	Crude oil	16.17 million barrels		
	Condensate	11.29 million barrels		
	Natural gas	631,400.66 Mmscf		
1.2	Purchase of Fuels		2,241.2	PTTEP's Board of Directors approved a five-year (2014 - 2018) fuel supply agreement with PTT. The prices under the agreement were based on competitive standard reference market prices and sensible conditions.
	Jet fuel	1.76 million liters		
	High speed diesel	100.40 million liters		
	Natural gas	67.73 Mmscf		

3. Transactions between PTT and petrochemical and refining subsidiaries

Transaction

PTT signed crude oil and raw material supply agreements and refined product purchase agreements with its petrochemical and refining subsidiaries as summarized below. PTT also signed gas sales agreements (GSAs) for its feedstock and engaged in hedging through derivative contracts with these subsidiaries to ease volatility of impacts from crude oil and petroleum product prices. However, price risk management is subject to the policy of each company.

Agreements with Thai Oil Plc. (TOP)

- PTT has secured crude oil and buys refined products equivalent to 49.99% of TOP's refining capacity at market prices under a 10-year minimum contract, starting in 2014. After the tenth year, either party may end the agreement through a written notice sent at least 12 months in advance under the Product Offtake and Crude Supply Agreement (POCSA) terms and conditions.
- PTT has secured natural gas for TOP's use in its refinery as required by an agreement between them at market prices, considered normal business practices, under a 10-year contract (January 1, 2014 - December 31, 2023).
- PTT entered into a short-term deposit agreement with TOP for oil reserve required under the law.

Transactions and Agreements with IRPC Plc. (IRPC)

- PTT secures crude oil supply at market prices for IRPC under a one-year feedstock supply agreement (term and spot). The contract is to be made year by year.
- PTT has signed a one-year contract for petroleum products at Rayong and Chumphon Depots with IRPC under market prices, effective January 1, 2016, with possible annual extensions.
- PTT has signed a 10-year GSA with IRPC for gas consumption in power generation and cogeneration, effective January 14, 2011 - January 13, 2021, and in refining under a five-year GSA (November 10, 2015 - December 31, 2020) at market prices.
- In addition, PTT also engaged in oil price hedging to ease the impacts of price volatility.
- However, price risk management is subject to IRPC's policy.

Transactions and Agreements with PTT Global Chemical Plc. (PTTGC)

PTTGC was founded on October 19, 2011, through the amalgamation of PTT Chemical Plc. (PTTCH) and PTT Aromatics and Refining Plc. (PTTAR) under the Public Company Act B.E. 2535 (1992). The new company inherited all the assets, properties, and liabilities of the two companies, and continues the operation of the two companies as summarized below.

Petrochemical and Chemical Business

- PTT secures feedstock supply for PTTGC's processes, namely ethane, propane, LPG, and NGL. Below are the details of the agreements for key feedstock.

Feedstock	Contractual Supply Volume (tons/year)	Contract Expiry year
Ethane	454,000 - 605,000	2020
Ethane	370,000 - 500,000	2020
Ethane	1,300,000 - 1,350,000	2025
Propane	126,000 - 168,000	2020
LPG	100,000 - 160,000	2020
LPG	> 240,000	2020
LPG	336,000	2020
LPG	> 156,000	2021
NGL	380,000 - 470,000	2021

Under these agreements, the price structure of ethane varies with that of film-grade HDPE in Southeast Asian markets - reflecting the entire petrochemical chain and the HDPE market. Similarly, the price structures of propane and liquid petroleum gas (LPG) vary with that of film-grade PP in Southeast Asian markets. The prices of other raw materials are as agreed, that is, based on market prices.

The above agreements are extendable for five years, subject to the conditions of individual agreements.

- PTT supplies 4.6 - 6.1 million tons per year of condensate to PTTGC under a long-term agreement under which the price is tied to a basket of crude oil prices.

- PTT entered into a long-term agreement under which it buys PTTGC's outputs of aromatics and naphtha for sale to export customers, effective from 2001 under an evergreen basis, which means that after 2013, the agreement is always regarded as effective unless otherwise notified in advance.
- PTT entered into a short-term deposit agreement with PTTGC for oil reserve required under the law.

Refining and Petroleum Product Supply Business Group

- PTT has secured crude oil supply under a feedstock supply agreement, effective from February 1, 2009. Under the agreement, PTT is to secure crude oil of PTTGC's desired grades and volumes at market prices, whether imported or from indigenous sources.
- PTT has bought refined products from PTTGC at no less than 70% of the latter's refined products at domestic market prices under an 18-year agreement, effective from February 9, 2006, beyond which the agreement is assumed to remain valid unless otherwise notified in advance.
- PTT has signed an 18-year New Complex Product Offtake Agreement with PTTGC, effective from February 9, 2006, beyond which the agreement is assumed to remain valid unless otherwise notified in advance. Under the agreement, PTT is to buy from PTTGC all products derived from the Upgrading Complex, at least half of which are to be based on domestic market prices.
- PTT signed a GSA with PTTGC for the gas consumed in product refining and power generation, which is due to expire in 2018.
- In addition, PTT also engaged in oil price hedging to ease the impacts price volatility.
- However, price risk management is subject to PTTGC's policy.

Transactions and Agreements with HMC Polymers Co., Ltd. (HMC)

- PTT has signed a 15-year (January 19, 2010- January 18, 2025) propane feedstock supply agreement with HMC, with five-year extension at a time, under which the price of propane varies with that of Southeast Asia's film-grade PP.
- PTT has secured natural gas for HMC's use in its refinery as required under a 10-year agreement (October 30, 2009 - October 29, 2019) at market prices, considered normal business practices.
- Since PTT has transferred the entire shares held in HMC to PTTGC on July 3, 2017, the transactions and agreements that PTT has with the company are not considered as connected transactions.

Transactions and Agreements with PTT Asahi Co., Ltd. (PTTAC)

- In 2008, PTT signed a 15-year (November 3, 2011 - November 2, 2026) propane supply agreement with PTTAC for its feedstock. The agreement is effective from the plant's start-up, with five-year extension each time. The price structure varies with that of Southeast Asia's film-grade PP.
- PTT has secured natural gas for PTTAC's use in its refinery as required under a 15-year agreement (March 21, 2011 - March 20, 2026) at market prices, considered normal business practices.
- Since PTT has transferred the entire shares held in PTTAC to PTTGC on July 3, 2017, the transactions and agreements that PTT has with the company are not considered as connected transactions.

4. Transactions between PTT and its subsidiary of the Infrastructure Business Group

Transactions and Agreements with Global Power Synergy Plc. (GPSC)

PTT signed a GSA with GPSC for its power generation, which is considered a normal business practice. PTT is the country's sole seller of natural gas to industrial operators, with prices and conditions as agreed in the agreements. PTT supplies gas to GPSC's power plants as follows.

1) Sriracha Power Plant: PTT has signed a 25-year GSA with Sriracha Power Plant at an IPP gas price. The agreement is effective until 2024. GPSC charges fuel costs with the energy payment to EGAT. If PTT cannot deliver the volume of gas under the agreement, and EGAT instructs GPSC to use its reserve fuel, EGAT will pay GPSC for the excess gas. Sriracha Power Plant also signed a diesel supply agreement with TOP for use as reserve. The 25-year agreement is due to expire in 2024.

2) Central Utility Plant 1 (CUP-1): PTT has secured a 15-year GSA with CUP-1 for power generation. The agreement is due to expire in 2021.

3) Central Utility Plant 2 (CUP-2): PTT will supply gas to CUP-2 for power generation. The 15-year GSA is due to expire in 2023.

4) Central Utility Plant 3 (CUP-3): PTT has signed a long-term GSA with CUP-3 for its steam generation plant. The 15-year agreement will end in 2024.

Sensibility of Connected Transactions

The purchase of goods, raw materials, or services (or all of them) from related companies is meant to create maximum mutual business benefit within PTT Group and support national energy security. Such transactions are perceived as normal business practices. The volumes of goods or raw materials are bought or sold by PTT or services/ provided or received by related parties to match with PTT's needs and businesses. To this end, such prices are as agreed in contracts, which leads to commercial benefit for both PTT and related parties without siphoning of benefits or irregular items.

Policy on Future Connected Transactions

PTT's future connected transactions will be conducted as a part of its normal businesses, without special favors or transfers of benefits between PTT, its subsidiaries, associated companies, related companies, or shareholders. Pricing will continue to be at arm's length, and the prices of products supplied by PTT's subsidiaries will be market-based. Disclosure of connected transactions will conform to the notification of the Securities and Exchange Commission (SEC) and SET, and to the accounting standard for related parties/ businesses disclosures, announced by the Federation of Accounting Professions.

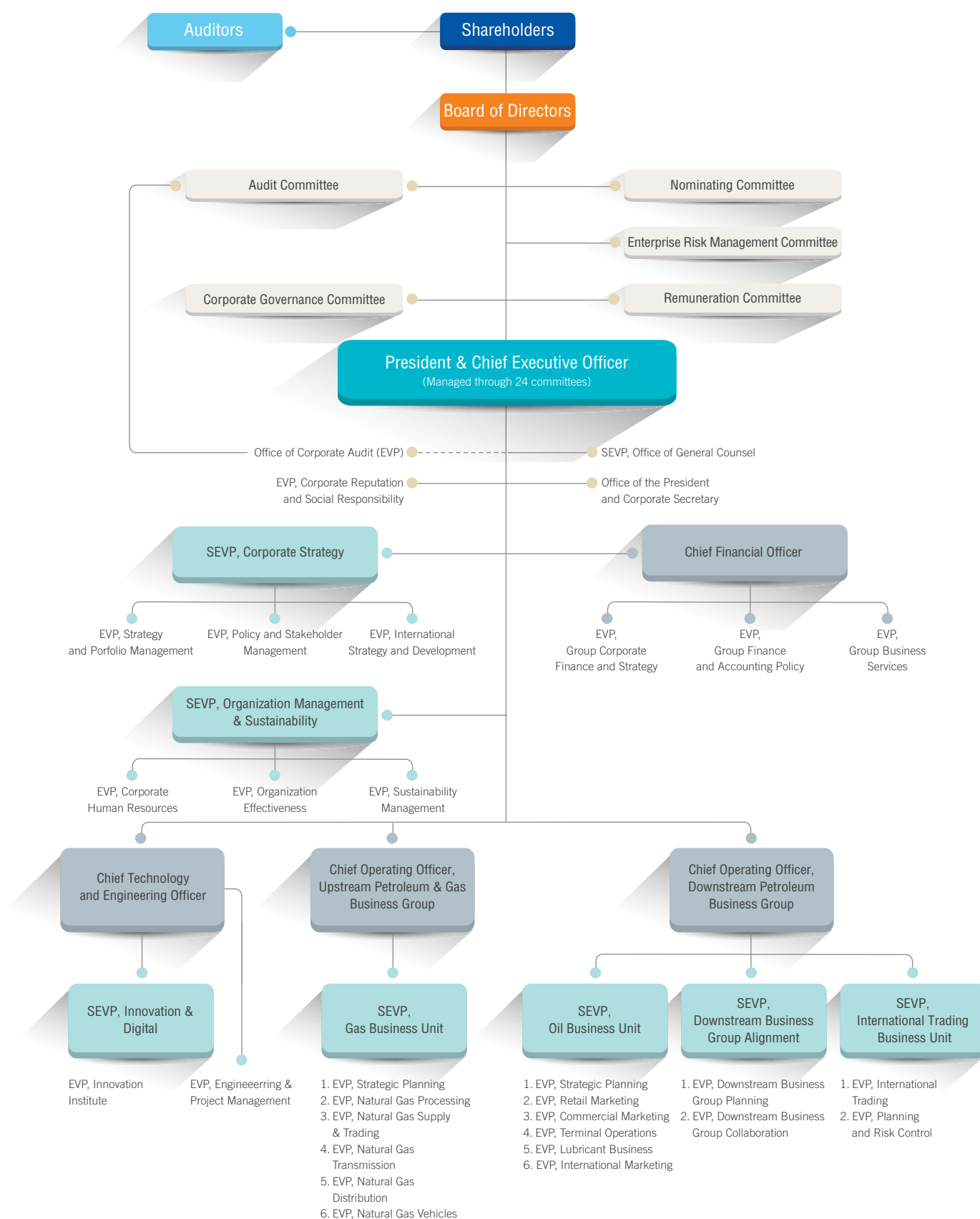
Management Structure

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Responsibility of the Board of Directors

PTT Public Company Limited's structure as of January 1, 2018 comprises the Board of Directors and five specific committees to consider the significant matters, including Audit Committee, Nominating Committee, Remuneration Committee, Corporate Governance Committee, and Enterprise Risk Management Committee. The President & CEO is the top executive who manages PTT's business groups through the 24 management's committees.





Composition of the Board

Under PTT's Articles of Association, the Board consists of:

- 5 - 15 persons
- A minimum of three independent directors (PTT's CG requires that independent directors account for no less than half of the Board)
- At least one director must possess knowledgeable in accounting and finance.

According to the Certification of Ministry of Commerce on March 6, 2017, PTT Board of Directors consists of 15 directors as follows:

- 14 non-executive directors (12 of whom are independent directors, which exceeds half of the Board)
- One executive director

The current Board consists of:

No.	Name	Position as of December 31, 2017	Appointed Date
1.	Mr. Piyasvasti Amranand	Independent Director/ Chairman of the Board (Director from July 1, 2014, Chairman of the Board from July 4, 2014)	July 1, 2014 (First term) April 11, 2016 (Second term)
2.	Prof. Dr. Kittipong Kittayarak	Independent Director/ Chairman of the Audit Committee	July 1, 2014 (First term) April 28, 2017 (Second term)
3.	AM Boonsuib Prasit	Independent Director/ Chairman of the Nominating Committee	September 4, 2014 (First term) April 28, 2017 (Second term)
4.	Mr. Boontuck Wungcharoen	Independent Director/ Chairman of the Remuneration Committee	February 27, 2017 (First term)*
5.	Gen. Chatchalerm Chalermsook	Independent Director/ Chairman of the Corporate Governance Committee	September 4, 2014 (First term) April 11, 2016 (Second term)
6.	Mr. Charvit Amatamatucharti	Independent Director/ Chairman of the Enterprise Risk Management Committee/ Member of the Nominating Committee	September 4, 2014 (First term) April 9, 2015 (Second term)
7.	Mrs. Nuntawan Sakuntanaga	Independent Director/ Member of the Audit Committee	July 1, 2014 (First term) April 9, 2015 (Second term)
8.	Mr. Vichai Assarasakorn	Independent Director/ Member of the Audit Committee	September 4, 2014 (First term) April 28, 2017 (Second term)
9.	Mr. Thon Thamrongnawasawat	Independent Director/ Member of the Nominating Committee/ Member of the Corporate Governance Committee	November 18, 2016 (First term)
10.	Mr. Somsak Chotrattanasiri	Independent Director/ Member of the Remuneration Committee	April 22, 2015 (First term) April 28, 2017 (Second term)

No.	Name	Position as of December 31, 2017	Appointed Date
11.	Mr. Somchai Sujjapongse	Director/ Member of the Remuneration Committee	November 1, 2015 (First term) April 11, 2016 (Second term)
12.	Mr. Don Wasantapruek	Independent Director/ Member of the Corporate Governance Committee	July 26, 2014 (First term) April 11, 2016 (Second term)
13.	Mr. Somkit Lertpaitoon	Independent Director/ Member of the Enterprise Risk Management Committee	February 27, 2017 (First term)
14.	Mr. Thammayot Srichuai	Director/ Member of the Enterprise Risk Management Committee	December 15, 2016 (First term) April 28, 2017 (Second term)
15.	Mr. Tevin Vongvanich	Director and Secretary of the Board (President & CEO)	September 10, 2015 (First term)

Note:

In 2017, the Board appointed new directors to replace those who are due to retired by rotation and/or resigned during the year as follows:

- No. 4, Mr. Boontuck Wungcharoen in replacement of Mr. Prasert Bunsumpun, who retired from the directorship due to his completion of sixty five years of age, effective from February 20, 2017. Mr. Boontuck Wungcharoen, however, tendered his resignation from PTT directorship, effective from December 31, 2017, and **the Board appointed Mr. Supot Teachavorasinskun in replacement, effective from January 18, 2018.**
- No. 13, Mr. Somkit Lertpaitoon in replacement of Mr. Areepong Bhoocha-oom, who resigned on February 8, 2016.

Authority and Responsibilities of the Board

Authority of the Board:

- The Board is authorized to supervise and oversee PTT's management to comply with applicable laws, objectives, Articles of Association, and resolutions of shareholders' meetings.
- The Board is authorized to select one director to serve as the Chairman and may select Vice Chairman, if deemed appropriate.
- The Board is authorized to select one director to serve as President & CEO and Secretary to the Board as appropriate.

Duties and Responsibilities of the Board

The Board is to:

- Carry out its duties under PTT's Articles of Association and ensure that the management complies with applicable laws, objectives, Articles of Association, and resolutions of shareholders' meetings.
- Define PTT's vision, directions, strategies, policies and major plans as well as consider potential risks so as to ensure that the management can effectively drive plans into practice.
- Monitor and ensure plan implementation is in line with PTT's major strategies and policies, including objectives, financial targets and operating plans, and budget.
- Institute systems for corporate accounting, financial reporting and auditing as well as the efficient and effective internal control and internal audit systems.

- Oversee and supervise issues regarding conflicts of interest and related transactions.
- Define comprehensive risk management guidelines and ensure an efficient risk management system or process.
- Ensure a suitable compensation system or mechanism for senior management to induce short-term and long-term motivation.
- Assess the performance of the President & CEO and decide suitable compensation.
- Ensure suitable communicating channels with each group of shareholders and stakeholders.
- Ensure accurate, clear, transparent, reliable, and high-quality disclosure of information.
- Express leadership and be a role model.

The Board's additional authority includes:

- Approve long-term investment, such as common stocks, preferred stocks, bonds, debentures and warrants or other financial instruments.
- Approve financial support, including funds, common stocks, preferred stocks, loans or others as appropriate for PTT-invested companies.
- Approve debt financing and issuance of debt instruments such as debentures.
- Approve the annual budget.
- Approve procurement and other procurement-related matters if the limits exceed the CEO's approval authority.
- Consent to employ, appoint, transfer, or promote employees serving as senior executive vice presidents or equivalent upward.
- Appoint the Corporate Secretary.

Authorized Directors to Sign and Bind for PTT

According to PTT's Articles of Association, as of March 6, 2017, the directors whose signatures are authorized to sign to bind PTT are either (1) Mr. Tevin Vongvanich, President & CEO, sign and affix PTT's seal, or (2) Two out of these three directors: Mr. Chanvit Amatamatucharti, AM Boonsuib Prasit or Mr. Don Wasantapruet jointly sign and affix PTT's seal.

Appointment and Dismissal of Directors

1. The Board consists of 5 - 15 persons who are being appointed at shareholders' meetings. In addition, the Board consists of a minimum of 3 independent directors and at least half of the directors must reside in the Kingdom. At least one of them must be knowledgeable in accounting and finance. All directors must be qualified as specified by laws and PTT's Articles of Association. Since 2004, the Board has a resolution that independent directors shall consist of at least half of the Board, such requirement remains effective until present. As of December 30, 2017, it had 12 independent directors, all of whom reside in Thailand. Seven directors are expert in accounting and finance, namely Mr. Somchai Sujjapongse, Mr. Somsak Chotrattanasiri, Mrs. Nuntawan Sakuntanaga, Mr. Piyasvasti Amranand, Mr. Vichai Assarasakorn, Mr. Boontuck Wungcharoen, and Mr. Tevin Vongvanich.

2. The shareholders' meetings are to appoint qualified directors whom the Nominating Committee has elected and proposed to the Board under the following criteria:

- (1) Each shareholder has one vote per share held.
- (2) Each shareholder exercises all votes applicable under (1) in electing one or more persons as directors, provided that no vote is divisible.
- (3) Candidates with the highest number of votes are to be appointed as directors up to the number required at the meeting.
- (4) If candidates get equal votes, which makes the number of successful candidates exceed directors to be elected, the Chairman of that meeting will cast the decisive vote.

3. At the AGM, one-third of the directors, or if the number is not a multiple of three, then the nearest number to one-third, will retire from directorship. The directors retiring in the first and second year after PTT was listed are to be drawn by lots. For subsequent years, those with the longest terms are to retire.

4. In case the seat of directors is vacated with other reasons beside the term completion, the Board may elect a qualified person without the prohibitions as stipulated under PTT's Articles of Association, to fill the vacancy at the next Board meeting, except the remaining term of the vacated director is less than two months. The acting director must secure at least three-quarters of the votes by the remaining directors. He can also stay in office only for the remaining term of the former director.

5. Any director who wish to resign from directorship must tender his or her resignation letter to PTT. Such resignation will take effect from the date the resignation letter reaches PTT.

6. In case of voting to remove any director from directorship before the completion of his term, a three-quarter vote of eligible shareholders present at the meeting is required. The number of shares represented by the three-quarter votes of at least half of the total number of shares represented by the eligible shareholders present at the meeting is also required.

Qualifications of Directors

Directors must be duly qualified and possess no disqualification, as stated in the Public Limited Company Act and the Standard Qualifications for Directors and State Enterprise Officers Act (No. 6) of 2007, as well as relevant Cabinet resolutions, including

- Up to 65 years of age.
- A maximum of three state enterprise directorships, including appointments due to their positions and those due to acting assignments.
- Independent directors must be qualified under SET's notification on the qualifications and scope of operation of audit committees.
- Never been sentenced to imprisonment, except for violations of the law by negligence or petty crimes.
- Not hold a political position, except for a director position required by law.
- Not belong to a political party or serve one.

- Never been expelled, dismissed, or made to leave a position because of malfeasance.
- Not hold shares in the state enterprise in question or a shareholder of a juristic person where that state enterprise holds shares. Exceptions apply to directors of state enterprises who are not government officials, government employees, or wage earners with positions or position salaries of centralized governments, provincial governments, local governments or other government units. Also, such state enterprise directors can hold no more than 0.5% of the paid-up capital of the state enterprise in which they serve as directors or juristic persons where the state enterprise in question holds shares.
- No position in the juristic person where the state enterprise in question holds shares. Exceptions apply when the board of directors of that state enterprise appoints them as directors or other positions in the juristic person.
- Not directors, management team members or authorized managers or hold vested interests in a juristic person that serves as a concessionaire, a joint venture, or ones with vested interests in the affairs of the state enterprise in question. Exceptions apply for the board chairman, director, or manager assigned by that state enterprise.

Since 2013, according to the Corporate Governance and Code of Conduct Handbook, versions 3 and 4, on term holding, a director can hold office up to the following limits:

1. A maximum of three directorships in the state enterprises/juristic persons of which the state enterprise is a shareholder.
2. A maximum of five directorships in SET listed companies, provided that the directorships under (2) do not contradict (1). Such directorships in (1) and (2) must not exceed five.
3. Independent directors and members of specific committee shall serve no more than nine consecutive years.

In compliance with the law, PTT ensures that at least one-third of the Board are listed in the Director's Pool of the Ministry of Finance. As of December 30, 2017, 10 out of 15 PTT directors' names were listed in the Director's Pool.

Board Meetings

Board meetings are defined for the entire year. For 2017, the meetings were held on the third Friday of each month. Additional meetings may be called to discuss special items as necessary. The Office of the President and Corporate Secretary issues a meeting notice along with the meeting agendas with its details and reasons, and relating documents that are sufficient for decision-making to each director seven days ahead of the meeting to allow the directors enough time to prepare themselves.

Since 2004, Board meetings have been made in electronic form. Meeting agenda items are put on a CD. Since 2013, the meetings have been conducted through iPad application software for convenience. It considerably reduces accompanying documents. This requirement also shortens the process, speeds up execution of the agenda, and eases decision-making of management with efficient information access.

Since 2015, the Board has set “sequel agenda” to report the progress of the previous proposed agenda items and to follow up the operations implemented based on the meeting’s observation and comments, applied to the corporate strategies. The agenda must be reported monthly in the meeting.

The Board has set a policy that those directors with potential conflicts of interest on such matters will not be forwarded particular agenda items. Also the directors will abstain from attending and voting during that portion of the meeting. At least a quorum of two-thirds of eligible directors is required to pass the Board’s resolution. If the quorum is not met, discretion of Chairman will be applied as stipulated in the CG Handbook.

The minutes of each meeting for each agenda item will be properly documented with all written comments and recommendations. After the adoption from the Board was approved the minutes will be filed for auditing purposes and reference by directors. By and large, each board meeting is lasted three hours approximately.

In 2017, PTT held 13 Board meetings (12 regular and one special). One special meeting, held annually, aimed to determine/review/approve PTT Group’s vision and missions, directions and operational strategies (five-year rolling). This year, the Board and the management jointly reviewed vision and missions and approved directions and operational strategies as a framework and guideline for business units, subsidiaries and associates to formulate the annual state enterprise plans and budgets of 2018 - 2022. In addition, one Board meeting was conducted in the absence of the management to allow full, honest discussions on management’s performance. One independent directors meeting was held on “Roles for Compliance and Ethical Culture Oversight,” at which the role of independent directors in compliance and corporate ethics were discussed. In every meeting, the Chairman allowed directors to freely and openly express their views.

Details of directors’ meetings are summarized as follows:

[illegible]

Attendance Record of the Board and the Five Specific Committee Meetings for 2017

Name	Meeting Attendance 2017						Appointment during the Year
	Board of Directors (Total 13)	Audit Committee (Total 17)	Corporate Governance Committee (Total 5)	Nominating Committee (Total 3)	Remuneration Committee (Total 3)	Enterprise Risk Management Committee (Total 5)	
1. Mr. Piyasvasti Amranand	13/13						-
2. Prof. Dr. Kittipong Kittayarak	13/13	17/17					-
3. AM Boonsuib Prasit	12/13			3/3			-
4. Mr. Boontuck Wungcharoen	10/11				1/1		February 27, 2017 (replaced Mr. Prasert Bunsumpun)
5. Gen. Chatchalerm Chalermsook	13/13		5/5				-
6. Mr. Chanvit Amatamatuchart	13/13			3/3		5/5	-
7. Mrs. Nuntawan Sakuntanaga	10/13	15/17					-
8. Mr. Vichai Assarasakorn	12/13	17/17					-
9. Mr. Thon Thamrongnawasawat	12/13		5/5	3/3			-
10. Mr. Somsak Chotrattanasiri	13/13				2/3		-
11. Mr. Somchai Sujjapongse	10/13				3/3		-
12. Mr. Don Wasantapruet	13/13		5/5				-
13. Mr. Somkit Lertpaitoon	11/11					4/4	February 27, 2017 (replaced Mr. Areepong Bhoocha-oom)
14. Mr. Thammayot Srichuai	13/13					5/5	-
15. Mr. Tevin Vongvanich	13/13						-

Attendance Record of Retired/ Resigned Directors for 2017 (Total: 1 Director)

Name	Meeting Attendance 2017						Appointment during the Year
	Board of Directors (Total 13)	Audit Committee (Total 17)	Corporate Governance Committee (Total 5)	Nominating Committee (Total 3)	Remuneration Committee (Total 3)	Enterprise Risk Management Committee (Total 5)	
Mr. Prasert Bunsumpun	2/2				2/2		Retired on reaching the age of 65 years effective February 20, 2017.

Note:

A total of 13 Board meetings were held during the year (12 regular and one special meetings)

* Reasons for meeting absence were prior overseas trips and official engagement. Apologies letters were forwarded to the Chairman ahead of the meeting.

Corporate Management (Management)

Management team members as of December 31, 2017, were as follows:

(PTT Organization Chart is detailed under “Responsibility of the Board”)

Name	Position
1. Mr. Tevin Vongvanich	President & CEO
2. Mr. Wirat Uanarumit	Chief Operating Officer, Upstream Petroleum & Gas Business Group
3. Mr. Auttapol Rerkpiboon ^{1/}	Chief Operating Officer, Downstream Petroleum Business Group, Acting Senior Executive Vice President, Downstream Business Group Alignment
4. Mr. Chansin Treenuchagron ^{2/}	Chief Operating Officer, Infrastructure and Sustainability Management Business Group (Title changed to Chief Technology and Engineering Officer, effective January 1, 2018)
5. Mrs. Nitima Thepvanangkul	Chief Financial Officer
6. Mr. Krit Imsang	Senior Executive Vice President, Human Resources & Organization Excellence (Title changed to Senior Executive Vice President, Organization Management and Sustainability, effective January 1, 2018)
7. Mrs. Sriwan Eamrungraj	Senior Executive Vice President, Corporate Strategy

Name	Position
8. Mr. Noppadol Pinsupa	Senior Executive Vice President, Gas Business Unit
9. Miss Jiraphon Kawswat ^{3/}	Senior Executive Vice President, Oil Business Unit
10. Mrs. Boobpha Amornkiatkajorn	Senior Executive Vice President, International Trading Business Unit
11. Mr. Wittawat Svasti-xuto	Senior Executive Vice President, Sustainability Management and Project Engineering (Title changed to Senior Executive Vice President, Innovation and Digital, effective January 1, 2018)
12. Mr. Athavuth Vikitsreth ^{4/}	Senior Executive Vice President, Public Relations
13. Miss Peangpanor Boonklum ^{5/}	Senior Executive Vice President, Office of General Counsel
14. Mr. Somporn Vongvuthipornchai ^{6/}	Senior Executive Vice President, seconded to CEO, PTT Exploration and Production Plc.
15. Mr. Atikom Terbsiri	Senior Executive Vice President, seconded to President and CEO, Thai Oil Plc.
16. Mr. Supattanapong Punmeechaow	Senior Executive Vice President, seconded to President and CEO, PTT Global Chemical Plc.
17. Mr. Sukrit Surabotsopon	Senior Executive Vice President, seconded to President, IRPC Plc.
18. Mr. Toemchai Bunnag ^{7/}	Senior Executive Vice President, seconded to President and CEO, Global Power Synergy Plc.
19. Mr. Sumrid Sumneing	Executive Vice President, Group Corporate Financial and Strategy
20. Miss Wilaiwan Kanjanakanti	Executive Vice President, Group Financial and Accounting Policy
21. Mr. Chienvit Udomwatwong	Executive Vice President, Group Business Services

Note:

No. 1 - 5 are PTT Management under SEC's notification.

1/ Appointed on October 1, 2017, replacing Mr. Sarun Rungkasiri, who retired

2/ Appointed on October 1, 2017, replacing Mr. Chavalit Punthong, who retired.

3/ Appointed on October 1, 2017, replacing Mr. Auttapol Rerkpiboon, who was appointed to Chief Operating Officer, Downstream Petroleum Business Group, and acting Senior Executive Vice President, Downstream Business Group Alignment.

4/ Appointed on March 1, 2017.

5/ Appointed on October 1, 2017, replacing Mr. Supot Laosuarpha, who retired.

6/ Title changed on November 1, 2017, after PTTEP's internal restructuring.

7/ Appointed on March 1, 2017.

Duties and Responsibilities of the President & CEO

Under PTT's Articles of Association, the President is authorized and responsible for managing Board-assigned and PTT's overall business. The business shall be strictly and prudently managed with integrity under the Board-approved plans or budget, for the best interests of PTT and its shareholders.

The President's authority and responsibilities include:

- Operating or managing day-to-day business, or both.
- Hiring, appointing, removing, transferring, promoting, demoting, reducing the salary or wages of, taking disciplinary action against, and dismissing any employees under the Board's regulations.
- Ensuring the preparation and submission of business policies, including operating plans and budget estimates, for the Board's approval, and reporting performance against them to the Board every three months.
- Ensuring implementation of the Board-approved policies, plans, and budget.

The Board authorizes the President to manage PTT's business under the following scope of authority:

- Manage overall business under all objectives, Articles of Association, policies, rules and regulations, specifications, directives, and resolutions of the Board or shareholders' meetings, or both.
- Order, contact, command, implement, and sign juristic acts, agreements, orders, announcements, or correspondence with government agencies, state enterprises, or other parties and engage in any essential and suitable action to facilitate this duty.
- Command all employees, including hiring, appointing, removing, promoting, demoting, cutting the salary or wages of, taking disciplinary action against or dismissing any employees under the rules, regulations, and directives of the Board. For employees serving as advisers, senior executive vice presidents or equivalent upward, prior approval of the Board is required. The President is also authorized to specify employment conditions for employees and issue rules for PTT's operations, provided that they do not contradict with the rules, regulations, and directives of the Board.
- Assign the power of attorney and/or delegate specific tasks to other persons, provided that the action complies with the document concerning the power of attorney or rules, regulations, or directives of the Board or PTT, or both.

The authority and duties of the President stated above are invalid in case of conflicts of interest with PTT in any form resulting from the President's exercise of the authority. This year no such cases have arisen.

The Management Committee

The PTT Management Committee (PTTMC) was appointed on October 1, 2001, with the mandate of operating PTT's business. As of December 31, 2017, the committee consists of 14 members as follows:

Name	Position
1. President & CEO	Chairman
2. Chief Operating Officer, Upstream Petroleum & Gas Business Group	Member
3. Chief Operating Officer, Downstream Petroleum Business Group	Member
4. Chief Operating Officer, Infrastructure and Sustainability Management Business Group (Changed to Chief Technology and Engineering Officer on January 1, 2018)	Member
5. Chief Financial Officer	Member
6. Senior Executive Vice President, Human Resources & Organization Excellence (Changed to Senior Executive Vice President, Organization Management and Sustainability on January 1, 2018)	Member
7. Senior Executive Vice President, Gas Business Unit	Member
8. Senior Executive Vice President, Oil Business Unit	Member
9. Senior Executive Vice President, Downstream Business Group Alignment	Member
10. Senior Executive Vice President, International Trading Business Unit	Member
11. Senior Executive Vice President, Sustainability Management and Project Engineering (Changed to Senior Executive Vice President, Innovation and Digital on January 1, 2018)	Member
12. Senior Executive Vice President, Public Relations	Member
13. Senior Executive Vice President, Office of General Counsel	Member
14. Senior Executive Vice President, Corporate Strategy	Member and Secretary

The Vice President, Office of the President & Corporate Secretary, served as Assistant Secretary.

The Management Committee meets at least once a month. This year there were altogether 45 meetings (42 regular and 3 special meetings).

Duties and Responsibilities

Provide advice and recommendations to the President & CEO on significant issues regarding corporate strategy and business directions, long-term planning, business performance, investment plans, budgets, allocation of resources to PTT and its affiliates, and ensure uniformity of PTT's operations.

PTTMC also provides consultation and recommendations to the President & CEO and promotes operation in the following matters:

- Sets the visions and major responsibilities for PTT Group.
- Establishes directions, strategies, and business targets for the group along with performance targets of business units and the group as a whole.
- Screens the group's capital allocation structure (budget and resources) to support future investments and operations of the group.
- Screens investment management of PTT and PTT Group (PTT Group's Portfolio Management).
- Screens and monitors PTT's extended international investment.
- Establishes a policy on human resource management, prepares and develops the group's management of level 14 up in a systematic, professional way to be ready for its future missions in line with the Leadership Affiliation and Alignment Program.
- Screens and provides opinions and recommendations on the establishment of standards/ mechanisms for the systems of business administration, human resources and information, as well as the organizational structure of PTT and its affiliates in order to be a corporate of sustainability excellence.
- Considers, screens, defines policies and principles for the PTT Way of Conduct, and ensures that it is carried out in the desired directions.

- Ranks significant matters about the allocation of human and financial resources of PTT and its affiliates.
- Jointly resolves significant conflicts between PTT's upstream and downstream petroleum businesses.
- Follows up the progress and assesses the performance of the group against KPIs (PAs & KPIs)
- Scrutinizes risk management in business operations of the group.
- Screens meeting agendas before presenting to the Board.
- Ranks Board decisions to ensure effective implementation.
- Appoints committees or working groups, or both, to assist the Board's tasks.
- Performs other work as may be assigned by the President & CEO.

To efficiently manage PTT Group to drive the strategies and operations of the companies to achieve their goals, PTT has divided its committees into three groups:

1. Strategy Committees:

- 1.1 PTT Group Management Committee: PTTGMC
- 1.2 PTT Management Committee: PTTMC (as mentioned above).

2. Coordination Committees:

- 2.1 Upstream & Gas Business Group Alignment & Coordination Management Committee (UAC)
- 2.2 Downstream Business Group Alignment & Coordination Committee (DAC)
- 2.3 Infrastructure & Sustainability Management Business Group Alignment & Coordination Committee (IAC)
- 2.4 Technology Alignment Committee (TAC)
- 2.5 Sustainability Alignment Committee (SAC)
- 2.6 Gas Business Strategic Alignment Committee (GBSC)
- 2.7 Oil Business Strategic Alignment Committee (OBSC)
- 2.8 Petrochemicals & Refining Business Strategic Alignment Committee (PRSC)
- 2.9 Trading Business Strategic Alignment Committee (TBSC)
- 2.10 Trading Risk Management Committee (TRMC)

3. Support Committees:

- 3.1 Corporate Plan and Risk Management Committee (CPRC)
- 3.2 Human Resources Group Alignment & Coordination Management Committee (HRAC)
- 3.3 Finance & Accounting Group Alignment & Coordination Management Committee (FAAC)
- 3.4 PTT Group KM Committee
- 3.5 PTT Group Internal Audit Management Committee
- 3.6 PTT Group Digital Steering Committee
- 3.7 PTT Group Policy & Strategic Sourcing Committee
- 3.8 PTT Group Quality, Security, Safety, Health, and Environment Management Committee (QSHEGMC)
- 3.9 PTT Group Brand Equity Optimization Committee
- 3.10 PTT Group Operational Excellence Committee
- 3.11 PTT Group Corporate Governance Committee
- 3.12 PTT Group CSR Committee

Corporate Secretary

To comply with the CG principles for listed companies contained in the category of “directors’ responsibility” and the terms of the Securities and Exchange Act, the Board has designated a Corporate Secretary. This position is charged to provide legal advice and related regulations which are mandatory for the Board to comply with; organize meetings; supervise Board activities to enable them to perform efficiently and effectively for the maximum benefit to PTT; prepare and maintain critical documents, including directors’ registration, Board meeting notices and minutes, annual reports; issue shareholders’ meeting notices and minutes, and reports of the interests of directors and managements.

The position of Corporate Secretary was established in 2008. Currently, Mrs. Wantanee Jaruke, Vice President, Office of President and Corporate Secretary, serves as the Corporate Secretary, effective from December 1, 2013.



Corporate Secretary

Mrs. Wantanee Jaruke

Corporate Secretary

Since December 1, 2013

Age: 57

Number of shares held: 0.000430%

Education:

- Bachelor of Arts (German), Chiang Mai University
- Master of Business Administration, Kasetsart University

Company Secretary Training Record:

- The Thai Institute of Directors Association (IOD):
Company Secretary Program (CSP 2/2002)
Effective Minutes-Taking (EMT 1/2006)
Board Reporting Program (BRP 9/2012)
Company Reporting Program (CRP 4/2012)
Anti-Corruption the Practical Guide (ACPG 11/2014)
Corporate Governance for Executives (CGE 1/2014)
Director Certification Program (DCP 215/2016)
Ethical Leadership Program (ELP), IOD
- TLCA: Executive Development Program (EDP 7),
Thai Listed Companies Association
- Company Secretaries, Trueeventus, the Philippines (2013)
- Leadership Development Program,
Centre for Creative Leadership, Singapore (2015)
- Professional Exchange Program,
Hong Kong Institute of Chartered Secretaries, Hong Kong (2016).

Professional Experience:

- 2002 - 2005 Expert, Office of the President and Corporate Secretary, PTT
- 2006 - 2013 Team Leader, Office of the President and Corporate Secretary, PTT
- 2013 - Present Vice President, Office of the President and Corporate Secretary, PTT

Related Important Positions Held: None

Extra Activity:

- Committee of Thai Company Secretary Club,
Thai Listed Companies Association
- Executive Committee of the Chulalongkorn University Preparatory
School Alumni Association under His Royal Patronage (CUPSAA)

Relationship with Executives: None

Remuneration of Directors and the Management

The Remuneration Committee is required to be in place to support PTT with the determination and validation of a fair and sensible remuneration policy. The committee considers compensation based on appropriateness, individual responsibility of members of the Board, corporate's financial status, and practices of other corporate of the same sector. The compensation is composed of meeting fee for attendance and bonuses. Besides, the additional allowance is paid to the directors who are appointed to the committees. Shareholder-approved directors' compensation rates are as follows:

Directors' Compensation

> Board's Compensation

The following compensation structure for the Board was approved at the 2017 AGM on April 28, 2017:

1. Meeting Allowances

1.1 Board Meeting compensation consisted of:

- Retainer fee of THB 30,000 per month (same rate as last year)
- Meeting allowance of THB 50,000 for each meeting (same rate as last year) for those who attend the meeting only. Payment of meeting allowances must not exceed 15 times per year.

1.2 Compensation for other Committee meetings (same rate as last year) consisted of:

1.2.1 Audit Committee

- Monthly allowance of THB 15,000 each
- Meeting allowance of THB 15,000 for each meeting for those in attendance only, whereas the Secretary received a monthly allowance of THB 7,500.

1.2.2 Compensation for other committees, namely **the Nominating, Remuneration, Corporate Governance, Enterprise Risk Management Committees** and other sub-committees to be appointed by the Board as necessary, consisted of a meeting allowance of THB 24,000 for each meeting (members who attend meeting only)

1.3 Compensation for the Chairman of each committee was 25% higher than other members.

> Directors' Bonuses in 2017 (same rate as last year)

Bonus payouts for each director, at 0.05% of the net profit of 2017, corresponded to PTT's performance and net profit, with a maximum limit of THB 3 million per person (same rate as last year). Bonuses were prorated to each director's term, with the Chairman receiving 25% higher than individual directors.

Remuneration for Directors in 2017

Unit: THB

No	Name	Days of Service Jan - Dec 2017	Bonus 2017	Meeting Allowance (Inclusive of Monthly Allowance)	Committee Meeting Allowance	Total Allowance	Total Remuneration
1.	Mr. Piyasvasti Amranand	365	3,750,000.00	1,262,500.00	-	1,262,500.00	5,012,500.00
2.	Mr. Kittipong Kittayarak	365	3,000,000.00	1,010,000.00	543,750.00	1,553,750.00	4,553,750.00
3.	AM Boonsuib Prasit	365	3,000,000.00	960,000.00	90,000.00	1,050,000.00	4,050,000.00
4.	Mr. Boontuck Wungcharoen*	307	2,523,287.67	801,175.12	30,000.00	831,175.12	3,354,462.79
5.	Gen. Chatchalerm Chalernsukh	365	3,000,000.00	1,010,000.00	150,000.00	1,160,000.00	4,160,000.00
6.	Mr. Chanvit Amatamatucharti	365	3,000,000.00	1,010,000.00	222,000.00	1,232,000.00	4,232,000.00
7.	Mrs. Nuntawan Sakuntanaga	365	3,000,000.00	860,000.00	405,000.00	1,265,000.00	4,265,000.00
8.	Mr. Vichai Assarasakorn	365	3,000,000.00	960,000.00	435,000.00	1,395,000.00	4,395,000.00
9.	Mr. Thon Thamrongnawasawat	365	3,000,000.00	960,000.00	192,000.00	1,152,000.00	4,152,000.00
10.	Mr. Somsak Chotrattanasiri	365	3,000,000.00	1,010,000.00	48,000.00	1,058,000.00	4,058,000.00
11.	Mr. Somchai Sujjapongse	365	3,000,000.00	860,000.00	72,000.00	932,000.00	3,932,000.00
12.	Mr. Don Wasantapruek	365	3,000,000.00	1,010,000.00	120,000.00	1,130,000.00	4,130,000.00
13.	Mr. Somkit Lertpaitoon*	308	2,531,506.85	852,142.86	96,000.00	948,142.86	3,479,649.71
14.	Mr. Thammayot Srichuai	365	3,000,000.00	1,010,000.00	120,000.00	1,130,000.00	4,130,000.00
15.	Mr. Tevin Vongvanicha ^{a/}	365	3,000,000.00	1,010,000.00	-	1,010,000.00	4,010,000.00
Total			44,804,794.52	14,585,817.98	2,523,750.00	17,109,567.98	61,914,362.50

a/ Mr. Tevin Vongvanich returned all of his remuneration to PTT in compliance with the employment agreement of President. In addition, the President & CEO returned to PTT all the remuneration earned in 2017 when serving as Chairman or director (or both) in two companies in PTT Group: from PTT Exploration and Production Company Limited for THB 2,389,473.09 and IRPC Public Company Limited for THB 4,045,991.00, in compliance with the employment agreement of President.

Note:

- * No. 4, Mr. Boontuck Wuangcharoen was appointed director on February 27, 2017, and resigned on December 31, 2017
No. 13, Mr. Somkit Lertpaitoon was appointed director on February 27, 2017.

A vehicle was provided to the Chairman to facilitate his duties only.

Retired and Resigned Directors (2017)

Unit: THB

No.	Name	Days of Service Jan - Dec 2017	Bonus 2017	Meeting Allowance (Inclusive of Monthly Allowance)	Committee Meeting Allowance	Total Allowance	Total Remuneration
1.	Mr. Prasert Bunsumpun	50	410,958.90	150,357.14	60,000.00	210,357.14	621,316.04
Total			410,958.90	150,357.14	60,000.00	210,357.14	621,316.04

Note:

Mr. Prasert Bunsumpun was appointed director on April 11, 2013, and retired from the position on reaching the age of 65 years, with effect from February 20, 2017.

Directors' Remuneration Profile of 2014 - 2017*

Unit: THB

Remuneration	2014		2015		2016		2017	
	Person	THB	Person	THB	Person	THB	Person	THB
Meeting Allowance	14	17,632,709.70	15	18,232,411.29	15	15,883,015.57	15	17,319,925.12
Bonuses	14	27,680,910.81	15	9,664,610.82	15	41,717,213.11	15	45,215,753.42
Total		45,313,620.51		27,897,022.11		57,600,228.68		62,535,678.54

Remark:

* 2015, 2016, 2017 Directors' Remuneration as shown in the table including the remuneration of Mr. Tevin Vongvanich with already returned to PTT.

Remuneration to Independent Directors Serving as Independent Directors of Subsidiaries* in 2017

Remuneration to those serving as independent directors of PTT Global Chemicals Plc. (PTTGC):

Name	Director's Remuneration		Committee Meeting Allowance	Total Remuneration
	Bonus	Meeting Allowance and Monthly Allowance		
Mr. Prasert Bunsumpun**	4,097,626.51	1,360,000.00	-	5,457,626.51
Mr. Don Wasantapreuk	3,278,101.21	1,050,000.00	240,000.00	4,568,101.21

* According to the new International Financial Reporting Standards.

** Mr. Prasert Bunsumpun retired from the position on reaching the age of 65 years, with effect from February 20, 2017.

Management's Remuneration

> Management's Remuneration

Management's remuneration is determined with regarding to policy and criteria given by the Board, and corresponding to PTT performance under the Performance Agreement (PA). The President & CEO, all executives and management annually set KPIs and adopt it as a direction for business operation and the President & CEO's assessment. The Remuneration Committee decided the remuneration, which reflects performance management, taking into account the practices and standards of leading companies within business sector. The decisions on both criteria and the final amount of compensation are subjected to the Board approval.

According to SEC's definition, PTT's "management" includes the President & CEO; Chief Operating Officer, Upstream Petroleum & Gas Business Group; Chief Operating Officer, Downstream Petroleum Business Group; Chief Operating Officer, Infrastructure and Sustainability Management Business Group; and Chief Financial Officer. The compensation paid to the PTT's management (excluded those seconded to PTT affiliates and those from PTT affiliates seconded to PTT) are detailed below:

Total Remuneration Paid to Top Management in 2017

Unit: THB

Remuneration	2017				
	President & CEO	Management (under SEC criteria)		Total	
		Person	THB	Persons (incl. President & CEO)	THB
Salary	32,460,000	4	27,127,470	5	59,587,470
Bonus	10,571,000	4	12,309,880	5	22,880,880
Total	43,031,000		39,437,350		82,468,350

Note:

The salary of the President & CEO includes an allowance for his additional tasks, namely holding the position of Chairman of the Board or Director (or both) of PTT's subsidiaries. He has already returned to PTT the remuneration earned as Chairman of the Board or Director (or both) of PTT, PTTEP, and IRPC in compliance with his employment agreement.

Total Remuneration Paid to the Management from 2014 to 2017

Unit: THB

Remuneration	2014		2015		2016		2017	
	Person	THB	Person	THB	Person	THB	Person	THB
Salary	10/5	56,454,960.00	5	51,686,336.00	5	56,614,080	5	59,587,470
Bonus	10/5	34,428,132.00	5	17,158,259.00	5	22,617,040	5	22,880,880
Total		90,883,092.00		68,844,595.00		79,231,120		82,468,350

Provident Fund Contribution to the Management from 2014 to 2017

Unit: THB

Remuneration	2014		2015		2016		2017	
	Person	THB	Person	THB	Person	THB	Person	THB
Provident Fund	9/4	4,937,228.80	4	5,086,634.00	4	3,518,977.20	4	3,632,300.50

Additional Information on the Board and the PTT's management

Records have shown no violation of the law within the past 10 years regarding:

- 1) Being sentenced for criminal charges, except for violations of traffic law, petty charges, or similar charges.
- 2) Being sentenced to bankruptcy or having assets controlled.
- 3) Serving as an executive or an authority in a company or partnership sentenced to bankruptcy or whose assets are controlled.

Employees

To PTT, the employees are its most important asset for business running and a key to success depends on its qualified personnel. Therefore, PTT concentrates on the development of HR management systems so that it can be compatible with international standard and technological advancement. It does not only promotes both conscientious merit and business competence for its employees, but also encourages them to actively take part in public service. It is indeed through employees that PTT focuses on its development toward a sustainability organization to elevate competitiveness, respond to internal mobility and enhance national energy security.

> Headcount and Compensation

PTT employee' headcount (including those seconded to PTT's affiliates) in 2017 stood at 4,616. PTT has continued to set its manpower plan in line with its operations under uncertain economic conditions. The focus is on allocating resources where significant value supplementation is likely or where continuing investment is needed.

The business-group headcounts from 2014 to 2017 are as follows:

Business Unit	2014		2015		2016		2017	
	PTT	PTT Group	PTT	PTT Group	PTT	PTT Group	PTT	PTT Group
1. Gas	1,323	-	1,289	-	1,283	-	1,281	-
2. Oil	1,409	-	1,465	-	1,440	-	1,486	-
3. Petrochemicals and Refining	93	-	83	-	105	-	100	-
4. Infrastructure Business Group	201	-	342	-	492	-	507	-
5. Support staff/ secondees to PTT affiliates	1,218 ^{1/}	272 ^{2/}	1,203 ^{1/}	278 ^{2/}	1,042 ^{1/}	254 ^{2/}	1,084 ^{1/}	239 ^{2/}
6. Subsidiaries and jointly-controlled entities	-	25,714	-	24,512	-	24,680	-	25,036
Total	4,244	25,986	4,382	24,790	4,362	24,934	4,458	25,275

Notes:

1/ Excludes PTT secondees

2/ PTT secondees

Remuneration for Personnel (excluding the President & CEO and the management) from 2014 to 2017

Unit: THB

Remuneration	2014	2015	2016	2017
Salary	3,729,946,652.00	4,000,980,185.00	4,080,267,146.00	4,282,921,717.48
Bonus	1,869,490,435.00	1,647,437,327.00	2,136,905,643.00	2,115,503,048.90
Provident Fund Contributions	434,836,637.00	468,316,181.00	481,014,787.00	506,518,662.19
Others (if applicable)	2,750,517,905.00	2,676,017,663.00	2,953,091,552.00	3,778,463,866.70
Total	8,784,791,629.00	8,792,751,356.00	9,651,279,128.00	10,683,407,295.27

Other Remuneration

In addition to salary, bonus, and provident fund, PTT provides management and employees welfare and other compensation programs based on economic conditions, the cost of living, and other standards for peer companies and with PTT's current and future performance. Considering in long-run and fairness to employees with more experience and skills or wider scope of duties, PTT also revises and improves this type of remuneration constantly to be in line and compatible with peer companies, for instance, a revision on rate of medical welfare, or salary increase at promotion.

HR System Development and Improvement

Running towards becoming an organization with sustainability, PTT has established and improved its HR management processes and mechanisms consistently in order to encourage employees to fully participate with their skills and knowledge contributing to company success. PTT employees are able to fully demonstrate their competence, advance in their careers, and continue to grow with PTT.

PTT has focused on participation across all level to map their own business plans based on corporate direction and targets as a whole. To this end, it has instituted to a process in which the senior management of PTT and its affiliates along with support staff jointly define a vision and directions before propagating the agreed items for other units to apply in defining business strategies and business plans and come up with budget plans in broad alignment. All PTT employees defined individual objectives and KPIs cascaded through the ranks from the corporate, department, to the individual levels. Such objectives and indicators defined by employees then served as a framework for performance and performance assessment standards to reflect individual performance.

PTT has applied Career Management guidelines to prepare and promote the management and all employees with skills and knowledge to fit the PTT-designed model in coping with its missions and creating value for the organization. PTT has applied this model in developing all its employees for greater efficiency by dividing employees into two professional groups (senior management and employees) with clear, efficient interconnected systems for recruitment, assessment, and individual development planning (IDP) in place.

- Senior management (equivalent to vice presidents upward) undergoes Group Leader Development, which sustains the needs of high-level executives in both quantity and quality. Management of this group is supervised by a panel of CEOs in PTT Group called the "PTT Group Management Committee (PTTGMC)", responsible for defining directions and policies for development plans for senior management. Another team, called "Human Resources Group Alignment & Coordination Management Committee (HRAC)", provides counseling and recommendations to the Senior Executive Vice President, Human Resources & Organization Excellence, to enhance decision-making on key coordination issues regarding human resource development strategies and directions of the PTT Group to align with those of PTT.

- Employees (division manager or equivalent downward): This internal management is specific to PTT or a PTT Group companies in developing employees to suit operational needs. For PTT, a Corporate Human Resources Committee (HRC) was established to promote and monitor career development planning to ensure goal achievement. A Career Counseling Teams (CCT) for 17 professional groups takes charge of defining and developing individuals, providing counseling and guidance, and monitoring and following up implementation. The individual development plan is a tool for employees to set their goals and develop their career paths and add value to their work in line with PTT's directions and goals. Such employee development can be undertaken through proper training via success profiles or job rotation in line with their career paths. This will enable all employees to develop skills in their new positions, as do suitable appointments and promotions in line with their responsibilities and potential. With this development framework, employees will be qualified to assume top management positions of PTT Group and enable PTT to achieve its goals.

Apart from implementing HR development under the above-mentioned guidelines, PTT takes the environmental issues seriously and holding environmental courses for related employees and interested parties to enhance their awareness. In 2017, the following courses were conducted:

No.	Name of the business event	Start date	End date	Location	Attendees
1.	SSHE Training 1	5/1/2017	7/12/2017	Head Office	262
2.	Basic Safety, Occupational Health and Environment	13/3/2017	19/5/2017	Head Office	60
3.	Collecting and Reporting Data on Environmental Performance for Those who Collect and Report Data (HO)	19/4/2017	2/11/2017	Head Office	24
4.	Collecting and Reporting Data on Environmental Performance for Those who Collect and Report Data (Rayong, Chon Buri)	26/4/2017	3/11/2017	Rayong Gas Separation Plant	11
5.	Consideration and Approval of the Data on Environmental Performance for Management (HO)	21/4/2017	21/4/2017	Head Office	7
6.	Consideration and Approval of the Data on Environmental Performance for Management (Rayong, Chon Buri)	28/4/2017	28/4/2017	Rayong Gas Separation Plant	3
7.	Verifier of Occupational Health, Safety, and Environment Performance PTT Group	6/7/2017	7/7/2017	Head Office	4
8.	Introduction & Internal auditor ISO14001:2015	24/5/2017	22/9/2017	Head Office	81
9.	Collecting and Reporting Data on Greenhouse Gas Emission	30/10/2017	30/10/2017	Head Office	10
Total					462

In 2017, PTT held the fifth “Young People to Globalization (YP2G)” program to select qualified personnel for overseas posting in line with PTT’s strategies. These personnel will receive additional training to prepare and develop them for the work. They will be assigned some tasks related to PTT’s international business development or international related businesses. This will enable them to learn and accrue experience in business acumen through on-the-job training (OJT).

Valuing career and competency management, PTT did not only prepare and review the success profile and career path of each position, but also assessed success profiles for alignment with the performance cycle. The employees were urged to discuss their responsibilities with their supervisors (two-way communication) at the beginning of the year. These responsibilities were monitored and evaluated at mid-year and the end of the year to monitor or formulate individual development plans (IDPs), or both, for the employees.

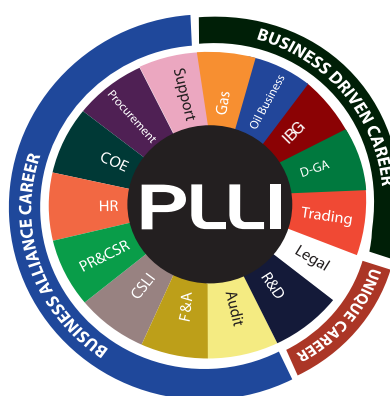
PTT Group encourages and supports employees’ learning through “PTT Leadership and Learning Institute (PLLI)”, whose vision is to be the top energy leadership development institution in ASEAN in 2020, with goals in establishing standards in capacity-building of employees through the management and implementation of compulsory courses for all PTT employees in the same direction.

PLLI has continually provided capacity-building courses for the management and employees to be smart and conscientious, leadership development grooming for organization’s growth, and staff capacity-building to prepare them for corporate core competencies and strategic challenges. It has upgraded its learning and development course structure to support business direction and strategies and maximize the development of employees’ capacity and modern management. PLLI’s course structure covers the development of all employees, from the new recruits to top management, as follows:

1. Leadership Development Program is designed for preparing and accelerating the development of PTT’s high-potential management team members in terms of skill, knowledge and ability in people and business management. The program concentrated on leadership, in views of self, staff, and organization through learning, knowledge-sharing and experience-sharing with world-class instructors, including learning and experience sharing of top management, internal and external.

2. Core Programs are designed for all employees deiving by their level and position. The supervisor must support the employee for training in this program. The program comprises compulsory courses, direction assignment, and essential program (personal wellness).

3. Functional Programs are specific courses for each professional/ group that develop the employees in each line position, from the beginners to experts. PLLI in collaboration with the Functional Academy, established by PTT, conducts this course to systematically develop corporate knowledge and encourage each unit line position to share knowledge and experience within their line position.



4. Elective Program is designed to develop the capacity of each individual needs. The line supervisor and employee will together choose the additional courses as suitable and necessary, for example, English and Presentation courses.

Summary of Human Resource Development

Hour/person/year

Training hours/person/year	2013	2014	2015	2016	2017
Employee	63.0	35.24	55.11	68.40	40.62
Management	43.0	22.61	30.02	20.91	25.12

THB/person/year

Expense/person/year	2013	2014	2015	2016	2017
Employee & Management	58,000.00	55,435.37	34,476.36	35,168.35	37,837.83

Fostering Positive Relations between the Management and Staff in Search of the Same Goal

Communication between the management and staff at PTT comes in various forms. Needing to be aware of corporate business, obstacles, and potential repercussions, all employees should be allowed to share their views and take part in business efficiency improvement. Each year, besides the monthly labor relations committee meetings, PTT holds Joint Consultation Committee (JCC) meetings between its management team and staff of regional offices nationwide. In addition, the President & CEO does not only constantly hold regular meetings with employees, but also annually surveys employees' satisfaction and engagement for views and suggestions for improvement. PTT believes that proper communication and information exchange among all staff and management will produce smooth relationships and cooperation, thus driving the organization toward goal achievement. Moreover, PTT surveys the basic human resource needs of the management and staff through the operation of various committees, such as the Human Resource Management Committee, PTT Labor Relations committee, and Career Path Management Committee. A survey of staff opinions was undertaken by an external human resource management adviser. There was also cooperation with PTT Group to jointly develop a database of the management as well as development plans of senior management.

PTT Group Core Values

PTT Group Core Values

PTT Group defined the PTT Group core values as SPIRIT, which is significant in molding PTT management and employees to possess work behavior in the same direction, clearly reflecting PTT's identity of smart, conscientious and responsible for society, communities and the nation.



HPO

- Energy security
- Economic prosperity
- National sustainable growth
 - Knowledge management
 - Technology and innovation research and development

CSR

- Create common value for society and business alike under the concept of social enterprise)
- Drive society and move forward together through CSR activities
 - Human resource development
 - Social and community development
 - Natural resources and environmental conservation

CG

- Manage the organization transparently
- Form an anti-corruption network with every sector
- Create trust and be responsive to stakeholders' expectations with balanced interest

Succession Planning

Because PTT is a state enterprise, the processes of nomination and appointment of the President & CEO must follow the Standard Qualifications of Directors and State Enterprise Officer Act. Directors must possess the qualifications as specified in Article 8 ter and the nominating procedures as specified in Article 8 quarter. The Board is to appoint a Nominating Committee, with five members duly qualified and without prohibitions under the law, which nominates persons with appropriate knowledge, capability, and experience to fill the positions of PTT management. Candidates must be legitimately qualified and without prohibitions under the laws and are not PTT directors, except for management team members who are directors by title. They must not be older than 58 years old on the date of application submission. When the Nominating Committee selects appropriate candidates, it submits the results to the authority. The appointment must be completed within one year from the day the incumbent vacates the position. Each employment contract lasts up to four years for each term. In case of the Board willing to hire previous management team member after the completion of his term as specified in the hiring contract, the nomination process is not required but hiring the person for more than two consecutive terms is prohibited. In 2015, the Board proceeded with the nomination of the new President to replace Mr. Pailin Chuchottaworn, who would complete his term

on September 9, 2015. The Nominating Committee was appointed as required by the Standard Qualifications for State Enterprise Directors and Officials Act. Four fully qualified candidates applied for the position, consisting of three PTT managements personnels and one non-PTT management person. The nominating process was transparently conducted in compliance with Section 8, paragraph 3, of the above-mentioned act (No. 6) B.E. 2550. The Nominating Committee proposed a qualified candidate, Mr. Tevin Vongvanich, to the Board for consideration. On June 26, 2015, the Board approved the Committee's proposal and appointed him President & CEO, replacing Mr. Chuchottaworn. Mr. Tevin Vongvanich assumed office on September 10, 2015, and his term will be completed in two years and 11 months from the date of appointment since Mr. Tevin will be 60 years old on August 30, 2018.

PTT has been grooming top management to become qualified candidates for the next President's nomination. It has also prepared successors to replace the retiring top management during 2017 and 2021. Furthermore, PTT lays out a policy/direction to develop PTT Group's top management, and formulates the IDPs by preparing a management pool consisting of 297 management personnels and a potential pool in key areas.

In 2007, PTT set up a Group Leader Development Program (GLDP) to develop a succession plan for potential leaders to assume higher positions that become vacant, namely

- President
- Senior Executive Vice President (SEVP) or equivalent
- Executive Vice President (EVP) or equivalent
- Vice President (VP) or equivalent.

Core responsible management parties and units are as follows:

- PTT Group Management Committee: PTTGMC
- PTT Group Management Committee-Minor: PTTGMC-Minor
- Human Resources Group Alignment & Coordination Management Committee: HRAC
- Human Resources Management Committee: HRMC
- Corporate Human Resources Committee (HRC).

Performance in 2017

- Selection of SEVP pool members from EVPs (PTT Group)
 - 30 pool members (as of December 31, 2017)
 - 27 pool members already promoted (2008 - 2017)
- Selection of EVP pool members from VPs (PTT Group)
 - 121 pool members (as of December 31, 2017)
 - 45 pool members already promoted (2009 - 2017)
- Selection of VP pool members from PTT division managers (PTT)
 - 146 pool members (as of December 31, 2017)
 - 153 pool members already promoted (2009 - 2017)

Labor Disputes

No reports of PTT labor disputes were received over the past three years.



Corporate Governance

Corporate Governance Policy

As the national energy company (officially a state enterprise) and a listed company on The Stock Exchange of Thailand (SET), PTT recognizes its vital mission of good management filled with transparency, establishing equitability among all stakeholders while striving to develop itself into a corporate governance (CG) role model. CG under good management will bring about fairness, investors' confidence, create long-term value for shareholders, boost all stakeholders' confidence, and give the corporation a most suitable, efficient, and effective management systems while enhancing its competitiveness for sustainable growth.

Ever since the privatization into PTT Plc and distribution of its shares on SET in late 2001, the Board of Directors has adopted CG as its guiding principles. PTT regulations state: "The Company must have and implement a policy on its business ethics, including the ethics of its Board of Directors, senior executives, the management, and employees in compliance with good CG practices as its code of conduct for the proper conduct of the organization with a high standard." PTT has issued its rules on CG in 2001 and revised them in 2014. It published the first CG Handbook in 2003 and delivered to each director, the management, and the employees to sign, acknowledge, and comply with. The handbook was revised

in 2005, 2009, 2013, and 2016 - 2017. The latest revision complied with SET's CG of listed companies as well as comments and recommendations from IOD's Corporate Governance Assessment Report, which was revised in line with the ASEAN Corporate Governance Scorecard (ASEAN CG Scorecard) and best practices of leading international companies. The handbook was renamed "Corporate Governance, Ethical Standard, and Code of Conduct Handbook". Essential provisions added to the handbook are:

- More details on complaint channels for ethics and the code of conduct
- More details on guidelines on insider trading by asking the Board of Directors, executives, and all those involved to refrain from PTT Group securities trading. In case of necessity, all details must be informed to the Corporate Secretary in advance
- More details on composition and qualifications of the Board and appointments, including the independence of the Chairman
- More details on roles for directors and the Chairman
- More details on qualifications and roles of the Board's committees

- More details on Board performance assessment and development
- More details on business ethics and code of conduct concerning anti-money laundering
- More details on guidelines for acceptance and giving of presents, monetary values, or other benefits

PTT has integrated CG in its vision, missions, and core values as part of its sustainable growth strategy, to become a leading Thai energy company and a high-performance organization to grow its competitiveness, focus on creating shared value (CSV), and provide appropriate returns to its stakeholders on the basis of CG principles.

Corporate Governance Policy

PTT duly reviewed its CG Policy and handbook to suit prevailing economic and social circumstances and requires all directors, the management, and employees to acknowledge it in writing and observe all policies in their work to illustrate the commitment to practical application of such policy and code of conduct to their jobs. The Board's policy on CG is as follows:

1. The Board, management, and all employees are committed to the six essentials of CG: Accountability, Responsibility, Equitable Treatment, Transparency, Vision to Create Long-Term Value, and Ethics. An organization structure balances the roles of the Board, management, and shareholders.

2. Directors must perform their duties independently with full commitment, responsibility, and independence. There is a clear division of responsibilities between the Chairman and the President & CEO.

3. Playing a key role in the formulation of the corporate vision, strategies, policies, and key plans with due regard for risk factors and suitable risk management, the Board must also ensure the credibility of PTT's accounting system, financial statements, and accounting audit.

4. To lead PTT on ethics and CG, the Board must supervise the management and provide solution to any conflicts of interest or related transactions.

5. The Board may appoint committees to help it screen critical issues.

6. The Board must undergo annual self-assessment to obtain a framework for its performance assessment.

7. The Board must establish a code of conduct for itself, the management, employees, and all contract employees to observe in addition to PTT's regulations.

8. The Board must arrange for disclosure of financial and non-financial information to be carried out adequately, credibly, promptly, and fairly for all shareholders and stakeholders. To investors and the public, Corporate Communications and Investor Relations are responsible for such disclosure.

9. For fair treatment, the Board must arrange for PTT shareholders to access information through proper communication channels with PTT.

10. The Board must ensure a proper recruitment procedure for the appointment of key management personnel under a fair and transparent nomination process.

11. The Board must establish an efficient anti-corruption system to ensure that the management is aware of actions on anti-corruption, as well as complying with anti-corruption measures.

PTT publicized on PTT Intranet and on its website the latest version of its "Corporate Governance, Ethical Standard, and Code of Conduct Handbook" in Thai and English for the benefit of and reference for investors and foreign interested parties together with stakeholders.

1. Shareholders' Rights

As the owners, the shareholders are entitled to set PTT's direction or decide on matters of significant impacts. Shareholders' meetings therefore serve as their key forums for the expression of views, questioning, and voting, apart from the election of directors to supervise PTT's operations on their behalf. Shareholders are entitled to attend shareholders' meetings, take adequate deliberation time, and acknowledge meeting minutes.

1.1 Shareholders' Meetings

PTT schedules an annual general meeting of shareholders (AGM) within four months of the annual closing date of its accounting books. For urgent matters that affect or involve shareholders' interests or involve conditions, regulations, or laws that require the shareholders' approval, however, it can call an extraordinary meeting of the shareholders.

This year the AGM held on April 28 at the Bangkok Convention Center, 5th floor, CentralPlaza Lardprao Shopping Complex, 1695 Phaholyothin Road, Chatuchak District, Bangkok. No extraordinary meeting was held this year.

1.2 Delivering Meeting Notices

For this year's AGM, Board Meeting No. 3/2560 (2017) of March 17, 2017, decided to call a meeting on April 28, 2017. Its decision, meeting date, and meeting agenda were disclosed in detail in advance by announcing on SET's website to notify shareholders before sending meeting notices. PTT assigned Thailand Securities Depository Co., Ltd. (TSD), its securities registrar, to mail a notice of meeting together with agenda details and accompanying documents, supplementary and supporting information for decision-making, opinions of the Board, complete minutes of the last meeting, the annual report, meeting documents, and proxy forms with complete instruction for shareholders more than 14 days before the meeting date. The meeting notices were sent on April 7, and three days before the meeting, the invitation was announced through one Thai and one English newspaper, each for three consecutive days (April 22 - 24), to allow shareholders enough time to prepare themselves for the meeting.

The AGM meeting notice and supporting documents were made available at PTT's website (<http://www.pttplc.com>) 30 days ahead of the meeting date (starting March 28, 2017).

1.3 On the Meeting Date

Before the meeting, the Chairman of the meeting introduced the directors, the management, the external auditor, and the legal adviser who served as a neutral party. The Chairman then elaborated on the voting and vote counting for individual agenda items under PTT's Articles of Association, as well as how to vote on each agenda item. Once information had been provided on each item, the Chairman gave the floor to all attendees to give comments or recommendations and ask questions, giving adequate time for debate. The Chairman and the management answered all questions clearly and precisely, treating all questions with due respect. For the election of directors, individual votes were required.

The Chairman ensured that the meeting proceeded by the order of the agenda and no additional items without notifying shareholders in advance, except there are at least two-thirds of the votes of the shareholders in attendance. Alternatively, the shareholders with at least one-third of tradable shares may ask the meeting to consider other matters not mentioned in the meeting notice. At the 2017 AGM, the order of the agenda was not changed, and there was no request to consider any other matter.

At every meeting, the minutes must be completely and accurately recorded with the vote tally on each applicable agenda item. As a rule, a shareholders' meeting lasts 3-4 hours. The 2017 AGM began at 9.30 a.m., with registration beginning at 7.30 a.m. At the meeting's opening, a total of 2,618 shareholders registered, of whom 1,125 were shareholders and 1,493 were proxy holders, holding a total of 2,040,915,542 shares, or 71.45% of the total shares, which exceeded one-third of all PTT's sold shares of 2,856,299,625, with the following attendees:

Board of Directors

1. Mr. Piyasvasti Amranand	Chairman/ Independent Director
2. Prof. Dr. Kittipong Kittayarak	Independent Director/ Chairman, Audit Committee
3. AM Boonsuib Prasit	Independent Director/ Chairman, Nominating Committee
4. Gen. Chatchalerm Chalermsook	Independent Director/ Chairman, Corporate Governance Committee
5. Mr. Boontuck Wangcharoen	Director/ Chairman, Remunerating Committee
6. Mr. Chanvit Amatamatuchart	Independent Director/ Member, Nominating Committee/ Chairman, Enterprise Risk Management Committee
7. Mr. Vichai Assarasakorn	Independent Director/ Member, Audit Committee
8. Mrs. Nuntawan Sakuntanaga	Independent Director/ Member, Audit Committee
9. Mr. Thon Thamrongnawasawat	Independent Director/ Member, Nominating Committee/ Member, Corporate Governance Committee
10. Mr. Somchai Sujjapongse	Director/ Member, Remunerating Committee
11. Mr. Somsak Chotrattanasiri	Independent Director/ Member, Remunerating Committee
12. Mr. Don Wasantapruek	Independent Director/ Member, Corporate Governance Committee
13. Mrs. Somkit Lertpaithoon	Independent Director/ Member, Enterprise Risk Management Committee
14. Mr. Thammayot Srichuai	Director/ Member, Enterprise Risk Management Committee
15. Mr. Tevin Vongvanich	Director and Corporate Secretary/ President & CEO

Executives

1. Mr. Wirat Uanarumit	Chief Operating Officer, Upstream Petroleum & Gas Business Group
2. Mr. Sarun Rungkasiri	Chief Operating Officer, Downstream Petroleum Business Group
3. Mrs. Nitima Thepvanangkul	Chief Financial Officer
4. Mr. Chavalit Punthong	Chief Operating Officer, Infrastructure and Sustainability Management Business Group

Also in attendance were senior executive vice presidents, executive vice presidents, and executives from PTT Group at the front of the stage, ready to address queries and provide information for relevant questions. Independent directors also served as proxies for minor shareholders.

External Auditors

1. Miss Mayuree Chanthama	Office of the Auditor – General
2. Miss Metawee Suaysom	Office of the Auditor – General
3. Miss Runguthai Thongsai	Office of the Auditor – General

Legal Advisers (to proctor balloting in case of disputes during the meeting)

1. Miss Peangpanor Boonklum	Weerawong, Chinnavat & Partners, Ltd.
2. Miss Chositar Daecharux	Weerawong, Chinnavat & Partners, Ltd.
3. Mr. Sathaporn Jumsuk	South Asia Law Co., Ltd.
4. Mr. Gun Vasharkorn	South Asia Law Co., Ltd.

Number of Shareholders (at the meeting's conclusion at 1:16 p.m.)

A total of 4,514 shareholders registered, of whom 1,829 were shareholders and 2,685 were proxy holders, commanding a total of 2,358,013,858 shares or 82.55% of the total sold shares.

1.4 Practical Guidelines for Reporting Conflicts of Interest

As specified by PTT CG Handbook, all directors, the management, and employees must prepare reports on conflicts of interest, consisting of annual reporting forms and a new interim reporting format in case of changes. At a given meeting, those with vested interests or conflicts of interest with PTT must inform the meeting to excuse themselves and abstain from voting on each connected matter.

At the shareholders' meetings, any director with vested interests or involvement on any agenda item must inform the meeting to excuse themselves and abstain from voting on each applicable agenda item.

1.5 Disclosure of Shareholders' Meeting Outcomes

For this year's AGM, PTT submitted a summary of AGM resolutions to SET and SEC at the end of the day after the meeting (April 28, 2017). It also submitted the minutes of the shareholders' meeting (each agenda clearly separated), number of directors in attendance/absence, questions raised by shareholders and answers from directors, together with the voting tallies of each agenda item to SET and SEC within 14 days after the meeting. Meeting information, video-recording, photos, and audio-recording are also accessible through PTT's website.

2. Equitable Treatment of Shareholders

PTT treats all shareholders fairly despite different shareholding proportions and corresponding voting power. Shareholders' fundamental rights are conserved regardless of their gender, age, race, nationality, religion, belief, social status, physical impairment, or political inclination. At the AGM, seats at the most convenient spots were reserved for the elderly, the handicapped, and pregnant women, with officers attending to their needs. Information on the shareholders' meeting was announced ahead of the meeting in Thai and English. Directors with vested interests in any agenda item must excuse themselves from the meeting on that item. All shareholders have equal rights to take part in PTT's activities.

2.1 Proposing Additional Meeting Agenda Items and Nominating Directors

To enable minor shareholders to take part in business operations and auditing, for this year's AGM, PTT has defined the criteria and consideration process for entitling them to propose meeting agenda items or nominate directors in advance, or both, so as to deliberate agenda items that could prove useful to PTT, including the selection of qualified directors to perform their duties efficiently in the best interests of PTT, the shareholders, and the stakeholders. In practice, shareholders with a combined holding of at least 5% of the total eligible votes or at least 100,000 shares held uninterrupted for at least one year could propose agenda items or nominate directors before the AGM from September to November of the previous year, in case the nomination of directors might need the approval of the State Enterprise Policy Office (SEPO), as required by the regulation of The Prime Minister's Office on State Enterprise Policy and Monitoring B.E. 2557 (2014).

For this year's AGM, PTT posted such criteria on its website and an announcement on SET's website from September 1, 2016, to November 30, 2016. However, this attracted no recommendation of such agenda items or nomination of directors, and the Corporate Secretary duly informed the Board meeting on the matter.

2.2 Facilitating Shareholders at the Meeting

As in previous AGM, this year PTT facilitated all shareholders by manning officers to welcome and take care of them, and provided adequate convenience. The meeting venue was well chosen to accommodate all shareholders and facilitate the elderly and those on wheelchairs. Back-up meeting rooms were arranged, as was a communication signal relay system between meeting rooms. Security precautions and emergency contingency plans were in hand. Examination of registration credentials was available five days in advance. Officers provided photocopying services and verified documents. On the meeting day, registration opened two hours early and extended until the period before the last meeting agenda. A barcode system facilitated registration and voting. Refreshments were also provided at the meeting.

Since most shareholders at the AGM were Thais, it was conducted in Thai. However, for the benefit of foreign shareholders, PTT arranged the translation of shareholders' meetings, supplementary documents, and relevant documents into English. Its website is also bilingual. It also provided officers with a good command of English on hand at meetings to facilitate foreign shareholders. If shareholders cannot communicate in Thai but want to pose queries or discuss topics at the meetings, PTT arranges for suitable communication and provides translation into Thai for both queries and answers for the benefit of other shareholders to preserve their interests and ease communication needs for foreign shareholders.

2.3 Appointing Proxies

To maintain the rights of those who could not attend the 2017 AGM in person, they could appoint proxies or delegate their votes to any independent director in attendance. To this end, PTT has specified these independent directors' names on proxy forms defined by the Ministry of Commerce for voting on behalf of shareholders without conditions. PTT treated proxies as if they were shareholders. As a rule, 30 days ahead of each meeting, PTT disclosed the proxy form, attached along with details and procedures, on its website. Shareholders could make further inquiries about this by phone or through other channels such as PTT's website and e-mail.

Customers: Ensuring customers' satisfaction and loyalty by delivering world-class quality products and services at fair prices.

Business partners: Conduct fair practices with all partners while promoting trust, relationship, and cooperation to extend business capability and increase efficiency in long-term business partnerships.

Employees: Promoting professional capability-building and ensuring that employees' wellbeing is on a par with those in other leading companies in order to strengthen employee engagement.

3. Roles toward Stakeholders

As the national energy company, PTT accounts for all stakeholders' rights and interests by establishing guidelines for addressing the needs of each group in and outside the corporation, as well as its own responsibility for society and the environment. The following spells out PTT Group's missions for each group:

The country:	Ensuring long-term energy security by providing adequate high-quality energy supply at fair prices to support economic growth.
Communities and society:	Representing a corporate citizen by exercising environment stewardship of international standards and improving the quality of life for communities and society.
Shareholders:	Operating profitable businesses that lead to sustainable growth while generating optimal returns.

3.1 Treatment of Six Main Stakeholder Groups

3.1.1 Thailand

As the national energy entity with a crucial mission to drive the country under the national strategies and the "Secure, Prosperous, and Sustainable" Thailand vision, PTT is tasked with a mission to achieve long-term energy security through procurement of energy supplies of sufficient volumes, standard quality, and at fair prices to promote economic growth.

PTT's operating directions and strategies in line with the Thailand 4.0 national strategy, Ministry of Energy policy, and state enterprise strategies have resulted in the following roles.

1) Security: PTT leverages its investment budget to relentlessly develop energy infrastructure to accommodate rising energy consumption, including natural gas transmission systems, LNG-receiving terminals, LPG import facilities, oil terminals, service stations, floating storage and regasification unit (FSRU), and the battery and power businesses. In sourcing energy supplies to meet domestic demand, PTT executes risk management plans for those from various sources to ensure adequate volumes, quality, and standards, including sourcing of natural gas to cover domestic deposits, imports from neighboring countries, and LNG.

2) Economy: PTT procures energy at suitable prices for business competitiveness; energy efficiency improvement; and value addition to petroleum through gas separation plants (GSPs), oil refineries, and the petrochemical business. These have created countless businesses and promoted the application of technologies to improve efficiency and develop the caliber of operators throughout the business chains—all designed to strengthen and grow the digital economy.

3) Ecology: PTT invests in research and development (R&D) of “green” energy and invents green products and services, while supplementing value to agricultural produce of communities, thus supporting value chain moves that aligns with sustainable development goals (SDGs) and reduction of greenhouse gas (GHG) emissions, among others.

3.1.2 Society and Communities

PTT is committed to participate in the development of Thai society, in tandem with its growth, driving Thai society, and environmental stewardship. SDGs are applied as guidelines for social moves and all aspects of human development, ranging from education, capability building, quality of life improvement, enabling suitable access to alternative energy, conservation of natural resources and environmental rehabilitation (on land and offshore), to reforestation and stewardship of forests to capture GHGs, one of the causes of climate change, to proactive driving for awareness and cooperation by all sectors, leading ultimately to sustainable growth for all.

Details about these matters appear under Collaboration for shared sustainability and the Corporate Sustainability Report 2017.

3.1.3 Shareholders

The Sustainable Growth Strategy has been applied in PTT management to achieve a high-performance organization (HPO) that is based on CG in tandem with CSR (corporate social responsibility) to ensure investors that PTT provides sound investment returns and is sustainable, apart from being a part of Thai society in the future.

Investors’ Activities

Since 2006, PTT has arranged ongoing trips for minor investors to visit its operation, update information, and meet the management as well as participating in PTT’s CSR activities in Rayong.

This year PTT organized these activities on October 31 to November 2 by mailing letters of invitation and response forms to all shareholders whose names appeared on the share roster on the date of closing of its registration to suspend share transfer for the 2017 AGM attendance (April 3, 2017). Interested shareholders were asked to notify PTT of their interest in the visit. But due to the overwhelming interest shown by shareholders (about 2,193 persons), PTT had to draw lots to select those who won the right to visit, as done in past years. Witnessing the draw on September 19 were executives and CG taskforce members. The winners’ names were posted on PTT’s website. PTT notified the winners by phone to confirm their acceptance. This activity involved minor shareholders’ visit to the Oil Business Academy (OBA) and Amazon Inspiring Campus (AICA) to hear a presentation, tour simulated learning room, service station, lubricants, aviation fuels LPG, and a coffee-roasting plant. Three batches of visitors, each 80, joined the activities. PTT will apply shareholders’ recommendations to the improvement of its work next year.

Those interested in visiting PTT’s sites can follow project updates and details on PTT’s website. PTT reserves the rights to invite only those that have never taken part in this activity.

Activities for Debenture Holders

Since 2010, PTT has staged ongoing debenture holders' activities to serve as a channel for maintaining cordial relations with them and repay them for the confidence in PTT bonds over the long term. This year the activities were diverse to meet the needs of debenture holders, who numbered over 23,000, including:

- The "Happiness" quarterly journal, which communicates corporate data, provides energy knowledge, and interesting articles in an edutainment way.
- Three visits to PTT's business operation. The first was a trip to VISTEC, KVIS, and the Wang Chan Forest Project in Rayong in April, the second to Amazon Inspiring Campus and the Oil Business Academy in June, and the third to the Rayong GSP in October.
- Relations activities, including seminars and workshops, particularly concerts, which consistently met with excellent responses. This year PTT continued its two annual concerts featuring HM the late King's compositions and other melodies blended with ambience changes in the sky.

PTT still plans to develop its formats of activities to raise its efficiency and satisfaction of shareholders, including wider access to data on activities through the webpage and e-mails to ease holders' contacts and align with prevailing technologies.

Activities for Institutional Investors

This year, besides investors' meetings to inform institutional investors and securities analysts about its quarterly performances, PTT organized annual company visits and meetings with its executives in January at the Amazon Inspiring Campus and Oil Business Academy, where such visitors and analysts learned about PTT's business directions and opportunities to be involved in PTT Group's businesses from executives first-hand.

3.1.4 Customers

PTT divides its market into both domestic and overseas. Its core products are natural gas products and petroleum products. These are sold to customers of the International Trading Business Unit, Oil Business Unit, Gas Business Unit, and Infrastructure and Sustainability Management Business Group, with two major groups of customers: Business to Business (B2B) and Business to Customer (B2C).

PTT listens to customers' needs and expectations to analyze them through assorted channels, including customer visits, seminars, and opinion surveys. These provide information on competitors, state of competition and technology, customers' behavioral trends and lifestyles, the market environment, and future needs of customers. All input is reviewed together with other information, namely situations and trends of energy economics, public policies, regulations, technological innovations, and financial and economic data for the design of products and services that match the needs and expectations of current and future customers.

Constantly, PTT developed support systems to ease customers' transactions with it, including the e-Order, e-Billing, e-Payment, and Direct Approved systems designed to help customers search for information on getting support and engagement in transactions round the clock, efficiency improvement of the Order & Customer Relations Center through the Mind System, which links all related information centers, including e-mails, the website, and PTT Blue Card member data, so that Contact Center officers can swiftly respond to customers with accurate and timely data

PTT also developed a service standard manual and procedure manual that are comprehensive, including a manual on PTT's service station standard, LPG bottling, aviation fuel refueling, and Contact Center standard. In place are procedures for periodic assessment against service standards under QSHE MS, Mystery Shopper, and Mobile Lab to ensure that its personnel can regularly forge good experience for customers.

PTT developed means to foster relations with customers that suit customers' everyday life, designed to lead to repurchase and "word of mouth" to others, which form the ultimate goal. In place is PTT satisfaction and engagement assessment in comparison with competitors via the annual satisfaction survey featuring constant query development. To this end, PTT considers the outcomes directly with customers' purchasing behavior to allow survey outcomes to reflect current operations while extending future businesses more clearly. Customers' dissatisfaction has been regularly compiled and analyzed, including via the Contact Center and customer visits so that PTT may indicate signals of problems and promptly resolve problems, preventing losses of customers or competitors' intervention.

PTT groups complaints by severity of impact, with defined service level agreements for different types of complaints, for which relevant units must resolve problems within given periods. All complaints must be addressed within 24 hours, and after problem resolution, an inquiry will be made to customers to determine their satisfaction with PTT's problem-solving. At the same time, customers will learn about PTT's long-term problem-solving plans. This ensures that customers are satisfied and will continue to buy PTT's products and services in the future.

Constantly paying attention to customers' convenience and safety, PTT launched projects like the PTT Tune Up Project, under which free engine checks and tune-ups are given. In 2015 it launched a "Friendly Design" concept for service stations to ease access by the handicapped and the elderly.

3.1.5 Business Partners

Since business partners are key to business success through mutual support, PTT values and treats them fairly on the basis of fair competition and mutual respect and in good cooperation. PTT strictly complies with contracts and procurement processes, since they are vital to the determination of expenses and the quality of PTT products and services. A clear procurement procedure is in place to ensure transparency, accountability, and maximum benefit.

To achieve its resolution, PTT is committed to doing business for sustainable growth in parallel with good governance for communities, society, and the environment. It therefore values supply chain management such that it is clearly in place by developing risk management processes and mitigation of impacts from business partners' business conduct to support the success of supply chain management. The key factors for the drive are as follows:

1) Clear policy and directions

This means PTT's policies and strategies are key factors for forging awareness among employees and society of PTT's commitment and business directions. Therefore, in 2015 PTT issued a **PTT Group policy on procurement and sustainable business partner management**.

So that PTT's business partners' business conduct guidelines may be more in line with, and more suitable for, the sustainable organization management concept, the company revised the **PTT Supplier Sustainable Code of Conduct (SSCoC)** and announced its third edition on August 3, 2015, defining the contents and scope under relevant regulations and laws, together with the aspects taken seriously by PTT, consisting of four main topics:

1. Business Ethics
2. Social Responsibility
3. Safety
4. Environmental Management.

2) Sustainable business partner selection and management process development

To align supply chain management with corporate directions, PTT manages its business partners with due regard for ESG (Environmental, Social, and Governance/ Economics) impacts. Assessing risks and impacts from the perspectives of the environment, society, and oversight of goods and services groups, PTT divides business partner management into three levels: critical, key, and managed (in order of potential severity of impacts). For those in the critical group, management actions will be more intensified than the other groups. Besides formally acknowledging the guidelines for sustainable treatment of PTT's business partners, they must respond to the Sustainability Performance Assessment Form. After self-assessment, if they fail, they will need to formulate ESG Corrective Action Plans. PTT reserves the right to audit business partners' self-assessment outcomes. This year a PTT team in conjunction with a third-party agency conducted sustainability assessment of six "critical" business partners. Overall, they had decent marks. A project designed to develop business partners' sustainable operation caliber was launched, under which PTT selected major business partners whose operations involved ESG for training on sustainability capability development of business partners and practices on sustainability capability self-assessment for development planning in line with PTT's policy.

In addition, to illustrate PTT's "pride" action in being a transparent company, it joined public agencies in preventing and suppressing corrupt practices by signing a memorandum of cooperation on driving the prevention and suppression of corrupt practices with the Office of the National Anti-Corruption Commission (NACC), State Enterprise Policy Office, and state enterprises to ensure that the national strategy on prevention and suppression of corrupt practices, relevant measures, relevant government policies, and action plans are successfully driven to implementation in state enterprises under CG. To this end, for the provision and disclosure of information on procurement, PTT disclosed related data in compliance with an announcement of the panel on public information on the requirement that information about the outcomes of procurement deliberation of public agencies must be open to the public under Article 9 (8) of the Public Information Act of

B.E. 2540 (1997). Disclosure is to be done monthly through the www.pttplc.com website for public examination and is subject to annual assessment. This year's score for PTT was 100% on procurement information disclosure.

Since August 24, 2017, PTT has complied with the Public Sector Procurement and Materials and Supplies Administration, B.E. 2560 (2017). It therefore amended its own processes by requiring the disclosure of its annual procurement plan for interested parties to join in price bidding contests at PTT and manage their bidding readiness. PTT has disclosed its up-to-date 2018 annual procurement plan at www.pttplc.com.

The annual procurement audit is the responsibility of a panel on materials and supplies audit and examination, appointed under PTT's regulation, which ensures transparency of materials and supplies processes. This year the panel random-checked procurement propriety in all business units. Out of such checking, this year PTT executives were committed to the vision of a transparent company and required KPIs in every business function as required by the company's rules and requirements. Findings from the audit done in 2016 served as the baseline. Procurement units mapped out a plan and took action to lessen shortcomings through training at orientation sessions and providing contents to courses at the Procurement Academy, which will become compulsory for all employees as organization knowledge.

A system is now in place, called Material Receive (MR) on Web, through which user units assess business partners in assorted aspects, including quality, delivery, service, performance, SSHE, and sustainability. Initially, assessment outcomes will be released to registered business partners for further improvement.

On July 18 this year, PTT signed an Integrity Pact, a joint agreement with public agencies and bidders to execute their duties with integrity and not demand bribes or other benefits; PTT would also disclose essential project data in every process with transparency under the "Fifth Onshore Gas Transmission Pipeline (Segment 2) Project" and the "New LNG Receiving Terminal, Rayong, Project". Presiding over the event was Gen. Anantaporn Kanjanarat, Minister of Energy, along with Mr. Pramont Sutivong, Chairman, Anti-Corruption Organization of Thailand. In attendance was Mr. Piyasvasti Amranand (PTT Chairman) and Mr. Tevin Vongvanich (PTT President & CEO).

This signing was between PTT Plc. and those interested in purchasing in advance bidding documents and observers and experts from the public and private sectors. The signing illustrated PTT's desire to be a business entity with CG, comply with the government's anti-corruption policy, and manage transparent procurement processes that are auditable.

The Fifth Onshore Gas Transmission Pipeline (Segment 2) Project was designed to enhance national energy security and add gas transmission capacity from the Eastern Region to the Western gas transmission network, not to mention enhanced security for the Bang Pakong, Wang Noi, North Bangkok, and South Bangkok Power Plants to accommodate future power demand. This project is due for completion by 2021. The New LNG-Receiving Terminal, Rayong, Project consists of a marine terminal and LNG-Receiving Terminal construction to accommodate LNG imports of 7.5 million tons per year, due for completion by 2022.

3) Capacity-building of relevant parties

Since mastery and caliber of relevant parties represent another key factor driving the success of this matter, PTT values capacity-building on procurement and management of business partners by PTT's own executives and staff in a systematic and suitable way. This is achieved through training, communication, and knowledge management (KM) so as to achieve the sustainability objectives of business partner management. In addition, PTT establishes business partners' readiness and communicates with them in parallel so that they may prepare themselves for developing their own businesses along the sustainability approach (PTT Supplier Sustainable Code of Conduct).

To promote the sharing of data and knowledge between PTT and business partners while nurturing their caliber to support PTT's success in outcomes, business continuity, and social responsibility, this year PTT staged four Supplier Relationship Management Seminars (SRMs), three of which were staged by each business unit/group and a main seminar on June 9, 2017:

Business partner group	Date (2017)
Nakhon Si Thammarat GSP's business partners	July 3
Rayong GSP's business partners	August 28
Natural Gas Transmission's business partners	October 17

At each SRM, PTT conveyed business directions and organized activities fitting business partners. This year's topics and seminar activities were as follows:

- Business directions, vision, and missions
- Policies and procurement directions and applicable laws
- Procurement, business partner management, and sustainable organizational management
- Procurement of green products and services
- Group activities and shared activities among procurement officers and business partners involving the sharing of views for adjusting business processes for greater efficiency. As a result, business partners' needs and satisfaction increased along with cordial relations and sustainable partnership
- Workshops on ESG assessment for business partners in pursuit of genuine supply chain sustainability.

The main seminar for core business partners for all units supplying goods and service procurement to PTT was held on June 9 under the Together towards Tomorrow theme. The seminar discussed business directions in tandem with transparency creating corruption-free society, while sharing with business partners PTT's business outlook and approaches to overall businesses under the Thai Premier Multinational Energy Company vision. It also addressed new business plans designed to enable partners to adjust to circumstances and extend sustainability with PTT. This expert discussion took place with invited guests amid participants from business partner companies, procurement officers, PTT user units, and about 350 representatives from PTT Group companies.

PTT requires price bidders to strictly conform to the rules of work safety and handling of tools, as well as other regulations, particularly the types of work affecting health, safety and the surroundings. PTT visits business partners' sites to assess their capabilities, particularly those on the QSHE side. In addition, business partners' employees must undergo the do's and don'ts on PTT's sites in addition to conforming to the requirements for entering sites to work, as described for each.

A PTT Approved Vendor List (PTT AVL) is prepared for the benefit of procurement through bidding to ensure that, under the process to determine business groups and procedures or methods of selecting business partners to register for PTT AVL, business partners are efficient and deliver products/services that meet PTT's requirements and foster sustainable partnership with PTT. This year the PTT AVL consisted of 188 companies from 13 business groups.

To ensure efficient preparation of PTT AVL, the company considers criteria, conditions, qualifications of business partners who apply to PTT AVL in each business group. The initial qualifications of the business partners must meet the following requirements:

- 1 Business partners must not have abandoned the work of PTT, the government sector, state enterprises, and government agencies.

2. If business partners were removed from the Vendor List, they have no right to apply for registration in that particular business group for three years. An exception applies if the removal was the result of abandoning the work of PTT, state enterprises, and public agencies, in which case PTT will not accept them to PTT AVL until PTT receives a letter proving the cancellation of such removal.

3. Business partners must understand and acknowledge PTT Suppliers' Sustainable Code of Conduct (SSCoC).

Apart from these initial criteria, PTT assesses business partners' operations and sustainable implementation in parallel.

After business partners deliver products/services in each allotment, PTT will assess them and notify them of the strengths/improvements to be made in operations for future supplier development.

Moreover, PTT supports Thai suppliers of goods and services and gives them the top priority. Past procurement information reveals that, PTT has procured more than 90% of local products, generating cash flow in the Thai economic system, promoting procurement of products from the areas where PTT sites are located, as well as promoting jobs and generating income for people in the communities.

3.1.6 Employees

(The information on employees is reported under Management Structure/ Employees).

3.2 Respect for Universal Human Rights Principles

PTT requires that all its directors, the management, and employees observe laws, customs, and cultures which differ in each country where PTT invests and strictly respects universal human rights principles under the Universal Declaration of Human Rights. This is the minimum requirement of PTT's business operations.

This year, to ensure complete and proper compliance by PTT with laws and regulations, PTT established a Compliance Department under the Office of Corporate Legal to compile laws and regulations, assess risks, support corporate units in proceeding with defined approaches, monitor and inspect, and report on compliance outcomes to the top management and relevant committees. With the rollout of human rights management system under the PTT Group sustainability management scope, this year PTT Group reviewed risk aspects on human rights embracing business operation covering their supply chains. Core operational risks are found as follows: unsafe work conditions, community health and safety, risk of forced labor, site community rights, and rights of minority groups or groups needing extra care. Each site with risk aspects then mapped out control measures and work plans on human rights, keeping human rights risks of PTT Group manageable. As assurance of maximum effectiveness, implementation of such plans is to be monitored every quarter. As a result of earnest, continuous system compliance, this year PTT found no human rights complaints. Constantly, it disclosed operating information under the 10-point The United Nations Global Compact, this year successfully upgrading such disclosure from the GC Active to the GC Advanced level.

3.3 Significant Disputes with Stakeholders

This appears under “Legal Disputes”, disclosed in Form 56-1.

4. Disclosure of Information and Transparency

Disclosure of information is a key index of operating transparency, a crucial factor for confidence among investors and stakeholders. PTT values accurate, precise disclosure of information and creates numerous channels of disclosure so that all stakeholders can gain easy access to information. It promotes awareness among directors, the management, and employees of the importance of CG and transparency to their work, and creates appropriate tools to receive complaints while providing fair treatment to whistleblowers and those complained against as follows:

4.1 Financial and Non-financial Reports

PTT prepared the annual report, financial report, and corporate sustainability report to communicate its policy, management approach, and outcomes of its economic, social, and environmental performance. The corporate sustainability report was based on the Sustainability Reporting Guidelines and Oil and Gas Sector Disclosure (OGSD) of the Global Reporting Initiative (GRI) approach to ensure that its disclosure was suitable to and specific for the business. PTT commissioned an external party for the seventh consecutive year for the certification of the report's accuracy, transparency, and credibility. This action is to be continued every year. This report and the annual report were delivered to the shareholders this year and are accessible to those interested via www.pttplc.com.

4.2 Investor Relations

Ever since PTT's privatization and share trading on SET in October 2001, the Investor Relations Department has been established as a center for disclosing essential information to investors and financial reporting, which includes performance reports, financial statements, and information filed to SET, together with quarterly management discussion and analysis (MD&A) reports showing updated performances and corporate outlooks. These are disclosed to domestic and international shareholders fairly, regularly, and thoroughly. A quarterly investors' magazine under the “Happiness” title communicates business information and data as well as PTT's performance for debenture holders, and a quarterly bilingual newsletter called “PTT Bizway” bears the same purpose, aimed at common-share holders. The two publications communicate PTT's vision, missions, quarterly performance, CG, management for sustainability, and other current major activities. Investors may contact the department directly or through the PTT website, which is regularly updated, for information in Thai and English, which includes:

- Company information
- Annual report (Form 56-2)/ Form 56-1
- Information for common-share holders
- Information and activities for debenture holders
- Presentations and webcasts
- Roadshow/ conferences
- Activity calendar
- Code of Conduct for Investor Relations
- Major investment project information
- Procurement
- Policy statements by the management
- Compliance with public policies
- Key plans
- CG policies and promotional activities
- Financial performance
- Non-financial performance
- Highlights of CSR activities.

Through the years, PTT has valued disclosure of information that is accurate, complete, transparent, and comprehensive, as well as direct and indirect presentation of performance while keeping investors, shareholders, and relevant parties informed of its data. Highlights of our activities appear below:

Direct: PTT regularly presents information to analysts, investors, and employees at analysts' meetings, roadshows, conference calls, and conferences organized by various entities. PTT also holds joint activities with SET to meet minor investors (Opportunity Day). Relevant persons can make appointments for company visits and meet PTT executives to inquire about business updates at all times. This year, these key activities took place:

Activities	2016 (times)	2017 (times)
International Roadshows	12	14
Domestic Roadshows	7	6
Analyst Meeting	4	4
Press Meeting	2	2
Credit Rating Review	4	6
Company Visit/ Conference Call	54	46
E-mail/ Phone Calls	8 - 10 times/day	8 - 10 times/day
Joint activities with SET and other agencies to meet investors	4	4
Participation in SET's Foreign Opportunity Day	-	2
Trips for institutional investors to visit and meet management team members	5	5
Trips for minor (retail) investors to visit and meet management team members	Scheduled once (two groups, November 23 - 24)	Scheduled once (three groups, October 31, November 1 - 2)
Relations activities with debenture holders	12	15

Indirect: Information about PTT, its performance, financial statements, and reports filed with SET are found at www.set.or.th, PTT's website, the "happiness" magazine for debenture holders, and the quarterly newsletter "PTT Bizway" for common shareholders.

Investors and interested parties can also mail inquiries to Investor Relations at Tel. 0-2537-3518-9, through e-mail at ir@pttplc.com or through PTT website at www.pttplc.com.

In addition, PTT has constantly publicized news, business activities, operation and project updates, apart from addressing questions and facilitating contacts for the media and the public. In 2016 - 2017, the activities appeared below:

Activities	2016 (times)	2017 (times)
E-mails	277	411
News/ photo releases	277	411
Press conferences	22	9
Media visits to operations (domestic and international)	5	12
Welcoming and information provision to visiting agencies for assorted purposes	43 groups (1,920 persons)	46 groups (1,743 persons)

4.3 Complaint-Filing and Access to Information

All stakeholders have equal access to PTT's public information, including reporting of news and leads, whether inside PTT through the intranet webboard or outside PTT through its website, by phone, letter, or e-mail. Please contact Investor Relations, Office of the President and Corporate Secretary, Corporate Communications, or the Ordering & Customer Relations Center through these channels:

Telephone : PTT Contact Center 1365, 0-2537-2000
 Website : <http://www.pttplc.com>
 E-mail : Ordering & Customer Relations Center: 1365@pttplc.com
 Corporate Communication Department: corporate@pttplc.com
 Office of the President and Corporate Secretary: corporatesecretary@pttplc.com
 Investor Relations: ir@pttplc.com
 CG Hot Line: cghelpdesk@pttplc.com.

Queries, comments and recommendations will be forwarded to relevant agencies to be addressed through the complaint management system. Follow-ups on the actions are done through e-mail every three days. If the actions are not completed, a notification will be sent to a higher level of supervisors for action. When completed, responsible units will notify the contact person(s), with another follow-up to find out about their satisfaction with the services of Contact Center officers, which will help improve information system management. The management tracks all information every month to detect trends and apply them as an approach for refinement of processes, products, and services in response to all stakeholders. This year, queries, comments, and recommendations received totaled 308,490, mostly concerning PTT Blue Card, NGV discount cards, service stations/shops, and PTT's projects.

PTT offers opportunities for the public to file complaints about improper behavior of directors, the management, and staff or their violation of PTT's code of conduct. They are to be directed to the Office of Corporate Audit, Office of the President and the Corporate Secretary, or Human Resources Department. PTT treats all complaints on the basis of equality, transparency, attention, and fairness to all concerned. An appropriate timeframe to consider the complaints is set, and secrecy and protection of whistleblowers will be observed. No significant complaint on ethics was filed this year.

Committees, Directors' Assessment, Directors' Development

1. Committees

The Board values CG by initially appointing the Audit Committee, the Nominating Committee, and the Remuneration Committee. For a period, the Audit Committee also looked after CG matters and risk management for the Board.

In 2004, the Board set up a Corporate Governance Committee, charged with promotion and screening of CG and promotion of excellence in such areas. In 2013, the Board set up the Enterprise Risk Management Committee to ensure clearer implementation of corporate risk management in compliance with the CG of listed companies and the State Enterprise Policy Office's (SEPO) guidelines on the CG of state-owned enterprises (2009). PTT today therefore has five committees investigating critical matters under the CG principles for the maximum benefit of shareholders, taking into account stakeholders' concerns and interests, business ethics, transparency, and accountability. Each of these committees consists of qualified, non-management directors as required by SET, with clearly written roles and responsibilities in a charter. Since 2009, the duties of the Corporate Governance Committee have been expanded to cover additional policies, implementation, and monitoring of the operation on responsibilities for society, communities, and the environment so that the committee may be responsible for the stakeholders in a more comprehensive and efficient way. In 2013, the duties of this committee also covered the definition of guidelines for CG monitoring concerning PTT's counter-corruption implementation. This year the Board updated the authorities of the Nominating Committee, Remuneration Committee, Corporate Governance Committee, and the Enterprise Risk Management Committee. This year the Board approved the Enterprise Risk Management Committee's steering of stakeholder management as an additional mandate.

PTT has appointed five committees with the following duties and responsibilities:

1.1 The Audit Committee

Each quarter, together with Accounting Service Center and the Office of the Auditor-General, the Audit Committee reviews PTT's financial reports. The Board is accountable for PTT Group's consolidated financial statements as well as other financial information presented in the annual report. The financial reports are prepared under generally accepted accounting principles and are audited and certified by the Office of the Auditor-General. Material information, financial and otherwise, is completely and consistently disclosed.

The Board approved the appointment of the Audit Committee on October 1, 2001, which consisted of directors with the qualifications specified by SEC laws and SET. The committee must consist of at least three directors. As of December 31, 2017, it consisted of three independent directors as follows:

Name	Position	Remarks
1. Prof. Dr. Kittipong Kittayarak	Chairman	Independent Director
2. Mrs. Nuntawan Sakuntanaga	Member	Independent Director
3. Mr. Vichai Assarasakorn	Member	Independent Director

Note:

Mrs. Nuntawan Sakuntanaga meets the qualifications required to review the credibility of PTT's financial statements.

- 1. Prof. Dr. Kittipong Kittayarak was appointed member with effect from July 5, 2014, and appointed Chairman with effect from September 4, 2014.*
- 2. Mrs. Nuntawan Sakuntanaga was appointed member with effect from July 5, 2014.*
- 3. Mr. Vichai Assarasakorn was appointed member with effect from September 4, 2014.*

The Executive Vice President, Office of Corporate Audit, served as secretary.

Duties and Responsibilities

- Prepare a charter on internal audit for the Audit Committee compatible with PTT's scope of work and responsibilities. The charter must be approved by the Board and revised at least once a year.
- Review the efficiency and effectiveness of CG, risk management, and internal control processes.
- Review PTT's financial reporting process to ensure accuracy and credibility.
- Review compliance with laws, regulations, procedures, cabinet resolutions, SET requirements, SEC laws, and announcements or directives relevant to PTT's businesses.
- Ensure sound internal audit procedures and review the adequacy of the budget and personnel and the independence of the Office of Corporate Audit.
- Consider connected transactions or transactions of potential conflicts of interest or potential corruption affecting PTT's operations under the laws and SET's requirements.

- Provide recommendations to the Board on the appointment, transfer, promotion, and assessment of the head of the Office of Corporate Audit.
- Select, nominate, and recommend fees for the external auditor to the Board.*
- Coordinate audit findings with the external auditor and recommend reviews or verification of any items, if necessary.
- Report its internal audit performance to the Board at least quarterly, except for the fourth quarter, which is reserved for the annual report. The reports must be submitted to the regulating ministry and the Ministry of Finance for acknowledgment.
- Evaluate its own internal audit performance at least once a fiscal year and report the results to the Board.
- Disclose a report on its annual performance and the fees of the external auditor in the annual report.
- The chairman or members of the Audit Committee must attend shareholders' meetings to address matters related to the committee or the appointment of the external auditor.
- Ensure that the management have a whistleblowing mechanism for complaints and supervise the system of complaints.
- When it is necessary to provide its opinions on PTT's assorted operations, seek independent opinions from or hire advisers or specialists at PTT's expenses.

- If internal reports show any sign of violation against laws, regulations, procedures, Cabinet resolutions, announcement, or directives relating to PTT's businesses, the top management must be informed and responsible unit(s) ordered to take due actions.
- Hold the committee meeting at least every quarter and a meeting with the external auditor in the absence of the management at least once a year.
- Hold a formal meeting with the management at least once a year.
- Perform other tasks as required by the law or as assigned by the Board within the committee's scope of duties and responsibilities.

These are in line with PTT's regulation on the Audit Committee and the Office of Corporate Audit 2014.

This year the committee held 17 meetings (12 regular and 5 special meetings) and duly reported its findings to the Board. In addition, it participated in quarterly financial audits along with the external auditor and Accounting.

The Audit Committee has reported this year's performance in the Report of the Audit Committee section.

Note:

* In practice, PTT is a state enterprise under the definition of the Budgetary Practice Act, B.E. 2502 (1959), Article 4, interpreted by an organic law concerning the auditing of state budget, B.E. 2542 (1999), Articles 4, 39, and 42, which state that the Office of the Auditor-General is authorized to state its views on the accounting standards generally accepted of state enterprises under the law concerning budgetary practices.

1.2 The Nominating Committee

The Board approved the appointment of the Nominating Committee on October 1, 2001, made up of three directors. As of December 31, 2017, it consisted of:

Name	Position	Remarks
1. AM Boonsuib Prasit	Chairman	Independent Director
2. Mr. Chanvit Amatamatucharti	Member	Independent Director
3. Mr. Thon Thamrongnawasawat	Member	Independent Director

Note:

1. AM Boonsuib Prasit was appointed member with effect from September 4, 2014, and appointed Chairman on November 18, 2016.
2. Mr. Chanvit Amatamatucharti was appointed member with effect from September 26, 2015.
3. Mr. Thon Thamrongnawasawat was appointed member with effect from November 18, 2016.

The Vice President, Office of the President and Corporate Secretary, served as secretary.

Duties and Responsibilities

1. Define the methods and criteria for directors' nomination for transparency.
2. Select director nominees to fill vacancies (due to resignation or term completion) for the Board's or the shareholders' consideration and appointment with due regard for the composition of the Board, expertise, competencies, and experience useful to PTT in compliance with PTT's Board Skill Matrix and the Director's Pool of SEPO and IOD. Equally important, nominees must have no conflicts of interest with PTT. The qualifications of desirable directors must prove compatible with PTT's business strategies.
3. Propose directors for committee duties with due regard for the committees' compositions qualifications, expertise, and competencies. Then these names are to be tabled for the Board's appointment. An exception is for the committee itself, which is to be appointed by the Board.
4. Be accountable to the Board directly, while the Board is accountable for PTT's businesses to all stakeholders.
5. Assess its own performance and report the outcomes to the Board for acknowledgment and disclose them in the annual report.
6. Disclose its own performance in the annual report.
7. Hold at least two meetings a year.
8. Perform other Board-assigned tasks.

Directors' recruitment procedures are as follows:

1. The committee defines the qualifications needed for replacements to ensure that the new directors meet the criteria and qualifications required by related laws and regulations and align with PTT's operations. It defines a procedure for nominating qualified candidates.

According to the CG Handbook, ethics standards, and the Code of Conduct, the Board should consist of experts from a variety of disciplines needed for the administration of PTT businesses. Specifically, it should consist of at least three experts in the petroleum business, at least one expert in law, and at least one expert in finance and accounting.

2. The committee summarizes its recruitment results and presents to the Board a shortlist of qualified candidates along with supporting rationale.

3. The Board appoints qualified candidates from the list prepared by the committee and submits their names to the shareholders' meeting for approval. The list of suitable persons must also be endorsed by SEPO in conformance to the Directive of the Prime Minister's Office on the Definition of Policy and Supervision of State Enterprises, B.E. 2557 (2014).

This year the committee held three meetings, with all committee members at the time in attendance. The Corporate Secretary served as secretary to the committee.

The committee disclosed its own performance in the annual report under the Report of the Nominating Committee.

1.3 The Remuneration Committee

The Board approved the appointment of the Remuneration Committee on October 1, 2001, by appointing three directors from the Board. As of December 31, 2017, it consisted of:

Name	Position	Remarks
1. Mr. Boontuck Wungcharoen*	Chairman	Independent Director
2. Mr. Somchai Sujjapongse	Member	Director
3. Mr. Somsak Chotrattanasiri	Member	Independent Director

Note:

1. Mr. Boontuck Wungcharoen succeeded Mr. Prasert Bunsumpun as Chairman, with effect from March 20, 2017, and resigned from the Board, with effect from December 31, 2017.
2. Mr. Somchai Sujjapongse was appointed member with effect from November 1, 2015.
3. Mr. Somsak Chotrattanasiri was appointed member with effect from November 18, 2016.

The Vice President, Office of the President and Corporate Secretary, served as secretary.

Duties and Responsibilities

1. Define the criteria for compensation and propose fair, sensible compensation for the directors and the committee members for the Board's and the shareholders' approval.

2. Propose guidelines for assessing the performance outcomes and compensation for the President & CEO for the Board's approval.

3. Acknowledge and comment on organization restructuring and job levels, and assess and decide compensation for the senior executive vice presidents.

4. Be accountable to the Board directly, while the Board is accountable for PTT's businesses to all stakeholders.

5. Assess its own performance and report the findings to the Board for acknowledgment and disclose it in the annual report.

6. Disclose its own performance in the annual report.

7. Hold at least two meetings a year (amended for performance in 2017).

8. Perform other Board-assigned tasks.

This year the committee held three meetings, with all committee members at the time in attendance. The Corporate Secretary served as secretary to the committee.

The committee disclosed its own performance in the annual report under the Report of the Remuneration Committee.

1.4 The Corporate Governance Committee

The Board approved the appointment of the Corporate Governance Committee on June 24, 2004, consisting of three directors. As of December 31, 2017, it consisted of:

Name	Position	Remarks
1. Gen. Chatchalerm Chalermsook	Chairman	Independent Director
2. Mr. Don Wasantapruet	Member	Independent Director
3. Mr. Thon Thamrongnawasawat	Member	Independent Director

Note:

1. Gen. Chatchalerm Chalermsook was appointed Chairman with effect from September 4, 2014.
2. Mr. Don Wasantapruet was appointed member with effect from September 4, 2014.
3. Mr. Thon Thamrongnawasawat was appointed member with effect from November 18, 2016.

The Vice President, Office of the President and Corporate Secretary, served as secretary.

Duties and Responsibilities

1. Propose practical CG guidelines to the Board.
2. Counsel the Board on CG matters.
3. Ensure that the performances of the Board and the management align with CG.
4. Revise PTT's CG approach annually by comparing it with international practices and propose revisions to the Board.
5. Assign the CG policy to PTT's CG taskforce.
6. Assign the policy and guidelines for sustainability management (SM) including CSR.
7. Assign a policy of allowing minor shareholders to nominate directors and propose AGM agenda items.
8. Monitor SM implementation and report its findings to the Board.
9. Define the scope for supervising matters dealing with PTT's anti-corruption practices.
10. Hold at least one meeting each quarter.

This year the committee held five meetings with all committee members at the time in attendance. The Corporate Secretary served as secretary to the committee.

The committee disclosed its own performance in the annual report under the Report of the Corporate Governance Committee.

1.5 The Enterprise Risk Management Committee

The Board approved the appointment of the Enterprise Risk Management Committee on October 25, 2013, by appointing at least three directors, at least one of whom must be an independent director. As of December 31, 2017, it consisted of:

Name	Position	Remarks
1. Mr. Chanvit Amatamatucharti	Chairman	Independent Director
2. Mr. Somkit Lertpaithoon	Member	Independent Director
3. Mr. Thammayot Srichuai	Member	Director

Note:

1. Mr. Chanvit Amatamatucharti was appointed member with effect from September 4, 2014, and was appointed Chairman, with effect from January 30, 2015.
2. Mr. Somkit Lertpaithoon was appointed member with effect from March 20, 2017.
3. Mr. Thammayot Srichuai was appointed member with effect from December 15, 2016.

The Senior Executive Vice President, Corporate Strategy & Organization Development, in the capacities of Chief Risk Officer (CRO) and Chief Stakeholder Officer (CSO), served as the secretary.

This year the committee's duties and responsibilities have been revised to embrace stakeholder management as follows:

Duties and Responsibilities

- Define and review PTT's risk management and corporate stakeholder management policies and framework
- Supervise and support risk management and stakeholder management practices in line with strategies and business goals as well as prevailing circumstances
- Provide recommendations on, monitor, and evaluate risk management and stakeholder management for further implementation of the Corporate Plan and Risk Management Committee (CPRC) (management level)
- Review risk management outcome reports and provide recommendations on risks including specifications of control measures or mitigation plans and development of the risk management system to CPRC for continued efficiency
- Review reports of corporate stakeholder management outcomes and provide recommendations on relevant plans to extend positive outcomes or minimize/offset potential impacts on stakeholders, including development of the stakeholder management system for CPRC to ensure continued efficiency
- Support the Chief Risk Officer (CRO) and Chief Stakeholder Officer (CSO) in achieving PTT's corporate risk management and stakeholder management goals
- Report risk management outcomes and stakeholder management outcomes to the Board. In case where factors or events might have significant impacts on PTT, the Board must be notified immediately.
- Consider and provide comments on the long-term commitments along with a potential of businesses complication and risk of PTT and Stakeholder before proposing such agendas to the Board of Directors.

- The Enterprise Risk Management Committee must meet at least once a quarter.
- Perform other Board-assigned duties.

The Enterprise Risk Management System was reviewed by the Audit Committee and the Office of Corporate Audit.

This year the Committee held five meetings with all committee members at the time in attendance. The Senior Executive Vice President, Corporate Strategy, served as the secretary.

The committee disclosed its own performance in the annual report under the Report of the Enterprise Risk Management Committee.

2. Board Self-assessment

With the resolution of Board Meeting No. 9/2560 (2017) of September 15, 2017, the Board approved all four self-assessment forms used in 2016 again this year, namely Assessment of the Board, Assessment of Individual Directors (Self-assessment), Individual Assessment of Other Directors (Cross-assessment), and Assessment of the Committees (Entire Committees). The Board agreed that the forms were still appropriate for the assessment of the Board this year. The four assessment forms stipulated the percentages corresponding to the levels of performance achieved in each of these detailed below.

Over 85%	=	Excellent
Over 75%	=	Very good
Over 65%	=	Good
Over 50%	=	Fair
Below 50%	=	Need improvement.

The self-assessments findings were as follows:

1. Assessment of the Board consisted of Board Policy, Board Composition, Board Practices, Board Meetings, and Board Training and Development.

The results indicated excellent/most suitable overall performance, with an average score of 90.38%.

2. Assessment of Individual Directors (Self-assessment) consisted of accountability for decisions and actions; responsibility for performing the job with full ability and efficiency; equitable treatment of all stakeholders; transparency in job performance and information disclosure; vision to create long-term value; and business ethics.

Overall results of the six categories indicated excellent conformance by most directors, with an average score at 96.64%.

3. Individual Assessment of Other Directors (Cross-assessment) consisted of six identical categories as listed above for direct comparison.

Cross-assessment results in these six categories indicated excellent conformance by most directors, with an average score of 98.43%.

4. Self-assessment of the Committees (entire committees) consisted of Board policy, Board composition, Board practices, and Board meetings.

The results in the four categories indicated excellent/most suitable overall performance for the committees as follows:

4.1 The Nominating Committee indicated excellent performance, with an average score of 100%.

4.2 The Remuneration Committee indicated excellent performance, with an average score of 98.61%.

4.3 The Corporate Governance Committee indicated excellent performance, with an average score of 98.61%.

4.4 The Enterprise Risk Management Committee indicated excellent performance, with an average score of 88.89%.

5. Audit Committee's Performance Assessment

Under PTT's regulations on performance assessment of the Audit Committee and Office of Corporate Audit 2014, the Audit Committee Manual for State Enterprises under the Ministry of Finance, and SET's good governance handbook for internal auditors and the audit committee Section 1.1: Responsibility of the Audit Committee, the Audit Committee must assess its performance by undertaking self-assessment at least once a year. The individual self-assessment or the entire committee's assessment is presented yearly to the Board, specifying problems leading to unfulfilled objectives. This year the Audit Committee's Meeting No. 10/2560 (2017) of October 6 resolved to use the same assessment forms for the Audit Committee, namely Assessment of Individual Directors (Self-assessment), Individual Assessment of Other Directors (Cross-assessment), and Assessment of the Committee (Entire Committee), since they conformed to the best practices stipulated by SEPO and SET. The Audit Committee's Extraordinary Meeting No. 5/2560 (2017) of November 21, 2017, approved the assessment of its performance for 2017 with the following details:

- Self-assessment elements consisted of business knowledge/ specific expertise/ duties and authorities/ independence and fairness/ understanding of duties and responsibilities of members/ commitment to work and meetings.

The assessment criteria were 4 = Excellent, 3 = Very good, 2 = Good, 1 = Need improvement.

The results of the Audit Committee's self-assessment indicated "excellent" overall performance, with an average score of 3.83.

- Cross-assessment consisted of six identical categories listed above for direct comparison.

The results of the Audit Committee's self-assessment indicated "excellent" overall performance, with an average score of 3.91.

- Assessment of the entire committee consisted of structure and composition/ meeting/ roles and responsibilities/ relationship with the Office of Corporate Audit and the external auditor/ relationship with the management/ reporting/ quality consistency.

The assessment criteria were 4 = regularly implemented, 3 = mostly implemented, 2 = sometimes implemented, 1 = never implemented.

The results of the assessment of the entire Audit Committee was at the "regularly implemented" level, with an average score of 3.91.

PTT also analyzed the assessment topics to develop/improve performance. In addition to developing the annual performance assessment forms for the Board, this year the Board began gauging directors' efficiency and effectiveness by defining KPIs for their performance early in the year for measuring the Board's performance and for determination of their compensation. The assessment findings this year were "excellent" at Level 5.

3. Directors' Orientation (Directors Orientation)

For incoming directors, PTT arranges an orientation program dealing with its business policies, capital structure, shareholding structure, business performance, information systems, as well as related laws and regulations. Moreover, each director receives a Director's Handbook, which includes the following topics:

Director's Handbook

1. Public Company Act
2. Securities and Exchange Act
3. Standard Qualifications of Directors and State Enterprise Officer Act
4. Company Registration Certificate
5. Company Certificate
6. Company Objectives
7. Articles of Association
8. Company Rules (17 Rules)
9. PTT Corporate Governance Handbook
10. Manual for Directors of Listed Companies.

Information kit for directors

1. Overview business presentation of PTT by the President & CEO
2. List of directors, committees, and management structure
3. Director Fiduciary Duty Check List
4. CG principles for listed companies
5. Connected transactions of listed companies
6. Guidance on providing information for listed company management
7. PTT Plc Company Profile (short version)
8. Annual Report
9. Financial Report
10. Annual Corporate Sustainability Report
11. Governance book

12. “PTT: The S-Curve Story”
13. Debenture Magazine
14. PTT Spirit publication
15. Article: “Truth about Privatization”
16. PTT Way of Conduct
17. PTT Technology and Innovation Management Operating System
18. PLLI Course Catalog.

In his briefing to the incoming directors this year, the President & CEO presented information about PTT, its policies, and relevant information for their overview of business operations and performance. At the same time, on one occasion, the above-mentioned documents and handbook for new directors were handed over.

4. Directors’ Development

> Course/ Seminar

The Board and the management value regular participation in development training relevant to their performance, as seen in each of their profiles. Most directors (over 90%) have undergone training with IOD. PTT supports and encourages their IOD training as well as other institutions in all relevant courses throughout the year, which included regular in-house briefings by experts and consultant companies with helpful business data. In addition, it stages study trips to other agencies and organizations to promote helpful initiatives for application to PTT’s business.

This year the following directors underwent training and seminars.

Name	Course/ Seminar
Mr. Piyasvasti Amranand	<ul style="list-style-type: none"> • Forum at the Thai Energy Academy (TEA) for Senior Executives • Forum on The Future of Energy in Thailand at the SPE Thailand Season Opening Meeting • Petroleum Institute of Thailand Seminar on Electric Vehicles & Future Energy System: Recent Development and Implications • The Amartya Sen Lecture Series on Globalization, Inequality and Thailand 4.0
Prof. Dr. Kittipong Kittayarak	<ul style="list-style-type: none"> • Forum under the CG WE CAN SEASON 6 Project
AM Boonsuib Prasit	<ul style="list-style-type: none"> • Ethical Leadership Program (ELP 7/2017), Thai Institute of Directors (IOD) • PTT Group CG Day 2017
Mr. Boontuck Wungcharoen	<ul style="list-style-type: none"> • SEPO seminar on State Enterprise Directors’ and Top Executives’ Remuneration System

Name	Course/ Seminar
Gen. Chatchalerm Chalermsook	<ul style="list-style-type: none"> • PTT CG Day 2017
Mr. Chanvit Amatamatuchart	<ul style="list-style-type: none"> • Ethical Leadership Program (ELP 7/2017), IOD
Mrs. Nuntawan Sakuntanaga	<ul style="list-style-type: none"> • Petroleum Institute of Thailand Seminar on Electric Vehicles & Future Energy System: Recent Development and Implications
Mr. Vichai Assarasakorn	<ul style="list-style-type: none"> • Petroleum Institute of Thailand Seminar on Electric Vehicles & Future Energy System: Recent Development and Implications • PTT Group AC Forum 2017
Mr. Thon Thamrongnawasawat	<ul style="list-style-type: none"> • Thai Energy Academy (TEA) for Senior Executives, Class 9 • Anti-Corruption: the Practical Guide (ACPG), Director Accreditation Program (DAP), IOD (in training) • PTT CG Day 2017 • Petroleum Institute of Thailand Seminar on Electric Vehicles & Future Energy System: Recent Development and Implications • The Amartya Sen Lecture Series on Globalization, Inequality and Thailand 4.0
Mr. Somsak Chotrattanasiri	<ul style="list-style-type: none"> • Successful Formulation & Execution of Strategy (SFE), IOD (in training) • Senior Executive Course of the Capital Market Academy, Class 24
Mr. Somchai Sujjapongse	<ul style="list-style-type: none"> • Participation in the 2017 Outstanding State Enterprise event
Mr. Don Wasantapruet	<ul style="list-style-type: none"> • PTT CG Day 2017 • Petroleum Institute of Thailand Seminar on Electric Vehicles & Future Energy System: Recent Development and Implications • The Amartya Sen Lecture Series on Globalization, Inequality and Thailand 4.0
Mr. Somkit Lertpaithoon	<ul style="list-style-type: none"> • Thai Energy Academy (TEA) for Senior Executives, Class 10
Mr. Thammayot Srichuai	<ul style="list-style-type: none"> • Director Certification Program (DCP 239/2017), IOD
Mr. Tevin Vongvanich	<ul style="list-style-type: none"> • Ethical Leadership Program (ELP 7/2017), IOD • Forum at the Thai Energy Academy (TEA) for Senior Executives • PTT CG Day 2017 • Petroleum Institute of Thailand Seminar on Electric Vehicles & Future Energy System: Recent Development and Implications • PTT Group CG Day 2017

> Visits to Businesses, Assets, and Employees of PTT Group Companies/ Energy Business Investigation

PTT's policy is to organize periodic visits and study trips to operations, assets, and employees, domestic and overseas for the directors to foster their understanding of the business to be able to apply their expertise and experience to their consideration of energy-related matters concerning PTT and Thailand.

At the same time, the Board will be able to compare energy policy-making with that of Thailand while enabling directors to track data and progress in the energy business and share views with experts from world-class, leading energy companies first-hand. This would provide insights into PTT Group's investment growth abroad, which aligns with the group's future business directions. The knowledge and direct experience derived from this activity will contribute to their mastery of world-class energy businesses and aid in setting PTT's and Thailand's businesses.

This year the Board's visits to PTT Group's business operations, assets, and employees were as follows:

- A visit to Jembayan coal mining operated by Sakari Resources Limited (SAR), an affiliate of PTT Energy Resources Co., Ltd., in Indonesia.
- A study visit to business operations and energy or related businesses, as well as emerging technologies, in the US, together with information sharing with senior executives of foreign businesses, including a meeting with Charles River Venture's partner about venture capital; concept and focused development of innovations to give birth to businesses, goods, and services; study of MIT Energy Initiative and Precourt Energy Efficiency Center of Stanford University concerning the construction of eco-systems in the form of open innovation to enable the

extension of novel research and technology to business operations together with the start-up business concept; an executive meeting and visit to 24M Technologies to share perspectives on the energy business and discuss viability and future business opportunities; an executive meeting and visit to GM's factory; a meeting with Tesla executives on today's promising EV business; an executive meeting with GE Digital Disruptive Technologies about Disruptive Thinking, which is playing a significant role in today's businesses. The discussion also covered productivity improvement and the New S-Curve.

- A visit to the businesses, assets, and employees of PTT International Trading, PTT Regional Treasury Center Pte. Ltd., and PTT Energy Resources Co., Ltd. (a PTT affiliate in Singapore); an executive meeting with Pavilion Energy to share views on the energy business, energy liberalization, and consulted on the viability and opportunities of joint business undertaking; an executive meeting with Temasek, in which the Singapore government holds equity, to share views about investment, management and governance of affiliates; and a visit to S&P Global Platts.

Also, this year the Board made the following domestic study visits:

1. Project areas of Rak Nam, Rak Pa, Rak Khung Bang Kachao in Amphoe Phra Pradaeng, Samut Prakan. PTT and its network have played a key role in developing the Khung Bang Kachao (river bend) in economic, social, and environmental aspects by focusing on the development of the community's quality of life for its own sustainable economic growth while preserving its surroundings.

2. The Board monitored the progress of a Forest in the City Learning Center in Khet Prawet on 12-rai acreage, designed under the PTT Green in the City concept.

Nomination and Appointment of Directors and President & CEO

1. Independent Directors

1.1 Qualifications of Independent Directors

At Meeting No. 1/2556 of January 17, 2013, the Board endorsed a proposal of the Corporate Governance Committee to redefine PTT independent directors' qualifications more stringently than the criteria of SEC and SET and define their roles and responsibilities in a manual signed by the Chairman on January 21, 2013, as follows:

• Qualifications of Independent Directors

(1) Hold up to 0.5% of the voting shares of PTT, its subsidiaries, associates, juristic persons with potential conflicts, or related companies (including the shares held by related parties under Article 258 of Securities and Exchange laws).

(2) Have not been involved in the management or employees, wage earners – including audit advisors, legal or other advisers – on the payroll of PTT, or have control over PTT, its subsidiaries, associates or juristic persons that could pose conflicts of interest for the past two years.

(3) Have no blood relationship or relationship through registration as parents, spouses, siblings, and children. This definition also applies to children's spouses, executives, major shareholder, controllers, or people due to be nominated as an executive or controller of PTT or its subsidiaries.

(4) Business relationship with PTT

(a) Types of relationship

- Professional service
 - Auditor and other professional service provider, including legal adviser, financial adviser, property valuator
 - “Non-independent” criteria
 - Total prohibition for auditors
 - Other professional services: when the total value exceeds THB 2 million per year.
- Commercial/business relationship (similar to SET's requirements for connected transactions)
 - Types of relationship: Full coverage of business transactions, that is, normal transactions, real-estate leasing, asset/service transactions, and financial assistance transactions.
 - “Non-independent” criteria: Transaction value from THB 20 million or 3% of PTT's NTA upward (whichever is lower); the total value must include items occurring within six months before this transaction.

(b) Should the relationship under (a) apply to a juristic person, the parties regarded as “non-independent” consist of the major shareholder, directors that are not independent ones or not a member of the Audit Committee, and executives (or partners) of that juristic person.

- (c) The forbidden periods for (a) and (b): Two years before the appointment
- (d) Exceptions: If necessary and suitable (exceptional cases), independent directors/ Audit Committee members may have more relationship than the non-independent criteria while holding directorship, provided that a prior unanimous approval has been given by the Board. Besides, PTT must disclose such relationship in Form 56-1 and its annual report (Form 56-2). And should PTT should decide to extend the term of that independent director, it must disclose details about such relationship in the meeting notice for the next shareholders' meeting (in the directors' election agenda item).

(5) Are not appointed to represent PTT's directors, its major shareholder, or shareholders related to PTT's major shareholder.

(6) Have no qualifications that compromise the expression of free views.

(7) Independent directors with qualifications 1 through 6 above may be assigned by the Board to decide on business matters of PTT, its subsidiaries, associated companies, sister companies, or juristic persons that could pose conflicts of interest; such decisions are to be collective decisions.

Incidentally, if independent directors serve in this position in PTT, its subsidiaries, associated companies, or sister companies, PTT must also disclose information about such service and the total compensation of such directors in Form 56-1 and Form 56-2.

• Roles and Responsibility of PTT's Independent Directors

(1) Recommend essential, beneficial matters to PTT and its minor shareholders to the Board or the President & CEO, or both.

(2) Advocate roles and responsibilities of the Board and provide views commonly expected of independent directors for the benefit of PTT and its minor shareholders.

(3) Review PTT's compliance with laws dealing with independent directors, and revise the definition of independent directors for suitability and legal completeness.

(4) Take other Board-assigned actions provided that these actions do not compromise their independence.

(5) An independent director's term begins once he or she fulfills all the requirements under the definition for PTT's CG; it ends when he or she lacks qualifications or completes the PTT term.

(6) The independent directors must hold their own meeting at least once a year.

1.2 Segregation of the Chairman and the President & CEO Positions

To segregate policy-making duties from those of day-to-day management and to enable directors to oversee, look after, and assess performance effectively, PTT has required that the Chairman and the President & CEO are always two persons. This is because the Chairman needs to oversee the management's performance, guide, and assist it, but not to take part in or interfere with day-to-day management, which is the duty of the President & CEO under the authority delegated by the Board.

The current Chairman is an independent director. He exercises high-level leadership and ensures that directors do not fall under the influence of the management by encouraging them to exercise their voting rights and strictly comply with CG principles.

1.3 Independence of the Chairman

At Extraordinary Meeting No. 1/2557 (2014) of July 4, 2014, the Board appointed Mr. Piyasvasti Amranand, an independent director, the Chairman in compliance with the CG principles for listed companies (2012 edition). It would allow the work of the Chairman to be independent and boost confidence in transparency of operations and fair treatment of all stakeholders.

2. Nomination of Directors and President & CEO

2.1 Nomination of Directors

(The nominating process to appoint directors is reported under Corporate Governance, entitled “2.1 Proposal of additional agenda items and nomination of directors” and “1.2 The Nominating Committee”).

2.2 Nomination of President & CEO/ Succession Planning

Because PTT is a state enterprise, the nomination and appointment of the President & CEO must follow the Standard Qualifications of Directors and State Enterprise Officer Act. The directors must have the qualifications as specified in Article 8 ter and the nominating procedures as specified in Article 8 quarter. The Board is to appoint a Nominating Committee with five members legitimately qualified to nominate persons with appropriate knowledge, capability, and experience to fill the positions of PTT management. They must be legitimately qualified and cannot be PTT directors, except for the management who are directors by title. They must not be older than 58 years old when submitting the application form. When the Nominating Committee has selected appropriate candidates, it submits the results to the authority's consideration. The appointment must be completed within one year from the day the incumbent left the position. The employment contract lasts up to four years for each term. If the Board wishes to hire the previous person after the completion of his term as specified in the employment contract, it does not have to go through the nominating process. However, it cannot hire that person for more than two consecutive terms.

*The information on **succession planning for the executives** is reported under Management Structure, entitled “Employees”.*

Governance of Subsidiaries and Associated Companies

Governance Mechanisms

PTT defined a CG policy for PTT Group companies by preparing the “PTT Way” handbook and the “PTT Way of Conduct” guidelines, which compile work procedures in various aspects of PTT Group companies so that their work procedures may be in conformity and unity. They will provide the PTT executives who take the positions of directors and presidents in PTT Group companies or relevant agencies with the guidelines that they can comply with and foster cooperation in business operations among PTT Group companies in the same direction, conforming to and complementing one another, in order to forge competitiveness and meet long-term goals and experience sustainable growth.

Management task grouping falls into two levels:

- **Corporate level**, consisting of
 - Corporate center, which focuses on governance and shared services. A PTT Group policy is defined for alignment
 - COO/BG, whose role is to define strategies and goals and closely monitor each business group's performance to pursue operational excellence and forge synergy.
- **Operating level in PTT Group**, namely business units and their companies, which focus on their own businesses to achieve success and integrate PTT Group governance and shared services with their own operations for maximum efficiency.

Corporate level and BU/ Flagship management are linked through governance mechanisms, namely

- Definition of company regulations and requirements
- Policy transfer leading to implementation by PTT executives holding directorships or the top management positions of PTT Group companies or PTT officers on secondment in PTT Group
- Linkage and driving of tasks toward goal achievement through assorted committees
- Transfer, monitoring, advice, and assessment of policy drives among PTT Group companies through the management of each affiliate of each business unit.

In addition, PTT has defined key roles in the management of PTT Group companies for maximum benefit as set by the mission, as follows:

Roles of the Board

- Define the company's vision, directions, strategies, and policies
- Appoint the management to conduct business
- Monitor and ensure that the operations provide maximum benefit to the shareholders and stakeholders
- Adhere to good governance

Roles of the top management

- Provide linkage of strategies and policies between the company and PTT Group based on concrete implementation
- Manage the company so that its performance may satisfy the shareholders

Roles of the Corporate Secretary

- Support the directors and the President & CEO

Roles of the Shareholders

- Elect and monitor directors
- Jointly formulate the company's policy

Below are the criteria and rules that dictate the roles and duties of PTT's directors and the top management in PTT Group:

- PTT Plc. Articles of Association on the investment criteria in PTT Group companies and governance guidance of PTT-invested companies (2014)

- PTT Plc. Articles of Association on the internal task division of PTT of 2010
- PTT Plc. Articles of Association on personnel management
- PTT Plc. Articles of Association on the investment criteria in PTT Group companies and governance guidance of PTT-invested companies (2015)
- Rules of the Securities and Exchange Commission (SEC)
- Rules on the replacement of directors in PTT Group companies not listed on SET
- Rules on the appointment of executives as boards of directors in PTT Group companies not listed on SET
- Rules on the management of PTT Group companies
- Anti-corruption rules regulated by the CAC panel.

Policy on Serving as Directors of Other Companies

This year PTT had 36 affiliated companies, five of which are SET-listed flagships. PTT therefore adopted the PTT Group management structure for synergy and alignment of policies. To achieve this, it appointed directors or management team members as directors in these companies to supervise policies and business management which aligned with PTT's policies for the benefit and value addition for all stakeholders. The objectives of such appointments are:

1. To ensure that the management of a given company aligns with the policies of PTT Group companies, monitor its overall business performance to align with PTT's policy, and institute comparable standards.
2. To establish synergy for the business of PTT Group companies and add value to all related parties, including Thailand as a whole.

3. To apply specific expertise in support of business, including financial know-how to improve accounting and financial processes to enable a given company to grow robustly. This includes assistance to companies outside PTT Group. The resulting application of the knowledge and expertise gained from serving in such leading companies will enhance the benefit to PTT and foster cordial relations and business alliance with PTT.

4. This is part and parcel of the responsibility of the directors and the management of PTT.

PTT ensures its consideration of executives or outsiders from the Ministry of Finance's Director's Pool for appointment within PTT Group, which is regarded as a state enterprise, based on the act on standard qualifications of directors and state enterprise officials. Chosen directors from the pool must make up no less than one-third of other directors of a given state enterprise. As of December 31, 2017, PTT had 27 members who belonged to the Director's Pool. It also ensures that PTT executives and such outsiders who serve as directors in PTT affiliates serve on no more than three PTT affiliates or other state enterprise affiliates. This is designed to lower risks of conflicts of interest and ensure conformance to applicable laws, as well as conformance to a Cabinet resolution of January 24, 2011, on fraud prevention measures at state enterprises, entitled "The appointment of senior government officials or persons as directors on multiple state enterprises", as proposed by NACC.

Finally, the Board defined guidelines and criteria for serving in various positions by PTT Group's executives. This year the Board decided to adopt them as part of the CG Handbook.

Supervision of the Use of Inside Information

1. Internal Control System

PTT consistently values internal control, particularly a system that is comprehensive in scope of activities and aspects, as well as adequate and suitable for its businesses, to achieve objectives on:

1. Operational excellence: Ensure efficient, effective management of resource consumption, together with stewardship of properties through prevention and reduction of errors, damage, waste, and fraud

2. Reporting reliability: Ensure that financial and other reports developed for internal and external consumption are accurate, credible, and timely

3. Compliance: Ensure compliance with laws and regulations dealing with the organization's business together with strict compliance with PTT-defined policies and procedures dealing with its businesses.

Under PTT's system, a unit is responsible for internal control to assess such control. The President & CEO has authorized the Corporate Plan and Risk Management Committee together with the Strategic Investment Management and Internal Control Committee to define work procedures under PTT's internal control standards, assess the outcomes, and report on PTT's internal control. The Board has assigned the Audit Committee to review the outcomes of such internal control assessment, annually conducted by the management and the Office of Corporate Audit, as highlighted below.

(1) Control Environment

PTT commands a sound overall control environment that is adequate for business efficiency and effectiveness. Its executives have promoted an organizational culture focusing on the code of conduct as a role model with the following implementation:

- PTT has defined a policy and procedures in writing on integrity and a code of conduct. The Corporate Governance Committee defines a CG policy in line with international standards. Disclosures are made about conflicts of interest to ward off activities of such conflicts, illegal, and improper activities. The policy and the handbook are revised each year. Each director, management team member, and employee sign his or her name to acknowledge and conform to such policy and handbook as part of their work, illustrating the commitment to concretely applying the CG policy and code of conduct.
- PTT has instituted an organizational structure that decentralizes power for business flexibility and alignment with prevailing circumstances. Duties and responsibilities are defined in writing, with definitions of key performance indicators (KPIs) set early in the year as guidelines for employees' performance. Performance is regularly monitored against goals and measured at the year-end. Goals are revised each year. All employees are aware of their roles, authority, duties, and responsibilities.
- PTT has integrated CG with the organization's vision, missions, and core values by setting a goal for PTT as a company with a sustainable growth strategy, a high-performance multinational energy company with excellent capability for growing its competitiveness and a focus on creating shared value (CSV), with suitable benefit to stakeholders on the basis of CG.

(2) Code of Conduct

PTT's written policy and a code of conduct are in place for integrity and a high ethical standard. In the handbook, the Corporate Governance Committee defines the code based on international standards. Violators of the code are subject to disciplinary action.

The essential aspects of the code are included below:

1. Respect the law and the Universal Declaration of Human Rights principles
2. Prevent money laundering
3. Stay politically neutral
4. Stay free of vested interests and conflicts of interest
5. Maintain confidentiality and refrain from using inside information for self-gains
6. Respond to customers' needs and show responsibility to consumers
7. Compete freely and fairly
8. Use a transparent procurement system and treat business partners fairly
9. Show responsibility to communities and society
10. Support employees' rights and establish employee engagement
11. Strictly, transparently, and equitably honor loan contracts
12. Have an efficient internal control system and an internal audit system
13. Have a guideline for accepting and giving gifts, assets, or other benefits
14. Maintain safety, promote health, and preserve the environment
15. Respect intellectual properties and properly apply information technology.

(3) Conflicts of Interest

PTT requires information disclosure to prevent conflicts of interest and illegal, improper activities. Under the Board's policy, business decisions made by the management and employees must be solely for PTT's best interests. All staff must not only avoid engaging in financial and other relationships with external

parties that would lead to financial losses for PTT or a conflict of loyalty or interests, but also not compromise the efficiency of business operations. Those staff with interests or related businesses which may require PTT's review and decisions must report their relationships and connection with possible conflicts of interest. PTT is to disallow such connected persons from exercising their authority for and involvement in such transactions.

(4) Reporting Connected Transactions with PTT

PTT has required the directors, management, and all employees to disclose potential conflicts of interest through a specific disclosure form. In addition, any approval of such items must not contain special conditions or specifications that are out of the ordinary, which forms part of PTT's internal controls. PTT's Office of Corporate Audit and the Audit Committee have been entrusted with the monitoring and resolution of issues related to conflicts of interest. The directors, management, and all employees were required to report for conflicts of interest at the beginning of the year. Also, executives and employees are able to electronically report on the PTT intranet. However, no such cases of significance have arisen. The disclosure form confirms their acknowledgment that violation of ethics and the code of conduct in PTT's business operations is subject to disciplinary measures varying with the seriousness of the actions.

(5) Reporting Vested Interests of Directors, the Management, and Related Parties

In the first quarter this year, the Board developed a form for reporting the vested interests of directors, the management, and related parties as basic information to manage vested interests for directors and senior management. The directors and the management are to report such matters every year and with every change. The Corporate Secretary is to compile and submit the copy to the Board Chairman and the Chairman of the Audit Committee to check and manage conflicts of interest. This year, however, no such cases have arisen.

(6) Reporting Changes in Share Portfolios

As part of the oversight of inside-information measures, all PTT directors and management, including their spouses and children not yet of legal age, must report any changes in their PTT share ownership to SEC under Article 59 of the Securities and Exchange Act B.E. 2535 (1992) within three days from the dates of sale, purchase, disposal, or receipt of such shares. PTT defines the policy of disclosing or reporting the sale, purchase, disposal, or receipt of such shares, changes in share ownerships of the directors and the management to the monthly Board meeting, contained in advance as a regular agenda item.

Moreover, one week before the closing of the quarterly and yearly financial statements, the Office of the President and Corporate Secretary issues a letter to the directors, executives, or units with privilege of inside information, forbidding them to disclose such information to external parties or unrelated parties, and to buy or sell PTT shares within 45 days (for quarterly statements) and 60 days (for the annual statements) of the last effective date of the financial statements to the notification date of the financial statements to SET, ahead of the public dissemination of the statements so as to prevent insider trading. This year, all directors and the management have strictly observed this policy. Notifications of no sale, purchase, or transfer of PTT's shares were served on four occasions to the directors and executives:

1. Between January 1 and February 28, 2017 (fiscal year 2016)
2. Between April 1 and May 15, 2017 (fiscal year 2017, first quarter)
3. Between July 1 and August 15, 2017 (fiscal year 2017, second quarter)
4. Between October 1 and November 15, 2017 (fiscal year 2017, third quarter).

A policy was set for the avoidance of share trading of PTT Group companies during other periods. If necessary, such share trading must follow notification to the Corporate Secretary by at least two days.

Directors' Securities Portfolio, 2016 - 2017

No.	Name	Shares (Shares)			Remarks
		Dec 31, 2016	Dec 31, 2017	Change during the year	
1.	Mr. Piyasvasti Amranand	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
2.	Prof. Dr. Kittipong Kittayarak	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
3.	AM Boonsuib Prasit	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
4.	Mr. Boontuck Wungcharoen	–	N/A	N/A	(Appointed on February 27, 2017 and Resigned on December 31, 2017) (As of December 30, 2017, no PTT share held)
	Spouse and children under legal age	–	–	–	–
5.	Gen. Chatchalerm Chalermsook	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
6.	Mr. Chanvit Amatamatucharti	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
7.	Mrs. Nuntawan Sakuntanaga	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
8.	Mr. Vichai Assarasakorn	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
9.	Mr. Somchai Sujjapongse	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
10.	Mr. Somsak Chotrattanasiri	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
11.	Mr. Don Wasantapruet	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–

No.	Name	Shares (Shares)			Remarks
		Dec 31, 2016	Dec 31, 2017	Change during the year	
12.	Mr. Thon Thamrongnawasawat	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
13.	Mr. Thammayot Srichuai	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
14.	Mr. Somkit Lertpaithoon	–	–	–	Appointed on February 27, 2017 (No PTT share held)
	Spouse and children under legal age	–	–	–	–
15.	Mr. Tevin Vongvanich	–	–	–	Shown in the Management's Ownership of Shares Table.
	Spouse and children under legal age	–	–	–	–

Securities Portfolios of Directors Who Completed Their Terms and Who Resigned, 2017

No.	Name	Shares (Shares)			Remarks
		Dec 31, 2016	Dec 31, 2017	Change during the year	
1.	Mr. Prasert Bunsumpun	–	N/A	N/A	Retired on reaching the age of 65 years on February 20, 2017 (PTT shares held by spouse)
	Spouse	130,800	N/A	N/A	–
	Children under legal age	–	N/A	N/A	–

Management's Ownership of Shares, 2016 - 2017

No.	Name	Shares (Shares)			Remarks
		Dec 31, 2016	Dec 31, 2017	Change during the year	
1.	Mr. Tevin Vongvanich	25,000	25,000	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
2.	Mr. Wirat Uanarumit	15,500	15,500	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
3.	Mr. Auttapol Rerkpiboon	22,500	22,500	–	(No trading transaction of PTT shares in 2017)
	Spouse	4,300	4,300		(No trading transaction of PTT shares in 2017)
	Children under legal age	–	–	–	–
4.	Mr. Chansin Treenuchagron	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
5.	Mrs. Nitima Thepvanangkul	41,000	41,000	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
6.	Mr. Kris Imsang	10,000	10,000	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
7.	Mrs. Sriwan Eamrungrroj	–	–	–	(No PTT share held)
	Spouse	110,200	110,200	–	(No trading transaction of PTT shares in 2017)
	Children under legal age	–	–	–	–
8.	Mr. Noppadol Pinsupa	13,600	13,600	–	(No trading transaction of PTT shares in 2017)
	Spouse	50,800	50,800	–	(No trading transaction of PTT shares in 2017)
	Children under legal age	–	–	–	–
9.	Miss Jiraphon Kawswat	N/A	–	–	* Appointed on October 1, 2017 (No PTT share held)
10.	Mrs. Boobpha Amornkiatkajorn	70,000	70,000		(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
11.	Mr. Wittawat Svasti-xuto	55,451	55,451	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–

No.	Name	Shares (Shares)			Remarks
		Dec 31, 2016	Dec 31, 2017	Change during the year	
12.	Mr. Athavuth Vikitsreth	N/A	–	–	* Appointed on March 1, 2017 (No PTT share held)
	Spouse	N/A	2,000	–	(No trading transaction of PTT shares in 2017)
	Children under legal age	N/A	–	–	–
13.	Miss Peangpanor Boonklum	N/A	–	–	* Appointed on October 1, 2017 (No PTT share held)
14.	Mr. Somporn Vongvuthipornchai	–	–	–	(No PTT share held)
	Spouse	10,000	10,000	–	(No trading transaction of PTT shares in 2017)
	Children under legal age	–	–	–	–
15.	Mr. Atikom Terbsiri	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
16.	Mr. Supattanapong Punmeechaow	–	–	–	(No PTT share held)
	Spouse and children under legal age	–	–	–	–
17.	Mr. Sukrit Surabotsopon	2,000	2,000	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
18.	Mr. Termchai Bunnag	–	–	–	* Appointed on March 1, 2017 (No PTT share held)
	Spouse and children under legal age	–	–	–	–
19.	Mr. Sumrid Sumneing	7,000	7,000	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–
20.	Miss Wilaiwan Kanjanakanti	3,699	3,699	–	(No trading transaction of PTT shares in 2017)
21.	Miss Chienvit Udomwatwong	1,516	1,516	–	(No trading transaction of PTT shares in 2017)
	Spouse and children under legal age	–	–	–	–

Note:

No PTT share was held by executives' spouses and children under legal age, except those of No. 3, 7, 8, 12 and 14.

Securities Portfolios of Executives Transferred/ Retired, 2017

No.	Name	Shares (Shares)			Remarks
		Dec 31, 2016	Dec 31, 2017	Change during the year	
1.	Mr. Sarun Rungkasiri	-	N/A	N/A	Retired on September 30, 2017 (No PTT share held)
	Spouse and children under legal age	-	N/A	-	-
2.	Mr. Chavalit Punthong	-	N/A	N/A	Retired on September 30, 2017 (No PTT share held)
	Spouse and children under legal age	-	-	-	-
3.	Mr. Supot Laosuarpha	78,807	N/A	N/A	Retired on September 30, 2017 (No trading transactions of PTT shares in 2017)
4.	Miss Nitaya Direksathapon	5,000	N/A	N/A	Retired on September 30, 2017 (No trading transactions of PTT shares in 2017)

Note:

PTT has issued and offered 60,000,000 warrants to the President, the management, PTT employees, and employees of PTT Group companies seconded to PTT, consisting of two batches: PTT-W1 (40,000,000 units), offered in 2005, with the last exercise date on August 31, 2010, and PTT-W2 (20,000,000 units), offered in 2006, with the last exercise date on September 28, 2011. The warrants were all exercised, and no new ones have been issued.

(7) Filing of Assets and Debts to NACC

Under Article 39 of the Anti-Corruption Act B.E. 2542 (1999), PTT's directors and senior management, including directors and senior management in the companies where PTT holds more than 50% of shares, are required to file a list of their own assets and debts, including those of their spouses and children not yet of legal age, to the NACC each time they take up a position, every three years during their terms, and one year after leaving their positions. To achieve this, PTT will issue a reminder to each of the directors and senior management as required.

(8) Declaring Vested Interests at Meetings

At each Board meeting, the Chairman reminds directors to conform to the policy on conflicts of interest on all agenda items, which requires those with vested interests to declare such interests to the meeting to abstain from voting or giving any views. This year, a total of 6 notices were made to the Chairman out of 13 Board meetings.

(9) Review of Connected Transactions

The Audit Committee reviews related transactions and those with potential conflicts of interest that could harm PTT's businesses. These have been examined for conformance to the law and SET's criteria. All these must be reported to the Board for approval.

(10) Corporate Governance Promotional Activities

The Corporate Governance Committee (CGC) provides oversight, monitors, and assesses the outcomes concerning PTT's CG and anti-corruption. It issues policies and guidelines to the Corporate Governance Working Group (CGWG), which this year underwent a name change to the Corporate Governance Management Committee (CGMC). Chaired by a senior executive vice president and reporting to CGC, CGMC serves as a state enterprise anti-corruption operation center at PTT under the approach set by NACC. CGMC implements the CG and anti-corruption operating plans and sets goals and KPIs approved by CGC and the Board. This year's tasks, both initiated and constantly developed, are described below:

- Delegated to the top management the driving of the corporate value strategy by appointing the COO, Upstream Petroleum & Gas Business Group, to the post of I Champion (Integrity & Ethics Champion) to found the Integrity Power Club among employees. The club is to attract employees as members to jointly engage in activities promoting awareness and expression of integrity by refusing all corrupt practices.
- A channel for directly communicating with all common shareholders is a quarterly, bilingual newsletter called "PTT Bizway", mailed to shareholders. It contains key information, including the vision, missions, message from the President & CEO, performance outcomes, CG, and PTT's sustainability management, business information, among others. PTT annually develops an evaluation form, which this year surveyed readers' satisfaction with the corporation. The results pointed out that PTT's CG was regarded by readers as "considerable" to "maximum" (90.24%).
- For new employees, the CG principles are communicated through orientation sessions, with tests to assess their knowledge under the CG E-Learning system. This year there were three batches, each 60 - 80 persons. All new employees receive a CG handbook each. They were to study them and sign their names as acknowledgment for implementation on their jobs.
- It also developed CG E-learning (self-learning) on the intranet as a learning media for CG, the Code of Conduct, and anti-corruption measures for all employees. Simulated situations drummed up awareness and enabled employees to apply what they learned from their self-learning experience to real-life situations as seen fit. At the end of the learning program, there was a test of their understanding. This year saw more lesson contents included, including anti-money laundering, treatment of creditors, and the anti-corruption policy. To date, 2,953 employees (63%) have joined the CG E-learning experience.

- Developed questionnaires through internal communication channels to assess employees' CG understanding and communication. It was found that over 97.08% commanded mastery of CG.
- Periodic promotional campaigns were conducted through various media within PTT, including exhibitions, a CG intranet website, and two-way communication channels through cghelpdesk@pttplc.com, video shows, CG Comics, and the CG See Through column in the "PTT SPIRIT" magazine, CG reminders through internal e-mails of CG movements together with knowledge tips and participation in activities of interest. In addition, topics dealing with QSHE, SPIRIT, CSR, CG Talk have entered meeting agenda (agenda-based meetings) at all units to convey CG messages and promote awareness of CG-filled business conduct, including meetings of the MC.
- Staged a CG Camp, Year 4, to allow representatives from different units to intensively observe and learn CG and anti-corruption practices to apply what they learn to real-life work while championing the cause among colleagues. This formed part of "strengthening from the inside" under PTT's strategies. At the camp, a workshop on the approach to an organization of integrity, a drama simulating CG compliance, and recreational activities interspersed with tips on CG, among others.
- A CG Day activity was organized under the "CG 4.0, It's Easy to Do Good Deeds for Sustainability" theme with a focus on employees' recognition of the value and inspiration for amassing the energy of good deeds. This was done through a dialogue and expression of the intention of executives, followed by a pledge of commitment to being smart and conscientious, as well as joint responsibility by directors, the management, and employees. PTT also staged an Integrity Forum 2017 activity to share views and concepts of the energy of good deeds together with transparency by representatives of SEC and NACC, among others on the topic of "Energy of Good Deeds...Strength from Within Creates Transparency toward Sustainability".
- PTT values PTT Group's CG to align with company management in the "PTT Group" management approach. To this end, goals have been defined for the elevation of the CG standards among PTT Group to comparable levels and getting prepared for ranking. Work plans were defined and proactive PR approaches were mapped out. A PTT Group Corporate Governance Committee was appointed to jointly investigate and develop an international-standard approach for PTT Group guidelines. A PTT Group CG Day was organized, a key annual activity designed to campaign, promote, and publicize CG practices among SET-listed PTT Group companies, namely PTT, PTTEP, PTTGC, TOP, IRPC, and GPSC. External guests of honor continued to join the event, including representatives from SET, SEC, IOD, Anti-corruption Network Foundation, business partners, Board of Directors, executives, and employees of PTT Group companies. This year GPSC hosted the event, entitled "PTT Group CG Day 2017: CG in DNA: Together We Can". CG is now PTT Group's identity for jointly nurturing a culture of transparency and freedom from corruption, which will expand to business networks, society, and the nation as a whole. The day's activities also featured a special lecture by Prof. Wicha Mahakhun, Chairman, Anti-Corruption Foundation, and a CEO forum among six PTT Group companies under the "Decoding CG to Continue Good Deeds and Strive for a Sustainable Culture".
- Besides promoting CG knowledge within the corporation, PTT shared this knowledge with external parties by agreeing to requests for visits by assorted organizations/institutions. PTT's top management were also invited to give talks or join seminars on the subject.

(11) Anti-corruption

- PTT defined its annual work plan in line with the national strategies on the prevention and suppression of fraud, phase 3 (2017 - 2021) by defining guidelines concerning anti-corruption as part of its business ethics and code of conduct, including a code of conduct on vested interests and conflicts of interest, on accepting and giving presents, assets, or other benefits. PTT absolutely does not support bribery.
- In 2010, PTT enlisted in the declaration of intention to join Thailand Private Sector Collective Action Coalition against Corruption (CAC), an endeavor of the Thai Institute of Directors (IOD) with the support of the government and NACC. PTT was one of the first 27 companies to do so.
- In 2012, PTT joined the United Nations Global Compact (UNGC) to show its desire to apply the principles of human rights, labor rights, environmental preservation, and anti-corruption at the international level to its business conduct. PTT presents an update of its compliance with the 10 elements of UNGC in its corporate sustainability report.
- Policy announcement:
 - Since 2014, PTT has begun enforcing PTT's and PTT Group's anti-corruption policies across each organization. It requires the Anti-Corruption Policy as a part of PTT's Corporate Governance, Ethics Standards, and Code of Conduct Handbook and requires PTT Group's Anti-Corruption Policy as part of the PTT Way of Conduct so that PTT Group companies may observe the same standards and management approaches and that all companies may achieve synergy under the investment objective. To this end, PTT organized media to convey the knowledge and a workshop with PTT Group representatives so as to develop gap assessment and gap closure plans through self-assessment under the CAC project. The purpose is to ready PTT Group companies for the certification process for CAC membership.
 - PTT's Anti-Corruption Policy forbids PTT's employees to carry out or participate in corrupt practices as well as any bribery giving or acceptance (direct and indirect). They must seriously observe the Anti-Corruption Policy, which covers various processes, including donation to charities, human resource administration, material procurement, and internal control.
 - In 2015, PTT declared its "No-Gift Policy" for any festive period. In 2016 - 2017 it enforced practical guidelines under PTT Group's policy on giving and accepting gifts, entertainment, or other benefits to establish a higher standard for business practices in the hope of having all employees perform to the best of their ability without expecting benefits. To this end, a letter was sent to business partners and external agencies, and signboards were put up on the premises of PTT along with assorted PR channels. PTT was the prototype company of Thailand to concretely enforce this policy.

- Communication, training, and highlights of tasks:
 - PTT communicates its Anti-Corruption Policy and guidelines to its subsidiaries, associates, and other PTT-controlled companies, business partners, and stakeholders, as well as the public, through assorted channels like letters, e-mails, website, PTT Intranet, seminars, and exhibitions so that all stakeholders may acknowledge and conform to PTT's guidelines.
 - PTT establishes constant communication with and training for its employees to develop true understanding about PTT's anti-corruption measures, expectations, and punishment for violators, including orientation sessions, an ethics curriculum, and CG E-learning. It also arranges for its executives and employees to join external training courses on anti-corruption.
 - Conforming to CAC's certification process, PTT duly secured CAC membership on October 3, 2014.
 - Launch of new systems under the PTT Intranet, designed to serve as a key tool for all PTT employees to show their transparency, namely a system to pre-report PTT Group securities trading to prevent insider trading and a system to report employees' acceptance of presents, assets, or other benefits in view of the No-Gift Policy so that employees who find it inevitable to accept such items and cannot return them to their givers can deliver such items for collection and donation for public use.
- PTT's hope is that it will become part of a transparency network for a strong Thai society. To this end, it promoted and pushed its business allies to declare their own intention to join CAC to lower corruption risks across their supply chains. This year it informed business partners to actively urge them to join CAC at the Supplier Relationship Management (SRM) Seminar, a seminar of marine petroleum product transporters, and a seminar of tank truck petroleum product transporters.
- Recognizing that corruption is a crucial problem that undermines the nation, PTT values its role of participating with public and private agencies in tracking, inspecting, and upgrading Thailand's transparency, namely through the implementation of the Integrity Pact. This year PTT's participating projects were the Fifth Onshore Gas Transmission Pipeline Project, segment 2 (Chachoengsao-Nonthaburi) and the LNG-Receiving Terminal Project in Rayong. PTT also formed anti-corruption networks through assorted activities, including the National Anti-Corruption Day, organized by the Anti-Corruption Organization of Thailand. Other activities included the definition of assessment criterion of CAC assessment for SMEs together with Thai IOD and the development of a master plan and action plan on enhancing PTT's morality for the National Morality Promotion Committee, Department of Religious Affairs, Ministry of Culture.
- Oversight and monitoring of performance:
 - The Board ensures that PTT commands an efficient system in support of anti-corruption to ensure that the management recognizes and values anti-corruption and cultivates it as a corporate culture.

- The Audit Committee supervises internal control, financial reporting, and other procedures related to anti-corruption measures, steers conformance to anti-corruption measures, and reviews applicable measures and internal control to ensure that the measures are adequate and effective. The committee reviews risk assessment and provides recommendations to the Board on suggested practices to mitigate such risks. Executives must implement such recommendations. The committee also regularly reports internal-audit outcomes regarding anti-corruption measures to the Board and provides good practices to the Board and the executives.
- The Corporate Governance Committee annually defines and reviews the Anti-Corruption Policy, provides recommendations and guidelines, monitors, and assesses anti-corruption performance.
- The Risk Management Committee steers and advocates risk management practices related to anti-corruption by assessing corruption risks and reviewing anti-corruption measures for adequacy and suitability.
- Executives establish risk assessment for business processes that may lead to corrupt practices, review the suitability of processes and measures, and personify proper behavior as well as communicating it to all employees and related parties.
- PTT has developed a Corruption Risk Assessment Manual for all units to apply as guidelines for assessing corruption risks in their respective business processes and for defining suitable internal control processes. This year Anti-Corruption Management Systems training was provided to vice presidents upward in two batches to elaborate the methods for assessing corruption risks, key internal control measures, decision-making guidelines, and provision of suitable advice to subordinates. PTT also handpicked units responsible for processes susceptible to corruption to join the Corruption Risk Assessment Workshop for application to their own processes and monitored the effectiveness of such measures to see whether the measures successfully reduced risks to manageable levels.
- PTT establishes procedures for maintaining auditable documents and records to confirm the accuracy and suitability of financial reports. The internal control of accounting processes and information storage is audited to verify the effectiveness of anti-corruption processes and ensure that the entry of financial items is well-evidenced for audit.
- The Office of Corporate Audit examines items of potential conflicts of interest, the likelihood of corruption, and corporate efficiency for managing risks arising from corporate corruption and those at operating levels. The office also reviews business ethics principles and the code of conduct for executives and employees. It reviews and reports to the Audit Committee and top executives immediately when encountering items or actions that could harm PTT's performance outcomes, including corruption.

- Measures, scope, and tools for whistleblower protection:
 - PTT's human resource administration process reflects its commitment to anti-corruption measures. Although refusal to take part in corruption may deprive PTT of business opportunities, its policy is not to demote, punish, or harm those that do so.
 - PTT's employees should not ignore actions in potential conflicts with anti-corruption measures. PTT has established channels for whistleblowing and protection of whistleblowers or those that need advice about conformance to anti-corruption measures.
 - PTT has established a requirement concerning complaint-making and whistleblowing to define related criteria and guidelines that are suitable and uniform throughout the corporation. In place are protective measures and fair treatment of whistleblowers or those that provide relevant information. Whistleblowing serves as an alerting tool for the organization and a channel for suppressing corrupt practices, since it could resolve problems promptly before they worsen and harm the image and financial position of the corporation. All employees can become whistleblowers by publicizing irregularities for the benefit of PTT's transparency, CG, and sustainability.
- Punishment
 - PTT has established a suitable and fair process for punishing violators of anti-corruption measures. Any violation of this policy, direct or indirect, calls for disciplinary review under PTT's regulations, consisting of fact-finding, investigation, punishment, and appeal. They could also lead to punishment by law. Employees must therefore master and strictly conform to the Anti-Corruption Policy in every step of their work.

2. Risk Assessment

PTT recognizes the significance of risk management under changes that impact its businesses because of internal and external factors. Viewing risk management as a key component of every business process which must be linked with one another, PTT therefore defined a policy of corporate risk management that all must conform to. At every level, risks are to be assessed. As for corporate risks, management is systematically undertaken by PTT's management committees. Operational risks fall under the oversight of respective executives. An Enterprise Risk Management Committee was set up by the Board to steer and support corporate risk management in line with business strategies and goals, as well as changing circumstances, and provide recommendations on guidelines for monitoring and assessment to the Enterprise and Risk Management Plan Committee to manage overall risks for maximum efficiency. It is the responsibility of all units to manage and control risks to manageable levels, as clearly stated in the functional descriptions of all units.

3. Control Activities

The Management Committee is authorized to review overall reports, financial and otherwise, of all business groups, and regularly reviews performance to ensure conformance to regulations, protocols, and job manuals. PTT has defined policies and procedures in writing, including those for performance assessment of all employees, which relies on KPIs to make control of administrative activities suitable, adequate, and auditable. Portions of businesses have been identified for key risks, and mechanisms defined to control and minimize errors. Regular performance reviews by the management are in place, including financial, procurement, and general administrative transactions. Systematic delegation of duties to personnel groups ensures checks and balances. Authority is duly and totally segregated for approval, information processing, transaction recording, receipt and disbursement of cash, reviews of inspection and stewardship of properties. In place is an internal control system for finance and accounting, dealing with cash collection, cash retention, receipt and disbursement, bank deposits, and cash advances. These follow rules with complete, accurate, and regular recording. Systematic storage of accounting documents, both documents and information, is in place to comply with the law.

In procurement, PTT follows rules and requirements on materials and supplies matters, which clearly define responsible parties, including the authority, approval limits, supply need assessment, inspection, control and storage of supplies, and property counting. As for human resource administration, PTT has instituted a human resource administration system, complete with adequate monitoring and assessment, covering recruitment, determination of compensation, duties, personnel development, performance, and communication so that employees may be competent and that PTT's human resource administration may be suitable and efficient.

If PTT enters into transactions with the major shareholder, directors, the management, or related parties, PTT will apply strict measures to ensure that each such transaction goes through the required approval procedures every time and for every item. Parties of vested interests will not take part in the approval of such an item. PTT also closely monitors subsequent actions.

In addition, PTT values security, safety, occupational health, and environment (SSHE), which is likened to a vital shield against risks or impacts, and efficiently and effectively lowers potential losses suffered by its employees, assets, work processes, data, and the surroundings. This would bring about business sustainability while extending corporate performance in all aspects of excellence for vision and goal attainment. The Board looks after, monitors, and provides policies as well as recommendations on SSHE, which PTT then applies as its control activities through the PTT MC, led by the President & CEO, PTT Group QSHE Policy Committee, and PTT QSHE Committee, which screens and steers management practices at the operating level for PTT Group and PTT. To this end, centralized functions are SSHE and Quality Management. This year a presentation on the main SSHE KPI performances was given to the PTT MC for review, direction, and comments once a month. SSHE management actions are detailed in the Corporate Sustainability Report 2017.

4. Information & Communication

This year PTT adopted an ICT direction that is moving into a digital age in support of the Thailand 4.0 Policy. In so doing, the Board cascaded the policy through its oversight of PTT ICT Solutions Co., Ltd. (PTTICT), altering its responsibility and renaming it PTT Digital Solution Co., Ltd. (PTT DIGITAL), which will now accommodate a hub for PTT's and PTT Group's digital services and enhance digital infrastructure. PTT DIGITAL will engage in its digital mandates in an efficient and continual manner, serving as PTT's and PTT Group's mainstay supporting and supplementing their business value.

This year the Board approved and drove a Digitization Roadmap, creating innovations to raise operating efficiency, lowering operating costs and expenses for ICT business competition by focusing on responses to the needs of all stakeholders thoroughly and equitably. For instance, the development of a digital procurement system to handle procurement under the Procurement for Public Agencies Act and support data connectivity with the Electronic Government Procurement (e-GP), the public sector's main procurement system that enables PTT and its business partners to collaborate in a faster and more efficient way. PTT also established an HR Analytic system and introduced Big Data management technology to compile and perform "Smart Analytics" and present and manage PTT's human resources most optimistically businesswise. It also developed a memorandum system to raise the speed and efficiency of data transfer or inter-office memoranda. PTT established an integrated pipeline maintenance monitoring system to improve its operation to manage maintenance work along the pipeline route for maximum security and safety of application. As for its customers, PTT developed and connected data on PTT Blue Credit Cards under the concept of benefits for members by joining KBank

for point accumulation of both PTT Blue Card and KBank Reward Point, using the same card. It also developed a database for maps showing PTT service station locations in the ASEAN area (PTT Life Station – AEC Map) to accommodate liberalized travel into AEC and ASEAN member countries. To elaborate, land routes will be connected, raising the need for service stations. With transport safety and environmental consideration in mind, PTT launched the Eco Driving Project to compile and process data concerning driving and fuel consumption behavior of transport operators serving PTT. The outcomes will be monitored and reported to serve subsequent improvement. Finally PTT has improved its Geographical Information System (GIS) by adding data on its service stations (petroleum products and natural gas), stores, and other businesses related to PTT onto the map for use as a central database that all PTT units can exploit. A system for displaying results was also developed for consumers' access via www.pttplc.com.

To enable the supervision and management of PTT's performance—which involves investment in more than 100 PTT Group companies—to achieve goals, manage risks efficiently, command transparency and auditability, PTT mounted key projects, including a "Finance & Accounting Shared Service Project" to define the directions and strategies of finance and accounting administration so that PTT Group's finance and accounting services may be more flexible and save costs, which benefits the group's competitiveness and business decisions. This also forges CG and credibility among related parties, both inside and outside the corporation. To improve its internal control system, PTT developed a "Continuous Control Monitoring and Auditing System (CCMS)" Phase 2 as a tool to review the effectiveness of and monitor control processes, including lowering risks and evolve cyclical audits into continuous audits.

The Board recognizes and values system preparedness for an ICT infrastructural system for operational excellence efficiency. This is achieved by replacing fiber optic transmission equipment commonly used along PTT's gas transmission pipelines for higher capacity and accommodation of the internet technology connected with future equipment and tools, the so-called "Digital Industrial Internet of Things (IIoT)" in tandem with improved IT security for modernity and efficient preventive ability against external threats. PTT Group therefore invested in the installation of a novel IT security system, "Advanced Persistent Threats (APT)", which wards off computer crimes, one of the biggest threats today. The ultimate result is that corporate data will not leak. Efforts were made to extend certification of the "Information Security Management System" to embrace all key equipment of computer centers ("Platform as a Service (PasS)"). Certification for ISO/IEC 27001:2013 is in place. The space inside the master network computer room is also certified for the ISO 14644-1 Class 8 for its clean-room properties. And the overall building has secured Green Building (Gold) certification from the LEED Institute of the US. In other words, PTT's Computer Center was the first in Thailand to achieve a certification standard on a par with international service provider (Co-location Service Provider). PTT engaged in a project to reduce greenhouse gas emissions in computer center management by introducing a solar power generation system for feeding electrical currents into the center instead of buying electricity from the Provincial Electricity Authority (PEA). In addition, PTT constructed a cogeneration plant, fueled by natural gas, for power generation. Natural gas, a clean-burning fuel, is PTT's own product. What is more, the heat obtained from the power generation system cools the system, bypassing air-conditioning, which consumes electricity. This project has secured certification from the Thailand Greenhouse Gas Management Organization (Public Organization) and recognition as Thailand's pilot project.

5. Monitoring & Evaluation

> Internal Control System

The Office of Corporate Audit is an independent unit which directly reports to the Audit Committee. It fosters assurance and provides consultation to ensure that business processes are properly equipped with CG, risk management, and sound internal controls in support of PTT's objectives.

The office commands an annual operating plan and three-year audit plans in line with PTT's business strategic directions and the risk-based approach (key corporate risks), encompassing PTT Group's businesses, both domestic and international. It reports findings to the Audit Committee for consideration and forwarding to the Board for acknowledgment every quarter. Regular monitoring is undertaken for actions in response to the office's recommendations. In its course of work, the office freely expresses its opinions. No conflicts have arisen between audited units and the office that cannot be resolved.

> Control Self-Assessment (CSA)

To ensure all stakeholders that PTT's business operations will achieve its objectives of business efficiency and effectiveness, credibility of financial and other reports, as well as compliance with laws and regulations, PTT has integrated internal control as part of the routine operation of executives, supervisors, and relevant parties. A unit under Corporate Strategy function called Investment Control and Internal Control Department, which supervises internal control, annually assesses Control Self-Assessment (CSA) within PTT in two forms:

1. Corporate assessment: An individual internal control assessment form for vice presidents upward under PTT's structure as well as executives on secondment at PTT Group companies

Investment Control and Internal Control Department collects data and develops an information system for a list of key controls. The effort consists of data on task description (FD), appointment orders of committees, five-point COSO Internal Integrated Framework (namely control environment, risk assessment, control activities, information & communication, and monitoring). The response format was also developed as an e-CSA (electronic) for executives to assess and access assessment reports. To enable the control self-assessment form to incorporate more activities under key processes for individuals, this year Investment Control and Internal Control Department amended questions for better alignment with the fundamental principles of defining suitable internal control measures for juristic persons' prevention of bribery of public officials under Article 123/5 of NACC.

2. Process assessment: This involves workshops to assess internal control at the activity level with a focus on process control. Assessment outcomes and plans to improve internal controls must have the buy-in of work process owners and monitoring by supervisors.

This year PTT focused on assessing internal control in key processes by applying COSO's five components of internal control and 17 principles to the assessment of a given unit. Consideration was given to efficiency, effectiveness, and the adequacy and suitability of existing internal control mechanisms. PTT also developed approaches / plans for internal control so as to achieve continuous development, promote, and foster the awareness of internal control to serve as a basis for future internal control system design.

This year the Office of Corporate Audit also reviewed the existing internal control to ensure that it is adequate, suitable, and consistently practiced. If a given item needed improvement, procedures were defined to ensure that audit and review findings are promptly remedied. The office also reviewed internal control assessment outcomes and reported to the Audit Committee. It indicated no significant problems or shortcomings, a view shared by the external auditor. In summary, PTT's internal control system was considered adequate and effective from a business standpoint.

Audit Fee

The Company and its subsidiaries paid audit fees to auditor's office for the completed accounting period amounting to THB 133,019,764 (One hundred thirty-three million nineteen thousand seven hundred sixty-four Baht). In addition, the Company and its subsidiaries paid non-audit fee for the professional services fees, including the Offering Memorandum of the Global Medium Term Note Program, professional fees for the completed accounting period amounting to THB 45,226,190 (Forty-five million two hundred twenty-six thousand one hundred ninety Baht).

Compliance with CG in other areas

According to a survey on PTT's CG conducted by the Thai IOD, the overall score given to PTT on the CG principles for listed companies in 2017 was "excellent". On average, PTT earned a higher overall score and individual category scores than the field of 620 companies, and higher than the average score of SET 50 companies. The survey result was based on PTT's public information. This year PTT commands good guidelines apart from the survey criteria which can serve as best practices for other listed companies such as:

- The current Chairman of the Board, an independent director, exercises freedom in assigning policies and guidance for PTT management.
- PTT requires that independent directors make up at least half of its directors.
- Because under the Budget Procedures Act B.E. 2502 (1959), PTT is regarded as a state enterprise, so the Audit Committee endorsed the appointment of the Office of the Auditor-General of Thailand (a credible, neutral agency) as PTT's external auditor. The committee has secured the Board's endorsement for approval by the shareholders, who will appoint and approve its audit fees.
- The Corporate Governance Committee at Meeting No. 5/2560 (2017) of December 13, 2017, and Board Meeting No. 12/2560 (2017) of December 22, 2017, acknowledged the Corporate Governance Code (CG Code) issued by SEC. They recognized very well their role as a governing body for the corporation by implementing CG principles in supplementing sustainable values for business. Having assessed PTT's compliance with the CG Code point by point and in detail, in comparison with PTT's CG Policy and actions, they viewed PTT as having a policy, measures, and work processes that align with CG Code guidelines, in addition to commanding short-term and long-term plans to develop PTT's CG system to suit its business growth and trends among international leading companies.

This year PTT has observed CG, though it may not have fully covered the criteria of the Corporate Governance Report of Thai Listed Companies and the ASEAN CG Scorecard in the following aspects:

1. Board composition of 5 - 12 directors

PTT Regulations (Articles of Association) call for 5 - 15 directors. Today it has a total of 15 directors, which agrees with the requirement for petroleum businesses that needs experts from a variety of professions. The Board has appointed five committees to screen key matters, namely the Audit Committee, the Nominating Committee, the Remuneration Committee, the Corporate Governance Committee, and the Enterprise Risk Management Committee.

(The number of subcommittee meetings has been detailed under "Board Meetings")

2. Director election through cumulative voting

PTT's regulations call for director election to be decided by a majority of votes. Each shareholder carries votes equal to his or her number of shares. In addition, PTT has consistently devised other ways to preserve the rights of minor shareholders, including its encouragement for them to exercise their right to nominate additional agenda items or nominate directors in advance.



Internal Control and Risk Management

Assigned by the Investment and Internal Control Management Committee, the Investment and Internal Control Supervision Department has developed a self-assessment on the part of internal control for the executives, at the level of Vice Presidents and higher, who serve under PTT's corporate structure and those seconded to PTT Group companies. The assessment covers the duties and responsibilities referred in the internal-control guidelines of The Committee of Sponsoring Organizations of the Treadway Commission (COSO), which attributed to the major compositions of internal controls: (1) control environment, (2) risk assessment, (3) control activities, (4) information & communication, and (5) monitoring activities. This move is to ensure that PTT's overall business would achieve the objectives of internal control with regard to business efficiency; resource consumption; stewardship of properties; errors, damage, losses, and waste prevention or reduction; credibility of financial, accounting, and other reports; laws, regulations, Cabinet resolutions, and PTT's policies and regulations compliance. The assessment is also conducted under the scope of corporate governance and anti-corruption measures under the CAC checklist.

After the review on effectiveness of internal controls, the Office of Corporate Audit reported the findings to the Audit Committee and the Board. The Board, then, assesses the system data obtained from the management on the implementation of guidelines/ recommendations to improve the process of internal control. The evaluation indicates that the system of internal control applied in PTT has been graded in adequate and proper as the result of workers sufficient to adequately perform all internal control activities.

Head of the Office of Corporate Audit

Pursuant to the Board of Director's Meeting No. 7/2560 (2017) on July 21, 2017, the Board had resolved to appoint Mr. Chalot Boonlai to be Executive Vice President, Office of Corporate Audit, effective from August 16, 2017 onwards. Mr. Chalot's in-depth understanding in PTT's business operation along with his expertise, skills, and experience in internal audit, principles of good governance, risk assessment, and internal control at both the business and overall levels reflects appropriateness to this position.

Compliance Mechanism

Formerly, PTT defined units responsible for proactively ensuring corporate regulatory compliance include the Office of the President and Corporate Secretary, Office of General Counsel, and the Office of Corporate Audit.

In 2017, the Compliance Department was established to ensure all units' actions to be in accordance with applicable laws, by-laws, rules, regulations, directives, and announcements—both inside and outside the corporation.

Structured under the Office of General Counsel, the Compliance Department has the duties in overseeing employees and all units to strictly engage to all required legal matters, and also those matters involved in investment, state enterprise laws, listed companies, energy laws, and other legislation relating to PTT's business operation, particularly new transactions in Thailand and abroad. Moreover, the Compliance has a duty to give sound legal advice for PTT's personnel and internal units so as to confide that all practice would be complied with all laws and regulations and prevent disruption due to legal issues. To this end, the proactive means of the Compliance would lead PTT's business operating to the goals of zero non-compliance policy with sustainability.



Head of the Office of Corporate Audit

Mr. Chalot Boonlai

Head of the Office of Corporate Audit

Age 57

Education:

- Bachelor of Engineering (B.E.), Chulalongkorn University
- Master of Public Administration (M.P.A.), Burapha University

Training:

- Leadership Development Program:
Center for Creative Leadership, Singapore
- MDD III Business & People Management Program, PLLI
- Anti-Corruption for Executive Program, Thai IOD
- Finance for Senior Executives,
Sasin Graduate Institute of Business Administration of
Chulalongkorn University

Career Experience:

- 2009 - 2012 Manager, Maintenance Section, PTT
- 2010 - 2012 Director, Production,
Thai Lube Blending Co., Ltd.
- 2012 - 2013 Vice President,
Internal Audit Strategy and Quality Improvement
- 2013 - 2014 Vice President, Internal Audit
- 2014 - 2017 Acting Managing Director,
Thai Petroleum Pipeline Co., Ltd.
- 2017 - Present Executive Vice President,
Office of Corporate Internal Audit, PTT

Relevant Important Position: None

Relationship with the Management: None

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PTT Board of Directors



1. **Mr. Piyasvasti Amranand**
Independent Director/ Chairman
2. **Professor Dr. Kittipong Kittayarak**
Independent Director/
Chairman of Audit Committee
3. **Air Marshal Boonsuib Prasit**
Independent Director/
Chairman of the Nominating
Committee

4. **Mr. Boontuck Wungcharoen**
Independent Director/
Chairman of the Remuneration
Committee
5. **GEN. Chatchalerm Chalermsook**
Independent Director/
Chairman of the Corporate
Governance Committee

6. **Mr. Chanvit Amatamatucharti**
Independent Director/ Chairman of
the Enterprise Risk Management Committee/
Member of the Nominating Committee
7. **Mrs. Nuntawan Sakuntanaga**
Independent Director/ Member of the Audit Committee
8. **Mr. Vichai Assarasakorn**
Independent Director/ Member of the Audit Committee

9. **Mr. Thon Thamrongnawasawat**
Independent Director/
Member of Nominating Committee/
Member of the Corporate Governance Committee
10. **Mr. Somsak Chotrattanasiri**
Independent Director/
Member of the Remuneration Committee
11. **Mr. Somchai Sujjapongse**
Director/ Member of the Remuneration Committee

12. **Mr. Don Wasantapruet**
Independent Director, Member of
the Corporate Governance Committee
13. **Mr. Somkit Lertpaithoon**
Independent Director/ Member of
the Enterprise Risk Management Committee
14. **Mr. Thammayot Srichuai**
Director/ Member of the Enterprise
Risk Management Committee

15. **Mr. Supot Teachavorasinskun**
Independent Director
16. **Mr. Tevin Vongvanich**
Director/ Secretary to the Board/
President and Chief Executive
Officer

PTT Board of Directors

* As of December 31, 2017



Mr. Piyasvasti Amranand

Age 64

Independent Director/ Chairman

(%) Share Possession

- None

Appointed

- July 1, 2014 (Chairman since July 4, 2014);
April 11, 2016 (re-elected)

Educations

- Bachelor's Degree (First Class Honors) (Mathematics), University of Oxford, UK
- Master's Degree (Economics), London School of Economics and Political Science, University of London, UK
- Ph.D. (Economics), London School of Economics and Political Science, University of London, UK

Certifications

- Director Accreditation Program (DAP 35/2005), Thai Institute of Directors Association (IOD)
- Certificate in Top Executives in the Energy Education Program (Class of 6th), Thailand Energy Academy (TEA)
- Seminar "Role and Function of Board of Directors of State Enterprise", State Enterprise Policy Office (June 5, 2015)
- Seminar "Incorporation of State Investment Corporation" (July 13, 2015)
- Seminar "Briefing on International Anti-Corruption... International Cases and Practices", IOD (October 14, 2015)
- Seminar Thailand's 6th National Conference on Collective Action against Corruption "Anti-Corruption in Thailand: Sustaining the Momentum" IOD (October 16, 2015)
- Seminar Chairman Forum "Corporate Governance VS Corporate Performance: Duty or Choice?" IOD (May 13, 2016)
- Seminar Anti-Corruption: Leadership Role of the Board in Driven the Organization toward the Draft of the Development of Corporate Governance and Enterprise Management Act... and Good Corporate Governance (October 17, 2016)
- PTT Board Briefing
- Seminar "Electric Vehicles & Future Energy System: Recent Development and Implications" Petroleum Institute of Thailand (PTIT)

Work Experiences

- 2006 - 2008 : Minister, Ministry of Energy
- 2008 - 2009 : Chief Advisor to Chief Executive Officer, Kasikornbank Public Company Limited
- 2009 - 2012 : President, Thai Airways International Public Company Limited
- Present : Independent Director/ Chairman, PTT Public Company Limited
Independent Director/
Chairman of the Audit Committee, Kasikorn Bank Public Company Limited
Independent Director/
Chairman of the Audit Committee, Pruksa Real Estate Public Company Limited
Independent Director/
Chairman of the Audit Committee, Pruksa Holding Company Limited
Chairman, Energy for Environment Foundation

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Chairman, PTT Public Company Limited
- Independent Director/ Chairman of the Audit Committee, Kasikornbank Public Company Limited
- Independent Director/ Chairman of the Audit Committee, Pruksa Holding Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Independent Director/ Chairman of the Audit Committee, Pruksa Real Estate Public Company Limited
- Chairman, Energy for Environment Foundation
- Director, Thai Heart Foundation under Royal Patronage
- Reform Commission of Thailand on Energy

Relation among Family with other Directors and Executives

- None



Professor Dr. Kittipong Kittayarak

Age 59

**Independent Director/
Chairman of Audit Committee**

(%) Share Possession

- None

Appointed

- July 1, 2014; April 28, 2017 (re-elected)

Educations

- Bachelor of Laws (Honor), Chulalongkorn University, Thailand
- Master of Laws (LL.M.), Cornell University, USA (Royal Thai Government Scholarship)
- Master of Laws (LL.M.), Harvard University, USA (Fulbright Scholarship)
- Doctor of the Science of Laws (J.S.D.), Stanford University, USA (Fulbright Scholarship)

Certifications

- Director Accreditation Program (DAP 112/2014), Advance Audit Committee Program (AACP 18/2015), Thai Institute of Directors Association (IOD)
- Barrister-at-Law, Institute of Legal Education Thai Bar Association
- Politics and Government in Democracy for Executives (Class of 5th), King Prajadhipok's Institute
- Diploma, The National Defence Course (Class of 49th), National Defence College
- Diploma, (Class of 8th), Capital Market Academy (CMA)
- Certificate in Top Executives in the Energy Education Program (Class of 1st), Thailand Energy Academy (TEA)
- Seminar "Role and Function of Board of Directors of State Enterprise", State Enterprise Policy Office (June 5, 2015)
- Thailand's 5th National Conference on Collective Action against Corruption (Tackling Corruption through Public-Private Collaboration) (October 16, 2014)

- Seminar Strengthen Good Governance of Directors of Public Enterprises, State Enterprise Policy Office (September 30, 2016)
- Seminar PTT Group AC Forum 2015
- PTT Board Briefing

Work Experiences

- 2005 - 2008 : Deputy Permanent Secretary, Ministry of Justice
- 2008 - 2014 : Permanent Secretary, Ministry of Justice
- 2014 - 2015 : Advisor to the Prime Minister
- 2015 - Present : Executive Director, Thailand Institute of Justice (TIJ)

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Chairman of the Audit Committee, PTT Public Company Limited
- Independent Director/ Chairman of the Audit Committee/ Member of the Compliance Committee, Krung Thai Bank Public Company Limited
- Independent Director/ Member of the Audit Committee, Dusit Thani Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Professor of Law, Faculty of Law, Chulalongkorn University
- Member of the Board of Committee, Thai Bar under the Royal Patronage
- Chairman, The Council of Bangkok University
- Director, The Council of Mahidol University
- Sub-committee, The Judicial Administration Commission - Foreign Affairs Sub-Division
- Member, National Commission for Justice Administration Development
- Member, Office of The Narcotics Control Board
- Executive Director and Vice Chairman, Friends in Need (of "PA") Volunteers Foundation Thai Red Cross
- Member of the Executive Committee, ASIA Crime Prevention Foundation (ACPF)

Relation among Family with other Directors and Executives

- None



Air Marshal Boonsuib Prasit

Age 64

**Independent Director/
Chairman of the Nominating
Committee/ Authorized Director**
(effective August 19, 2016)

(%) Share Possession

- None

Appointed

- September 4, 2014; September 28, 2017 (re-elected)

Educations

- Armed Forces Academies Preparatory School (Class of 13th)
- Royal Thai Air Force Academy (Class of 20th)
- Master of Engineer (Aeronautical Engineering), Hochschule der Bundeswehr Muenchen, Germany
- Squadron Officers (Class of 56th)
- Air Command and Staff College (Class of 33rd)
- Air War College (Class of 36th)

Certifications

- Director Accreditation Program (DAP 117/2015), Role of the Nomination & Governance Committee Program (RNG 7/2015), Ethical Leadership Program (ELP7/2017), Thai Institute of Directors Association (IOD)
- Certificate in Top Executives in the Energy Education Program (Class of 8th) (2016), Thailand Energy Academy (TEA)
- Thailand's 5th National Conference on Collective Action Against Corruption (Tackling Corruption through Public- Private Collaboration) (October 16, 2014)
- Seminar "Incorporation of State Investment Corporation" (July 13, 2015)
- PTT Board Briefing

Work Experiences

2008 - 2011	: Chief of Staff, Directorate of Aeronautical Engineering, Royal Thai Air Force
2011 - 2013	: Deputy Director, Directorate of Aeronautical Engineering, Royal Thai Air Force
2013	: Special Expert, Royal Thai Air Force
2013 - 2014	: Director, Directorate of Aeronautical Engineering, Royal Thai Air Force

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Chairman of the Nominating Committee, PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None



Mr. Boontuck Wungcharoen

Age 61

**Independent Director/
Chairman of the Remuneration
Committee**

(%) Share Possession

- None

Appointed

- February 27, 2017*
(* resigned from directorship effective from December 31, 2017)

Educations

- Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
- MBA (Finance and International Business), New York University, USA

Certifications

- Director Accreditation Program (DAP) (2008), Thai Institute of Directors Association
- Seminar "Directors and Executives Remuneration System for State Enterprise", State Enterprise Policy Office (SEPO)
- PTT Board Briefing

Work Experiences

1999 - 2007	: Executive Vice President, Kasikornbank Public Company Limited
July 2008 - December 31, 2017	: Chief Executive Officer, TMB Bank Public Company Limited

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/
Chairman of the Remuneration Committee,
PTT Public Company Limited
- Director/ Member of the Board of Executive Directors/
Member of the Credit Committee/
Member of the Risk Management Committee,
TMB Bank Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None



GEN. Chatchalerm Chalermsook

Age 62

**Independent Director/
Chairman of the Corporate
Governance Committee**

(%) Share Possession

- None

Appointed

- September 4, 2014; April 11, 2016 (re-elected)

Educations

- Bachelor of Science Program,
Chulachomklao Royal Military Academy, Thailand
- Master of Arts (Military),
Command and General Staff College, Thailand

Certifications

- Director Accreditation Program (DAP 129/2016),
Thai Institute of Directors Association (IOD)
- Seminar Strengthen Good Governance of Directors of
Public Enterprises, State Enterprise Policy Office
(September 30, 2016)
- PTT Board Briefing

Work Experiences

2012	: Assistant Chief of Staff for Intelligence, Royal Thai Army
2013	: Deputy Chief of Staff, Royal Thai Army
2014 - September 30, 2015	: Chief of Staff, Royal Thai Army
Present	: Chairman, MCOT Public Company Limited Chairman, Rubber Authority of Thailand

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/
Chairman of the Corporate Governance Committee,
PTT Public Company Limited
- Independent Director/ Chairman,
MCOT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Member of the National Legislative Assembly (NLA)
- Chairman Rubber Authority of Thailand
- Thailand Trade Representative

Relation among Family with other Directors and Executives

- None



Mr. Chanvit Amatamatuchart

Age 61

**Independent Director/ Chairman of
the Enterprise Risk Management
Committee/ Member of the Nominating
Committee/ Authorized Director
(effective July 24, 2015)**

(%) Share Possession

- None

Appointed

- September 4, 2014; April 9, 2015 (re-elected)

Educations

- Master of Arts (Economics), Chiang Mai University, Thailand
- Master of Economics Program (Development Economics),
National Institute of Development Administration, Thailand

Certifications

- Director Certification Program (DCP 109/2008),
Audit Committee Program (ACP 39/2012),
Ethical Leadership Program (ELP 7/2017),
Thai Institute of Directors Association (IOD)
- Diploma, The National Defence Course (Class of 50th),
National Defence College
- Advanced Certificate Course in Public Economics
Management for Executives (Class of 5th)
King Prajadhipok's Institute
- "Middle Management",
Office of The Civil Service Commission (OCSC)
- Top Executive Program in Commerce and Trade (TEPCoT)
(Class of 4th), Commerce Academy
- Top Executives Program (Class of 18th), Capital Market
Academy (CMA)
- Certificate in Top Executives in the Energy Education
Program (Class of 3rd), Thailand Energy Academy (TEA)
- Seminar Strengthen Good Governance
of Directors of Public Enterprises,
State Enterprise Policy Office (September 30, 2016)
- Seminar Anti-Corruption: Leadership Role of the Board in
Driven the Organization toward the Draft of the Development
of Corporate Governance and Enterprise Management Act...
and Good Corporate Governance (October 17, 2016)
- PTT Board Briefing

Work Experiences

2007 - 2010	: Senior Advisor, Office of National Economic and Social Development Board (NESDB)
2010 - 2016	: Deputy Secretary General, NESDB
Present	: Director of the Sirindhorn International Environmental Park and Energy for Environment Center

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Member of the Nominating Committee/
Chairman of the Enterprise Risk Management Committee,
PTT Public Company Limited
- Independent Director, WHA Corporation Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None



Mrs. Nuntawan Sakuntanaga

Age 59

**Independent Director/
Member of the Audit Committee**

(%) Share Possession

- None

Appointed

- July 1, 2014; April 9, 2015 (re-elected)

Educations

- Bachelor of Accounting in Finance and Banking,
Chulalongkorn University, Thailand
- Master of Business Administration in Marketing
and International Business,
University of Wisconsin at Madison (Wisconsin, USA)

Certifications

- Director Certification Program (DCP 166/2012),
Audit Committee Program (ACP 43/2013),
Financial Statements for Directors (FSD 31/2016)
Thai Institute of Directors Association (IOD)
- Management Development Program, Mt. Eliza, Melbourne,
Australia (1989)
- Certificate, The Civil Service Executive Program
for Senior Civil Servants (Class 38/2003),
Office of the Civil Service Commission
- Diploma, The National Defence Course (Class of 49th)
(2006 - 2007), National Defence College

- Leaders in Development Program-Managing Political
& Economic Reform, Kennedy School of Government,
Harvard University, Boston, USA, 2008
- Top Executive Program in Commerce and Trade (TEPCoT)
(Class of 2nd), Commerce Academy
- Top Executive Program (Class 14/2012),
Capital Market Academy (CMA)
- Corporate Governance Program for Directors
and Executives of State Enterprises and Public Organization
(Class 12/2013), Public Director Institute (PDI)
- Certificate in Top Executives in the Energy Education
Program (Class 5/2014), Thailand Energy Academy (TEA)
- Seminar PTT Group AC Forum 2015
- Briefing on International Anti-Corruption...
International Cases and Practices, IOD (October 14, 2015)
- Seminar "Global Financial Market Outlook 2016", IOD
(November 17, 2015)
- PTT Board Briefing
- Seminar "Electric Vehicles & Future Energy System:
Recent Development and Implications"
Petroleum Institute of Thailand (PTIT)

Work Experiences

September 2012	: Director General, Department of International Trade Promotion, Ministry of Commerce
October 2012	: Deputy Permanent Secretary, Ministry of Commerce
October 2013	: Director General, Department of International Trade Promotion, Ministry of Commerce
October 2015	: Director General, Department of Intellectual Property, Ministry of Commerce
October 2016	: Director General, Department of Internal Trade, Ministry of Commerce
October 2017 - Present	: Permanent Secretary, Ministry of Commerce

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Member of the Audit Committee,
PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Commissioner,
The Securities and Exchange Commission (SEC) Board
- Commissioner, The Insurance Commission Board

Relation among Family with other Directors and Executives

- None



Mr. Vichai Assarasakorn

Age 57

**Independent Director/
Member of the Audit Committee**

(%) Share Possession

- None

Appointed

- September 4, 2014; April 28, 2017 (re-elected)

Educations

- Bachelor of Engineering, New South Wales University, Australia

Certifications

- Director Certification Program (DCP 215/2016), Thai Institute of Directors Association (IOD)
- Top Executive Program (Class of 12th), Capital Market Academy (CMA)
- Diploma, The Joint State-Private Sector Course (Class of 22nd), National Defence College
- Thailand's 5th National Conference on Collective Action Against Corruption (Tackling Corruption through Public-Private Collaboration) (October 16, 2014)
- Seminar "Role and Function of Board of Directors of State Enterprise", State Enterprise Policy Office (June 5, 2015)
- Seminar "Re-energizing Growth through Better Governance", IOD (June 18, 2015)
- Seminar "Incorporation of State Investment Corporation" (July 13, 2015)
- Certificate in Top Executives in the Energy Education Program (Class of 7th) (2015), Thailand Energy Academy (TEA)
- Seminar PTT Group AC Forum 2015
- Briefing on International Anti-Corruption... International Cases and Practices, IOD (October 14, 2015)
- CG Forum 4/2015 - Thailand CG Forum "Governance as a Driving Force for Business Sustainability", SET SEC and IOD (October 28, 2015)
- Seminar Anti-Corruption: Leadership Role of the Board in Driven the Organization toward the Draft of the Development of Corporate Governance and Enterprise Management Act...and Good Corporate Governance (October 17, 2016)
- PTT Board Briefing
- Seminar "Electric Vehicles & Future Energy System: Recent Development and Implications" Petroleum Institute of Thailand (PTIT)

Work Experiences

- 1995 - Present : Director, ShiangHeng International Company Limited
- 2001 - October 2014 : Secretary-General, Anti-Corruption Organization of Thailand
- October 2014 - Present : Vice President, Anti-Corruption Organization of Thailand
- March 2013 - Present : Vice Chairman, The Thai Chamber of Commerce
- 2014 - 2017 : Qualified Director, Financial Institutions Policy Committee, Bank of Thailand
- 2015 - Present : Director, Assets Scrutiny Committee
- 2016 - Present : Chairman of the Sub-committee for the Private Sector Mobilization of the National Anti-Corruption Strategy under National Anti-Corruption Commission
- 2017 - Present : Commission Member in Business Administration, Office of Insurance Commission

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director, Member of the Audit Committee, PTT Public Company Limited
- Independent Director, Krung Thai Bank Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, The Support Arts and Crafts International Centre of Thailand (Public Organization)
- Reform Commission of Thailand on Anti-Corruption

Relation among Family with other Directors and Executives

- None



Mr. Thon Thamrongnawasawat
Age 51
**Independent Director/
Member of Nominating Committee/
Member of the Corporate
Governance Committee**

(%) Share Possession

- None

Appointed

- November 18, 2016

Educations

- Bachelor of Science, Marine Science, Chulalongkorn University
- Master of Science, Marine Science, Chulalongkorn University
- Ph.D., Marine Biology and Ecology, Jamescook University, Australia

Certifications

- Anti-Corruption: the Practical Guide (ACPG), Direct Accreditation Program (DAP), Thai Institute of Directors Association (IOD) (in training)
- Certificate in Top Executives in the Energy Education Program (Class of 9th), Thailand Energy Academy (TEA)
- Seminar "Electric Vehicles & Future Energy System: Recent Development and Implications" Petroleum Institute of Thailand (PTIT)

Work Experiences

October 6, 2012 - September 6, 2013	: Member of the National Reform Council
October 2012 - September 2013	: Member of the Committee on Environment and Natural Resources
October 2012 - September 2013	: Member of Energy Reform and Internal Affair of the National Reform Council
July 5, 2016 - Present	: Honorary Board Member, Marine and Coastal Resources Policy
Present	: Deputy Dean of the Fisheries Faculty, Kasetsart University

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Member of the Nominating Committee/ Member of Corporate Governance Committee, PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Reform Commission of Thailand on Natural Resources and Environment Management
- National Strategic Plan Committee

Relation among Family with other Directors and Executives

- None



Mr. Somsak Chotrattanasiri
Age 60
**Independent Director/
Member of the Remuneration
Committee**

(%) Share Possession

- None

Appointed

- April 22, 2015; April 28, 2017 (re-elected)

Educations

- Bachelor of Arts (Political Science), Kasetsart University, Thailand
- Master of Public Administration (MPA), National Institute of Development Administration, Thailand

Certifications

- Director Certification Program (DCP 113/2009), Audit Committee Program (ACP 33/2011), Thai Institute of Directors Association (IOD)
- Diploma, The National Defence Course (2006), National Defence College
- Senior Executives on Justice Administration Batch (Class of 14th), National Justice Academy
- Seminar Thailand's 6th National Conference on Collective Action Against Corruption "Anti-Corruption in Thailand: Sustaining the Momentum", IOD (October 16, 2015)
- PTT Board Briefing
- Rule of Law for Democracy Course (Class of 4th)
- Top Executives Program, Capital Market Academy (Class of 24th), Thailand

Work Experiences

2009 - 2010 : Advisor, Bureau of the Budget
2010 - 2013 : Deputy Director, Bureau of the Budget
2013 - : Director, Bureau of the Budget
September 30, 2017

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director/ Member of the Nominating Committee, PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Member of the National Legislative Assembly (NLA)
- Council of State, 12th

Relation among Family with other Directors and Executives

- None



Mr. Somchai Sujjapongse

Age 56

**Director/ Member of
the Remuneration Committee**

(%) Share Possession

- None

Appointed

- November 1, 2015; April 11, 2016 (re-elected)

Educations

- B.A. (Economics) (Hons.), Chulalongkorn University, Thailand
- M.A. (Economics), The Ohio State University, USA
- Ph.D. (Economics), The Ohio State University, USA

Certifications

- Director Certification Program (DCP 75/2006), Thai Institute of Director (IOD)
- Certificate, The Civil Service Executive Program for Senior Civil Servants (Visionary Leadership, Class 44/2005), Office of the Civil Service Commission
- Top Executive Program (Class 2/2006), Capital Market Academy (CMA)

- Diploma, The Joint State-Private Sector Course (Class of 20th) (2007 - 2008), National Defence College
- Top Executive Program in Commerce and Trade (TEPCoT) (Class 2/2009), Commerce Academy
- Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organizations 2011, Public Director Institute (PDI), King Prajadhipok's Institute
- Certificate in Top Executives in the Energy Education Program (Class 3/2013), Thailand Energy Academy (TEA)
- Seminar Strengthen Good Governance of Directors of Public Enterprises, State Enterprise Policy Office (September 30, 2016)

Work Experiences

2009 - 2010 : Director-General,
Thai Customs Department,
Ministry of Finance
2010 - 2011 : Director, State Enterprise Policy Office,
Ministry of Finance
2011 - 2014 : Director, Fiscal Policy Office,
Ministry of Finance
2014 - 2015 : Director-General,
Thai Customs Department,
Ministry of Finance
2015 - Present : Permanent Secretary, Ministry of Finance

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Member of the Remuneration Committee, PTT Public Company Limited
- Director/ Chairman, Krung Thai Bank Public Company Limited
- Director, Thai Airways International Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None

**Mr. Don Wasantapruek**

Age 59

**Independent Director,
Member of the Corporate
Governance Committee/
Authorized Director**

(effective August 19, 2016)

(%) Share Possession

- None

Appointed

- July 26, 2014; April 11, 2016 (re-elected)

Educations

- Bachelor of Industrial Engineering, University of New South Wales, Sydney, Australia
- Master of Industrial Engineering, University of New South Wales, Sydney, Australia

Certifications

- Bachelor of Industrial Engineering, University of New South Wales, Sydney, Australia
- Master of Industrial Engineering, University of New South Wales, Sydney, Australia
- Director Accreditation Program (DAP 117/2015), Role of the Nomination & Governance Committee Program (RNG 7/2015), Thai Institute of Directors Association (IOD)
- Thailand's 5th National Conference on Collective Action Against Corruption (Tackling Corruption through Public-Private Collaboration) (October 16, 2014)
- Certificate in Top Executives in the Energy Education Program (Class 6/2015), Thailand Energy Academy (TEA)
- Seminar "Incorporation of State Investment Corporation" (July 13, 2015)
- Briefing on International Anti-Corruption... International Cases and Practices, IOD (October 14, 2015)
- Seminar Anti-Corruption: Leadership Role of the Board in Driven the Organization toward the Draft of the Development of Corporate Governance and Enterprise Management Act... and Good Corporate Governance (October 17, 2016)
- PTT Board Briefing

Work Experiences

2009 - Present : Self-employed

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director, Member of the Corporate Governance Committee, PTT Public Company Limited
- Independent Director, Member of the Corporate Governance Committee, PTT Global Chemical Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None

**Mr. Somkit Lertpaithoon**

Age 58

**Independent Director/
Member of the Enterprise
Risk Management Committee**

(%) Share Possession

- None

Appointed

- February 27, 2017

Educations

- Bachelor of Law, Thammasat University
- D.E.A. de Droit Public Interne (ParisII), France
- Doctorat de l'Université de Droit d'Economie et de Sciences Sociales de Paris II, France

Certifications

- Barrister-at-Law, Institute of Legal Education Thai Bar Association
- Certification in Local Government, Institut international d'administration publique (IIAP), France
- Certificate in Top Executives in the Energy Education Program (Class 10/2017), Thailand Energy Academy (TEA)

Work Experiences

1997 : Member of the Constituent Assembly
2007 : Secretary of the Constitution Drafting Commission
2010 - 2017 : Rector, Thammasat University
2017 : Director, the Government Pharmaceutical Organization (GPO)
Present : Professor, Faculty of Law, Thammasat University

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director, Member of the Enterprise Risk Management Committee, PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Member of the National Legislative Assembly (NLA)
- Governing Board, National Science and Technology Development Agency (NSTDA)
- Honorary Board Member, King Prajadhipok's Institute
- Reform Commission of Thailand on process of judgement (Police)
- Committee, the Draft of the Development of Corporate Governance and Enterprise Management Act...

Relation among Family with other Directors and Executives

- None



Mr. Thammayot Srichuai
Age 59
Director/
Member of the Enterprise
Risk Management Committee

(%) Share Possession

- None

Appointed

- December 15, 2016; April 28, 2017 (re-elected)

Educations

- Electrical Power Engineering,
Rajamangala University of Technology
(Rajamangala Institute of Technology)

Certifications

- Corporate Governance for Executives Program (CGE 5/2015),
Director Certification Program (DCP 239/2017),
Thai Institute of Directors Association (IOD)
- Energy Curriculum Program for Executives (Class 1),
Ministry of Energy
- Command and General Program (Class 47),
Joint Staff College, National Defense Studies Institute
- Senior Executive Program (Class 56),
Office of the Civil Service Commission
- National Defense Course (Class 52), National Defense College

Work Experiences

2007 - 2014	: Deputy Director General, Department of Alternative Energy Development and Efficiency, Ministry of Energy
October 1, 2014 - September 30, 2016	: Director General, Department of Alternative Energy Development and Efficiency, Ministry of Energy
October 1, 2016 - September 30, 2017	: Deputy Permanent Secretary, Ministry of Energy
October 1, 2017 -	: Permanent Secretary,
Present	Ministry of Energy

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director, Member of the Enterprise Risk Management
Committee, PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None



Mr. Supot Teachavorasinskun
Age 52
Independent Director

(%) Share Possession

- None

Appointed

- January 18, 2018

Educations

- Bachelor of Engineering (Civil Engineering), Chulalongkorn
University
- Master of Engineering (Civil Engineering), University of Tokyo
- Doctor of Engineering (Civil Engineering), University of Tokyo

Certifications

- Certificate in Top Executives in the Energy Education
Program (Class of 10th), Thailand Energy Academy (TEA)

Work Experiences

2003	: Associate Professor, Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University
2016 - Present	: Dean, Faculty of Engineering, Chulalongkorn University
2017 - Present	: Board Member, Thailand Institute of Scientific and Technological Research

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Independent Director, PTT Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Board Member,
Thailand Institute of Scientific and Technological Research

Relation among Family with other Directors and Executives

- None

**Mr. Tevin Vongvanich**

Age 59

**Director/ Secretary to the Board/
President and Chief Executive
Officer/ Authorized Director**
(effective September 10, 2015)

(%) Share Possession

- 0.000875 (own 0.000875; Spouse 0)

Appointed

- September 10, 2015

Educations

- B.Eng. (Chemical Engineering) (Hons.), Chulalongkorn University, Thailand
- M.Sc. (Chemical Engineering), Rice University, USA
- M.Sc. (Petroleum Engineering), University of Houston, USA
- Honorary Doctorate of Philosophy, Civil Engineering Department, Faculty of Industry and Technology, Rajamangala University of Technology Isan

Certifications

- Director Certification Program (DCP 21/2002), Financial Statements for Directors (FSD 6/2009), Finance for Non-Finance Director (FN), Role of the Compensation Committee (RCC 13/2011), Anti-Corruption for Executive Program (ACEP 15/2015), Ethical Leadership Program (ELP 7/2017), Thai Institute of Directors Association (IOD)
- Program for Global Leadership (PGL), Harvard Business School, USA
- Democratic Politics and Governance for High-Level Administrators Program, (Class of 10th), King Prajadhipok's Institute
- Senior Executive Program (SEP) (Class of 7th), Sasin Graduate Institute of Business Administration, Chulalongkorn University
- Top Executives Program (Class of 6th), Capital Market Academy
- Diploma, The Joint State-Private Sector Course (Class of 22nd), National Defence College
- Senior Executives on Justice Administration Batch (Class of 16th), National Justice Academy
- Certificate in Top Executives in the Energy Education Program (Class 3/2013), Thailand Energy Academy (TEA)

- Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organizations (Class of 7th), Public Director Institute (PDI), King Prajadhipok's Institute
- Seminar "Briefing on International Anti-Corruption... International Cases and Practices", IOD (October 14, 2015)
- Seminar Thailand's 6th National Conference on Collective Action against Corruption "Anti-Corruption in Thailand: Sustaining the Momentum", IOD (October 16, 2015)
- CG Forum 4/2015-Thailand CG Forum "Governance as a Driving Force for Business Sustainability", SET SEC and IOD (October 28, 2015)
- Seminar "Global Financial Market Outlook 2016", IOD (November 17, 2015)
- Seminar Strengthen Good Governance of Directors of Public Enterprises, State Enterprise Policy Office (September 30, 2016)
- Seminar Anti-Corruption: Leadership Role of the Board in Driven the Organization toward the Draft of the Development of Corporate Governance and Enterprise Management Act... and Good Corporate Governance (October 17, 2016)
- PTT Board Briefing
- Seminar "Electric Vehicles & Future Energy System: Recent Development and Implications" Petroleum Institute of Thailand (PTIT)

Work Experiences

- | | |
|------------------------------|---|
| 2008 - 2009 | : Senior Executive Vice President of Strategy and Development, PTT Public Company Limited (PTT) |
| July 2009 - December 2009 | : Chief Financial Officer, Acting Senior Executive Vice President of Strategy and Development, PTT |
| January 2010 - April 2012 | : Chief Financial Officer, PTT |
| 2012 - September 9, 2015 | : Senior Executive Vice President, PTT, working on a Secondment as President and Chief Executive Officer, PTT Exploration and Production Public Company Limited |
| September 10, 2015 - Present | : President and Chief Executive Officer, PTT Public Company Limited |

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Secretary to the Board/
President and Chief Executive Officer,
PTT Public Company Limited
- Director,
PTT Exploration and Production Public Company Limited
- Director/ Chairman, IRPC Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, Chulalongkorn University Alumni Association
under the Patronage of His Majesty the King (2015 - 2017)
- Chairman, Information and Public Communication
Management Sub-committee, National Committee on
Competitive Advantage (NCC)
- Honorary Board Member,
National Committee on Competitive Advantage (NCC)
- Director, Power of Innovation Foundation
and Power of Learning Foundation
- Chairman, TMA Center for Competitiveness,
Thailand Management Association
- Board of Trustees, Thailand Management Association
- Honorary Board Member,
National Science and Technology Development Agency
- Director, Thailand - United States Educational Foundation
(TUSEF/ Fulbright Thailand) and Ruamchit-Normklao
under Royal Patronage
- Honorary Board Member (Business Management),
Office of the Public Sector Development Commission
- Chairman of Sub-Committee,
The Office of the Public Sector Development Commission
focusing on Financial and Fiscal
- Honorary Advisor,
The 84th Queen Birthday Anniversary Project
- Director, Member of the Economic Reform Commission
- Vice President,
Thai Listed Companies Association (2017 - 2019)

Relation among Family with other Directors and Executives

- None

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PTT Executives

**1. Mr. Tevin Vongvanich**

Director/ Secretary to the Board/
President and Chief Executive Officer

2. Mr. Wirat Uanarumit

Chief Operating Officer, Upstream Petroleum
and Gas Business Group

3. Mr. Auttapol Rerkpiboon

Chief Operating Officer, Downstream Petroleum
Business Group and Acting Senior Executive Vice President,
Downstream Business Group Alignment

4. Mr. Chansin Treenuchagron

Chief Technology
and Engineering Officer

5. Mrs. Nitima Thepvanangkul

Chief Financial Officer

6. Mr. Kris Imsang

Senior Executive Vice President,
Organization Management
and Sustainability

7. Mrs. Sriwan Eamrungraj

Senior Executive Vice President,
Corporate Strategy

8. Mr. Noppadol Pinsupa

Senior Executive Vice President,
Gas Business Unit

9. Miss Jiraphon Kawswat

Senior Executive Vice President,
Oil Business Unit

10. Mrs. Boobpha Amornkiatkajorn

Senior Executive Vice President,
International Trading Business Unit

11. Mr. Wittawat Svasti-xuto

Senior Executive Vice President,
Innovation and Digital

12. Mr. Athavuth Vikitsreth

Senior Executive Vice President,
Public Relations

13. Miss Peangpanor Boonklum

Senior Executive Vice President,
Office of General Counsel

14. Mr. Somporn Vongvuthipornchai

Chief Executive Officer, PTT Exploration
and Production Public Company Limited

15. Mr. Supattanapong Punmeechaow

President and Chief Executive Officer,
PTT Global Chemical Public Company Limited

16. Mr. Atikom Terbsiri

President and Chief Executive Officer,
Thai Oil Public Company Limited

17. Mr. Sukrit Surabotsopon

President,
IRPC Public Company Limited

18. Mr. Toemchai Bunnag

President and Chief Executive Officer,
Global Power Synergy Public Company Limited

PTT Executives

* As of December 31, 2017



Mr. Tevin Vongvanich

Age 59

**Director/ Secretary to the Board/
President and Chief Executive
Officer/ Authorized Director**
(effective September 10, 2015)

(%) Share Possession

- 0.000875 (own 0.000875; Spouse 0)

Appointed

- September 10, 2015

Educations

- B. Eng. (Chemical Engineering) (Hons.), Chulalongkorn University, Thailand
- M.Sc. (Chemical Engineering), Rice University, USA
- M.Sc. (Petroleum Engineering), University of Houston, USA
- Honorary Doctorate of Philosophy, Civil Engineering Department, Faculty of Industry and Technology, Rajamangala University of Technology Isan

Certifications

- Directors Certification Program (DCP 21/2002), Financial Statements for Directors (FSD 6/2009), Finance for Non-Finance Director (FN), Role of the Compensation Committee (RCC 13/2011), Anti-Corruption for Executive Program (ACEP 15/2015), Ethical Leadership Program (ELP 7/2017), Thai Institute of Directors Association (IOD)
- Program for Global Leadership (PGL), Harvard Business School, USA
- Democratic Politics and Governance for High-Level Administrators Program, (Class of 10th), King Prajadhipok's Institute
- Senior Executive Program (SEP) (Class of 7th), Sasin Graduate Institute of Business Administration, Chulalongkorn University
- Top Executives Program (Class of 6th), Capital Market Academy
- Diploma, The Joint State-Private Sector Course Class of 22nd, National Defence College

- Senior Executives on Justice Administration Batch (Class of 16th), National Justice Academy
- Certificate in Top Executives in the Energy Education Program (Class 3/2013), Thailand Energy Academy (TEA)
- Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organizations (Class of 7th), Public Director Institute (PDI), King Prajadhipok's Institute
- Seminar "Briefing on International Anti-Corruption... International cases and practices", IOD (October 14, 2015)
- Seminar Thailand's 6th National Conference on Collective Action against Corruption "Anti-Corruption in Thailand: Sustaining the Momentum", IOD (October 16, 2015)
- CG Forum 4/2015-Thailand CG Forum "Governance as a Driving Force for Business Sustainability", SET SEC and IOD (October 28, 2015)
- Seminar "Global Financial Market Outlook 2016", IOD (November 17, 2015)
- Seminar Strengthen Good Governance of Directors of Public Enterprises, State Enterprise Policy Office (September 30, 2016)
- Seminar Anti-Corruption: Leadership Role of the Board in Driven the Organization toward the Draft of the Development of Corporate Governance and Enterprise Management Act... and Good Corporate Governance (October 17, 2016)
- PTT Board Briefing

Work Experiences

- | | |
|------------------------------|---|
| 2008 - 2009 | : Senior Executive Vice President of Strategy and Development, PTT Public Company Limited (PTT) |
| July 2009 - December 2009 | : Chief Financial Officer Acting Senior Executive Vice President of Strategy and Development, PTT |
| January 2010 - April 2012 | : Chief Financial Officer, PTT Public Company Limited |
| 2012 - September 9, 2015 | : Senior Executive Vice President, PTT, working on a Secondment as President and Chief Executive Officer, PTT Exploration and Production Public Company Limited |
| September 10, 2015 - Present | : President and Chief Executive Officer, PTT Public Company Limited |

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Secretary to the Board/
President and Chief Executive Officer,
PTT Public Company Limited
- Director,
PTT Exploration and Production Public Company Limited
- Director/ Chairman, IRPC Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, Chulalongkorn University Alumni Association
under the Patronage of His Majesty the King
- Chairman, Information
and Public Communication Management Sub-committee,
National Committee on Competitive Advantage (NCC)
- Honorary Board Member,
National Committee on Competitive Advantage (NCC)
- Director, Director, Power of Innovation Foundation
and Power of Learning Foundation
- Chairman, TMA Center for Competitiveness,
Thailand Management Association
- Board of Trustees, Thailand Management Association
- Honorary Board Member,
National Science and Technology Development Agency
- Director, Thailand - United States Educational Foundation
(TUSEF/ Fulbright Thailand) and Ruamchit-Normkiao
under Royal Patronage
- Honorary Board Member (Business Management),
Office of the Public Sector Development Commission
- Chairman of Sub-Committee, The Office of the Public Sector
Development Commission focusing on Financial and Fiscal
- Honorary Advisor,
the 84th Queen Birthday Anniversary Project
- Director, Member of the Economic Reform Commission
- Vice President, Thai Listed Company Association (2017 - 2019)

Relation among Family with other Directors and Executives

- None



Mr. Wirat Uanarumit

Age 55

**Chief Operating Officer,
Upstream Petroleum
and Gas Business Group**

(%) Share Possession

- 0.000543 (own 0.000543; spouse 0)

Appointed

- October 1, 2016

Educations

- Bachelor of Science in Electrical Engineering,
Chulalongkorn University, Thailand
- Master of Business Administration,
with emphasis in Financial Management,
Pennsylvania State University, Pennsylvania, USA

Certifications

- Director Certification Program (DCP 8/2001),
Directors Certification Program Update (DCPU 5/2015),
Audit Committee Program (ACP 38/2012),
Thai Institute of Directors Association (IOD)
- Member, Beta Gamma Sigma
(US National Scholastic Honour Society in Business)
- Advance Management Programme, INSEAD Business School,
Fontainebleau, France
- Advanced Management Program, Harvard Business School,
USA
- Top Executive Program (Class of 4th), Capital Market
Academy (CMA)
- Senior Executives on Justice Administration Batch
(Class of 16th), National Justice Academy
- Advanced Security Management Program (ASMP),
(Class of 2nd), National Defence College
- Executive Development Program (Class of 1st),
Thai Listed Companies Association (TLCA)
- Diploma, The Joint State-Private Sector Course,
National Defence College

- Executive Management with Business Development and Investment (Class 2), Institute of Business and Industrial Development (IBID)
- Democratic Politics and Governance for High-Level Administrators Program, (Class of 20th), King Prajadhipok's Institute

Work Experiences

- 2005 - January 2011 : Executive Vice President - Finance, Thai Oil Public Company Limited
- February 2011 - : Senior Executive Vice President -
October 2011 : Corporate Accounting and Finance, IRPC Public Company Limited
- October 2011 - : Executive Vice President,
April 30, 2014 : Corporate Finance, PTT
- May 1, 2014 - : Chief Financial Officer, PTT
- September 30, 2016
- October 1, 2016 - : Chief Operating Officer,
Present : Upstream Petroleum and Gas Business Group, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Member of the Risk Management Committee, PTT Exploration and Production Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, Sakari Resources. Ltd.
- Director/ Audit Committee, Thailand Management Association (TMA)
- Director, Chulalongkorn University Alumni Association (CUAA) 2015 - 2017
- Director under Thai-Chinese Railway Finance and Investment Sub-Committee, Thai-Chinese Railway Development Committee
- Advisory Committee, Promoting and Supporting Office of Industries, The Federation of Thai Industries
- Chairman, Thailand - Malaysia Business Council, The Federation of Thai Industries (FTI)
- Director, Joint Standing Committee on Commerce, Industry and Banking of Thailand (JSCIB-Thailand)
- Advisor to the President of the Association, Capital Market Academy (CMA)

Relation among Family with other Directors and Executives

- None



Mr. Auttapol Rerkpiboon

Age 52
**Chief Operating Officer,
Downstream Petroleum Business
Group and Acting Senior Executive
Vice President, Downstream
Business Group Alignment**

(%) Share Possession

- 0.000939 (own 0.000788; Spouse 0.000151)

Appointed

- October 1, 2017

Educations

- Bachelor of Engineering (Civil Engineering), Chulalongkorn University, Thailand
- Diploma of Petroleum Management, College of Petroleum Studies, Oxford, England (British Council Scholarship)
- Master of Economics Program, National Institute of Development Administration, Thailand

Certifications

- Director Certification Program (DCP 173/2013), Thai Institute of Directors Association (IOD)
- TLCA Executive Development Program (EDP) (Class of 1st) Thai Listed Companies Association (TLCA)
- Diploma, The Joint State-Private Sector Course Class of 58th, National Defence College
- Politics and Governance in Democratic for Executives (Class of 14th), King Prajadhipok's Institute
- Top Executive Program (Class of 20th), Capital Market Academy (CMA)
- NIDA-Wharton Executive Leadership Program 2009, The Wharton School of the University of Pennsylvania, USA
- PTT Executive Leadership, General Electric, GE, New York, USA

Work Experiences

- 2010 - 2011 : Executive Vice President, Corporate Communications & Social Responsibility, PTT
- 2011 - 2014 : Executive Vice President, Commercial & International Marketing, PTT
- 2014 - : Executive Vice President, Retail Marketing, PTT
- September 30, 2014
- October 1, 2014 - : Senior Executive Vice President, Sustainability Management and Project Engineering, PTT
- September 30, 2015
- October 1, 2015 - : Senior Executive Vice President
- September 30, 2017 : Oil Business Unit, PTT

October 1, 2017 - Present : Chief Operating Officer,
Downstream Petroleum Business Group
and Acting Senior Executive
Vice President, Downstream
Business Group Alignment, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Member of Corporate Governance Committee, PTT Global Chemical Public Company Limited
- Director, Thai Oil Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, PTT Oil and Retail Business Company Limited
- Director, Sustainable Energy Foundation
- Director, Engineer Alumni of Chulalongkorn University

Relation among Family with other Directors and Executives

- None



Mr. Chansin Treenuchagron
Age 57
Chief Technology
and Engineering Officer

(%) Share Possession:

- None

Appointed

- January 1, 2018

Educations

- Bachelor Degree of Economic, Thammasat University, Thailand
- Master Degree of Economic, Chulalongkorn University, Thailand

Certifications

- Director Certification Program (DCP 85/2007), Financial Statements for Directors (FSD12/2011), Director Accreditation Program (DAP 93/2011), Chartered Director Class (CDC 11/2015) Thai Institute of Directors Association (IOD)
- Executive Development Relation (Class of 1st), Directorate of Civil Affairs, Royal Thai Army
- Air War College (Class 35/2006)
- Senior Executive Program (SEP) (Class of 20th), Sasin Graduate Institute of Business Administration of Chulalongkorn University
- PTT Executive Leadership, General Electric, GE, New York, USA
- Advance Senior Executive Program (ASEP-5), Class 5/2010, KELLOGG & SASIN, Chicago, USA

- Advanced Certificate Course in Public Economics Management for Executives (Class of 10th) King Prajadhipok's Institute
- Leadership Excellence through Awareness and Practice (LEAP), INSEAD, France & Singapore
- Leadership Development Program III (LDP III), Class 1/2014, PLLI, PTT Public Company Limited
- Diploma, The National Defence Course (Class 57/2014), National Defence College
- Seminar "Briefing on International Anti-Corruption... International Cases and Practices", IOD (October 14, 2015)
- Certificate in Top Executives in the Energy Education Program (Class of 7/2015), Thailand Energy Academy (TEA)
- Reward for Thammasat Best Economics Alumni 2015
- Reward for Thammasat Best Alumni 2015

Work Experiences

- October 2011 - February 2013 : Executive Vice President, PTT, working on a secondment at IRPC Public Company Limited (IRPC) as Senior Executive Vice President Corporate Port and Asset Management Business Unit, IRPC
- March 2013 - September 2014 : Executive Vice President, PTT, working on a secondment at IRPC Public Company Limited (IRPC) as Senior Executive Vice President Corporate Commercial and Marketing, IRPC
- October 2014 - September 30, 2015 : Senior Executive Vice President, Corporate Strategy, PTT
- October 1, 2015 - December 31, 2015 : Senior Executive Vice President, Petrochemicals & Refining Business Unit, PTT
- January 1, 2016 - September 30, 2017 : Senior Executive Vice President, Downstream Business Group Alignment, PTT
- October 1, 2017 - December 31, 2017 : Chief Operating Officer, Infrastructure and Sustainability Management Business Group, PTT
- January 1, 2018 : Chief Technology and Engineering Officer, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

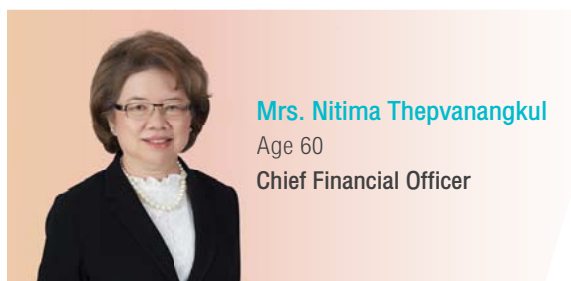
- Director/ Member of the Risk Management Committee, IRPC Public Company Limited
- Director/ Member of the Nomination and Remuneration Committee/ Member of the Risk Management Committee, Global Power Synergy Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, PTT Digital Solutions Company Limited

Relation among Family with other Directors and Executives

- None

**Mrs. Nitima Thepvanangkul**

Age 60

Chief Financial Officer**(%) Share Possession**

- 0.001435 (own 0.001435; spouse 0)

Appointed

- October 1, 2016

Educations

- Bachelor of Accounting, Chulalongkorn University
- Master of Business Administration Program (Finance) (Hons.), National Institute of Development Administration (NIDA), Thailand

Certifications

- Director Certification Program (DCP 126/2009), Risk Management Committee Program (RMP 3/2014), Anti-Corruption: The Practical Guide (ACPG 18/2015), Ethical Leadership Program (ELP 3/2016) Thai Institute of Directors Association (IOD)
- NIDA-Wharton Executive Leadership Program, the Wharton School, University of Pennsylvania, USA
- PTT Executive Leadership Program, GE Crotonville, USA

Work Experiences

2011 - 2014	: Executive Vice President, PTT, working on a secondment as Senior Executive Vice President - Corporate Accounting and Finance, Thai Oil Public Company Limited
2014 - 2016	: Executive Vice President, Corporate Accounting and Finance, PTT
2016 - September 2016	: Executive Vice President, Financial Policy and Corporate Accounting, PTT
October 1, 2016 - Present	: Executive Vice President Acting Chief Financial Officer

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Member of the Risk Management Committee, Thai Oil Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, PTT International Trading Pte. Ltd.
- Chairman, PTT Energy Resources Co., Ltd.

Relation among Family with other Directors and Executives

- None

**Mr. Kris Imsang**

Age 52

**Senior Executive Vice President,
Organization Management
and Sustainability****(%) Share Possession**

- 0.000350 (own 0.000350; spouse 0)

Appointed

- January 1, 2018

Educations

- Bachelor of Engineering (Civil Engineering), Chulalongkorn University, Thailand

Certifications

- Director Certification Program (DCP 139/2010) Thai Institute of Directors Association (IOD)
- Leadership Development Program, PTT
- Certificate in Top Executives in the PoomPalungPandin Program, Chulalongkorn University
- Top Executives Program, Capital Market Academy (CMA #23)
- Top Executives in Energy Program, Thailand Energy Academy (TEA #9)

Work Experiences

2009 - 2011	: Vice President, Leadership & Talent Management
2012 - 2013	: Executive Vice President, Lubricant Business
2013 - 2015	: Executive Vice President, Petroleum Terminal Operations, PTT
2015 - January 1, 2016	: Executive Vice President, Retail Marketing, PTT
February 1, 2016 - December 31, 2017	: Senior Executive Vice President Human Resources & Organization Excellence, PTT
January 1, 2018	: Senior Executive Vice President, Organization Management and Sustainability

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

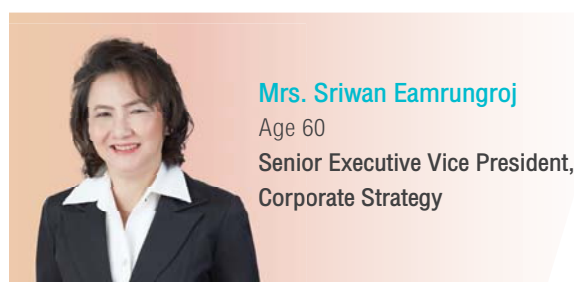
- Director, IRPC Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, Energy Complex Company Limited
- Chairman, Sam Palung Social Enterprise Company Limited
- Deputy Secretary General,
Chulalongkorn University Alumni Association (CUAA)
(Term of 2015 - 2017 and Term of 2017 - 2019)
- Deputy Secretary General, Chulalongkorn University
Engineering Alumni Association

Relation among Family with other Directors and Executives

- None



Mrs. Sriwan Eamrungrroj

Age 60

**Senior Executive Vice President,
Corporate Strategy**

(%) Share Possession

- 0.003858 (own 0; spouse 0.003858)

Appointed

- October 1, 2015

Educations

- Bachelor of Engineering (Mechanical Engineering)
(Second-class Honors), Chulalongkorn University, Thailand
- Master of Business Administration, Thammasat University,
Thailand

Certifications

- Director Certification Program (DCP 60/2012),
The Board's Role in Mergers and Acquisitions (Class 1/2011)
Thai Institute of Directors Association (IOD)
- INSEAD Business School 2010, INSEAD Executive Education,
France
- Advance Management Program (AMP) (Class 183/2012),
Harvard Business School, USA
- Strategic Marketing Management,
Stanford Graduate School of Business
- Seminar "Briefing on International Anti-Corruption...
International Cases and Practices", IOD (October 14, 2015)
- Certificate in Top Executives in the Energy Education
Program (Class of 8th) (2016), Thailand Energy Academy
(TEA)
- Top Executive Program (Class of 25th),
Capital Market Academy (CMA)

Work Experiences

- 2009 - 2011 : Executive Vice President
Corporate Strategy, PTT
- 2011 - : Executive Vice President,
September 30, 2015 PTT working on a secondment as
Executive Vice President,
Corporate Commercial and Marketing,
PTT Global Chemical
Public Company Limited (PTTGC)
- October 1, 2015 - : Senior Executive Vice President
Present Corporate Strategy, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

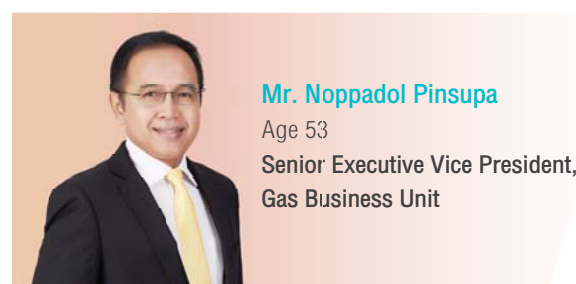
- Director, Thai Oil Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- None

Relation among Family with other Directors and Executives

- None



Mr. Noppadol Pinsupa

Age 53

**Senior Executive Vice President,
Gas Business Unit**

(%) Share Possession

- 0.002255 (own 0.000476; spouse 0.001779)

Appointed

- October 1, 2015

Educations

- Bachelor of Engineering (Electrical Engineering),
Chulalongkorn University, Thailand
- Master of Engineering (Electrical Engineering),
Chulalongkorn University, Thailand

Certifications

- Director Certification Program (DCP 146/2011),
Financial Statement for Director (FSD 12/2011),
Thai Institute of Directors Association (IOD)
- Leadership Development Program III,
PTT Leadership and Learning Institute
- Breakthrough Program For Senior Executives,
International Leading Business School (IMD), Lausanne,
Switzerland

- Assessor Training Program, Thailand Quality Award (TQA)
- Financial Statement for Directors, PTT Public Company Limited (PTT)
- Seminar "Briefing on International Anti-Corruption... International Cases and Practices", IOD (October 14, 2015)
- Mitsui-HBS Global Management Academy 2015, Japan - USA
- G-20Y Summit 2015, France
- Program for Senior Executive on Justice Administration Batch (Class of 19th), Judicial Training Institute
- Top Executives Program (Class of 22/2016), Capital Market Academy
- Diploma, The National Defence Course (Class 60), National Defence College

Work Experiences

2010 - 2012	: Executive Vice President, Natural Gas Distribution, Gas Business Unit, PTT
2012 - 2014	: Executive Vice President, Natural Gas for Vehicle, PTT
October 1, 2014 - September 30, 2015	: Executive Vice President, PTT, working on a secondment as President, Global Power Synergy Public Company Limited
October 1, 2015 - Present	: Senior Executive Vice President Gas Business Unit, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director and Member of Risk Management Committee, Thai Oil Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, PTT Global LNG Company Limited
- Director, Ratchaburi Power Company Limited
- Chairman, PTT Natural Gas Distribution Company Limited

Relation among Family with other Directors and Executives

- None



Miss Jiraphon Kawswat

Age 55

**Senior Executive Vice President,
Oil Business Unit**

(%) Share Possession:

- None

Appointed

- October 1, 2017

Educations

- Bachelor of Science (Accounting), Kasetsart University
- Master of Accountancy (Cost Accounting), Chulalongkorn University
- Master of Business Administration (Financial Management), Kasetsart University

Certifications

- Director Certification Program, Thai Institute of Directors Association (IOD)
- Senior Executive Program, London Business School, UK
- Leadership Development Program III (2013), PTT Leading and Learning Institute (PLLI)
- Strategic Thinking Through Case
- PTT Group VP Leadership Development Program
- Executive Development Program (EDP), Thai Listed Companies Association
- PTT group PLLI 3 Leadership Greatness: Great Leaders, Great Teams, Great Results

Work Experiences

2006 - 2012	: Vice President, Managerial Accounting, PTT
2012 - 2016	: Executive Vice President, Planning, Oil Business Unit, PTT
2016 - September 30, 2017	: Executive Vice President, PTT, working on a secondment at PTTRM as Managing Director.
October 1, 2017 - Present	: Executive Vice President Acting Senior Executive Vice President, Oil Business Unit, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- None

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, PTT Retail Management Company Limited
- Director, PTT Oil and Retail Business Company Limited

Relation among Family with other Directors and Executives

- None



Mrs. Boobpha Amornkiatkajor

Age 59

**Senior Executive Vice President,
International Trading
Business Unit**

(%) Share Possession

- 0.002451 (own 0.002451; spouse 0)

Appointed

- October 1, 2014

Educations

- Bachelor of Science (Economics) (Hons.), Kasetsart University, Thailand
- Master of Economics Program (Finance) (Hons.), National Institute of Development Administration (NIDA), Thailand

Certifications

- Director Certification Program (DCP 152/2011), Thai Institute of Directors Association (IOD)
- Senior Executive Program (Class 2003), Sasin Graduate Institute of Business Administration of Chulalongkorn University
- Army War College (Class 2008), Institute of Army Academics
- Leadership Development Program- center for Creative Leadership, Singapore
- Breakthrough Program for Senior Executive (BPSE) (Class 2012), IMD Institute/ Switzerland
- Capital Market Academy Leader Program (CMA 21/2015), Capital Market Academy
- Certificate in Top Executives in the Energy Education Program (Class 10/2017), Thailand Energy Academy (TEA)

Work Experiences

2002 - 2009	: Vice President, Crude Oil Trading, PTT
2010 - 2014	: Executive Vice President, Downstream Business Group Alignment, PTT
2014 -	: Executive Vice President, Trading Operations, PTT
September 30, 2014	
October 1, 2014 -	: Senior Executive Vice President, International Trading Business Unit, PTT
Present	

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director, PTT Global Chemical Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, Tiger Energy Trading Pte. Ltd.
- Vice Chairman, The Institute of Industrial Energy, The Federation of Thai Industries

Relation among Family with other Directors and Executives

- None



Mr. Wittawat Svasti-xuto

Age 56

**Senior Executive Vice President,
Innovation and Digital**

(%) Share Possession

- 0.001941 (own 0.001941; spouse 0)

Appointed

- January 1, 2018

Educations

- Bachelor of Engineering (Chemical Engineering), Chulalongkorn University, Thailand
- Master of Science (Industrial Engineering), The University of Rhode Island, USA

Certifications

- Director Certification Program (DCP), Financial Statements for Director (FSD), Thai Institute of Directors Association (IOD)

Work Experiences

August 1, 2014 -	: Executive Vice President
December 31, 2015	: Strategy Management, Downstream Business Unit, PTT
January 1, 2016 -	: Executive Vice President
September 30, 2016	: Downstream Business Group Alignment, PTT
October 1, 2016 -	: Senior Executive Vice President, Sustainability Management, PTT
December 31, 2016	
January 1, 2017 -	: Senior Executive Vice President, Sustainability Management and Project Engineering, PTT
December 31, 2017	

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- None

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, Energy Complex Company Limited
- Director,
District Cooling System and Power Plant Company Limited
- Director, Business Service Alliance Company Limited
- Director, Business Professional Solutions Company Limited

Relation among Family with other Directors and Executives

- None



Mr. Athavuth Vikitsreth

Age 58

**Senior Executive Vice President,
Public Relations**

(%) Share Possession

- 0.000070 (own 0; spouse 0.000070)

Appointed

- March 1, 2017

Educations

- B.B.A., Abilene Christian University, Texas, USA

Certifications

- Director Certification Program (DCP 106/2008),
Audit Committee Program (ACP 24/2008),
Monitoring the System of Internal Control
and Risk Management (MIR 5/2009),
Thai Institute of Directors Association (IOD)
- The Joint State-Private Sector Course (Class of 23th),
National Defence College
- Democratic Politics and Governance for
High-Level Administrators (Class of 12th),
King Prajadhipok's Institute
- Corporate Governance for Directors and Top Executives of
State Enterprises and Public Organizations (Class 3) (PDI),
King Prajadhipok's Institute
- The Programme for Senior Executives on Justice
Administration Batch 4, National Justice Academy,
Office of Judiciary, Thailand
- Top Executives Program, Capital Market Academy
(Class of 20th), Thailand
- Certificate in Top Executives in the Energy Education Program
(Class of 8th) (2016), Thailand Energy Academy (TEA)

Work Experiences

- 2011 - 2013 : Executive Vice President,
External Affair, PTT Global Chemical
Public Company Limited (PTTGC)
- 2014 - 2016 : Senior Executive Vice President,
External Affair, PTTGC
- 2016 - 2017 : Senior Executive Vice President,
External Affair, PTTGC working on
a secondment as
Executive Vice President,
Public Relations,
PTT Public Company Limited
- March 1, 2017 -
Present : Senior Executive Vice President,
PTTGC working on a secondment as
Senior Executive Vice President,
Public Relations,
PTT Public Company Limited

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- None

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director/ Internal Audit Director,
Office of National Broadcasting
and Telecommunications Commission

Relation among Family with other Directors and Executives

- None



Miss Peangpanor Boonklum

Age 51

**Senior Executive Vice President,
Office of General Counsel**

(%) Share Possession:

- None

Appointed

- October 1, 2017

Educations

- Bachelor of Laws (Second Class Honor),
Chulalongkorn University
- Master of Laws (Business Law), Chulalongkorn University
- Master of Laws (LL.M.), Columbia University School of Law,
New York, USA Columbia University School of Law, New York,
USA

Certifications

- Director Certification Program (DCP 7/2001), Anti-Corruption: The Practical Guide (ACPR 38/2017), Thai Institute of Directors Association (IOD)
- Executive Development Program (Class of 1st), Thai Listed Companies Association (TLCA)

Work Experiences

- 2009 - February 29, 2016 : Partner and Associate, Weerawong, Chinnavat & Peangpanor Company Limited
- March 2016 - June 2017 : Senior Counsel, Weerawong, Chinnavat & Partners Company Limited (Former Company Name: "Weerawong, Chinnavat & Peangpanor Company Limited", Changed to the current name on April 3, 2017)
- July 1, 2017 - September 30, 2017 : Executive Vice President, Office of Corporate Legal, PTT
- October 1, 2017 - Present : Senior Executive Vice President, Office of General Counsel, PTT

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Member of the Corporate Governance Committee, Global Power Synergy Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, East Mediterranean Gas Company S.A.E.
- Expert Committee Member, Finance & Accounting Policy, Srinakharinrajwong University

Relation among Family with other Directors and Executives

- None



Mr. Somporn Vongvuthipornchai

Age 59

**Chief Executive Officer,
PTT Exploration and Production
Public Company Limited**

(%) Share Possession

- 0.000350 (own 0; spouse 0.000350)

Appointed

- October 22, 2015

Educations

- Bachelor of Sciences (Petroleum Engineering), University of Tulsa, Oklahoma, USA
- Master of Sciences (Petroleum Engineering), University of Tulsa, Oklahoma, USA
- Ph. D. (Petroleum Engineering) University of Tulsa, Oklahoma, USA

Certifications

- Director Certification Program (DCP 224/2016), Thai Institute of Directors Association (IOD)
- Advanced Management Program 2006 (Executive Education Program), Harvard Business School, USA
- GE Energy Customer Executive Leadership Program (Class 2012), GE Global Learning, Crotonville, USA
- Leadership Development Program III (2013), PTT Leading and Learning Institute (PLLI)
- Certificate in Top Executives in the Energy Education Program (Class of 2nd), Thailand Energy Academy (TEA)
- Anti-Corruption Strategic Management Course for Senior Executive (Class of 6th), Sanya Dharmasakti Anti-Corruption Institute (SDI), Office of the National Anti-Corruption Commission (NACC)

Work Experiences

May 1, 2006 - January 14, 2010	: Vice President, International Asset Division, PTT Exploration and Production Public Company Limited (PTTEP)
January 15, 2010 - December 31, 2014	: Executive Vice President, International Asset Group, PTTEP
January 1, 2015 - October 21, 2015	: Executive Vice President, Strategy and Business Development Group, PTTEP
October 22, 2015 - October 31, 2017	: Senior Executive Vice President, PTT working on a secondment as President and Chief Executive Officer, PTTEP
November 1, 2017 - Present	: Senior Executive Vice President, PTT working on a secondment as Chief Executive Officer, PTTEP

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director,
PTT Exploration and Production Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, PTT Global LNG Company Limited
- Director, Power of Innovation Foundation
and Power of Learning Foundation
- Director, Thailand Energy Academy
- Director, Thai Listed Companies Association
- Director, Vidyasirimedhi Institute of Science and Technology

Relation among Family with other Directors and Executives

- None



Mr. Supattanapong Punmeechaow

Age 58

**President
and Chief Executive Officer,
PTT Global Chemical
Public Company Limited**

(%) Share Possession:

- None

Appointed

- October 1, 2014

Educations

- Bachelor of Engineering (Chemical Engineering),
Chulalongkorn University, Thailand
- Master of Business Administration,
Chulalongkorn University, Thailand

Certifications

- Director Certification Program (DCP 131/2010),
Role of Chairman Program (RCP 30/2013),
Thai Institute of Directors Association (IOD)
- Advanced Management Program, INSEAD University, France
- Diploma, The National Defence Course (Class of 50th)
and The Joint State-Private Sector Course (Class of 20th),
National Defence College
- Oxford Energy Seminar 2013, United Kingdom
- Certificate in Top Executives in the Energy Education
Program (Class of 4th), Thailand Energy Academy
- Corporate Governance for Directors
and Senior Executives of State Enterprises
and Public Organizations (Class 12/2014),
Public Director Institute (PDI), King Prajadhipok's Institute
- Rule of Law for Democracy Course (Class 3/2015)

Work Experiences

2009 - 2011	: Executive Vice President Business Development, PTT International Company Limited and Executive Vice President Corporate Strategy, PTT
2011 - September 30, 2014	: Senior Executive Vice President, Corporate Strategy, PTT
October 1, 2014 - Present	: Senior Executive Vice President, PTT, working on a secondment as President and Chief Executive Officer, PTT Global Chemical Public Company Limited

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Secretary to the Board/
Member of Risk management Committee,
PTT Global Chemical Public Company Limited
- Director, Global Power Synergy Public Company Limited
- Chairman of the Board of Directors,
Global Green Chemicals Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, PTT Chemical International Private Limited
(CH INTER)
- Chairman of the Community Partnership
- Vice Chairman, Power of Innovation Foundation
and Power of Learning Foundation
- Honorary Member of Vidyasirimedhi Institute Council
- Member of Kamnoetvidya Science Academy
- Director, Thai Listed Company Association

Relation among Family with other Directors and Executives

- None



Mr. Atikom Terbsiri
Age 55
President
and Chief Executive Officer,
Thai Oil Public Company Limited

(%) Share Possession:

- None

Appointed

- October 1, 2014

Educations

- Bachelor of Business Administration, Assumption University,
Thailand
- M.B.A., (Finance & International Business),
High Distinction, Armstrong University, California, USA

Certifications

- Director Certification Program (DCP125/2009)
Risk Management Program for Corporate Leader
(RCL 4/2016), Role of the Chairman (RCP 41/2017)
Thai Institute of Directors Association (IOD)
- Diploma, National Defence College,
The State Private Sector and Political Sectors Course, Class 5
- Advanced Security Management Program (ASMP1),
The National Defence College Association of Thailand
- Top Executives Program, Capital Market Academy
(Class of 17th), Thailand

- Executive Education Program, Harvard Business School,
Harvard University, USA
- Certificate in Top Executives in the Energy Education
Program (Class of 6th), Thailand Energy Academy (TEA)

Work Experiences

- | | |
|------------------------------|--|
| 2009 - 2011 | : Senior Executive Vice President,
Corporate Strategy & Planning,
Acting Senior Executive Vice President,
Port & Asset Management Business Unit,
IRPC Public Company Limited |
| 2011 - 2013 | : President, IRPC Public Company Limited |
| 2013 - 2014 | : Senior Executive Vice President,
Petrochemicals & Refining Business Unit,
PTT Public Company Limited |
| October 1, 2014 -
Present | : Senior Executive Vice President, PTT,
working on a secondment as
President and Chief Executive Officer,
Thai Oil Public Company Limited |

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director and Secretary to the Board of Directors,
Thai Oil Public Company Limited
- Director/ Member of the Risk Management Committee,
Global Power Synergy Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Chairman, Thai Lube Base Public Company Limited
- Chairman, Thail Marine Co., Ltd.
- Chairman, Thail Solvent Co., Ltd.
- Chairman, TOP Solvent Co., Ltd.
- Chairman, Thail Power Co., Ltd.
- Chairman, TOP SPP Co., Ltd.
- Chairman, LABIX Co., Ltd.
- Chairman, Thai Paraxylene Co., Ltd.
- Director, Power of Innovation Foundation
and Power of Learning Foundation
- Council, Vidyasirimedhi Institute of Science and Technology
- Director, Board of the Federation of Thai Industries
- Executive Director, Thailand Energy Academy
- Director, Thai Industries Estate Foundation
- Executive Director, Thailand Swimming Association
- Director, Thai Listed Companies Association

Relation among Family with other Directors and Executives

- None

**Mr. Sukrit Surabotsopon**

Age 59

**President,
IRPC Public Company Limited****(%) Share Possession**

- 0.000070 (own 0.000070; spouse 0)

Appointed

- October 1, 2013

Educations

- Bachelor of Engineering (Chemical Engineering) (Second-Class Honors), Chulalongkorn University, Thailand

Certifications

- Director Certification Program (DCP 132/2010), Audit Committee Program (ACP 38/2012), Monitoring the System of Internal Control and Risk Management (MIR 12/2012), Thai Institute of Directors Association (IOD)
- Executive Development Program (EDP 3) 2009, Thai Listed Companies Association (TLCA)
- Democratic Politics and Governance for High-Level Administrators (Class 15/2012), King Prajadhipok's Institute
- Top Executives Program, Capital Market Academy (Class of 16th), Thailand
- Diploma, The Joint State-Private Sector Course (Class 26/2013), National Defence College
- Energy Literacy Executive Management Program (TEA 6/2015), Thailand Energy Academy
- The Board's Role in Strategic Formulation, Governance Matters, Australia (2015)

Work Experiences

- | | |
|----------------|---|
| 2010 - 2013 | : Senior Executive Vice President, Petrochemicals & Refining Business Unit, PTT |
| 2013 - Present | : Senior Executive Vice President, PTT, working on a secondment as President, IRPC Public Company Limited |

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Secretary of the Board/ Member of the Risk Management Committee, IRPC Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, UBE Chemicals (Asia) Public Company Limited
- Chairman, IRPC Oil Company Limited
- Chairman, IRPC Polyoil Company Limited
- Chairman, IRPC A&L Company Limited
- Chairman, IRPC Technology Company Limited
- Chairman, PTT Energy Solutions Company Limited
- Chairman, Petroleum Refining Industry Club, The Federation of Thai Industries (Term 2014 - 2017)
- Vice President, Petrochemical Cluster (Petroleum Refining, Petrochemicals, Plastics, and Chemicals Industries)
- Director and Executive Director, the Institute of Industrial Energy, The Federation of Thai Industries (Term 2014 - Present)
- Director, Water Institute for Sustainability (Term 2014 - 2016)
- Director (Chemical Engineering Sector), The Engineering Institute of Thailand under H.M. The King's Patronage
- Council, Vidyasirimedhi Institute of Science and Technology
- Director, Power of Innovation Foundation and Power of Learning Foundation
- Director, The Federation of Thai Industries (Term 2014 - Present)
- Director, Industrial Promotion Committee, The Federation of Thai Industries
- Director, The Industrial Environment Institute, The Federation of Thai Industries
- Advisory of the Board of Directors, Plastics Institute of Thailand
- Advisor, Chulalongkorn University Alumni Association under the Patronage of His Majesty the King (2015 - 2017)
- Director, Public-Private Steering Committee (Competitive Workforce Sector)
- Honorary Advisor, Thai Plastic Industries Association (since March 2017)

Relation among Family with other Directors and Executives

- None



Mr. Toemchai Bunnag
Age 59
**President
and Chief Executive Officer,**
**Global Power Synergy
Public Company Limited**

(%) Share Possession:

- None

Appointed

- March 1, 2017

Educations

- Bachelor of Science (Chemical Engineering), Chulalongkorn University
- MSc. (Operations Research) Illinois Institute of Technology, Chicago Illinois, USA
- Ph.D. (Management Sciences) Illinois Institute of Technology, Chicago Illinois, USA

Certifications

- Director Certification Program (DCP 143/2011) Risk Management Program for Corporate Leaders (RCL 3/2016), Thai Institute of Directors Association (IOD)
- Public Administration and Conflict Management, King Prajadhipok's Institute
- GE: Executive Program 2005
- GE: PTT Executive Program 2008
- Safety Officer - Management Level, NPC Safety and Environmental Services
- Leadership Development Program (LDP) (Batch 4), Thai Listed Companies Association

Work Experiences

- 2012 - October 2015 : Executive Vice President, working on a secondment as Managing Director, PTT Natural Gas Distribution Company Limited/ Managing Director, Amata Natural Gas Distribution Company Limited
- 2012 - November 2015 : Director, PTT Natural Gas Distribution Company Limited/ Director, Amata Natural Gas Distribution Company Limited
- 2015 - February 2017 : Executive Vice President, PTT, working on a secondment as President, Global Power Synergy Public Company Limited
- March 1, 2017 - Present : Senior Executive Vice President, PTT, working on a secondment as President and Chief Executive Officer, Global Power Synergy Public Company Limited

Relevant Important Positions in Listed Company – The Stock Exchange of Thailand

- Director/ Secretary to the Board/ Member of the Risk Management Committee/ President and Chief Executive Officer, Global Power Synergy Public Company Limited

Relevant Important Positions in Non-listed Company/ Other Organizations

- Director, Xayaburi Power Company Limited
- Director, GPSC International Holdings Limited

Relation among Family with other Directors and Executives

- None

Positions held by The Management and Authorized Controllers of PTT Plc., Subsidiaries, Joint Ventures, Associates, and Related Companies for 2017

[illegible]

Company* (As of December 31, 2017)				PTT Executive																																						
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36			
				Mr. Piyasvasti Amranand	Prof. Dr. Kittipong Kitayarak	Air Marshal Boonsuib Prasit	Mr. Boontuck Wungcharoen**	Gen Chatchalearn Chalemsukh	Mr. Chanvit Amalamlucherti	Mrs. Nuntawan Sakuntanaga	Mr. Vichai Assarakorn	Mr. Thon Thamrongnawasawat	Mr. Somsak Chotratanasiri	Mr. Somchai Sujadongse	Mr. Don Wasanapruet	Mr. Somkit Lerpaiboon	Mr. Thammayot Srichuai	Mr. Supot Teachavorasinskun***	Mr. Tevin Vongvanich	Mr. Wirat Uanarumit	Mr. Auttapol Rerkpiboon	Mr. Charsin Treenuchagron	Mrs. Nitima Thepvanangkul	Mr. Kris Insang	Mrs. Sirwan Eamrungsri	Mr. Noppadol Pitsupa	Miss Jiraphon Kawsat	Mrs. Boobpha Amornkietkajorn	Mr. Witawat Svasi-xub	Mr. Athavuth Vikitsreth	Miss Peangnanor Boonklum	Mr. Sompon Vonguthipornchai	Mr. Supattanaong Punneetbaow	Mr. Athom Tebsiri	Mr. Sukrit Surabotsopon	Mr. Teemchai Burnag	Mr. Sumrid Sumneing	Miss Waiwan Kanjanakanti	Mr. Chennet Udonwong			
Associated and Related Companies	Gas	Trans Thai-Malaysia (Thailand) Ltd.	TTM(T)																																							
		Trans Thai - Malaysia (Malaysia) Sdn. Bhd.	TTM(M)																																							
	Oil	Thai Petroleum Pipeline Co., Ltd.	THAPPLINE																																							
		Petro Asia (Thailand) Co., Ltd.	PAT																																							
		Bangkok Aviation Fuel Services Public Co., Ltd.	BAFS																																							
		Intoplane Services Co., Ltd.	IPS																																							
		Fuel Pipeline Transportation Co., Ltd.	FPT																																							
		Petro Asia (Maoming) Co., Ltd.	PA(Maoming)																																							
		Petro Asia (Sanshui) Co., Ltd.	PA(Sanshui)																																							
	Others	Dhipaya Insurance Public Co., Ltd.	TIP																																						/	
		Sarn Palung Social Enterprise Co., Ltd.	SPSE																						x																	
	Infrastructure	District Cooling System and Power Plant Co., Ltd.	DCAP																									/														

Notes:

• Symbol X = Chairman – = Vice Chairman * = President O = CEO / = Director // = Executive

• The first four executives, excluding the President & CEO, under SEC's Announcement are Mr. Wirat Uanarumit, Mr. Auttapol Rerkpiboon, Mr. Chansin Treenuchagron, and Mrs. Nitima Thepranangkul.

* The Company has classified new subsidiary in according to the International Financial Reporting Standards No. 10 Consolidated Financial Statement, effective since January 1, 2015.

** Mr. Boontuck Wungcharoen has resigned from the directorship of PTT, effective from December 31, 2017.

*** Mr. Supot Teachavorasinskun has been appointed as an Independent Director, effective from January 18, 2018.

Awards of Thai Pride

PTT has been operating its business in alignment with sustainability strategy, social care, and responsibility, and of a commitment to the continuous improvement of technology, innovation, and knowledge. PTT also highly concerns on being Good Corporate Governance and running transparent business.

11 International
Entities Total



17
awards

31 Domestic
Entities Total



37
awards



Business
Excellence



Business
Sustainability



Good Governance
and Transparency



Innovation
and Technology



Earned
“Corporate Improvement
Excellence Award” royal award
from the Thailand Corporate
Excellence Awards 2016 event



> Date:

February 23, 2017

> Presented by:

Royal award from HRH Princess Maha Chakri Sirindhorn,
organized by Thailand Management Association in conjunction
with Sasin Graduate Institute of Business Administration of Chulalongkorn University

The award was presented to an organization with excellent development in various fields on the organization's potential. PTT was also presented with “Distinguished Awards” in sustainable development, corporate social responsibility, financial management, human resource management, innovation, leadership, marketing, and product/ service.



International



National



Business
Excellence

2

SOE Award 2017



- > Date:
August 18, 2017
- > Presented by:
Ministry of Finance

1. **Outstanding State-Owned Enterprise Award 2017**
(Second consecutive year) Observed as the most prestigious award for being an outstanding state enterprise organization, including the Board and the management with high standards in all fields of operations.
2. **Outstanding Information Disclosure and Transparency Award** (Third consecutive year)
3. **Outstanding CSR and Environment Award**
For "CSR Clean Energy Project" (PTT hydraulic ram pump)
4. **Outstanding Innovation Award**
(Eighth consecutive year) From the "Bioplastic compound-based silver skin of coffee (Bio SSCMB) work"



3

The Most Powerful Brands of Thailand 2016 (Gas Station)



- > Date:
March 1, 2017
- > Presented by:
Faculty of Commerce and Accountancy, Chulalongkorn University

(Third consecutive year)

4

BrandAge Thailand's Most Admired Brand 2017



- > Date:
March 1, 2017
- > Presented by:
BrandAge Magazine

PTT service stations have been voted the Most Admired Brand for over 14th consecutive year. PTT lubricant products have also been voted the Most Admired Brand for 8th consecutive year.

5

The No. 1 Brand Thailand 2016 - 2017



- > Date:
May 2017
- > Presented by:
Marketeer Magazine

Three awards were presented to PTT for:

1. PTT service stations (Gas Station)
 2. Café Amazon (Coffee Shop)
 3. PTT Lubricants (Engine Oil).
- Seventh consecutive year.



6

Prime Minister's Export Award: PM Award 2017



- > Date:
August 30, 2017
- > Presented by:
Thailand Institute of Design and Innovation Promotion,
Department of International Trade Promotion, Ministry of Commerce

PTT Lubricants won PM Award 2017 in the category of Best Thai Brand for major companies.

7

Top 10 Companies Thai employees aspire to work for in 2017



- > Date:
November 23, 2017
- > Presented by:
JobsDB (Thailand) Co., Ltd.

8

Thailand Automotive Quality Award 2017 (TAQA Award 2017)



- > Date:
December 6, 2017
- > Presented by:
Thailand Automotive Institute, Suesakon Co., Ltd., Custom Asia Co., Ltd., and Manager Newspaper

For eighth consecutive year, PTT has won the award for automotive products (fuels) and service stations.

9

2016 ATD Excellence in Practice Awards (Honorable Mention Citation, Career Development)



- > Date:
May 2017
- > Presented by:
The Association for Talent Development (ATD)

The award was presented to PTT for “Young People to Globalization (YP2G) project”, a human resource development project to groom outstanding young employees to work domestically or internationally, or both.



10

Asia Marketing Company of the Year 2017



- > Announced:
June 2017
- > Date:
September 2017
- > Presented by:
Asia Marketing Federation (AMF)




11

Brand of the Year (National Tier 2017 - 2018)



- > Date:
November 6, 2017
- > Presented by:
World Branding Forum from The 2017 World Branding Awards Ceremony to present awards for leading brands worldwide

PTT service stations and Café Amazon won the Brand of the Year (National Tier 2017 - 2018) in the Petro/Gas Station category and Retailer – Coffee category.

 <h1>1</h1> <h2>EIA Monitoring Awards to PTT Group's 19 Projects</h2> 	<h1>2</h1> <h2>Runner-up for "Suriyasasithon" Award 2017</h2> 
<ul style="list-style-type: none"> > Date: March 6, 2017 > Presented by: Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment 	<ul style="list-style-type: none"> > Date: March 19, 2017 > Presented by: Thailand Public Relations Association <p>PTT's "Goodness is a force in all of us" calendar won second place in Social and Environmental category.</p>



<h1>3</h1> <h2>The Ultimate Popular Stock Award 2016</h2> 	<h1>4</h1> <h2>Zero Accident Campaign 2017</h2> 	<h1>5</h1> <h2>Outstanding Occupational Safety, Health, and Work Environment Award 2017</h2> 
<ul style="list-style-type: none"> > Date: March 19, 2017 > Presented by: Kaohoon Newspaper, Stock Exchange of Thailand, and University of the Thai Chamber of Commerce <p>(Second year since 2013)</p>	<ul style="list-style-type: none"> > Date: June 28, 2017 > Presented by: Thailand Institute of Occupational Safety and Health (Public Organization) <p>Earned 2 awards for</p> <ol style="list-style-type: none"> 1. Rayong Gas Separation Plant (Gold) 2. Khanom Gas Separation Plant (Silver) 	<ul style="list-style-type: none"> > Date: June 28, 2017 > Presented by: Department of Labour Protection and Welfare, Ministry of Labour <p>Surat Thani Petroleum Terminal has won the national award for 21st consecutive year.</p>



International



National



Business Sustainability

6

Awards of Outstanding Model Operator for Occupational Safety, Health, and Work Environment 2017



- > Date:
August 25, 2017
- > Presented by:
Department of Labour Protection and Welfare

Awards were presented to PTT's 18 petroleum terminals nationwide and Phra Khanong Office in Thailand Labour Management Excellence Award 2017.



7

Green Industry Level 5 Award (Top Award) or "Green Network"



- > Date:
September 11, 2017
- > Presented by:
Ministry of Industry

Awards were presented to Rayong Gas Separation Plant and Khanom Gas Separation Plant.



8

Honorary Plaque and Certificate under Thailand Voluntary Emission Reduction Program (T-VER)



- > Date:
September 19, 2017
- > Presented by:
Thailand Greenhouse Gas Management Organization (Public Organization)

- Floating Photovoltaic Electricity Generation for Water Management Research Project at Rama XI Reservoir under the Royal Initiative of HM the late King Bhumibol by PTT and the Chaipattana Foundation won an Honorary Plaque and was registered with T-VER in the Renewable Energy category.
- Kham Khaen Community Biogas Project from pig farming at Tambon Kham Khaen by PTT and Kham Khaen Tambon Administrative Organization, Amphoe Mancha Khiri, Khon Kaen, won a carbon credit honorary plaque and certificate.
- Tha Manao Community Biogas Project from pig farming at Tambon Tha Manao by PTT and Tha Manao Tambon Administrative Organization, Amphoe Chai Badan, Lop Buri, won a carbon credit certificate.
- Seven products of Carbon Footprint for Product (CFP) of Rayong Gas Separation Plant including sales gas, ethane, propane, pentane, LPG, NGL, and carbon dioxide gas won certificates of carbon footprint products.

9

Certificate for Outstanding Model Operator for Occupational Safety, Health, and Work Environment 2017 (National Level) for Khanom Gas Separation Plant



- > Date:
October 5, 2017
- > Presented by:
Department of Labour Protection and Welfare

(Seventh consecutive year)
Diamond level

10

Thailand Sustainability Investment (THSI) 2017



- > Date:
November 8, 2017
- > Presented by:
Thai Institute of Directors (IOD),
SET, and Money & Banking Magazine



11

NACC Rewards 2017



- > Date:
November 17, 2017
- > Presented by:
Office of the National Anti-Corruption Commission (NACC)

The reward presented to the Kon Mun Pun Asa anti-corruption TV program that PTT jointly produced with TV Burabha Co., Ltd.



12

Adman Awards 2017



- > Date:
November 8, 2017
- > Presented by:
Advertising Association of Thailand

1. "Honesty" advertisement won Bronze Award in the category of Film: Public Service Message & Cause Appeals.
2. "Disable to Disable", part of a short-film series "Stories from the Heart with Nine Sustainable Forces of Goodness", won Bronze Award in the category of Out of Home: GUERILLA MARKETING.

13

Thailand Friendly Design Award 2017



- > Date:
December 1, 2017
- > Presented by:
2nd Thailand Friendly Design Expo 2017

The award was presented to PTT on promoting Friendly Designs from the 2nd Thailand Friendly Design Expo 2017. PTT's booth also won the "Outstanding booth of the year 2017" recognition.

14

Sustainability Report Award 2017



- > Date:
December 14, 2017
- > Presented by:
Securities and Exchange Commission (SEC) in conjunction with Thai Listed Companies Association, nominated by CSR Club and Thaipat Institute



15

PTT's Metro-Forest Project was published and featured on the cover of Landscape Architecture Magazine (May 2017, Issue 107).



- > Presented by:
Landscape Architecture Magazine

16

Ranked membership of Dow Jones Sustainability Indices (DJSI) 2017



- > Date:
September 11, 2017
- > Presented by:
Dow Jones Sustainability Indices (DJSI)

PTT has retained DJSI membership for sixth consecutive year. This was the first year that PTT had received the highest score as an industry leader under Oil & Gas Upstream & Integrated (OGX).

DJSI is a family of indices that evaluates business sustainability performance as globally recognized, especially sustainability and corporate governance. They were set up with the cooperation between S&P Dow Jones Indices and RobecoSAM.

1

**NACC Integrity Awards
(Honorable Mention)**

- > Date:
November 17, 2017
- > Presented by:
Office of the National Anti-Corruption Commission (NACC)

Recognizing for a commitment of executives and employees on developing operations and mechanisms in order to prevent corruption and to create an organizational culture with zero tolerance.



2

**“Human Resource
Excellence Award”
presented to
Mr. Tevin Vongvanich,
President & CEO**

- > Date:
June 28, 2017
- > Presented by:
Institute for Continuing Education and Human Resources,
Thammasat University

3

**State-owned enterprise that is developed
for excellence in driving the action plan
to upgrade morality and transparency
in performing duty 2017”**

- > Date:
September 18, 2017
- > Presented by:
Office of the National Anti-Corruption Commission (NACC)

Including:

- Action plan to upgrade morality and transparency in operation (Integrity Culture), Excellence Award
- Action plan to upgrade morality and transparency in operation (Work Integrity), Excellence Award.



International



National

Good Governance
and Transparency

4

Excellent CG Scoring Company 2017



- > Date:
October 17, 2017
- > Presented by:
Thai Institute of Directors (IOD) and SET

PTT has achieved Excellent CG Scoring (5 Symbols) for ninth consecutive year. It was one of the top-quartile listed companies with a market value of at least 10,000 MB in Corporate Governance Report (CGR) Project in 2017.

5

Asian Excellence Awards 2017



- > Date:
June 9, 2017
- > Presented by:
Corporate Governance Asia Magazine

Earned 2 awards:

- For individual: Asia's Best CEO to Mr. Tevin Vongvanich
- For Corporate: Best Investor Relations Company



6

Alpha Southeast Asia 2016



- > Date:
September 13, 2017
- > Presented by:
Alpha Southeast Asia Magazine

Earned 3 awards:

1. Most Consistent Dividend Policy
2. Strongest Adherence to Corporate Governance
3. Best Strategic Corporate Social Responsibility

7

The Asset awards:



- > Date:
December 13, 2017
- > Presented by:
The Asset Magazine

Earned 4 awards:

- The Asset Corporate Award – Platinum Award, 2017 (for ninth consecutive year)
- Best Chief Executive Officer Award – Mr. Tevin Vongvanich (for ninth consecutive year)
- Best Initiatives in Innovation for Bio SSCMB (Bioplastic products from coffee silverskin) (for second consecutive year)
- Best Initiatives in Diversity and Inclusion for Ensuring Women in Leadership (for second consecutive year)

1

Drive Award 2017 - Marketing Excellence



- > Date:
July 3, 2017
- > Presented by:
MBA Alumni Association, Faculty of Commerce
and Accountancy, Chulalongkorn University

Outstanding award (Marketing Excellence)
based on marketing success



2

Public Sector
Service Award 2017
(Innovation)

- > Date:
September 11, 2017
- > Presented by:
Office of the Public Sector Development
Commission

Service Award (Good Level) presented to
PTT Plc.'s Market and Customer Service,
Natural Gas for Vehicles, for the
"Mobile Application for NGV Station" work.

3

Adman
Awards 2017

- > Date:
November 2017
- > Presented by:
Advertising Association of Thailand

Texas Chicken won a Silver Award
for Promo & Activation (Product Launch)
from the Kosanaarai campaign.

4

MAT Award 2017
(Silver Award Category,
Industrial: Chemical)

- > Date:
November 17, 2017
- > Presented by:
Marketing Association of Thailand

Under the "What is your Challenge?"
campaign or "Challenging spirit
is not limited to oneself"



International



National

Innovation
and Technology

5

**Thailand HR Innovation Award 2017
(Honorable Mention) from its
Welfare Satisfaction Project**



- > Date:
November 22, 2017
- > Presented by:
Personnel Management Association of Thailand
in conjunction with Thailand Productivity Institute
and School of Human Resource Development,
National Institute of Development Administration



6

**Association of Polish
Inventors and Rationalizers
(Gold Medal and Special Price)**



- > Date:
April 2017
- > Presented by:
Association of Polish Inventors and Rationalizers

From "Bio Silver Skin of Coffee Masterbatch"
research (Bio SSCMB)



7

**The Best
Paper Awards**



- > Date:
September 20 - 21, 2017
- > Presented by:
15th Asian Network For Quality Congress

from "Carbon Credits on Approach Towards
Sustainability in PTT Gas BU" at
ANQ Congress 2017 in Nepal

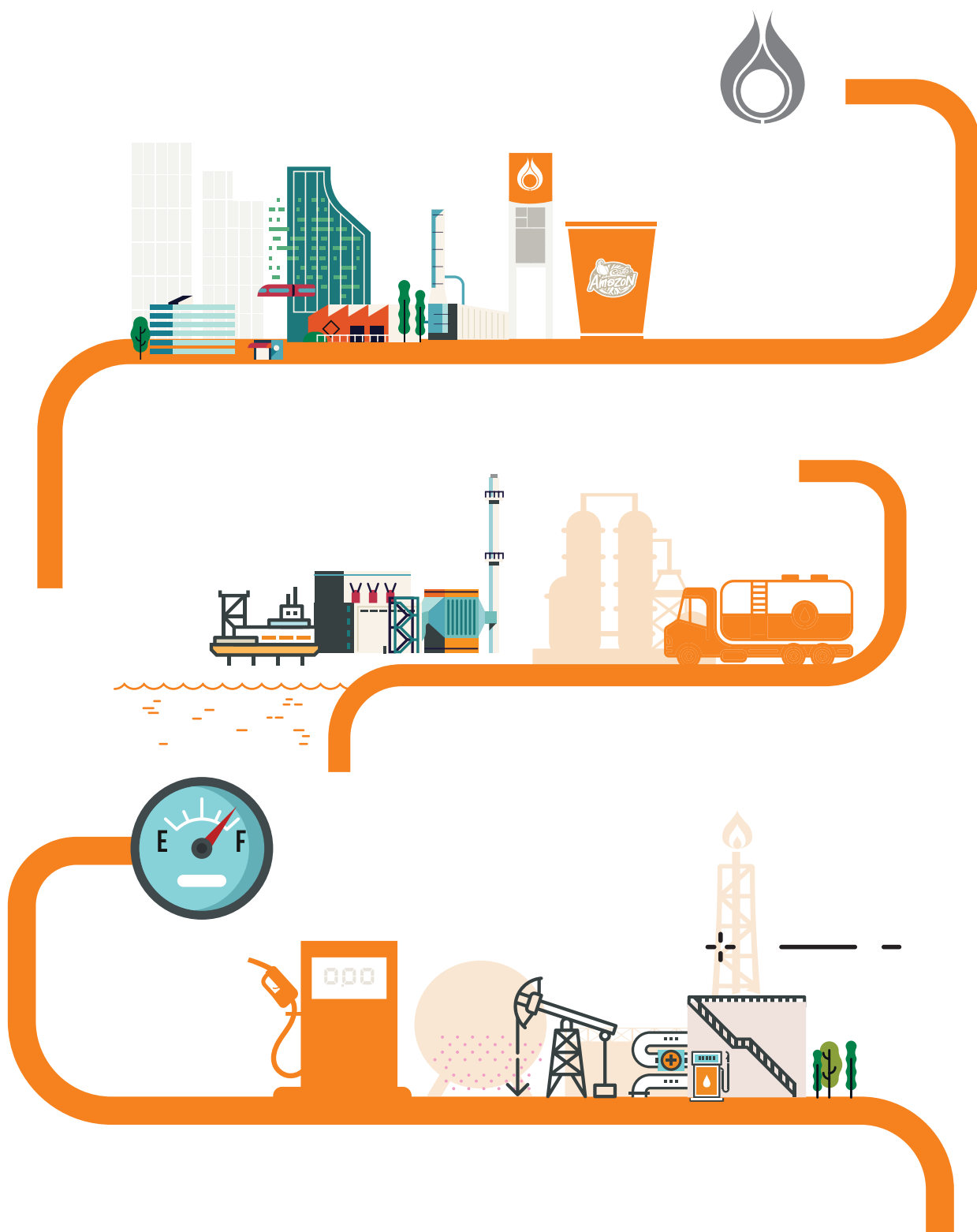
8

**International Convention on
Quality Control Circles 2017",
Gold Award (Top award)**



- > Date:
October 24 - 26, 2017
- > Presented by:
ICQCC 2017

"International Convention on Quality Control Circles 2017",
Gold Award (Top award) PTT's PIC Project
(Productivity Improvement Circle: PIC) (total 3 projects)
won the "International Convention on Quality Control
Circles 2017" Gold Award (Top award) from
ICQCC 2017 event in Philippines.





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