



Supplementary of 56-1 One Report for year 2020

- [Details of businesses invests through PTT Group](#)
- [Connected Transaction](#)



POWERING LIFE
WITH FUTURE ENERGY
AND BEYOND

Details of the businesses that PTT invests through PTT Group are as follows: These are an extension of the annual report 2020 (Form 56-1 One Report) in Topic 1.2.2 Nature of Business / Supply Procurement / Distribution

1. Upstream Businesses Invested through PTT Group

1.1 Gas-related businesses

PTT engages in gas-related businesses through its affiliates to support PTT Group's fully integrated gas businesses. For example, the LNG business operates an LNG receiving terminal, LNG regasification and storage services to support country's demand as well as an investment expansion and an integrated LNG business across the value chain, also, the gas distribution pipeline business engages in developing and constructing pipeline systems together with gas transportation etc. PTT invested through affiliate companies as follows:

1.1.1 [PTT Natural Gas Distribution Co., Ltd. \(PTT NGD\)](#)

1.1.2 [Trans Thai-Malaysia \(Thailand\) Limited \(TTM\(T\)\) and Trans Thai-Malaysia \(Malaysia\) Sdn. Bhd. \(TTM\(M\)\)](#)

1.1.3 [PTT LNG Company Limited \(PTT LNG\)](#)

1.1.4 [Map Ta Phut Air Products Company Limited \(MAP\)](#)

1.2 Exploration and Production Business

PTT engages in exploration and production (E&P) business through its subsidiary [PTT Exploration and Production \(PTTEP\) Plc.](#) (Flagship Company). PTTEP operates domestic and international petroleum E&P and invests in related businesses to find petroleum sources of crude oil and natural gas in order to ensure Thailand's energy security and sells petroleum outputs from domestic and regional projects, mostly natural gas, primarily to the domestic market. As of December 31, 2020, PTTEP had working interests in more than 40 petroleum exploration development and production projects in 15 countries including Thailand and other countries globally.

1.3 Overseas Upstream Business

PTT is fully committed to pursuing businesses in search of new energy sources and renewables power to secure energy supply for Thailand and continuously extend its existing businesses by leveraging knowledge, expertise, and experience of its people, as well as synergy among PTT Group, particularly for international investments. PTT invested through affiliate companies as follows:

1.3.1 [PTT Energy Resources Company Limited \(PTTER\)](#)

1.3.2 [PTT Global Management Company Limited \(PTTGM\)](#)

1.3.3 [PTT Green Energy Company Limited \(PTTGE\)](#)

1.3.4 [PTT Global LNG Company Limited \(PTTGL\)](#)

2. Downstream Businesses Invested through PTT Group

2.1 International Trading Business

PTT invested in international trading businesses to undertake full-fledged international trading transactions through three companies as follows:

- 2.1.1 [PTT International Trading Pte. Ltd. \(PTTT\)](#)
- 2.1.2 [PTT International Trading London Ltd. \(PTTT LDN\)](#)
- 2.1.3 [PTT International Trading USA Inc. \(PTTT USA\)](#)

2.2 Oil and Retail Business, Petrochemical and Refining Business

PTT has invested in the integrated refining with interests in three of Thailand's six refineries, total refining capacity is 770,000 barrels per day (BPD), or account for 62% of the national refining capacity (as of 31 December 2020), and integrated petrochemical business ranging from upstream to downstream, from production to sale of fuels, upstream-midstream and downstream petrochemicals both olefins and aromatics lines which enables us to add significant value to our business. We also provide marine terminal and tank services. PTT is responsible for procuring crude oil and buying fuels and petrochemicals from PTT Group companies for distribution in domestic and international markets. The performance of these businesses are primarily subject to the global economy, the spreads between crude oil and products, which is related to global demand and supply together with year-end inventories. PTT Group's petrochemical flagship company is GC; refinery flagship, TOP; integrated petrochemical and refinery operation flagship, IRPC; and oil and retail business flagship, OR. OR operates the integrated sale and distribution of oil products and retailing of a variety of products and other non-oil services, including sale of petroleum products and other products in retail and commercial markets, coffee business, food and beverages, convenience stores, and space management in domestic and international markets. Additionally, PTT TANK engages in petroleum and petrochemical product receiving, storing, and offtaking services to companies in the Group. PTT exercises direct and indirect governance of its affiliates through representatives that serve as directors and secondments.

PTT invests in the oil and retail, petrochemical, and refining business through five affiliates:

- 2.2.1 [PTT Global Chemical Plc \(GC\)](#)
- 2.2.2 [Thai Oil Plc \(TOP\)](#)
- 2.2.3 [IRPC Plc \(IRPC\)](#)
- 2.2.4 [PTT Oil and Retail Business Plc \(OR\)](#)
- 2.2.5 [PTT Tank Terminal Co., Ltd. \(PTT TANK\)](#)

3. PTT Group-Operated Technology and Engineering Businesses

As of December 31, 2020, PTT commanded the following 6 affiliates under the supervision of the Technology and Engineering Group:

- 3.1 [Global Power Synergy Plc \(GPSC\)](#)
- 3.2 [District Cooling System and Power Plant Co., Ltd. \(DCAP\)](#)
- 3.3 [Thaioil Power Co., Ltd. \(TP\)](#)
- 3.4 [Energy Complex Co., Ltd. \(EnCo\)](#)
- 3.5 [PTT Energy Solutions Co., Ltd. \(PTTES\)](#)
- 3.6 [PTT Digital Solution Co., Ltd. \(PTT Digital\)](#)

PTT group engaged in power business through GPSC, a Power Flagship. GPSC conducts its business primarily in the production and distribution of electricity, steam, industrial water and other utilities which operates by itself and by invested in other companies. As of the year-end 2020, its total equity capacities were 5,055 MW of power generation, 2,946 tons per hour of steam, 7,372 cubic meters per hour of industrial water, 15,400 refrigerated tons of chilled water, and 30 megawatts hour per year of energy storage unit.

Additionally, on January 4, 2021, PTTGM (a subsidiary of PTT) has acquired 50% of Global Renewable Power Company Limited (“GRP”)’s ordinary shares (GRP is a wholly owned subsidiary of GPSC). As a result, PTTGM holds 50% and GPSC holds 50% shareholding of GRP’s registered capital. The objective of the acquisition of GRP’s shares is a part of PTT’s expansion in international renewable energy power plants, which focus in solar energy and wind energy. In this regard, such share acquisition is in accordance with PTT Group’s strategic plan to become a leader in the renewable energy or green energy sectors, which to expand its business and investment portfolio, to enhance its competitiveness in the renewable energy, as well as to achieve the group target of the renewable power output capacity of 8,000 megawatts within 2030. However, the joint investment in GRP by PTT and GPSC will not cause any changes in the business operation of GPSC which is the Power Flagship of PTT Group.

4. Other Business Groups

[PTT Treasury Center Company Limited \(PTT TCC\)](#) operating a corporate treasury center for PTT and subsidiaries, providing services include sourcing of Thai and foreign currencies, both long-term and short-term, for loans to PTT and/or PTT subsidiaries, together with the debt, liquidity, and finance management, for the interests of PTT and subsidiaries.

**Details of businesses invests through
PTT Group in 2020**

1. Upstream businesses invested through PTT Group

1.1 Gas-related businesses

1.1.1 PTT Natural Gas Distribution Co., Ltd. (PTT NGD)

PTT NGD, was established on June 24, 1996, engages in developing and constructing gas distribution pipeline systems for gas transport and distribution, for industrial customers located in industrial zones around Bangkok Metropolis, its perimeter, and Rayong. As of December 31, 2020, PTT NGD's issued and paid-up shares amounted to THB 500 million. Its current shareholders are PTT Plc, with 58%, Gulf Energy Development Plc, with 40%, and CPB Equity Co., Ltd., with 2%.

PTT NGD invests in constructing distribution pipeline systems, using Steel and High-Density Polyethylene (HDPE) pipe branching off from PTT's transmission pipelines to customers located in industrial zones around Bangkok Metropolis, its perimeter, and Rayong. Additionally, PTT assists PTT NGD in procuring land as well as the rights to use land to construct the natural gas pipeline distribution network. PTT NGD also extends its business and investment to address customers' needs by providing energy services, cogeneration business, and alternative-energy businesses along with other business activities, for instance providing additional services regarding pipeline transmission systems.

1) Procurement

PTT supplies all natural gas to PTT NGD under a long-term gas sales agreement for each area with a 10-year term contract. The gas price structure consists of gas cost, pipeline tariff, and the return for the gas supply, marketing, and distribution.

2) Distribution

As of December 31, 2020, PTT NGD currently owns gas distribution pipeline network for supplying gas encompassing 13 industrial zones, namely Bang Pu Industrial Estate, Bang Pu Mai Industrial Zone, Bang Phli Industrial Estate, Lat Krabang Industrial Estate, Rangsit Industrial Zone, Rojana Industrial Park, Navanakorn Industrial Estate, Theparak Industrial Park, Bang Pa-in Industrial Estate, Bang Kradi Industrial Park, Eastern Seaboard (Rayong) Industrial Estate, WHA Eastern Seaboard 1 Industrial Estate, and North Bang Pu Industrial Estate. The gas sales agreements with customers have term ranging from five to seven years where gas price charges is set to be competitive with alternative fuel sources, principally fuel oil or LPG. In 2020, PTT NGD has a total distributed volume of 50.48 MMSCFD or 7.49% drop from previous year, with a total of 255 customers. The following table sets forth PTT NGD's sales volume and number of customers from 2018 to 2020.

Distribution	2018	2019	2020
Volume (MMSCFD)	57.34	54.57	50.48
Customers	253	253	255

In addition, PTT NGD expanded its channel for sales of natural gas by co-venturing with 80% holding in Amata Natural Gas Distribution Co., Ltd. (AMATA NGD) to construct a natural gas pipeline distribution network for customers in Amata Industrial Estate and Amata City Industrial Estate.

3) Administration

PTT NGD's board of directors as of December 31, 2020, consisted of 13 directors, 5 of whom were appointed by PTT, including the Chairman. In addition, PTT has assigned its executives to take the position of the PTT NGD's management, including the Managing Director.

4) Finance

The performance results of PTT NGD from 2018 to 2020 are as follows:

Unit: THB million

Separate financial statements	2018	2019	2020*
Sales and service revenue	8,102	6,883	4,785
Total revenue	8,845	7,378	4,872
Total expenses (incl. taxes)	6,446	6,240	5,060
Net profit (loss)	2,399	1,138	(195)

Unit: THB million

Separate financial statements	2018	2019	2020*
Total assets	3,683	2,959	3,075
Total liabilities	959	808	1,119
Equity	2,724	2,151	1,956

* Data of 2020 are unaudited.

1.1.2 Trans Thai-Malaysia (Thailand) Limited (TTM(T)) and Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM(M))

PTT and Petronas, Malaysia's National oil company, jointly established Trans Thai-Malaysia (Thailand) Company Limited (TTM (T)) in Thailand on February 4, 2000, and established Trans Thai-Malaysia (Malaysia) Sdn. Bhd. (TTM (M)) in Malaysia on March 21, 2000. TTM (T) operates a gas transmission pipeline service from Malaysia-Thailand Joint Development Area - JDA) to deliver gas to Thailand and the Thailand-Malaysia border, as well as providing gas separation services at Songkhla province and transporting LPG through the pipeline from Songkhla province to the border. Meanwhile, TTM (M) operates the transport of natural gas and LPG thru transmission pipeline from the border to Malaysia. On December 31, 2020, TTM (T) had issued and paid-up capital of THB 6,343.6 million and TTM (M) had issued and paid-up capital of Ringgit 52.8 million and held the redeemable preference shares amounting to Ringgit 150 million, in which PTT and Petronas own a 50% of the paid-up capital in both companies.

1) Services

Trans Thai-Malaysia (Thailand) Co., Ltd., and Trans Thai-Malaysia (Malaysia) Sdn. Bhd. provide the transmission service of natural gas and LPG, including the gas separation services for only PTT and Petronas. Both are the shareholders of the companies under a mutual service agreement. The companies have been providing gas transmission services (onshore and offshore) since January 2006 where the natural gas has processed thru a carbon dioxide separation unit, as well as providing gas separation services and LPG transmission services since April 14, 2006. Additionally, it has expanded a commercial gas delivery for PTT to Chana Power Plant with a capacity of 138 MMSCFD since the third quarter of 2008 and subsequently increased by 7 MMSCFD, starting from June 2011, to deliver to NGV mother station in Thailand's southern region. Since December 2006, the pipeline from the MTJDA-A18 gas field, connected to PTT's third gas pipeline, has lay with a delivery capacity of 300 MMSCFD and began its gas transmission in late 2008. Consequently, the commercial service from MTJDA-B17, connected to PTT's third gas pipeline on June 1, 2010, has started its service with expanding up to 300 MMSCFD.

Besides, on May 1, 2015, the gas commercial transmission service, from the MTJDA-B17 field connected to Petronas's pipeline at the edge of the JDA to Kerteh, Malaysia, has started. Such expansion generates additional revenue and also helped PTT procure sufficient gas supply to meet its customers' needs. This also strengthened stability and increased energy security for Thailand. As of December 31, 2020, the service details are as follows:

● Feed gas (A18)	845	MMSCFD
● Feed gas (B17)	334	MMSCFD
● Sales gas delivery	321	MMSCFD
● LPG delivery	149,778	Metric tons
● NGL delivery	54,842	Metric tons

2) Administration

As of December 31, 2020, the boards of directors of Trans Thai-Malaysia (Thailand) Co., Ltd. and Trans Thai-Malaysia (Malaysia) Sdn. Bhd., consisted of 6 directors, which PTT and Petronas appointed 3 directors each. Currently, the directors appointed by Petronas serve as the chairman of the board for both companies with a 3-year term, and then alternating this position with PTT's appointee.

3) Finance

The performance results of Trans Thai-Malaysia (Thailand) Co., Ltd., for 2018 - 2020 are as follows:

Unit: THB million

Financial statement	2018	2019	2020*
Sales and services revenue	2,751	2,786	2,874
Total revenue	3,088	3,083	3,122
Total expenses (including tax)	2,216	2,054	2,731
Net profit (loss)	872	1,029	391

Unit: THB million

Financial statement	2018	2019	2020*
Total assets	18,469	16,119	13,221
Total liabilities	9,749	7,870	7,119
Equity	8,720	8,249	6,102

* Data of 2020 are unaudited.

The performance results of Trans Thai-Malaysia (Malaysia) Sdn. Bhd. for 2018 - 2020 are as follows:

Unit: Ringgit million

Financial statement	2018	2019	2020*
Sales and services revenue	73	74	73
Total revenue	106	90	84
Total expenses (including tax)	59	60	46
Net profit (loss)	47	31	38

Unit: Ringgit million

Financial statement	2018	2019	2020*
Total assets	933	829	720
Total liabilities	610	560	468
Equity	323	269	252

* Data of 2020 are unaudited.

1.1.3 PTT LNG Company Limited (PTT LNG)

PTT registered the establishment of PTT LNG Company Limited (PTT LNG) on August 30, 2004, to operate an LNG receiving terminal with LNG regasification and storage services. On December 31, 2020, PTT LNG had a registered capital of THB 27,748 million and a paid-up capital of THB 24,424.9 million.

1) Project description

The first LNG Receiving Terminal Project consists of an LNG Jetty, LNG Storage Tank, and an LNG Re-gasification Unit for a total capacity of 11.5 million tons per annum: 5 million tons per annum in phase 1, extend to 10 million tons per annum in phase 2, and an additional expansion of phase 2 of 1.5 million tons per annum.

2) Progress

On December 8, 2016, the National Energy Policy Council (NEPC) resolved to review the estimated gas demand under the Natural Gas Management Plan 2015- 2036 and agreed to expand the construction of the second LNG Receiving Terminal from 5 to 7.5 million tons in capacity per year. The commencement of gas delivery was scheduled by 2022. Currently, the terminal is under construction and expected to be completed in 2022.

On August 30, 2019, the Committee on Energy Policy Administration (CEPA) passed a resolution assigning EGAT to import spot LNG of up to 200,000 tons to test the free-market system in the natural gas business. Subsequently, EGAT imported two spot LNG cargoes, with the first one in December 2019 at 65,000 tons and the second in April 2020 at 63,350 tons.

On January 25, 2020, the LNG Reloading Facilities were tested at Map Ta Phut LNG Terminal to prepare Thailand as a regional LNG hub.

3) Services

PTT LNG provides services and management of LNG receiving terminals and collect terminal tariffs service, where LNG is supplied and imported by clients.

- The Demand charge (Ld) in 2018-2022 is THB 18.3506 per MMBTU
- The Commodity Charge (Lc) for the year 2020 is THB 0.4810 per MMBTU (Jan-Aug) and THB 0.5382 per MMBTU (Sep-Dec)
- Current clients: PTT and EGAT.

4) Administration

The board of directors of PTT LNG Company Limited consists of 5 directors, 4 of whom from PTT and another was a representative from the Ministry of Finance, nominated by PTT as an expert.

5) Finance

The performance results for 2018 - 2020 are as follows:

Unit: THB million

Financial statement	2018	2019	2020*
Sales and services revenue	7,807	9,542	9,580
Total revenue	7,835	9,566	9,599
Total expenses (including tax)	2,981	3,430	2,882
Net profit (loss)	4,854	6,136	6,717

Unit: THB million

Financial statement	2018	2019	2020*
Total assets	49,695	55,458	56,981
Total liabilities	19,117	17,367	13,344
Equity	30,578	38,091	43,637

* Data of 2020 are unaudited.

1.1.4 Map Ta Phut Air Products Company Limited (MAP)

Map Ta Phut Air Products Company Limited (MAP) was established on January 15, 2019, as a joint-venture company where PTT holds 51% and Bangkok Industrial Gas Company Limited (BIG) holds 49%, to enhance competitiveness capability under the competitive industrial gas business. MAP operates by utilizing surplus cold energy from LNG to reduce production costs of the Air Separation Unit (ASU) to produce and distribute industrial gases, including nitrogen, oxygen and argon.

1) Project description

The ASU project is a factory or production JVC of industrial gases with a capital investment of THB 1.5 billion, which utilizes around 0.67 million tons per year of the surplus chilled energy from LNG by constructing a cooling pipeline connected to PTT LNG's receiving terminal to transport LNG to exchange the cooling energy with the ASU plant. Consequently, the gas will be delivered through the pipeline back to the receiving terminal and to gas customers. PTT LNG will invest the cooling pipeline system for the ASU project, which will adopt the production technology from Air Products and Chemicals, Inc. (APC), the parent company of BIG.

The ASU project requires about 9.5 rai of land, located in the industrial port area of Map Ta Phut Industrial Estate, Rayong, of the Industrial Estate Authority of Thailand (IEAT), a kilometer from the PTT LNG's receiving terminal.

2) Progress

As of 31 December 2020, the ASU plant is under construction and around 83.6% completed. The COD is expected by August 1, 2021.

3) Distribution

MAP will distribute industrial gas products to BIG (wholesale) with a sales price formula that follows the cost-plus pricing principle. The retail marketing will be managed by BIG for distributing the gases to end users in different economic sectors, such as the frozen industry, electronics industry, welding industry, and hospitals, which will be delivered through pipelines and transport trucks.

4) Administration

MAP's board of directors consisted of 4 directors: 2 PTT's executives and 2 BIG's executives.

5) Finance

The performance results for 2019 - 2020 are as follows:

Unit: THB million

Financial statement	2019	2020*
Total assets	170	960
Total liabilities	106	741
Equity	63	219

* Data of 2020 are unaudited.

1.2 Exploration and Production Business

PTT engages in oil and gas exploration and production business (E&P) through its subsidiary PTT Exploration and Production Plc. (PTTEP). PTTEP was incorporated on June 20, 1985 as the E&P arm of PTT (E&P Flagship Company) with an initial capital of THB 400,000, listed on SET on June 10, 1993. As of December 31, 2020, PTTEP has a registered capital of THB 3,969,985,400 with PTT holding 63.79% of PTTEP's registered and paid-up capital.

PTTEP's core business is exploration and production of petroleum in Thailand and abroad. The investments must comply with all applicable law and regulations of those invested countries, which could be in form of (1) Production Sharing Contract (PSC), (2) Concession, or (3) Services Agreement. Within Thailand, PTTEP must comply with the Petroleum Act B.E. 2514 and its amendments.

Most of PTTEP producing projects are located in Southeast Asia including Thailand, Myanmar, Malaysia, and Indonesia. Other operating areas including Kazakhstan, Oman, UAE, Algeria, Mozambique), Angola, Australia, Canada, Brazil, and Mexico. As of December 31, 2020, PTTEP had working interests in more than 40 petroleum exploration development and production projects in 15 countries including Thailand and other countries globally. The total amount of Proved Reserves of PTTEP Group's projects was 1,074 million barrels of oil equivalent, consisting of 295 million barrels of crude oil, condensate and liquefied petroleum gas; and 4,760 billion cubic feet of natural gas, while the total Probable Reserves was 548 million barrels of oil equivalent. The total Proved Reserves of PTTEP and its subsidiaries at the year-end on December 31, 2018 - 2020 were as follows:

Unit: Million barrels of oil equivalent

Proved Reserves	2018	2019	2020
Indigenous Thailand	470	566	534
International	207	574	540
Total	677	1,140	1,074

In addition to petroleum exploration and production activities, PTTEP also engages in other businesses such as gas transmission pipeline from Zawtika, Yadana and Yetagun Project in Myanmar, property development and management under the Energy Complex Company Limited (EnCo); joint venturing with PTT Group, and LNG value chain under PTT Global LNG Company Limited; joint venturing with PTT.

Factors affecting PTTEP's business performance mainly include the global crude oil price, success of exploration and development of oil and gas fields, work efficiency, and continuous improvement of operating and unit costs, as well as the investment opportunities. The business performance of PTTEP is summarized as follows:

1) Production

As of December 31, 2020, the total production under PTTEP and subsidiaries was 422,278 barrels of oil equivalent per day. The total annual production for 2018 - 2020 is summarized as follows:

Unit: Barrels of oil equivalent per day

Production Volume	2018	2019	2020
All projects	359,386	413,640	422,278

2) Distribution

PTTEP and subsidiaries dispose of and distribute four main products: crude oil, natural gas, liquefied petroleum gas, and condensate. PTT is the major buyer and processor of all petroleum products (74% of the total production in 2020) operated by PTTEP and subsidiaries. For natural gas, PTT has entered long-term gas sales agreements (GSAs) with PTTEP. The terms of the GSAs last 25-30-years and stipulate obligations for the buyer to commit to the annual committed volumes. For crude oil and condensate, the prices under sales agreements between PTT and PTTEP are made in reference to the properties and benchmarked with crude oil prices of those predominantly sold in the market.

As of December 31, 2020, the total sales of all four types of products by PTTEP and its subsidiaries was approximately 354,052 barrels of oil equivalent per day, rising 1% compared to 2019 at 350,651 barrels of oil equivalent per day. The increased was resulted mainly from the acquisition of Murphy's business in Malaysia projects (Murphy Oil Corporation's) and Partex Holding B.V. in the Middle East, despite lower demand caused by COVID-19 outbreak. Summaries of product sale volume by PTTEP and its subsidiaries are as follows:

Petroleum Product	2018	2019	2020
Crude oil (thousand BPD)	48.00	61.16	79.32
Natural gas (MMSCFD)	1,362.95	1,536.57	1,469
LPG (metric tons per day)	203.54	199.95	182
Condensate (thousand BPD)	36.23	38.49	34.95
Total (barrels of oil equivalent per day)	305,522	350,651	354,052
Average price (USD per barrel of oil equivalent)	46.66	47.24	38.92

3) Administration

PTT governs PTTEP through its executives nominated as members of the board of directors with authority to define and supervise policies and business activities under good governance. PTTEP's board of directors as of December 31, 2020, consisted of 15 directors, 2 of whom were nominated by PTT.

4) Financial

PTTEP's performance results for 2018 - 2020 are as follows:

Unit: THB million

Financial statements*	2018	2019	2020
Sales and services revenue	171,810	191,053	160,401
Total revenue	176,687	198,822	167,418
Total expenses (including taxes)	140,737	150,400	146,061
Net profit (loss)	36,206	48,803	22,664

Unit: THB million

Financial statements*	2018	2019	2020
Total assets	632,256	669,464	675,637
Total liabilities	242,683	312,405	321,226
Equity	389,573	357,059	354,411

* Since January 1, 2001, PTTEP had adopted USD as the functional currency. All figures shown in the consolidated balance sheets are converted from USD into Thai baht.

5) Progress of significant projects and projects under development

PTTEP's primary operational base is in Southeast Asia, with projects located in Thailand, Myanmar, Malaysia, Vietnam, and Indonesia. In 2020, the average sales volume from projects in Thailand is 249,500 BOED, accounting for 70% of total sales volume. Average sales volume from other countries in this region is 85,200 BOED, which accounted for 24% of total sales volume.

The key projects progress including: Projects in the Gulf of Thailand including The Bongkot, Arthit, and Contract 4 Projects which were delivered production in accordant with low nomination from the buyer resulted from the impact of COVID-19 pandemic. The Sarawak SK410B Project began drilling one appraisal well in end of third quarter 2020 to confirm petroleum potential upside resources after successful exploration drilling in mid-2019 and the Sarawak SK417 Project also began drilling the exploration well in the fourth quarter of 2020. The drilling results for both projects is expected to be known in the first quarter of 2021. Moreover, the project will continue drilling an addition exploration well in 2021. Additionally, PTTEP has expanded its investments in the Middle East with high petroleum potential; received exploration and production rights for the Oman Onshore block 12 Project and the Abu Dhabi Offshore 3 Project.

For more information, please access the link: pttep.com/en/Investorrelations/Regulatorfilings/Annualfiling.aspx

1.3 Overseas Upstream Business

1.3.1 PTT Energy Resources Company Limited (PTTER)

PTTER is a wholly owned subsidiary of PTT, registered in October 2007. PTTER is managing gas pipeline in the Arab Republic of Egypt (Egypt). As of December 31, 2020, its registered capital stood at THB 36,045 million, with 3,604,500,000 common shares at a par value of THB 10; THB 33,703 million was fully paid.

1) Operation

Through its vehicle investment entity PTTER, PTT acquired 25% equity of East Mediterranean Gas S.A.E. (EMG) in December 2007 at a total cost of THB 16,479 million under a loan from PTT to PTTER.

EMG is the legitimate and sole exporter of natural gas from Egypt to the State of Israel (Israel) under a bilateral MOU stipulating the sale of natural gas from the Egyptian state-owned Egyptian General Petroleum Corporation (EGPC)/Egyptian Natural Gas Holding Company (EGAS) at 677 MMSCFD for 20 years through EMG under the GSA.

The delivery of gas from the Egyptian city of Al-Arish to Ashkelon city in southern Israel is via offshore pipeline. The project commenced in the first quarter of 2008.

The operation was, however, interrupted and finally suspended due to EGPC/EGAS pipeline explosion, following the ongoing political chaos in Egypt since February 2011, leading to zero natural gas delivery to EMG and significantly affecting EMG's business.

Consequently, EMG enquired for justice by submitting a call for arbitration to the International Chamber of Commerce (ICC), located in Geneva, Switzerland, on grounds that the GSA was terminated illegitimately and demanded compensation of USD 1,500 million. The ICC arbitration committee reached a resolution on December 4, 2015, calling for EGPC/EGAS to compensate EMG with USD 328 million in total. Meanwhile, EGPC/EGAS counter-submitted a call for arbitration to the International Commercial Arbitration (CRCICA) at the Cairo Regional Centre, Cairo, Egypt, and demanded legitimate abandonment of the GSA due to the breach of agreement by EMG on default of payment. The CRCICA reached a resolution on May 30, 2018, demanding that EGPC/EGAS compensate EMG with USD 1,269 million. Currently, EMG is pursuing the execution proceedings process for such compensation.

1) Administration

As of December 31, 2020, there were 5 directors on the PTTER board of directors, 4 of whom were from PTT and the remaining person was an external independent director.

2) Finance

The financial performance of PTTER for 2018 - 2020 is summarized as follows:

Unit: THB million

Financial statements*	2018*	2019	2020**
Sales and services revenue	-	-	-
Other revenue	162	127	114
Total expenses (including taxes)	(6,297)	158	(409)
Net profit (loss)	6,459	(31)	523

Unit: THB million

Financial statements*	2018*	2019	2020**
Total assets	1,158	1,051	1,564
Total liabilities	31	36	50
Equity	1,127	1,016	1,514

* In 2018, there was THB 6,433 million of reversal of doubtful debt resulting from coal business investment restructuring

** 2020 data are unaudited and the reversal of doubtful debts of THB 513 million due to the restructuring of coal business investments.

1.3.2 PTT Global Management Company Limited (PTTGM)

PTT Global Management Company Limited (PTTGM) is a wholly owned subsidiary of PTT and is being a holding company as the PTT's investment arm in domestic and international businesses. As of December 31, 2020, PTTGM's registered capital is at THB 57,735 million, of which THB 55,343 million was fully paid.

1) Business Operation

Investments in coal business:

PTT Mining Limited (PTTML), a wholly subsidiaries of PTTGM (direct and indirect), is registered in Hong Kong. Currently, PTTML's registered capital is at USD 497,680,942.05, of which USD 497,680,942.05 was fully paid.

The investment are as follows:

- Holding of 95.82% stake in Sakari Resources Limited (SAR), a Singapore-based company, operating coal mining in the Republic of Indonesia including Sebuk mine and Jembayan mine, and trading of coal in the Republic of Singapore through Tiger Energy Trading Pte Ltd. (TET).
- Holding 80% stake thru subsidiary company in Madagascar Consolidated Mining SA (MCM), a joint investment entity with the nominating entity of the Madagascar government, operating exploration and development of coal in the Sakoa Coal Field in the Republic of Madagascar. The project, located in the southwest of Madagascar, has a potential on coal production for export and fuel use as an energy source for power generation and industrial use, particularly in the Republic of India and western European countries. Currently, MCM has successfully obtained an operating license from the Madagascar government but is currently delaying its mining operation due to the falling price of coal. The project is now under the pre-development stage, including a review of the project feasibility study.
- Holding of 35% stake thru a subsidiary company in Fee (Bru) Pte Ltd., a joint venture company with an exploration license to explore coal potential in Brunei. The company is awaiting approval of the license under the Coal Mining Act (CMA) from the government of Brunei before commencing exploration activities. Currently, the company is reviewing the investment feasibility under the pre-development stage.

SAR reported the 2020 performance with total sales of coal of 6.4 million tons, with a net operating loss of USD 198 million, mainly from loss on impairment in mining assets approximately USD 227 million.

In order to support PTT and PTT Group's investment in new businesses to align with PTT's investment strategy in New S-Curve, therefore, PTTGM has established new companies to facilitate new business operations; the investment in the battery business for electric vehicles, the investments in Life Science i.e. Pharmaceuticals, Nutrition, and Medical Devices etc., including the investment in providing various types of information system services via the Internet (Public Cloud). These businesses are still in the early stages, therefore, it has not yet generated any significant income to PTTGM's performance.

2) Administration

As of December 31, 2020, there were 3 directors on PTTGM's board of directors, 2 of whom were from PTT and another was a representative of the Ministry of Finance.

3) Finance

The performance results from 2018 to 2020 are as follows:

Unit: THB million

Financial statements	2018	2019	2020*
Sales and services revenue	20,527	15,380	10,779
Other revenue	(1)	206	343
Total expenses (including taxes)	18,356	13,657	18,426
Net profit (loss)	2,170	1,929	(7,304)

Unit: THB million

Financial statements	2018	2019	2020*
Total assets	26,709	28,247	36,506
Total liabilities	6,229	7,619	17,848
Equity	20,480	20,628	18,658

* 2020 data are unaudited

1.3.3 PTT Green Energy Company Limited (PTTGE)

PTT Green Energy Company Limited (PTTGE) was registered as a wholly owned subsidiary of PTT on September 14, 2007, with an initial capital of THB 833 million, with a primary business objective to invest in palm plantation and crude palm oil production. Currently, PTTGE's registered capital has risen to THB 12,403 million. However, the assets under PTTGE is not appropriate for palm plantation at the international acceptable level. The performance failed to meet the business targets and the investment plans could not provide a positive yield as higher cost and operating expenses. As a result, in 2014, the PTT Board of Directors decided at Board Meeting No. 5/2557 to resolve and liquidate the projects under PTTGE.

1) Business Progress

PTTGE fully completed the liquidation of its subsidiaries PTT Green Energy (Hong Kong) Limited, Kalimantan Thailand Palm Pte. Ltd., and Sabran Brothers Pte. Ltd., on April 6, 2018, July 4, 2018, and November 14, 2019, respectively. Currently, PTTGE has two active entities: PTT Green Energy Pte. Ltd. (a Singaporean registered company) and PTT Green Energy (Thailand) Co. Ltd. (a Thai registered company).

2) Administration

As of December 31, 2020, PTTGE had 4 directors on its board of directors, 3 of whom were executives from PTT and the other was an independent director.

3) Finance

PTTGE's financial performance during 2018 - 2020 is summarized as follows:

Unit: USD million

Financial statements	2018	2019	2020*
Total revenue	1	1	0
Total expenses (including taxes)	8	10	(1)
Net profit (loss)	(7)	(9)	(1)

Unit: USD million

Financial statements	2018	2019	2020*
Total assets	11	18	18
Total liabilities	1	0.2	1
Equity	10	17.8	17

* 2020 data are unaudited

1.3.4 PTT Global LNG Company Limited (PTTGL)

Registered on June 23, 2017, PTT Global LNG Company Limited is a 50:50 joint venture entity between PTT and PTTEP. PTTGL's registered capital stood at THB 10.421 billion, calculated from 10,421,446 common shares with a par value of THB 1,000 per share; THB 10.421 billion was fully paid.

1) Business Nature

The PTT Group's investment in international LNG value chain is invested through PTTGL. PTTGL already established the wholly owned subsidiary call PTTGL Investment Limited (PTTGLI), registered in Hong Kong with a registered capital of USD 25,000, to held 10% interest in Petronas LNG 9 Sdn. Bhd. (PL9SB). PL9SB is include the LNG liquefaction plant (train 9) and other facilities around the Petronas LNG Complex in Sarawak Malaysia, with the total capacity of 3.6 million tons per annum (MTA) to produce LNG and distribute to Asia customers. This project is the first step of PTTGL to enter in LNG Value chain business.

2) Administration

As of December 31, 2020, PTTGL had 4 directors on its board of directors, 2 of whom were from PTT and the remaining were from PTTEP.

3) Finance

PTTGL's financial performance during 2018-2020 is summarized as follows:

Unit: USD million

Financial statements	2018	2019	2020*
Total revenue	7.4	6.5	5.5
Total expenses (including taxes)	11.2	11	7.3
Net profit (loss)	(3.8)	(4.5)	(1.8)

Unit: USD million

Financial statements	2018	2019	2020*
Total assets	467	438	379
Total liabilities	159	134	120
Equity	308	304	259

* 2020 data are unaudited

2. Downstream businesses invested through PTT Group

2.1 International Trading Business Unit

2.1.1 PTT International Trading Pte. Ltd. (PTTT)

PTTT registered in Singapore as a company on December 1, 2000, wholly-owned subsidiary of PTT. PTTT has a registered and paid-up capital of SGD 6.1 million. The objective is to undertake full-fledged international trading transactions through commodity storage, blending, administration, chartering service and price risk management for crude oil, petroleum products, petrochemicals, products related to energy, and other commodities to generate revenue, create value added, and represent a platform for transaction expansion in the Eastern together with energy security.

PTT International Trading DMCC (PTTT DMCC) is a subsidiary of PTTT, located in Dubai, UAE, which is being in the process of closing and establish PTT MEA Ltd. (PTT MEA) in Abu Dhabi, UAE to operate forward trade invest in the ICE Futures Abu Dhabi (IFAD) market and extend trading networks in the Middle East. Also, PTTT has a representative office in Shanghai, China, to coordinate market data in China and the nearby region.

1) Trading and services

PTTT engages in full-fledged international trading ranges from storage, blending, administration through the sales and purchase of commodities together with chartering service and price risk management through derivatives. PTTT also focuses on Asia market and intercontinental market associated with other subsidiaries of the International Trading Business unit and PTT Group.

2) Administration

PTTT's board of directors as of December 31, 2020, consisted of 6 directors, 5 of whom were appointed by PTT and the other appointed by the Ministry of Finance.

3) Finance

A profile of PTTT's performance results from 2018 to 2020 appears below:

Unit: USD million

Financial statements	2018	2019	2020
Service revenue	12,567	13,255	8,553
Total revenue	12,627	13,281	8,565
Total expenses (incl. taxes)	12,624	13,265	8,524
Net profit (loss)	3	16	41

Unit: THB million

Financial statements	2018	2019	2020
Total assets	1,655	1,737	1,084
Total liabilities	1,561	1,628	936
Equity	94	109	148

2.1.2 PTT International Trading London Ltd. (PTTT LDN)

PTTT LDN is a flagship for PTT's International Trading Business expansion in the Western corridor, which is a wholly owned subsidiary of PTT. On October 24, 2016, PTT LDN has registered in London, the United Kingdom with a registered capital USD 26.5 million; paid up USD 10.5 million. The objective of the company is to operate international trading, focus on expanding the trading network in the Western corridor together with the aspiration to pursue opportunities and create value added of new transactions from West to East. Its transactions embrace trading of crude oil and petroleum products together with chartering service and price risk management.

PTTT LDN's other key role is to pursue trading and price movement data in the West, which gives PTT worldwide product data around the clock; its location in the best of the world's derivatives market in the UK also contributes to even more efficient trading and price risk management.

1) Trading and administration

PTTT LND aims to expand an international market where it's outside of the country through the sales and purchase of commodities together with chartering service and price risk management through derivatives. PTTT LDN focuses on primarily trading markets in Europe and Africa, including intercontinental trading associated with other subsidiaries of International Trading Business unit and PTT Group.

2) Administration

PTTT LDN's board of directors as of December 31, 2020, consisted of 6 directors, 5 of whom were appointed by PTT and the other appointed by the Ministry of Finance.

3) Finance

A profile of PTTT LDN's performance results from 2018 to 2020 appears below:

Unit: THB million

Financial statements	2018	2019	2020
Service revenue	2,086	2,344	1,141
Total revenue	2,090	2,357	1,159
Total expenses (incl. taxes)	2,087	2,346	1,145
Net profit (loss)	3	11	14

Unit: THB million

Financial statements	2018	2019	2020
Total assets	143	460	149
Total liabilities	128	435	111
Equity	15	25	38

2.1.3 PTT International Trading USA Inc. (PTTT USA)

PTTT USA registered as a company on April 2, 2020, in Houston, USA, which a wholly owned subsidiary of PTT. PTTT USA has a registered capital of USD15 million; paid up USD 5 million. The company's objective is to engage in international trading, focus on expanding trading network embracing the Americas (North America, Central America, and Latin America), including pursuing opportunities to create value added and enlarge trading transactions in the Americas and intercontinental. PTTT USA also procures feedstock for PTT Group's refineries or petrochemical plants, which reduce dependence on the Middle East, where politics is highly risky. Its transactions consist of trading in crude oil, petroleum products, petrochemicals, chartering service, and price risk management.

Moreover, PTTT USA's key role is to pursue data on product trading and price movement in the Americas and the world's foremost derivative market in the US, contributing to PTT's efficiency of trading and hedging, thanks to around-the-clock product data availability.

1) Trading and services

PTTT USA engages in full-fledged international trading by purchasing and selling commodities and providing chartering and hedging services through derivatives. PTTT USA focuses on the primary markets in North America and South America, including intercontinental trading associated with other subsidiaries under PTT's International Trading Business unit and PTT Group.

2) Administration

PTTT USA's board of directors as of December 31, 2020, consisted of 3 directors, all of whom are PTT executives.

2.2 Oil and Retail Business, Petrochemical and Refining Business

2.2.1 PTT Global Chemical Plc (GC)

GC engages in integrated petrochemicals and refining businesses with a total capacity for petrochemicals and chemicals of about 11.65 million tons per annum (MTA) and a total refining capacity for crude oil/condensate of about 280,000 barrels per day (BPD). GC is PTT Group's petrochemical flagship; as of December 31, 2020, PTT held 45.41% equity interest in GC.

GC's operations are organized into 8 core business units are listed below:

1. Refinery and shared facilities: refining crude oil and sale of petroleum products, with diesel, aviation fuels, and fuel oil as the main products
2. Aromatics: processing and sale of paraxylene and benzene as the main products
3. Olefins: processing and sale of ethylene and propylene as the main products
4. Polymers: processing and sale of High Density Polyethylene (HDPE), Linear Low Density Polyethylene (LLDPE), and Low Density Polyethylene (LDPE) as the main products; operating through GC Group affiliates, with Polypropylene (PP), Purified Terephthalic Acid (PTA), Polyethylene Terephthalate (PET), Polystyrene (PS), rotomolding compounds, and PP compounds as the main products
5. Ethylene-oxide-based performance: processing and sale of ethylene oxide (EO), mono ethylene glycol (MEG), and ethanolamine (EA), operating through GC Group affiliates
6. Greenchemicals: processing and sale through GC Group affiliates, with methyl ester, oleochemicals, and PLA as the main products
7. Phenol: processing and sale through GC Group affiliates, with phenol, acetone, and bisphenol-A as the main products
8. Performance materials and chemicals: processing and sale through GC Group affiliates, with hexamethylene diisocyanate (HDI), HDI derivatives, acrylonitrile (AN), methyl methacrylate (MMA), Propylene Oxide (PO) and Polyols as the main products.

Apart from its 8 core business units, GC also engages in auxiliary businesses, including the provision of electricity, industrial water, steam and other utilities as well as the operation of production support facilities such as jetty and buffer tank farm services for plants in the Map Ta Phut Industrial Estate, Rayong.

The following table sets forth GC's nameplate capacities by products as of December 31, 2020

Product	Capacity (Tons per year except stated otherwise)
Refinery ⁽¹⁾	280,000
Aromatics	2,419,000
Olefins	2,988,000
Polymers ⁽²⁾	3,279,000
Ethylene oxide based performance	473,000
Green chemicals ⁽²⁾	931,000
Phenol	954,000
Performance materials and chemicals ⁽²⁾	606,000

Remarks:

(1) Refers to distillation intake capacity as measured in barrels per day. Includes the sum of our intake capacities for our crude distillation unit (145,000 barrels per day) and condensate splitter (135,000 barrels per day).

(2) The capacities for polymers, green chemicals and performance materials and chemicals were only those where GC held at least 25% equity

The following table sets forth GC's capacities and utilization rate for its refinery, olefins, and aromatics for the periods indicated:

	Capacity	2018	2019 ¹	2020 ²
		Utilization (Percent)	Utilization (Percent)	Utilization (Percent)
Refinery	280 KBD	102	87	97
Olefins plant	2,988 thousand tons/year	101	102	97
Aromatics plant	2,419 thousand tons/year	93	88	96

¹ In 2019 there were planned maintenance shutdown of Aromatics plant 1 in May and June for 49 days and the Refinery in October and November for 52 days

² In 2020 there were planned maintenance shutdown of Olefin plant 2/1 and Olefin plant 2/2 in January to March for 74 days and Oleflex unit in March to April for 37 days

1) Procurement

The principle feedstock used in for petroleum products and aromatics products consist of imported crude oil and condensate from domestic and international sources. PTT procures crude oil and condensate to GC pursuant to a feedstock supply agreement. Pricing terms reference to the market prices.

The principle feedstock used in olefins plants consist of ethane, propane, LPG, NGL, and light naphtha. GC procures most of the feedstock from domestic sources. PTT procures natural gas from our GSP to GC under long-term supply agreements.

2) Distribution

For refined products, OR purchases them under Product Offtake Agreements from GC at market prices.

For aromatics products, GC distributes this product group under long-term agreements with domestic and international customers, at market prices.

For olefins products, GC is a party to long-term agreements with petrochemical plants within the Group and those operating under a joint venture arrangement with GC.

For polymers products, GC entered into agreements with domestic agents and international traders to sell PE and PS polymers under the "InnoPlus" and "Diarex" trademarks. All products of GC are sold through GC Marketing Solution Co., Ltd. (GCM), which was established to market and distribute polymer products both domestically and internationally for GC Group affiliates. GC also sells other polymers through subsidiaries and joint ventures.

3) Administration

GC's board of directors as of December 31, 2020, consisted of 15 directors, 4 of whom were appointed by PTT. PTT also delegated its executives to GC management, including the CEO.

4) Finance

A profile of GC's performance results from 2018 to 2020 appears below:

Unit: THB million

Financial statements	2018	2019	2020
Sales and service revenue	518,655	412,810	329,291
Total revenue	529,734	422,974	335,716
Total expenses (incl. taxes)	489,464	410,625	335,064
Net profit (loss)*	40,270	12,349	652
Net profit (loss) of the major shareholder	40,069	11,682	200

Unit: THB million

Financial statements	2018	2019	2020
Total assets	469,255	452,514	489,383
Total liabilities	165,773	158,919	200,389
Equity	303,482	293,595	288,994

* Profit (loss) of the major shareholder after deducting the shared portions of non-controlling parties. Such portions for 2018 amounted to THB 201 million; for 2019, THB 667 million; and for 2020, THB 452 million

5) Projects

5.1.1 Olefins Reconfiguration Project

GC had approved and investment the new Olefins plant (Olefins Reconfiguration Project) will the use of naphtha and LPG as major feedstock. The plant will ethylene capacity of 500,000 tons per year and propylene capacity of 250,000 tons per year. This project will increase GC's total olefins capacity from 2,988,000 tons per year to 3,738,000 tons per year. The plant is expected to start commercial operation within the first quarter of 2021.

5.1.2 Propylene Oxide (PO) Project and Polyols & PU System Project

The purpose of PO/Polyols project is to expand toward downstream business of polyurethane; a high value product. GC has set up a wholly-owned, GC Oxirane Company Limited, to produce PO with the capacity of 200,000 tons per year. GC has also set up a joint venture, GC Polyols Company Limited, with shareholding of GC 82.1%, with polyether polyols (PGP) capacity of 130,000 tons per year polymer polyols (POP) with the capacity of 30,000 tons per year and premix polyols (PM) with the capacity of 20,000 tons per year. The plant started commercial operation in December 2020.

5.1.3 High-Quality Recycled Plastics Project

GC invested in this project, also known as the Recycle Plant Project through ENVICCO Limited., a joint venture company where GC holds 70% shares with ALPHA holding the remaining 30%. This joint venture company was established with the objectives to produces and sells recycled plastics of the rPET and rHDPE with a total capacity of

45,000 tons per year including rPET 30,000 tons per year and rHDPE 15,000 tons per year. The plant is expected to start commercial operation within the fourth quarter of 2021.

5.1.4 High Heat Resistant Polyamide-9T (PA9T) and Hydrogenated Styrene Block Copolymer (HSBC) Project

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

5.1.5 Olefins 2 Modification Project

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

For further information, please access the link: investor.pttgcgroup.com/ar.html

2.2.2 Thai Oil Plc (TOP)

TOP is Thailand's largest refinery and supplier of petroleum products as well as one of Asia-Pacific's most efficient refinery operators, which was established in 1961 and listed on SET in 2004. Its core business is petroleum refining. Currently, TOP had a refining nameplate capacity of 275,000 barrels per day or 22.1% of the total refining nameplate capacity in Thailand. It distributes domestically about 87% of the total capacity. Additionally, TOP has grown investment to embrace production of paraxylene and benzene with a total distillation capacity of 838,000 tons per year, TOP's businesses are structured as an integrated operation of long value chains and organized into eight core business units: oil refinery, lube base oil refinery, petrochemical, power generation, marine and pipeline transportation services, solvent, ethanol and other businesses. As of December 31, 2020, PTT held 45.03% equity interest in TOP.

The following table sets forth TOP's capacities and utilization rate for its refinery and aromatics plant for the periods indicated:

	Capacity	2018	2019 ¹	2020 ²
		Capacity utilization (Percent)	Capacity utilization (Percent)	Capacity utilization (Percent)
Refinery	275,000 BPD	113	107	101
Aromatics Plant	838,000 tons per year	89	70	71

¹ In 2019 there were planned shutdown at the Crude Distillation Unit (CDU-3) and related production units and conducted tie-in activities under the Clean Fuel Project (CFP) and the aromatics unit from mid-June to late July 2019

² In 2020 there were planned major turnaround of LAB production from mid-July to late August 2020

1) Procurement

TOP's production relies on crude oil from domestic sources and international sources. For International sources mostly from the Middle East, transported by sea. Domestic crude oil is transported by rail and sea freight. The selection of crude oil depends on price and expected return. PTT procures crude oil under the Crude Supply Agreement, following the market-referenced price structure.

2) Distribution

In 2020, TOP distributed 87% of its products to domestic market; the rest 13%, was exported. PTT purchased refined products under the Product Offtake Agreement from TOP at market prices. On July 1, 2018, PTT transferred its rights under this agreement to OR, its main distributor of refined products. The agreement's terms and other conditions remain the same.

Unit: Percent

2018	2019	2020
Ratio of domestic sale to international sale (Percent)	Ratio of domestic sale to international sale (Percent)	Ratio of domestic sale to international sale (Percent)
86/14	88/12	87/13

3) Administration

TOP's board of directors as of December 31, 2020, consisted of 15 directors, 5 of whom were appointed by PTT. PTT also delegated its executives to TOP management, including the President & CEO.

4) Finance

A profile of TOP's performance outcomes from 2018 to 2020 appears below.

Unit: THB million

Financial statements	2018	2019 ¹	2020
Sales and service revenue	389,042	361,768	242,840
Total revenue*	395,861	369,056	259,000
Total expenses**	385,477	362,539	261,882
Net profit (loss)***	10,384	6,517	(2,882)
Net profit (loss) of the major shareholder	10,149	6,277	(3,301)

Unit: THB million

Financial statements	2018	2019	2020
Total assets	268,613	283,445	306,188
Total liabilities	142,141	159,521	186,069
Equity	126,472	123,924	120,119

Remarks:

¹ Adjustment of the impact on financial statement align with Financial Reporting Standard No.5 Non-current Asset held for sale and discontinued operations

* Including the share of profit resulting from investment in associated and joint-venture companies, amounting to THB 1,193 million in 2018, THB 1,276 million in 2019, and THB 2,566 million in 2020

** Including income tax (income tax credit) of THB 1,983 million in 2018, THB 1,240 million in 2019, and THB (647) million in 2020, and the cost of funds of THB 3,942 million in 2018, THB 3,224 million in 2019, and THB 4,292 million in 2020

*** Profit of the major shareholder (parent company) after deducting that of minor shareholders; the profit shares of non-controllers amounted to THB 235 million in 2018, THB 240 million in 2019, and THB 419 million in 2020

5) Projects

The Clean Fuel Project (CFP) is to enhance the competitiveness of TOP by improving its production and energy efficiency. TOP's refining capacity will increase from 275,000 to 400,000 barrels per day, resulting in creating economies of scale, cost reduction, enhancing flexibility in crude handling, which will allow the refinery to increase its heavy crude processing by 40-50 % and increase product value by turning fuel oil into jet fuel and diesel. This project enables TOP to produce Euro 5 Standard gasoline and diesel for a good environment and quality of life. CFP project is considered the first private-sector Megaproject in Eastern Economic Corridor (EEC), which will create an opportunity for Thailand to become Southeast Asia's energy hub. The total investment of this project is US\$ 4.825 billion, CFP began in 2018 and construction of the project is approximately 61% complete as of December 31, 2020, including completion of the Basic engineering design package and procurement of equipment and key machinery requiring longer shipment time. Engineering procurement construction (EPC) is currently in progress, including area improvement and foundation building to support the structure installation, machinery, and equipment. Commercial operation is expected in 2023.

For more information, please access the link: investor.thaioilgroup.com/ar.html

2.2.3 IRPC Plc (IRPC)

IRPC, formerly known as Thai Petrochemical Industry Plc (TPI), was formed as a juristic person in 1978, registered as a public company limited on October 10, 1994, and listed on SET on March 17, 1995. IRPC is an integrated refinery and petrochemical manufacturing company with a total refinery capacity of 215,000 barrels per day, accounting for 17.45% of the country's total refining capacity. As of December 31, 2020, PTT held 45.05% equity interest in IRPC.

IRPC's refinery produces a range of petroleum products, including naphtha, gasoline, diesel, and LPG. IRPC also produces lubricating oils with a total capacity of 320,000 tons per year and asphalt with a total capacity of 600,000 tons per year. Additionally, IRPC is a producer of the petrochemical products include olefins and aromatics with a production capacity of 1,221,000 and 367,000 tons per year, respectively. These upstream products are used as feedstock for IRPC's downstream petrochemical plants. The downstream petrochemical plants have polyolefins (HDPE and PP)

production capacity of 915,000 tons per year and styrene (ABS, SAN, PS, and EPS) production capacity of 352,000 tons per year. These downstream petrochemical products are sold to producers of finished plastic products in Thailand and overseas. Moreover, IRPC has main facilities, which features the infrastructure needed for its business, including a deep-sea port, an oil depot and a power plant resulting in economy of scale to IRPC.

The following table sets forth IRPC's capacities and utilization rate for its refinery, olefins and aromatics & styrenics plant for the periods indicated:

	Capacity	2018	2019 ¹	2020 ²
		Capacity utilization (Percent)	Capacity utilization (Percent)	Capacity utilization (Percent)
Refinery	215,000 BPD	97	92	89
Olefins	1,611,000 tons/year	94	95	93
Aromatics & Styrenics	1,194,000 tons/year	101	93	98

¹ In 2019 there were planned shutdown of its main production units: RDCC plant for 28 days and ADU 1 for 18 days

² In 2020 there were planned shutdown of its main production units: RDCC plant for 27 days

1) Procurement

IRPC's principle feedstock of production is crude oil, accounting for 83% of the total feedstock. Most of the crude oil is imported from the Middle East, transported by sea freight. IRPC's procurement policy is to obtain crude oil that generates high returns. Currently, PTT procures most of crude oil for IRPC under the Crude Supply Agreement, following the market-reference price structure.

2) Distribution

Petroleum products: In 2020, IRPC posted about 59% in domestic product distribution and exported about 41% of its net petroleum sales revenue. On July 1, 2018, PTT transferred its right as the contractual party under the Product Offtake Agreement to OR, which represents PTT Group's main distributor of refined products, under the same terms and agreement.

Petrochemicals: In 2020, IRPC posted about 55% in domestic petrochemical product distribution and exported about 45% of its net petrochemical sales revenue. IRPC distributes these products through distributors and direct sales. Sales to offshore customers are made through trade agents.

3) Administration

IRPC's board of directors as of December 31, 2020, consisted of 14 directors, 3 of whom were appointed by PTT. PTT also delegated its executives to IRPC management, including the President & CEO.

4) Finance

A profile of IRPC's performance results from 2018 to 2020 appears below:

Unit: THB million

Financial statements	2018	2019	2020
Sales and service revenue	280,551	239,315	174,463
Total revenue*	282,750	243,632	175,802
Total expenses (incl. taxes)*	274,981	244,778	181,932
Net profit (loss)**	7,769	(1,146)	(6,130)
Net profit (loss) of the major shareholder	7,735	(1,174)	(6,152)

Unit: THB million

Financial statements	2018	2019	2020
Total assets	182,446	177,850	173,491
Total liabilities	95,066	94,448	97,825
Equity	87,380	83,402	75,666

* Including income tax of THB 1,147 million in 2018, THB 779 million in 2019, and THB 1,554 million in 2020

** Profit (loss) of the major shareholder (parent company) after deducting those of minor shareholders; the profit (loss) shares of non-controllers amounted to THB 34 million in 2018, THB 28 million in 2019, and THB 22 million in 2020.

5) Projects

5.1 The Ultra Clean Fuel Project

The objective of the UCF project is to increase its refineries' efficiency and upgrade its diesel fuel quality to meet Euro 5 standard, which Thailand plans to adopt in 2024. Under the Euro 5 standard, the permitted Sulphur for diesel fuels will decline from 50 ppm (Euro 4) to 10 ppm (Euro 5). The project expected to increase IRPC's competitiveness in response to the growing demand of low sulfur diesel in Thailand and ASEAN countries. Furthermore, UCF is turning its plants into environmental-friendly facilities and eco-factory. Currently, the project is under construction bidding process and expected to commence its commercial operation by 2023.

5.2 The ABS Powder Expansion Project

The project goal is to upgrade the polymerization unit in order to improve properties of ABS powder, increase cost competitiveness and increase production capacity by 6,000 tons per year. In addition, it will reduce the Volatile Organic Compounds (VOC) released to the environment by gas recovery into the production process. The ABS powder can be used for variety purposes, especially in the quality improvement of recycled plastic that the market demand is likely to grow continuously. Currently, the construction phase of the project has been completed and move to the inspection phase. Commercial operation is expected in 2021.

For more information, please access the link: irpc.co.th/en/about-us/library/annual-report/

2.2.4 PTT Oil and Retail Business Plc (OR)

PTT Oil and Retail Business Plc (OR) is the flagship of PTT Group in charge of oil and retail businesses. As of December 31, 2020, PTT held 100% shares of OR's issued and paid-up capital. OR was first trade on the Stock Exchange of Thailand on February 11, 2021, which resulted in PTT's shares in OR at 75.0-77.5 %, subject to the exercise of over-allotment shares.

OR operates the integrated sale and distribution of oil products and retailing of a variety of products and other non-oil services both domestic and international, including sale of petroleum products and other products in retail and commercial markets, coffee business, food and beverages, convenience stores, and space management.

OR's business covers three business groups, namely oil business, non-oil business, and international trading business.

1) Nature of Business by Business Group

1.1 Oil Business

OR conducts petroleum-product marketing principally through retail and commercial market sectors. OR's Retail Market is in charge of sales of fuels products (including gasoline, diesel, and LPG) and lubricating products, mostly to motorists and other retail customers directly through "company owned company operated" service stations (COCO) and indirectly via agreements with dealers who own and operate service stations (DODO). OR's Commercial Market, on the other hand, operates sale of petroleum and other products to commercial customers locally and internationally, including export of lubricating products to more than 40 countries worldwide, and FIT Auto service and maintenance shops.

Products and goods distributed under the Retail Market function are as follows:

Product	Type of Goods	Details
Gasoline	XtraForce Gasoline Octane 95	Gasoline with Octane 95
	XtraForce Gasohol Octane 95	Gasoline with Octane 95, containing 10.0 % ethanol
	XtraForce Gasohol Octane 91	Gasoline with Octane 91, containing 10.0% ethanol
	XtraForce Gasohol E20	Gasoline with Octane 95, containing 20.0% ethanol
	XtraForce Gasohol E85	Gasoline with Octane 95, containing 85.0% ethanol
Diesel	UltraForce Diesel	Regular Diesel containing 10.0% bio-diesel
	UltraForce Premium Diesel	Premium Diesel, containing 7.0% bio-diesel
	UltraForce B7	Diesel, containing 7.0% bio-diesel
	UltraForce B20	Diesel, containing 20.0% bio-diesel
Liquefied Petroleum Gas (LPG).....	Liquefied Petroleum Gas for Transportation Sector	LPG consumed by motorists as alternative of Gasoline
Lubricating products..	Performa	Lubricating Product for Gasoline engine
	Dynamic	Lubricating Product for Diesel engine
	Challenger	Lubricating Product for motor cycle engine
Kerosene product.....	Kerosene	Kerosene in container

Remarks: PTT remains a distributor of oil and petroleum products to the public sector under the Government Procurement and Supplies Management Act B.E. 2560 (2017) and the owner of some PTT fuel stations.

Marketing

Oil Business marketing operates through retail and commercial markets. Retail Market is in charge of sale of fuel products, including gasoline and diesel at its service stations and LPG for motorists and small customers at LPG stations located in service stations. Besides, OR sells oil to independent oil traders such as oil traders under Article 10. At year-end 2020, there were 1,997 service stations in Thailand. On the other hand, Commercial Market engages in sale of a variety of fuels to customers in Thailand and foreign countries. Its products are aviation fuel, in particular Jet A-1, and into-plane service for aircraft at airports, fuel oil, and high-speed diesel for marine vessels. In addition, OR sells fuel oil, LPG, high-speed diesel, and other petroleum products, including asphalt, to customers in the industrial sector. Commercial Market also has retail sale of LPG for the transport sector (mainly through networks of LPG stations located outside service stations), LPG for the household sector (through LPG household dealers), and sale of fuel oil and LPG to

fuel traders under Article 7. Moreover, OR sells lubricating products for vehicles (for engines of cars and motorcycles) of gasoline and diesel types and industrial lubricants. Additionally, OR distributes fuels products to customers in international market. OR also operates a network of FIT Auto service shops, which provide sale of lubricating products and services for vehicles, including lubricant and fluid system changes, light maintenance, mileage preventive maintenance, and tire and battery changes.

Non-Oil Business

OR's Non-Oil Business constitutes of (1) food and beverages, namely Café Amazon and other food and beverage shops and restaurants under a variety of renowned brands. The coffee business under the Café Amazon brand offers coffee and other beverages, bakery items, and snacks. At year-end 2020, there were 3,290 Café Amazon outlets in Thailand. The food and beverage business also covers sale of food and beverages through shop networks with brand exclusively licensed to OR, such as "Texas Chicken", a brand of which OR is the exclusive master-franchise license holder in Thailand, such as "Hua Seng Hong Dim Sum", and a brand proprietarily owned by OR, such as "Pearly Tea", (2) other businesses comprising convenience stores under the "Jiffy" brand, proprietarily owned by OR, and under the "7-Eleven" brand, a joint cooperation agreement with CP ALL. At year-end 2020, both brands operated with a total of 1,977 stores in service stations in Thailand. OR is also in charge of space management in service stations and other areas, such as highway rest areas, including rental and related services to tenants.

1.2 International Business

International Business earns revenue from sale by OR's subsidiaries in foreign countries. These subsidiaries conduct oil and retail non-oil products and services. The products cover various petroleum products such as diesel, gasoline, aviation fuel, fuel oil, lubricating products, as well as retail non-oil products comprising Café Amazon coffee outlets and convenience stores under the Jiffy brand.

2) Procurement, Preparation, Storage and Product Distribution

2.1 Procurement and Product Preparation

Oil Business

OR purchases petroleum products under agreements with PTT subsidiaries and refineries owned by non-PTT entities. It also procures some petroleum products, including gasoline, from oil importers to increase volumes apart from those of domestic refineries and to increase the variety of supply sources. Petroleum products purchased by OR are delivered by pipelines, sea, road, and rail to OR's depots.

For liquefied petroleum gas (LPG), the principal LPG supplier is PTT, where OR directly procures main products, namely condensate and methanol, from GSPs, which are supplied to specific groups of customers. Besides, OR purchases ethanol, biodiesel (B100), and fuel additives from selected suppliers for blending with gasohol and diesel and sale to its customers.

For lubricating products, OR procures basic lubricants from Thai Lube Base Plc, IRPC, and other domestic and international traders for producing lubricating products, and procures lubricating additives from domestic and international distributors.

Non-Oil Business

Café Amazon

Café Amazon procures coffee beans from domestic sources, namely the Royal Project Foundation, Sam Palung Social Enterprise Co., Ltd., community enterprises, and cooperatives, to promote coffee plantation by communities and farmers as well as other coffee bean suppliers.

Leveraging the same concept, Café Amazon's international business procures coffee beans mostly from local suppliers, especially in countries which are major regional sources of coffee plantation. In some countries, OR supplies outlets with roasted coffee beans from Thailand.

OR also procures other raw materials related to its Café Amazon business, such as sweetened condensed milk and evaporated milk, drink blending powder, cups and straws, from local high-potential and industrially recognized producers.

Other Food and Beverages and other Business under Non-Oil Business Group

For the business of other food and beverages under the "Texas Chicken" brand, convenience stores under the "Jiffy" brand and beverage under the "Pearly Tea" brand, OR sources raw materials mostly from wholesalers. For the "Hua Seng Hong Dim Sum" brand, OR procures goods and raw materials from the franchise grantor.

For convenience stores under the "7-Eleven" brand, CP ALL is the sole product distributor and owner of goods in the stores located in OR's network stations.

For convenience stores under the "Jiffy" brand, OR has a trading agreement with producers and distributors without specified agreement periods. This is to allow OR to procure products as required.

2.2 Storage and Product Distribution

Oil Business

Depots (or terminals) in Thailand are connected to networks of product distribution and transport by pipeline, marine vessels, by road and by rail for distribution to customers and consumers. OR is confident that these depots have adequate storage capacities to supply petroleum in times of normal distribution, emergencies, or during shortage (including unforeseen events which may force one or all facility owners or service operators to unexpectedly close their operations temporarily) and that the storage capacities are able to serve as the storage for export and large volumes of purchase. In addition, to comply with Thailand's and other countries' laws and regulations, OR reserves certain volumes of fuel as required by law. The reserved volumes vary with the types of petroleum products.

Non-Oil Business

Networks of merchandise distribution centers are used for the storage of inventory and other goods related to the non-oil business.

3) Sale and Marketing

Distribution channels of OR's products are scattered across Thailand and in foreign countries, namely the Philippines, Cambodia, Laos, Japan, Oman, Singapore, Myanmar, Malaysia and China. These channels are service stations, LPG stations, household, LPG dealers, FIT Auto service and maintenance shops, Café Amazon outlets, food and other beverages, shops and restaurants, and convenience stores.

4) Projects

Oil Business:

Most projects involve the plan to expand its network of service stations under the "PTT station" brand with a target, during 2020 – 2025, of 108 new service stations annually. Continual improvement of service stations and quality of petroleum products are part of a key plan to reinforce customers' confidence and enhance OR's competitiveness. Included in the plan is new business expansion for commercial markets, including depots and merchandise distribution centers.

Non-Oil Business:

According to the plan, during 2020 – 2025, OR envisages continual expansion of non-oil business networks in line with market demand growth. For Café Amazon, 418 new outlets are expected annually. Also, the plan for Texas Chicken is 20 new shops and 19 new restaurants for Hua Seng Hong Dim Sum. There, as well, are projects to expand convenience stores (Jiffy and 7-Eleven), including the space management business.

Others:

OR plans to enhance investment diversity in new businesses (new S-Curve) to correspond with the strategy to be well prepared and ready to cope with rapid changes in business environment and to satisfy the demand of new-generation customers, including businesses under the trend of mobility ecosystem, lifestyle ecosystem, and digitization and personalization. In addition, there is a plan to additionally invest in EV service, including the establishment of EV charging stations in service stations, and a plan for EV maintenance and service in FIT Auto shops in the future. If there is an opportunity, OR may consider investing in a joint venture or with business partners in EV charging service in service stations.

5) Management

OR's board of directors as of December 31, 2020, consisted of 10 directors, 3 of whom were appointed by PTT. PTT also delegated its executives to OR management, including the President & CEO.

6) Finance

OR's performance during 2018 – 2020 is tabled below:

Unit: THB million

Financial statements	2018	2019	2020
Sales and service revenue	594,129	577,134	428,804
Total revenue	599,920	584,137	432,957
Total expenses (incl. taxes)	590,427	573,241	424,166
Net profit (loss)	9,493	10,896	8,791

Unit: THB million

Financial statements	2018	2019	2020
Total assets	144,356	152,176	144,979
Total liabilities	116,413	113,468	107,063
Equity	27,943	38,708	37,916

For more information, please access the link: <https://investor.pttor.com/en>

2.2.5 PTT Tank Terminal Co., Ltd. (PTT TANK)

PTT TANK is wholly owned subsidiary of PTT, which incorporated on March 6, 2009, with a registered and paid-up capital THB 2,500 million, valued at THB 100 per share. Its objective is to operate marine terminals, which includes receiving, storing, and offtaking services of petroleum, petrochemical and chemical product, and gas, to companies in the Group. As of December 31, 2020, PTT wholly owned PTT TANK's shares.

On June 30, 2009, the company took transfer of PTT's two agreements with the Industrial Estate Authority of Thailand (IEAT): one allowing PTT to make use of about 57.8 rai of land for the first expansion phase of Map Ta Phut Industrial Estate to construct a tank farm for liquid goods; and a joint-venture operating agreement to develop the Map Ta Phut Industrial Estate port.

PTT TANK provides PTT and PTT Group with two ports and product receiving, storing and offtaking services, with commercial operating since April 21, 2011. Two ports are available with a maximum cargo size of 60,000 DWT. Its operations can accommodate up to 2,000,000 tons of various products per year with product throughput of approximately 800,000 tons per year (40% utilization). PTT TANK has 10 storage tanks to accommodate sulfuric acid, propylene, methyl methacrylate, acrylonitrile, ammonia, LPG, NGL, and solvent.

1) Administration

PTT TANK's board of directors as of December 31, 2020, consisted of 5 directors, 4 of whom were appointed by PTT. PTT also delegated its executives to PTT TANK management, including the managing director.

2) Finance

A profile of PTT TANK's performance results from 2018 to 2020 appears below:

Unit: THB million

Financial statements	2018	2019	2020*
Service revenue	900	959	920
Total revenue	964	992	984
Total expenses (incl. taxes)	593	680	707
Net profit (loss)	371	312	277

Unit: THB million

Financial statements	2018	2019	2020*
Total assets	4,770	4,818	5,187
Total liabilities	327	192	385
Equity	4,443	4,626	4,802

*2020 data are unaudited

3) Projects

Map Ta Phut Industrial Port Phase 3 Development Project (Part 1), On October 1, 2019, PTT TANK entered into a joint venture with Gulf Energy Development Co., Ltd. (GULF) to establish Gulf MP LNG Terminal Co., Ltd. (GMTP) with a registered capital of THB 3,500 million to develop LNG value chain and logistics business for supporting future investments of PTT Group according to strategic plans. PTT TANK owns 30% and GULF 70% shares in GMTP. Furthermore, GMTP entered into a joint-venture a public-private partnership (PPP) agreement with IEAT to develop Map Ta Phut Industrial Port Phase 3 Development Project (Part 1). The total investment value for land reclamation is worth about THB 12,900 million, and the right of construction of LNG Terminal phase 1 with the capacity of not less than 5 million tons per year with an investment value of approximately THB 28,000 million of a total project investment around THB 40,900 million.

3. Technology and Engineering Business

3.1 Global Power Synergy Public Company Limited (GPSC)

Global Power Synergy Public Company Limited registered as a limited company from the consolidation of related partnership entities at the Department of Business Development, Ministry of Commerce, on January 10, 2013. The company was later transformed into a public company limited and registered on SET with the first trading date of May 18, 2015. The objective is to support future business growth under a prime mission to pursue power businesses expansion both in Thailand and abroad, and become a power flagship for PTT Group as a synergy force. As of December 31, 2020, GPSC's paid-up registered capital stood at THB 28,197.29 million. However, the restructuring of PTT Group's power businesses (PTT purchased TOP's entire shareholding in GPSC, 8.91% of GPSC's total paid-up capital) in December

2020, resulted in a change of securities holding structure from 22.81% PTT, 22.73% GC, 20.79% TP, 8.91% TOP, and 24.76% minor shareholders to 31.72% PTT, 22.73% GC, 20.79% TP, and 24.76% minor shareholders respectively.

GPSC engages primarily in the production and distribution of electricity, steam, industrial water and other utilities, either as an operator or a business partner. In 2019, GPSC merged with Glow Energy Public Company Limited (GLOW) through a tender offer of direct and indirect purchases of GLOW stocks from Engie Group, completed in the fourth quarter of 2019 and successfully delisted the securities from SET on December 13, 2019. Currently, GPSC holds 99.83% of the total issued and sold shares of GLOW shares with a total investment value of THB 133,806 million (including those under the tender offer), and with equity operating power capacity of 2,771 megawatts (MW). On April 1, 2020, GPSC has stepped into a new corporate management, the overall management of GLOW is united with the GPSC Group.

As of the year-end 2020, its total equity capacities were 5,055 MW of power generation, 2,946 tons per hour of steam (T/h), 7,372 cubic meters per hour (Cu. m/h) of industrial water, 15,400 refrigerated tons of chilled water, and 30 megawatts hour (MWh) per year of energy storage unit.

1) Procurement

GPSC's power and steam production uses natural gas as the main fuel. PTT is the sole supplier of gas to GPSC under an agreement on long-term gas supply and consumption of 25 years for its Sriracha Power Plant and a 15 years contract for its Central Utility Plants (CUP-1, CUP-2, CUP-3, and CUP-4).

2) Distribution

Distribution of GPSC's products varies:

- Sriracha Power Plant is an independent power producer (IPP) with total electricity capacity of 700 MW. All the generated power is distributed to EGAT under 25-year-long power purchase agreement (PPA) starting from the first day of its commercial operation on August 15, 2000.
- Rayong - Central Utility Plants (CUP 1 -4) distributes electricity to the petrochemical and other industrial customers under long term contract agreements ranging from 10 to 15 years of 299 MW, 1,410 T/h of steam under 10- 15-year contracts, and 2,000 Cu. m/h of water for industrial usage under 15-year contracts. In addition, GPSC has entered two non-firm PPAs with EGAT: 40 MW for CUP-1, beginning in September 2010, and 60 MW from CUP-2, beginning in January 2009. Both PPAs are under five-year agreements with automatic renewal at every 5-year period effectively from CODs. These two non-firm PPAs were developed in case of excessive power generation when industrial users demand more steam for their production. The total capacity of Rayong is 403 MW of electricity and 1,480 T/h of steam.

GPSC Group manages its power distribution through affiliates with total capacity of 1,739 MW under the IPP scheme which is distributed to EGAT under executed PPAs. The remaining 2,203 MW is delivered under SPPs and VSPPs (small power producer and very small power producer schemes) to EGAT, PEA (Provincial Electricity Authority), MEA (Metropolitan Electricity Authority), and other industrial users. Moreover, they also distributed to industrial and other users with capacity of 1,466 T/h of steam generated by the Group.

3) Administration

As of December 31, 2020, GPSC's Board of Directors comprised 15 directors, including 3 from PTT. Under the shareholding structure, PTT also appointed a number of executives to hold executive positions in GPSC, including the President and Chief Executive Officer.

4) Finance

The financial profile of GPSC for 2018-2020 is as follows:

Unit: THB million

Financial Statement	2018	2019	2020
Sales and service revenue*	24,337	65,789	68,757
Total revenue	25,895	68,635	71,908
Total expenses (incl. taxes)	22,006	62,634	63,418
Net profit (loss)	3,889	6,001	8,490
Net profit (loss) of the major shareholder	3,359	4,061	7,508

Unit: THB million

Consolidated Balance Sheets	2018**	2019***	2020
Total assets	64,439	252,017	256,656
Total liabilities	22,090	141,841	144,789
Equity	42,349	110,176	111,867

* Excluding revenue from financial leases

** 2018 balance sheets reclassified to coincide with the 2019 financial classification

*** 2019 balance sheets as of March 13, 2020, included all pro-rated shareholding structure in GLOW after the merger with GLOW

5) Projects progress and projects under construction

There were three COD projects in 2020, all of which recognized its revenue streams:

- Nava Nakorn Electricity Generating Company Limited (NNEG) – extension project, has commenced the COD and recognized revenue on October 31, 2020, with total power and steam generating capacities of 185 MW and 40 T/h (Including the existing capacity).
- Battery pilot plant with capacity of 30 MWh, located in Map Ta Phut Industrial Estate, Rayong.
- Global Renewable Power Company Limited (GRP), wholly owned by GPSC, acquired 100% of solar farm projects with total capacity of 39.5 MW, COD since 2014-2015. In addition, GRP also established Global Renewable Power One Company Limited (GRP1) to acquire 90% share of Sheng Yang Energy Co., Ltd. (“Sheng Yang”), a solar farm power producer in Taiwan with a total installed generating capacity of 55.8 MW, of which 54.4 MW is in operation and 1.4 MW is under construction. The electricity generated is sold to Taiwan Power Company, a state-owned power company and the single buyer of electricity in Taiwan, under long-term the PPA of 20 years.

On November 18, 2020, PTT's Board of Directors approved PTTGM (a subsidiary of PTT) to acquire 50% of Global Renewable Power Company Limited ("GRP")'s ordinary shares (GRP is a wholly owned subsidiary of GPSC). As a result, PTTGM holds 50% and GPSC holds 50% shareholding of GRP's registered capital. The objective of the acquisition of GRP's shares is a part of PTT's expansion in international renewable energy power plants, which focus in solar energy production businesses and wind energy production businesses. In this regard, such share acquisition is in accordance with PTT Group's strategic plan to become a leader in the renewable energy or green energy sectors, which to expand its business and investment portfolio, to enhance its competitiveness in the renewable energy, as well as to achieve the group target of the renewable power output capacity of 8,000 megawatts within 2030. However, the joint investment in GRP by PTT and GPSC will not cause any changes in the business operation of GPSC which is the Power Flagship of PTT Group in electricity and public utility business. This acquisition of GRP was completed on January 4, 2021.

The under-investment or under-construction projects are as follows:

- Rayong Waste to Energy (WTE) management project, consisting of 2 subprojects located in Rayong province. Refuse-Derived Fuel (RDF) has seen its construction completed and carried out waste disposal since 2018. The power plant from RDF, with a capacity of 9.8 MW, is under construction; commercial distribution of power is scheduled for the second quarter of 2021.
- SPP Replacement Glow Energy Phase 2, commenced with site preparation. The project is designed with a total generating capacity of 192 MW of power and 300 tons per hour of steam, with a SCOD of the fourth quarter of 2022.
- Energy Recovery Unit (ERU) project for Thai Oil, designed to retrieve oil residue from TOP's distillation units under the Clean Fuel Project (CFP). The retrieved oil residue from ERU is set to generate 250 MW and 175 T/h of steam, which are sold directly to TOP under CFP. The scheduled COD is the third quarter of 2023.

For more information, please access the link: investor.gpscgroup.com/ar.html

3.2 District Cooling System and Power Plant Co., Ltd. (DCAP)

District Cooling System and Power Plant Co., Ltd. (DCAP), is a joint venture between PTT, EGAT, and the Metropolitan Electricity Authority (MEA), holding 35%, 35%, and 30% shares respectively. It was established on April 2, 2003 with a registered capital of THB 1,670 million to engage in the production and sale of power and chilled water for the Airports of Thailand Plc (AOT) and other customers in Suvarnabhumi Airport. The project detail are as follows:

DCAP's project for Suvarnabhumi Airport, District Cooling System and Power Plant, was designed to supplement value to natural gas by using natural gas to generate electricity. The surplus heat generating steam which using for generate additional electricity; the surplus steam then produces chilled water for air-conditioning systems. This scheme represents highly cost-effective energy consumption and lowering air pollution.

DCAP's utilities units are as follow:

- A combined-cycle cogeneration power plant with a total capacity of about 95 MW
- A Steam Absorption Chiller (SAC) unit with a total chilled-water capacity of about 29,440 RT
- An electric chiller with a total chilled-water capacity of about 8,000 RT
- An electric chiller for the Satellite Airport Terminal-1 (SAT-1) with a capacity of about 12,000 RT, which is operate commercially in February 2021.

8-inch gas transmission pipeline branching off PTT's transmission pipeline system at King Kaeo – Lat Krabang Road into the airport, 2 kilometers. This pipeline segment can transport up to 25 MMSCFD.

1) Procurement

DCAP fuels its power and chilled water production with natural gas supplied by PTT under a gas supply agreement containing a minimum of about 7 MMSCFD for 25 years.

2) Distribution

DCAP's product distribution consists of:

- Electricity sold to AOT Plc under a power purchase agreement (PPA) of 50 MW, the surplus electricity sold to EGAT under a non-firm PPA of up to 65 MW.
- Chilled water for air-conditioning and steam systems for the following customers:
 - AOT's air terminals, Airport Operation Building (AOB), and Airport Information Management System (AIMS) under a purchase agreement for 21,500 RT
 - Catering Building of Thai Airways Plc under a purchase agreement for 6,600 RT and 8.6 tons/hour of steam
 - Suvarnabhumi Airport Hotel Co., Ltd., under a purchase agreement for 1,500 RT and about 2 tons/hour of steam
 - Electric train station at Suvarnabhumi Airport under a purchase agreement for 700 RT.

3) Administration

DCAP's board of directors as of December 31, 2020, consisted of 7 directors, 2 of whom were appointed by PTT, which delegated its executives to its management.

4) Finance

A profile of DCAP's operating results from 2018 to 2020 appears below:

Unit: THB million

Financial statements	2018	2019	2020
Total revenue	2,687	2,777	2,655
Total expenses	2,475	2,583	2,477
Net profit (loss)	212	194	178

Unit: THB million

Financial statements	2018	2019	2020
Total assets	3,465	3,288	3,839
Total liabilities	788	472	1,179
Equity	2,677	2,816	2,660

3.3 Thairoil Power Company Limited (TP)

Thairoil Power Company Limited (TP) was established on September 17, 1996, with a registered capital of THB 2,810 million, PTT and TOP hold 26% and 74% of TP's registered share capital, respectively. TP generates and distributes power and steam as a small power producer (SPP). It operates a gas-fired combined-cycle co-generation power plant with capacity of 118 MW of power and 216 tons per hour of steam. TP also holds 20.79% shares in GPSC, the power flagship of PTT Group.

(1) Procurement

Natural gas is used for power production. TP signed a 25-year GSAs with PTT to purchase 28 MMSCFD, while diesel could be used as the alternative fuel, for which the price difference is compensated according to the agreement.

(2) Distribution

TP's products distribution consists of:

- Distribution contract of 41 MW electricity with EGAT under a 25-year PPA from the commercial operation date (COD). The remaining output is sold to TOP's group.
- 194 tons per hour of steam sold to TOP's group.

(3) Administration

As of December 31, 2020, TP's board of directors comprised 7 persons, 2 of whom were PTT executives.

(4) Finance

TP's operating results between 2018 and 2020 are detailed below:

Unit: THB million

Financial statements*	2018**	2019	2020
Total revenue	4,409	4,391	4,132
Total expenses	4,015	4,138	4,161
Net profit (loss)	394 ¹	253	(29)

Unit: THB million

Financial statements*	2018**	2019	2020
Total assets	5,117	20,066	19,434
Total liabilities	698	15,903	15,746
Equity	4,419	4,163	3,688

* TP's separate financial statements only, exclusive of GPSC's dividends

** Financial restatements

PTT's Board of Directors at the Meeting No. 8/2020 held on August,20, 2020 approved the shareholding restructure of PTT's power business by transfer the entire business of TP to TOP. The Entire Business Transfer agreement was signed between PTT and TOP on October 22, 2020, and completed the entire business transfer of TP on February 1, 2021. Additionally, after the Entire Business Transfer of TP to TOP, TP will cease its business operations, and start the liquidation process within the same accounting period as the Entire Business Transfer. After the completion of the liquidation, TP will distribute its assets to its shareholders, namely TOP and PTT

3.4 Energy Complex Company Limited (EnCo)

PTT and PTTEP have jointly established EnCo on August 11, 2004, with a registered capital of THB 1,800 million. EnCo is responsible for the project the construction and operational management of the Energy Complex Project, with the aim to be the country's energy center by combining architectural and engineering innovations into the Energy Complex. These innovations have resulted in an Energy Complex that serves as the prototypical building for energy conservation, harmonious coexistence of industry and the environment and optimal utilization of resources. The concept is also efficiently use resources with better living for people, society, and the environment to sustainably grow. In 2018, EnCo extended its business scope to property development.

1) Services

1.1 Property management business

- Energy Complex Center provides office space services as detailed below:

No. 555/1, 555/2, and 555/3, Vibhavadi Rangsit road, Chatuchak district, Bangkok 10900, located in the Railway Compound on Km. 11, adjacent to the rear of PTT Head Office with 28.93 rai, rented from the State Railway of Thailand. Construction period took four years from 2006 to 2009 and the exploitation period is 30 years, starting from 2010 to 2039.

- Building A, 36 floors, 88,266 sq.m. rentable space, used as PTT Group offices
- Building B, 26 floors, 42,428 sq. m. rentable space, used as PTT Group offices and the Ministry of Energy
- Building C, 8 floors, connecting between Building A and B, used as a business service area and recreation facilities such as banks, shops, canteens, conference rooms, and a fitness center for any offices and agencies located in the Energy Complex Center

- Parking Tower, 10 floors, Two buildings, with a total parking capacity of 2,500 cars
 - Chilled-water production building, 3 floor-heights with the total capacity of 5,400 RT
- THE EnCony Phase 1, comprises 73 units of serviced apartment, located at Wang Chan Valley, Rayong, to serve Vidyasirimedhi Institute of Science and Technology (VISTEC) personnel, PTT Group and other customers. The service started in October 2018.
 - THE EnCony Phase 2, comprises 38 units of apartment and 38 hotel rooms, located at Wang Chan Valley, Rayong, to serve Vidyasirimedhi Institute of Science and Technology (VISTEC) personnel, PTT Group, PTT Group's customers, and other customers.
 - THE EnCony Phase 3, comprises 34 units of apartment and 34 hotel rooms, located at Wang Chan Valley, Rayong, to serve PTTEP personnel, PTT Group's customers, and other customers.

1.2 Facility Management Business

Provides services for the entire management and administration of PTT Group buildings and facilities for a total of 16 locations. The services included building operating, engineering and maintenance of building systems, energy management, housekeeping, safety and security, occupational health, and stewardship of the surrounding landscape.

1.3 Property Development Business

This business consists of pre-development and development processes, as detailed below:

- Pre-development process comprises land selection & acquisition, marketing survey, designed concept and feasibility study
- Development process comprises detail design, constructor selection and procurement, authorized construction & commissioning, decoration and delivering

2) Administration

As of December 31, 2020, EnCo's board of directors comprised 8 persons, 4 of whom were PTT's executives. PTT also appointed its executive as the managing director.

3) Finance

EnCo's operating results between 2018 and 2020 are detailed below:

Unit: THB million

Financial statements	2018	2019	2020*
Total sales and service revenue	1,901	2,044	1,985
Total expenses (incl. taxes)	1,532	1,539	1,307
Net profit (loss)	369	505	678

Unit: THB million

Financial statements	2018	2019	2020*
Total assets	5,089	4,971	5,802
Total liabilities	2,260	1,779	2,074
Equity	2,829	3,192	3,728

*2020 data are unaudited

3.5 PTT Energy Solutions Company Limited (PTTES)

PTT and subsidiaries established PTT Energy Solutions Company Limited (PTTES) on June 10, 2011, with a registered capital of THB 150 million to provide consultancy services on technical engineering and operation to PTT Group and other customers. PTTES is 40% held by PTT and the remaining 20% each by TOP, GC, and IRPC.

1) Services

PTTES provides consultancy services on technical engineering to support the operating efficiency of PTT Group and other customers. Services include energy management, project development, risk management, process safety, equipment reliability improvement as well as technical competency and development of PTT Group for high caliber and global competitiveness.

2) Administration

As of December 31, 2020, PTTES's board of directors comprised 5 persons, 2 of whom were PTT's executives. PTT also appointed its executive as the managing director.

3) Finance

PTTES's operating results between 2018 and 2020 are detailed below:

Unit: THB million

Financial statements	2018	2019	2020
Sales and service revenue	450	448	438
Total revenue	453	454	440
Total expenses (incl. taxes)	467	479	435
Net profit (loss)	(14)	(25)	5

Unit: THB million

Financial Statement	2018	2019	2020
Total assets	518	367	513
Total liabilities	279	157	289
Equity	239	210	224

3.6 PTT Digital Solution Company Limited (PTT Digital)

PTT and subsidiaries established PTT Digital Solution Company Limited (PTT Digital) on July 7, 2006, with a registered capital of THB 150 million. The objective of the company is to enhance value added to the companies in PTT Group through operating, executing and applying its information technology and communications services with excellence in the most professional manner. PTT Digital is 40% held by GC and the remaining 20% each by PTT, TOP, and PTTEP.

1) Services

PTT Digital professionally provides the integrated information technology and communication under international standards. Services include design, development, and maintenance that conform to each organization by experienced and proficient personnel who command a mastery of PTT Group's business.

2) Administration

As of December 31, 2020, PTT Digital's board of directors comprised 7 persons, 3 of whom were PTT's executives. PTT also appointed its executive as management members and the managing director.

3) Finance

PTT Digital's operating results between 2018 and 2020 are detailed below:

Unit: THB million

Financial statements	2018	2019	2020
Sales and service revenue	3,805	4,710	5,103
Total revenue	3,811	4,719	5,110
Total expenses (incl. taxes)	3,460	4,341	4,587
Net profit (loss)	351	378	523

Unit: THB million

Financial statements	2018	2019	2020
Total assets	3,255	4,008	4,980
Total liabilities	1,409	1,900	2,444
Equity	1,846	2,108	2,536

4. Other Business Groups

PTT Treasury Center Company Limited (PTT TCC) was established on May 11, 2018, and wholly owned by PTT with a registered capital of THB 20 million. PTT TCC operate corporate treasury center business for PTT and subsidiaries, which was approved as a treasury center on July 31, 2018.

1) Services

PTT TCC operates corporate treasury center for PTT and subsidiaries, providing services include sourcing of Thai and foreign currencies, both long-term and short-term, for loans to PTT and/or PTT subsidiaries, together with the debt, liquidity, and finance management, for the interests of PTT and subsidiaries.

2) Administration

As of December 31, 2020, PTT TCC's Board of Directors consists of 3 persons, all of whom were PTT's executives, with one of them appointed as the managing director.

3) Finance

The operating results of PTT TCC from 2018 to 2020 are as follows:

Unit: THB million

Financial Statements	2018*	2019	2020
Interest revenue	0.02	296.67	3,057.81
Total revenue	0.08	297.82	3,073.30
Total expenses	3.36	298.30	2,903.32
Net profit (loss)	(3.28)	(0.48)	169.98

* PTT TCC was registered on May 11, 2018

Unit: THB million

Financial Statements	2018	2019	2020
Total assets	18	52,200	99,189
Total liabilities	2	52,185	99,011
Equity	17	15	178

Connected Transaction

9.2 Connected transactions

The detailed connected transaction is an expansion of the Annual Registration Statement/Annual Report 2020 (Form 56-1 One Report) under 9.2 Connected transactions

9.2.2 Connected transactions with organizations with mutual major shareholders

9.2.2.1 Sales of goods and services are items that PTT sold goods and services to organizations with mutual major shareholders that may have conflict of interest

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Electricity Generating Authority of Thailand	65,117.03	72,791.42	70,472.66	Ministry of Finance which is PTT's major shareholder has the controlling authority of Electricity Generating Authority of Thailand	—
State Railway of Thailand	1,687.52	2,298.13	2,481.36	Ministry of Finance which is PTT's major shareholder has the controlling authority of the State Railways of Thailand	—
Bangkok Mass Transit Authority	1,306.27	1,538.19	1,952.71	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Bangkok Mass Transit Authority	—
Port Authority of Thailand	626.11	754.72	863.19	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Port Authority of Thailand	—
Transport Company Limited	318.83	660.67	695.10	Ministry of Finance which is PTT's major shareholder has the controlling authority of Transport Co., Ltd.	—
Provincial Electricity Authority	269.58	386.10	423.94	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Provincial Electricity Authority	A PTT's Director (Mr. Danucha Pichayanan) is a Director of the Provincial Electricity Authority
Dairy Farming Promotion Organization of Thailand	54.21	74.88	85.57	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Dairy Farming Promotion Organization of Thailand	—
Metropolitan Electricity Authority	31.53	44.31	48.42	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Metropolitan Electricity Authority	—
Liquor Distillery Organization, Excise Department	20.19	12.41	23.05	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Liquor Distillery Organization	—
Government Pharmaceutical Organization	18.72	17.99	16.79	Ministry of Finance which is PTT's major shareholder has the controlling authority of the Government Pharmaceutical Organization	—

9.2.2.1 Sales of goods and services are items that PTT sold goods and services to organizations with mutual major shareholders that may have conflict of interest (continued)

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Civil Aviation Training Center	7.80	20.27	26.16	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Civil Aviation Training Center	—
Tobacco Authority of Thailand	7.75	21.43	55.28	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Tobacco Authority of Thailand	—
Rubber Authority of Thailand	7.04	3.93	7.21	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Rubber Authority of Thailand	—
Thailand Post Company Limited	1.55	3.38	4.19	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Post Company Limited	—
Aeronautical Radio of Thailand Limited	0.38	4.20	14.47	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Aeronautical Radio of Thailand Limited	—
Airports of Thailand Public Company Limited	0.37	0.81	0.44	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Airports of Thailand Public Company Limited	—
CAT Telecom Public Company Limited	0.29	0.35	0.85	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of CAT Telecom Public Company Limited	—
Thailand Institute of Scientific and Technological Research	0.22	0.29	0.25	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Institute of Scientific and Technological Research	—
Government Housing Bank	0.09	0.10	2.28	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Government Housing Bank	—
Tourism Authority of Thailand	0.03	-	0.05	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Tourism Authority of Thailand	- A PTT's Director (Prof. Dr. Tossaporn Sirisamphan) is the Chairman of the Board of Directors of the Tourism Authority of Thailand
Bangkok Dock Company (1957) Limited		1.54	0.38	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Bangkok Dock Company (1957) Limited	—

9.2.2.1 Sales of goods and services are items that PTT sold goods and services to organizations with mutual major shareholders that may have conflict of interest (continued)

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Bank for Agriculture and Agricultural Cooperatives	-	-	0.27	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Bank for Agriculture and Agricultural Cooperatives	—
Metropolitan Waterworks Authority	-	-	0.09	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Metropolitan Waterworks Authority	—
Total	69,475.51	78,635.12	77,174.71		

9.2.2.2 Sales of goods and/or services, including other expenses, are the items that PTT purchased goods and/or services from organizations with major shareholders that may have conflict of interest

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Provincial Electricity Authority	1,196.01	1,430.75	1,496.56	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Provincial Electricity Authority	A PTT's Director (Mr. Danucha Pichayanan) is a Director of the Provincial Electricity Authority
Metropolitan Electricity Authority	368.89	497.02	549.86	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Metropolitan Electricity Authority	—
Electricity Generating Authority of Thailand	44.21	73.45	18.64	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Electricity Generating Authority of Thailand	—
Airports of Thailand Public Company Limited	43.95	146.73	128.78	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Airports of Thailand Public Company Limited	—
Export Import Bank of Thailand	28.41	18.81	10.38	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Export Import Bank of Thailand	—
State Railway of Thailand	26.33	61.95	173.87	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of State Railway of Thailand	—

9.2.2.2 Sales of goods and/or services, including other expenses, are the items that PTT purchased goods and/or services from organizations with major shareholders that may have conflict of interest (continued)

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
TOT Public Company Limited	14.96	14.57	20.63	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of TOT Public Company Limited	—
CAT Telecom Public Company Limited	12.26	17.38	12.85	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of CAT Telecom Public Company Limited	—
Provincial Waterworks Authority	11.90	10.29	18.18	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Provincial Waterworks Authority	—
Thailand Post Company Limited	6.13	10.75	13.77	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Post Company Limited	—
Metropolitan Waterworks Authority	4.42	8.03	10.46	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Metropolitan Waterworks Authority	—
Industrial Estate Authority of Thailand	2.91	48.76	21.30	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Industrial Estate Authority of Thailand	—
Transport Company Limited	0.30	0.50	1.30	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Transport Company Limited	—
Expressway Authority of Thailand	-	0.25	0.57	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Expressway Authority of Thailand	—
Aeronautical Radio of Thailand Limited	-	-	0.03	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Aeronautical Radio of Thailand Limited	—
Total	1,760.68	2,339.24	2,477.18		

9.2.2.3 Trade accounts receivable, other receivables and advance payments made to companies with mutual major shareholders that may have conflict of interest

9.2.2.3.1 Trade accounts receivable

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Electricity Generating Authority of Thailand	4,632.34	12,115.43	14,945.56	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Electricity Generating Authority of Thailand	—
State Railway Authority	191.96	261.91	247.61	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the State Railway Authority	—
Bangkok Mass Transport Authority	171.18	203.06	201.46	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Bangkok Mass Transport Authority	—
Port Authority of Thailand	51.11	62.74	75.76	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Port Authority of Thailand	—
Transport Company Limited	37.62	59.55	61.36	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Transport Company Limited	—
Provincial Electricity Authority	22.27	26.82	45.16	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Provincial Electricity Authority	- A PTT's Director (Mr. Danucha Pichayanan) is a Director of the Provincial Electricity Authority
Dairy Farming Promotion Organization	6.32	6.97	7.19	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of the Dairy Farming Promotion Organization	—
Government Pharmaceutical Organization	3.34	3.33	1.85	Ministry of Finance, which is PTT's major shareholder, has the controlling authority Government Pharmaceutical Organization	—
Liquor Distillery Organization	2.56	0.97	3.13	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Liquor Distillery Organization	—
Metropolitan Electricity Authority	2.76	6.69	6.24	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Metropolitan Electricity Authority	—
Aeronautical Radio of Thailand Limited	1.22	2.83	4.56	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Aeronautical Radio of Thailand Limited	—

9.2.2.3 Trade accounts receivable, other receivables and advance payments made to companies with mutual major shareholders that may have conflict of interest (continued)

9.2.2.3.1 Trade accounts receivable (continued)

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Thailand Post Company Limited	0.64	0.77	0.80	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Post Company Limited	—
Tobacco Factory	0.04	0.52	2.93	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Tobacco Factory	—
Aeronautical Radio of Thailand Limited	-	0.21	1.78	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Aeronautical Radio of Thailand Limited	—
Thailand Institute of Scientific and Technological Research	-	0.09	-	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Institute of Scientific and Technological Research	—
CAT Telecom Public Company Limited	-	0.08	0.53	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of CAT Telecom Public Company Limited	—
Rubber Authority of Thailand	-	-	0.40	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Rubber Authority of Thailand	—
Bangkok Dock (1957) Company Limited	-	-	0.40	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Bangkok Dock (1957) Company Limited	—
Total	5,123.36	12,751.97	15,606.72		

9.2.2.3 Trade accounts receivable, other receivables and advance payments made to companies with mutual major shareholders that may have conflict of interest (continued)

9.2.2.3.2 Other accounts receivable

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Liquor Distillery Organization, Excise Department	0.04	0.07	0.06	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Liquor Distillery Organization, Excise Department	—
Thailand Post Company Limited	0.01	0.01	0.01	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Post Company Limited	—
Electricity Generating Authority of Thailand	-	0.76	7.47	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Electricity Generating Authority of Thailand	—
Thailand Institute of Scientific and Technological Research	-	0.06	-	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Institute of Scientific and Technological Research	—
Transport Company Limited	-	-	0.01	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Transport Company Limited	—
Total	0.05	0.90	7.55		

9.2.2.3 Trade accounts receivable, other receivables and advance payments made to companies with mutual major shareholders that may have conflict of interest (continued)

9.2.2.3.3 Advance payment

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
State Railway of Thailand	-	38.21	39.13	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of State Railway of Thailand	—
Airports of Thailand Public Company Limited	-	7.77	7.59	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Airports of Thailand Public Company Limited	—
Industrial Estate Authority of Thailand	-	1.88	1.66	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Industrial Estate Authority of Thailand	—
CAT Telecom Public Company Limited	-	-	0.07	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of CAT Telecom Public Company Limited	—
Total	-	47.86	48.45		

9.2.2.4 Trade creditors and other creditors and companies with mutual shareholders who may have conflict of interest

9.2.2.4.1 Trade creditors

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Industrial Estate Authority of Thailand	17.74	14.89	15.25	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Industrial Estate Authority of Thailand	—
Export Import Bank of Thailand	-	-	0.02	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Export Import Bank of Thailand	—
Total	17.74	14.89	15.27		

9.2.2.4 Trade creditors and other creditors and companies with mutual shareholders who may have conflict of interest (continued)

9.2.2.4.2 Other creditors

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
State Railway of Thailand	44.18	44.18	50.71	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of State Railway of Thailand	—
MCOT Public Company Limited	9.52	21.42	2.77	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of MCOT Public Company Limited	—
TOT Public Company Limited	5.26	2.65	1.93	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of TOT Public Company Limited	—
CAT Telecom Public Company Limited	0.82	4.08	-	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of CAT Telecom Public Company Limited	—
Industrial Estate Authority of Thailand	0.73	-	0.95	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Industrial Estate Authority of Thailand	—
Metropolitan Waterworks Authority	0.34	0.70	0.70	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Metropolitan Waterworks Authority	—
Provincial Electricity Authority	0.19	0.61	0.11	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Provincial Electricity Authority	- A PTT's Director (Mr. Danucha Pichayanan) is a Director of the Provincial Electricity Authority
Aeronautical Radio of Thailand Limited	0.08	7.19	30.54	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Aeronautical Radio of Thailand Limited	—
Transport Company Limited	0.08	0.04	0.03	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Transport Company Limited	—
Electricity Generating Authority of Thailand	0.03	1.46	1.50	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Electricity Generating Authority of Thailand	—
Government Pharmaceutical Organization	0.02	0.05	0.02	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Government Pharmaceutical Organization	—

9.2.2.4 Trade creditors and other creditors and companies with mutual shareholders who may have conflict of interest (continued)

9.2.2.4.2 Other creditors

Organizations with mutual major shareholders	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Expressway Authority of Thailand	0.02	-	-	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Expressway Authority of Thailand	—
Thailand Institute of Scientific and Technological Research	-	0.09	-	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Thailand Institute of Scientific and Technological Research	—
Airports of Thailand Public Company Limited	(0.11)	-	-	Ministry of Finance, which is PTT's major shareholder, has the controlling authority of Airports of Thailand Public Company Limited	
Total	61.16	82.47	89.26		

9.2.3 Connected transactions with subsidiaries, joint operations, joint ventures, associates and other related companies

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Global Chemical Public Company Limited	175,175.20	234,564.02	306,555.23	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director (Mr. Don Wasantapruerk) is a Director PTT Global Chemical Plc. - PTT's executives (Mr. Witawat Svasti-xuto, Mrs. Arawadee Photisaro, and Mr. Disathat Panyarachun) are Director of PTT Global Chemical - A PTT's executive (Mr. Kongkrapan Intarajang) is a Director and Secretary, and the Chief Executive Officer of PTT Global Chemical Plc.
IRPC Public Company Limited	100,329.47	152,995.77	179,020.53	The Company Group holds 48.05 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - PTT's executives (Mr. Kris Imsang, and Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chavalit Tippavanich) is a Director and Secretary, and Chief Executive Officer and President of IRPC Plc.

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Thai Oil Company Limited	67,590.13	114,945.49	135,107.39	The Company Group holds 48.03 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - PTT's executives (Ms. Pannalin Mahawongtikul, Mr. Terdkiat Prommool, Ms. Duangporn Thiengwatanatham, Mr. Buranin Rattanasombat) are Directors of Thai Oil Plc. - A PTT's executive (Mr. Wirat Uanarumit) is a Director and Secretary, and Chief Executive Officer and President of Thai Oil Plc.
PTT Oil and Retail Business Public Company Limited	29,552.24	41,961.00	47,386.31	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/Executive (Mr. Auttapol Rerakpibool) is the Chairman of the Board of Directors of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraporn Khaosawas) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT International Trading Pte. Ltd.	22,596.81	31,150.06	43,793.15	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of the Board of Directors of PTT International Trading Pte. Ltd.
Global Power Synergy Public Company Limited	11,399.60	12,651.74	12,181.48	The Company Group holds 75.23 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some PTT's executives (Mr. Atikom Terbsiri, Mr. Witawat Svasti-xuto, Mr. Wuttikorn Stithit, Mr. Kongkrapan Intarajang, Mr. Wirat Uanarunit) are Directors of Global Power Synergy Plc. - A PTT's executive (Mr. Worawat Pitayasiri) is a Director and Secretary, and Chief Executive Officer and President of Global Power Synergy Plc.
Glow Energy Public Company Limited	8,443.54	9,204.66	-	The Company Group holds 99.83 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director Glow Energy Plc.
PTT Natural Gas Distribution Company Limited	4,431.60	5,543.64	5,405.16	The Company Group holds 58 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executives (Mr. Wuttikorn Stithit) is a Director of PTT Natural Gas Distribution Co., Ltd.
Top SPP Company Limited	4,157.44	4,651.49	4,469.56	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Glow SPP 2 Company Limited	4,138.47	3,452.48	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 2 Co., Ltd.
IRPC Clean Power Company Limited	3,761.74	4,257.89	4,009.37	The Company Group holds 100 percent stake	—
Glow SPP 11 Company Limited	3,170.11	2,922.09	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 11 Co., Ltd.
Thai Oil Power Company Limited	2,418.53	2,711.81	2,635.28	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Wirat Uanarumit) is the Chairman of the Board of Directors of Thai Oil Power Co., Ltd.
Amata Natural Gas Distribution Company Limited	2,329.08	2,975.52	2,765.22	The Company Group holds 80 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Glow IPP Company Limited	913.38	730.19	-	The Company Group holds 95 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow IPP Co., Ltd.
Labix Company Limited	494.32	672.84	690.02	The Company Group holds 75 No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wirat Uanarumit) is Director, Chairman of the Board of Directors of Labix Co., Ltd.
PTT LNG Company Limited	256.87	89.14	0.63	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of the Board of Directors of PTT LNG Co., Ltd.
GC-M PTA Company Limited	217.36	284.18	-	The Company Group holds 74 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai Lubes Public Company Limited	212.89	494.92	585.03	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai PET Resin Company Limited	89.36	113.14	-	The Company Group holds 84.40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
GC Oxirane Company Limited	64.96	-	-	The Company Group holds 100 percent stake	
Sak Chaisidhi Company Limited	53.36	73.37	85.46	The Company Group holds 80.52 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT Phenol Company Limited	27.44	27.77	34.48	The Company Group holds 100 percent stake	—
GC Glycol Company Limited	11.45	12.43	33.10	The Company Group holds 100 percent stake	—
PTT Exploration and Production Public Company Limited	6.66	4.77	527.92	The Company Group holds 65.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director/executive (Mr. Auttapol Rerkpibool) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Atikom Terbsiri) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Montri Rawanchaikul) is the President of PTT Exploration and Production Plc.
GC Polyols Company Limited	4.14	-	-	The Company Group holds 82.10 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT International Trading London Limited	-	7,357.53	11,599.53	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the President of PTT International Trading London Ltd.
Global Green Chemical Public Company Limited	-	634.91	2,153.27	The Company Group holds 72.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kongkrapan Intarajang) is the Chairman of the Board of Directors of Global Green Chemical Plc.
PTT Retail Management Company Limited	-	-	15,579.07	The Company Group holds 100 percent stake	---
PTT (Cambodia) Limited	-	-	2,413.61	The Company Group holds 100 percent stake	---
PTT (Lao) Co., Ltd.	-	-	1,822.23	The Company Group holds 100 percent stake	---
PTTEP International Limited	-	-	215.68	The Company Group holds 100 percent stake	---
PTTEP Siam Limited	-	-	137.70	The Company Group holds 100 percent stake	---
Business Services Alliance Company Limited	-	-	67.80	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of the Board of Directors of Business Services Alliance Co., Ltd.
PTT Philippines Trading Corporation	-	-	26.97	The Company Group holds 100 percent stake	---
PTT Philippines Corporation	-	-	24.24	The Company Group holds 100 percent stake	---
Combined Heat and Power Producing Company Limited	-	-	13.80	The Company Group holds 100 percent stake	---
Top Solvent Company Limited	-	-	10.16	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Thai Tank Terminal Co., Ltd.	-	-	6.35	The Company Group holds 51 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT Energy Solutions Company Limited	-	-	3.00	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Witawas Svasti-xuto) is the Chairman of the Board of Directors of PTT Energy Solutions Co., Ltd. - A PTT's executive (Mr. Chavalit Tippavanich) is the Vice Chairman of PTT Energy Solutions Co., Ltd.
IRPC Oil Company Limited	-	-	1.43	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai Paraxylene Company Limited	-	-	1.16	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wirat Uanarumit) is a Director and Chairman of Thai Paraxylene Co., Ltd.
Sapthip Company Limited	-	-	1.13	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTTEP SP Limited	-	-	1.11	The Company Group holds 100 percent stake	—
Thai Lube Blending Company Limited	-	-	0.76	The Company Group holds 100 percent stake	—
IRPC Polyols Company Limited	-	-	0.68	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
IRPC Technology Company Limited	-	-	0.61	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Chavalit Tippavanich) is the Chairman of IRPC Technology Co., Ltd.

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
GC Styrenics Company Limited	-	-	0.59	The Company Group holds 100 percent stake	—
PTT Tank Terminal Company Limited	-	-	0.30	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
Energy Complex Company Limited	-	-	0.20	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.
PTT Digital Solution Company Limited	-	-	0.13	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solution Co., Ltd.
PTT GC Marketing Solutions Company Limited	-	-	0.09	The Company Group holds 100 percent stake	—
GC Management and Engineering Company Limited	-	-	0.04	The Company Group holds 100 percent stake	—
GC Logistics Solutions Company Limited	-	-	0.01	The Company Group holds 100 percent stake	—
Joint Operations					
Carigali - PTTEPI Operating Company Sdn. Bhd.	-	9.48	302.49	The Company Group holds 50.00 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Joint Venture					
HMC Polymers Company Limited	4,414.26	4,621.64	5,718.44	The Company Group holds 41.44 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Joint Venture (continued)					
PTT Asahi Chemical Company Limited	3,335.89	4,342.62	5,416.95	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Nava Nakorn Electricity Generating Company Limited	1,788.30	1,787.74	1,849.27	The Company Group holds 30 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
District Cooling System and Power Plant Company Limited	1,622.39	1,827.56	1,672.02	The Company Group holds 35 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
OPG Energy Solutions Company Limited	34.04	13.31	0.29	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT MCC Biochem Company Limited	28.76	37.74	27.10	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Trans Thai-Malaysia (Thailand) Limited	-	-	0.54	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Associates					
Bangpa-in Cogeneration Company Limited	2,948.42	3,334.15	3,163.16	The Company Group holds 25 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Vinythai Public Company Limited	236.82	261.84	284.11	The Company Group holds 24.98 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Petro Asia (Thailand) Co., Ltd.	-	-	46.04	The Company Group holds 35 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Ube Chemicals (Asia) Public Company Limited	-	-	14.99	The Company Group holds 25 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.1 Sales of products and services are the items that PTT sells goods and services to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Other related companies					
Ratchaburi Power Company Limited	6,027.89	11,868.71	14,103.85	The Company Group holds 15 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Ratchaburi Power Co., Ltd.
Sarn Palung Social Enterprise Company Limited	-	-	0.18	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Duangpom Tiengwatanatham) is the Chairman of Sarn Palung Social Enterprise Company Limited
Total	462,282.92	662,587.64	811,966.40		

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Exploration and Production Public Company Limited	81,263.85	101,665.86	91,379.66	The Company Group holds 65.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director/executive (Mr. Auttapol Rerkpibul) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Atikom Terbsiri) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Montri Rawanchaikul) is the President of PTT Exploration and Production Plc.
PTT International Trading Pte. Ltd.	28,593.84	15,105.26	42,362.33	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading Pte.
PTT Oil and Retail Business Public Company Limited	18,139.65	26,640.43	26,375.24	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/executive (Mr. Auttapol Rerkpibul) is the Chairman of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraporn Kaosawas) is a Director and Secretary, and Acting Chief Executive Officer of PTT Oil and Retail Business Plc.

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Global Chemical Public Company Limited	17,415.36	28,755.73	120,715.32	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director (Mr. Don Wasantapruerk) is a Director of PTT Global Chemical Plc. - Some PTT's executives (Mr. Witawat Svastixuto, Ms. Arawadee Photisaro, Mr. Disathat Panyarachun) are Directors of PTT Global Chemicals Plc. - A PTT's executive (Mr. Kongkrapan Intarajang) is a Director and Secretary, and the Chief Executive Officer of PTT Global Chemicals Plc.
PTTEP International Company Limited	14,535.77	18,692.72	16,727.34	The Company Group holds 100 percent stake	—
PTTEP Siam Company Limited	11,465.11	17,347.07	17,323.29	The Company Group holds 100 percent stake	—
PTT LNG Company Limited	9,517.40	9,481.46	7,806.87	The Company Group holds 100 percent stake	- A PTT's executive (Mr Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
PTT International Trading London Limited	7,482.27	19,756.65	5,189.28	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading London Ltd.
PTTEP SP Limited	5,839.77	7,645.62	7,418.69	The Company Group holds 100 percent stake	—

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
IRPC Public Company Limited	592.40	5.96	14,432.68	The Company Group holds 48.05 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	<ul style="list-style-type: none"> - Some of PTT's executives (Mr. Kris Imsang, Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chavalit Tippavanich) is a Director and Secretary, and Chief Executive Officer and President of IRPC Plc.
Business Services Alliance Company Limited	197.09	187.95	371.39	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Services Alliance Co., Ltd.
PTT Tank Terminal Company Limited	156.21	191.18	132.14	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
Thai Oil Public Company Limited	56.74	1,098.48	82,374.63	The Company Group holds 48.03 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	<ul style="list-style-type: none"> - PTT's executives (Ms. Pannalin Mahatiwongkul, Mr. Terdkiat Prommool, Ms. Duangporn Thiengwatanatham, Mr. Buranin Ratanasombat) are Directorsof Thai Oil Plc. - A PTT's executive (Mr. Wirat Uanarumit) is a Director and Secretary, and Chief Executive Officer and President of Thai Oil Plc.

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Digital Solution Company Limited	33.41	66.29	33.45	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solution Co., Ltd.
PTT Natural Gas Distribution Company Limited	18.73	27.43	32.72	The Company Group holds 58 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	- A PTT's executives (Mr. Wuttikom Stithit) is a Director of PTT Natural Gas Distribution Co., Ltd.
GC Maintenance and Engineering Company Limited	10.12	11.32	10.63	The Company Group holds 100 percent stake	—
Top Solvent Company Limited	4.38	8.89	-	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
GC Logistics Solutions Company Limited	2.79	6.87	22.51	The Company Group holds 100 percent stake	—
GC Glycol Company Limited	2.32	2.31	218.90	The Company Group holds 100 percent stake	—
NPC Safety and Environmental Service Company Limited	1.46	1.23	0.70	The Company Group holds 100 percent stake	—
PTT Retail Management Company Limited	0.31	0.30	0.30	The Company Group holds 100 percent stake	—
PTT Energy Solutions Company Limited	-	7.27	5.68	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Witawat Svasti-xuto) is the Chairman of PTT Energy Solutions Co., Ltd. - A PTT's executive (Mr. Chavalit Tippavanich) is the Vice Chairman of PTT Energy Solutions Co., Ltd.

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTTEP Australasia (Ashmore Cartier) Pty Ltd	-	-	4,638.72	The Company Group holds 100 percent stake	—
Global Green Chemical Public Company Limited	-	-	2,127.60	The Company Group holds 72.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kongkrapan Intarajang) is the Chairman of Global Green Chemical Plc.
Thai Lubes Public Company Limited	-	-	1,698.04	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT (Cambodia) Limited	-	-	767.44	The Company Group holds 100 percent stake	—
Sapthip Company Limited	-	-	355.39	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT Philippines Trading Corporation	-	-	349.09	The Company Group holds 100 percent stake	—
IRPC Oil Company Limited	-	-	236.97	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai Lube Blending Company Limited	-	-	232.63	The Company Group holds 100 percent stake	—
PTT Phenol Company Limited	-	-	39.09	The Company Group holds 100 percent stake	—
PTT Philippines Corporation	-	-	6.78	The Company Group holds 100 percent stake	—
Thai Oil Marine Company Limited	-	-	1.14	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Sport Services Alliance Company Limited	-	-	0.01	The Company Group holds 100 percent stake	---
Joint operations					
Moattama Gas Transportation Company	13,917.36	17,602.33	16,257.50	The Company Group holds 25.50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Andaman Transportation Limited	9,250.09	10,574.59	9,716.96	The Company Group holds 80 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Orange Energy Company Limited	2,873.75	5,011.05	3,354.99	The Company Group holds 53.95 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
B 8/32 Partner Company Limited	2,873.75	5,011.05	3,205.64	The Company Group holds 25 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	---
Taninthayi Pipeline Company LLC	1,571.04	3,579.89	-	The Company Group holds 19.32 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Joint ventures					
Trans Thai-Malaysia (Thailand) Limited	1,402.70	1,406.76	1,431.14	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
PTT Asahi Chemical Company Limited	-	-	99.21	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---

9.2.3.2 Goods and service purchase is the items that PTT buys goods and/or services from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Affiliate					
Thai Petroleum Pipeline Company Limited	4.72	-	894.63	The Company Group holds 49.21 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Buranin Rattanasombat) is a Director of Thai Petroleum Pipeline Co., Ltd.
Eastern Fluid Transport Company Limited	0.31	0.31	0.30	The Company Group holds 37.65 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Ubon Bioethanol Company Limited	-	-	232.05	The Company Group holds 21.28 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Other related companies					
Dhipaya Insurance Public Company Limited	287.77	257.36	264.15	The Company Group holds 13.33 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Sam Palung Social Enterprise Company Limited	-	-	40.20	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Duangporn Thiengwatanatham) is the Chairman of Sam Palung Social Enterprise Co., Ltd.
Total	227,510.47	290,149.62	478,883.42		

9.2.3.3 Interest received from subsidiaries, joint operations, joint ventures, associates and other related companies

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Treasury Center Company Limited	1,195.00	83.27	-	The Company Group holds 100 percent stake	—
PTT LNG Company Limited	19.59	577.28	613.34	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
Energy Complex Company Limited	15.25	19.43	19.43	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.
Global Power Synergy Public Company Limited	14.31	550.57	-	The Company Group holds 75.23 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Mr. Atikom Terbsiri, Mr. Witawat Svasti-xuto, Mr. Wuttikorn Stithit, Mr. Kongkrapan Intarajang, Mr. Wirat Unarumit) are Directors of Global Power Synergy Plc. - A PTT's executive (Mr. Worawat Pitayasiri) is a Director and Secretary, and Chief Executive Officer and President of Global Power Synergy Plc.
IRPC Public Company Limited	2.90	30.96	-	The Company Group holds 48.05 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- PTT's executives (Mr. Kris Imsang, Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chavalit Tippavanich) is a Director and Secretary, and Chief Executive Officer and President of IRPC Plc.

9.2.3.3 Interest received from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Global Chemical Public Company Limited	1.57	-	-	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director (Mr. Don Wasantapruerk) is a Director of PTT Global Chemical Plc. - PTT's executives (Mr. Witawat Svasti-xuto, Ms. Arawadee Photisaro, Mr. Disathat Panyarachun) are Directors of PTT Global Chemical Plc. - A PTT's executive (Mr. Intarajang) is a Director and Secretary, and the Chief Executive Officer of PTT Global Chemical Plc.
PTT Oil and Retail Business Public Company Limited	-	451.88	389.45	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/executive (Mr. Auttapol Rerkpibul) is the Chairman of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraporn Kaosawas) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.
PTT Regional Treasury Center Pte. Ltd.	-	93.51	102.40	The Company Group holds 100 percent stake	---
Siam Management Holdings Company Limited	-	27.87	-	The Company Group holds 100 percent stake	---
PTT Energy Resources Company Limited	-	-	43.00	The Company Group holds 100 percent stake	---
PTT Green Energy Pte. Ltd.	-	-	32.43	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Wilaiwan Kanjanakanti) is the Chairman of Green Energy Pte.

9.2.3.3 Interest received from subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Green Energy (Thailand) Company Limited	-	-	22.39	The Company Group holds 100 percent stake	—
PTT (Cambodia) Limited	-	-	5.75	The Company Group holds 100 percent stake	—
PTT (Lao) Co., Ltd.	-	-	0.54	The Company Group holds 100 percent stake	—
Total	1,248.62	1,834.77	1,183.95		

9.2.3.4 Interest paid to subsidiaries, joint operations, joint ventures, associates and other related companies

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Treasury Center Company Limited	1,474.77	193.00	-	The Company Group holds 100 percent stake	—
PTT LNG Company Limited	7.18	19.60	24.91	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Plc.
PTT Tank Terminal Company Limited	4.55	8.18	5.33	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
PTT Energy Resources Company Limited	0.76	2.48	2.99	The Company Group holds 100 percent stake	—
Energy Complex Company Limited	0.64	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.

9.2.3.4 Interest paid to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Global Management Company Limited	0.40	0.80	1.67	The Company Group holds 100 percent stake	—
Siam Management Holding Company Limited	0.34	-	-	The Company Group holds 100 percent stake	—
Business Services Alliance Company Limited	0.29	0.26	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Services Alliance Co., Ltd.
Alpha Com Company Limited	0.21	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is a Director of Alpha Com Co., Ltd. - A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Alpha Com Co., Ltd.
IRPC Public Company Limited	0.20	-	-	The Company Group holds 48.05 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- PTT's executives (Mr. Kris Imsang, Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chavalit Tippavanich) is a Director and Secretary, and the Chief Executive Officer and President of IRPC Plc.
PTT Digital Solution Company Limited	0.04	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solution Co., Ltd.

9.2.3.4 Interest paid to subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Oil and Retail Business Public Company Limited	-	-	0.27	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/executive (Mr. Auttapol Rerkpibul) is the Chairman of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklym) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraporn Kaosawas) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.
Joint ventures					
Trans Thai-Malaysia (Thailand) Limited	48.11	53.12	58.10	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Total	1,537.49	277.44	93.27		

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies

9.2.3.5.1 Trade accounts receivable

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
IRPC Public Company Limited	13,569.37	15,432.36	18,218.40	The Company Group holds 48.05 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	<ul style="list-style-type: none"> - Some of PTT's executives (Mr. Kris Imsang, Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chavalit Tippavanich) is a Director and Secretary, and the Chief Executive Officer and President of IRPC Plc.
PTT Global Chemical Public Company Limited	12,261.18	17,202.17	24,603.52	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director (Mr. Don Wasantapruerk) is a Director of PTT Global Chemical Plc. - Some of PTT's executives (Mr. Witawat Svastixuto, Ms. Arawadee Photisaro, Mr. Disathat Panyarachun) are Directors of PTT Global Chemical Plc. - A PTT's executive (Mr. Kongkrapan Intarajang) is a Director and Secretary, and Chief Executive Officer of PTT Global Chemical Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.1 Trade accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Thai Oil Company Limited	4,184.76	11,614.64	8,556.64	The Company Group holds 48.03 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	<ul style="list-style-type: none"> - Some of PTT's executives (Ms. Pannalin Mahawongthikul, Mr. Terdkiat Prommool, Ms. Duangporn Thiengwatanatham, Mr. Buranin Ratanasombat) are Directors of Thai Oil Plc. - A PTT's executive (Mr. Wirat Uanarumit) is a Director and Secretary and President and Chief Executive Officer of Thai Oil Plc.
PTT International Trading Pte. Ltd.	3,010.97	3,794.04	4,487.42	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading Pte.
PTT Oil and Retail Business Public Company Limited	1,721.36	2,752.58	3,107.32	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - PTT's Director/executive (Mr. Auttapol Rerkpibul) is the Chairman of the Board of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraporn Kaosawas) is a Director and Secretary, Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.1 Trade accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Global Power Synergy Public Company Limited	1,352.48	1,326.15	1,101.91	The Company Group holds 75.23 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Mr. Atikom Termbsiri, Mr. Witawat Svasti-xuto, Mr. Wuttikorn Stithit, Mr. Kongkrapan Intarajang, Mr. Wirat Uanarumit) are Directors of Global Power Synergy Plc. - A PTT's executive (Mr. Worawat Pitayasiri) is a Director and Secretary, Chief Executive Officer and President of Global Power Synergy Plc.
PTT Natural Gas Distribution Company Limited	744.09	447.81	996.37	The Company Group holds 58 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	- A PTT's executive (Mr. Wuttikorn Stithit) is the Chairman of PTT Natural Gas Distribution Co., Ltd.
Glow Energy Public Company Limited	601.68	854.77	-	The Company Group holds 99.83 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow Energy Plc.
Glow SPP 2 Company Limited	429.26	436.53	-	The Company Group holds 100	A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 2 Co., Ltd.
Amata Natural Gas Distribution Company Limited	398.59	241.04	545.71	The Company Group holds 80 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Top SPP Company Limited	337.06	424.62	857.68	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
IRPC Clean Power Company Limited	286.11	354.59	737.88	The Company Group holds 100 percent stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.1 Trade accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Glow SPP 11 Company Limited	238.45	308.98	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 11 Co., Ltd.
Thai Oil Power Company Limited	189.77	236.41	517.05	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Wirat Uanarumit) is the Chairman of Thai Oil Power Co., Ltd.
Glow IPP Company Limited	162.60	162.31	-	The Company Group holds 95 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow IPP Co., Ltd.
Labix Company Limited	47.47	52.52	69.58	The Company Group holds 75 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wirat Uanarumit) is a Director/ Chairman of Labix Co., Ltd.
GC-M PTA Company Limited	20.69	23.04	-	The Company Group holds 74 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai Lubes Public Company Limited	18.97	24.73	55.64	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT LNG Company Limited	17.84	23.41	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
Thai PET Resin Company Limited	8.37	8.90	-	The Company Group holds 84.40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.1 Trade accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Sak Chaisidhi Company Limited	3.44	6.53	7.35	The Company Group holds 80.52 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT Phenol Company Limited	2.64	2.05	2.88	The Company Group holds 100 percent stake	—
GC Glycol Company Limited	1.38	0.98	2.27	The Company Group holds 100 percent stake	—
PTT Exploration and Production Public Company Limited	0.50	-	1.58	The Company Group holds 65.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's Director/ executive (Mr. Auttapol Rerkpibul) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Atikom Terbsiri) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Montri Rawanchaikul) is the President of PTT Exploration and Production Plc.
PTT International Trading London Limited	-	7.50	1,651.49	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading London Co., Ltd.
Global Green Chemical Public Company Limited	-	-	64.41	The Company Group holds 72.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive Mr. Kongkrapan Intarajang) is the Chairman of Global Green Chemical Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.1 Trade accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Joint operations					
Carigali - PTTEPI Operating Company Sdn. Bhd.	-	-	0.60	The Company Group holds 50.00 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Joint ventures					
HMC Polymers Company Limited	442.79	363.47	1,191.45	The Company Group holds 41.44 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT Asahi Chemical Company Limited	410.93	326.95	498.74	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Nava Nakorn Electricity Generating Company Limited	158.94	156.00	352.06	The Company Group holds 30 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
District Cooling System and Power Plant Company Limited	133.79	151.66	170.64	The Company Group holds 35 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
OPG Energy Solutions Company Limited	4.06	0.72	0.31	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT MCC Biochem Company Limited	0.12	1.69	0.05	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.1 Trade accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Associates					
Bangpa-in Cogeneration Company Limited	230.48	262.60	302.01	The Company Group holds 25 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Vinythai Public Company Limited	19.29	24.28	24.03	The Company Group holds 24.98 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Eastern Fluid Transport Company Limited	-	-	15.77	The Company Group holds 37.65 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Other related businesses					
Ratchaburi Power Company Limited	954.17	955.52	2,983.24	The Company Group holds 15 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Ratchaburi Power Co., Ltd.
Total trade accounts receivable	41,963.60	57,981.55	71,124.00		
Less: Allowance for doubtful debts	-	-	-		
Total trade accounts receivable	41,963.60	57,981.55	71,124.00		

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.5.2 Other accounts receivable

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Oil and Retail Business Public Company Limited	615.92	518.24	651.16	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/Executive (Mr. Auttapol Rerakpibool) is the Chairman of the Board of Directors of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraporn Khaosawas) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.
PTT Treasury Center Company Limited	282.49	58.21	1.48	The Company Group holds 100 percent stake	—
PTT Digital Solution Company Limited	47.89	60.99	62.80	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solution Co., Ltd.
PTT Exploration and Production Public Company Limited	46.48	31.44	15.85	The Company Group holds 65.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director/Executive (Mr. Auttapol Rerakpibool) is the Chairman of the Board of Directors of PTT Exploration and Production Plc. - A PTT's executive (Mr. Atikom Terbsiri) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Montri Rawanchaikul) is the President of PTT Exploration and Production Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Global Power Synergy Public Company Limited	31.03	28.08	21.18	The Company Group holds 75.23 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Mr. Atikom Terbsiri, Mr. Witawat Svasti-xuto, Mr. Wuttikorn Stitith, Mr. Kongkrapan Intarajang, Mr. Wirat Uanarumit) are Directors of Global Power Synergy Plc. - A PTT's executive (Mr. Worawat Pitayasiri) is the Director and Secretary, Chief Executive Officer and President of Global Power Synergy Plc.
GC Oxirane Company Limited	26.18	-	-	The Company Group holds 100 percent stake	—
PTT Global Chemical Public Company Limited	23.06	36.96	17.62	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Don Wasantapruerk) is a Director of PTT Global Chemical Plc. - Some of PTT's executives (Mr. Witawat Svasti-xuto, Ms. Arawadee Photisaro, Mr. Disathat Panyarachun) are Directors of PTT Global Chemical Plc. - A PTT's executive (Mr. Kongkrapan Intarajang) is a Director and Secretary, and Chief Executive Officer of PTT Global Chemical Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT LNG Company Limited	19.95	23.98	27.83	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
Energy Complex Company Limited	18.25	20.04	23.12	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklym) is the Chairman of Energy Complex Co., Ltd.
PTT Tank Terminal Company Limited	15.41	14.43	20.05	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
Thai Oil Public Company Limited	13.93	14.01	18.37	The Company Group holds 48.03 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Ms. Pannalin Mawongthikul, Mr. Terdiat Prommool, Ms. Duangporn Thiengwatanatham, Mr. Buranin Rattanasombat) are Directors of Thai Oil Plc. - A PTT's executive (Mr. Wirat Uanarumit) is a Director and Secretary, Chief Executive Officer and President of Thai Oil Plc.
IRPC Public Company Limited	13.69	172.03	178.21	The Company Group holds 48.05 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kris Imsang, Mr. Noppadol Pinsupa) is a Director of IRPC Plc. - A PTT's executive (Mr. Chawalit Tippavanich) is a Director and Secretary, Chief Executive Officer and President of IRPC Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT International Trading Pte. Ltd.	11.34	23.67	1,207.84	The Company Group holds 100 percent stake	- A PTT's Executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading Pte. Ltd.
Business Services Alliance Company Limited	10.51	8.61	6.71	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Services Alliance Co., Ltd.
PTT Global LNG Company Limited	10.35	2.52	8.00	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Wuttikorn Stitith) is the Chairman of PTT Global LNG Co., Ltd. - A PTT's executive (Mr. Montri Rawanchaikul) is a Director of PTT Global LNG Co., Ltd.
PTT Energy Solutions Company Limited	7.17	4.37	5.14	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Witawat Svasti-xuto) is the Chairman of PTT Energy Solutions Co., Ltd. - A PTT's executive (Mr. Noppadol Pinsupa) is a Director of PTT Energy Solutions Co., Ltd.
PTT Natural Gas Distribution Company Limited	5.94	6.52	12.90	The Company Group holds 58 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wuttikorn Stitith) is the Chairman of PTT Natural Gas Distribution Co., Ltd.
PTT International Trading London Limited	4.23	4.06	2.43	The Company Group holds 100	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading London Co., Ltd.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Global Green Chemical Public Company Limited	2.85	1.55	3.34	The Company Group holds 72.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kongkrapan Intarajang) is the Chairman of Global Green Chemical Co., Ltd.
PTT Energy Resources Company Limited	2.46	3.21	4.10	The Company Group holds 100 percent stake	---
PTT Retail Management Company Limited	2.18	2.56	6.38	The Company Group holds 100 percent stake	---
PTTOR Singapore Pte. Ltd.	1.56	1.38	0.42	The Company Group holds 100 percent stake	---
PT Bahari Cakrawala Sebuku	1.33	1.29	8.69	The Company Group holds 100 percent stake	---
PTT GC Marketing Solutions Company Limited	1.05	1.33	1.92	The Company Group holds 100 percent stake	---
Business Professional Solutions Recruitment Company Limited	0.85	1.10	1.28	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Professional Solutions Recruitment Co., Ltd.
Tiger Energy Trading Pte. Ltd.	0.84	0.85	0.80	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Arawadee Photisaro) is a Director of Tiger Energy Trading Pte. Ltd.
Sport Services Alliance Company Limited	0.75	5.63	2.63	The Company Group holds 100 percent stake	---
GC Polyols Company Limited	0.61	-	-	The Company Group holds 82.10 percent stake	---
PTTEP Siam Company Limited	0.60	1.66	4.12	The Company Group holds 100 percent stake	---
GC-M PTA Company Limited	0.56	0.03	-	The Company Group holds 74 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
PTT Philippines Trading Corporation	0.52	0.87	0.28	The Company Group holds 100 percent stake	---

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTTOR China (Shanghai) Co., Ltd.	0.51	0.51	0.07	The Company Group holds 100 percent stake	—
PTT (Cambodia) Limited	0.45	2.49	4.55	The Company Group holds 100 percent stake	—
PTT Philippines Corporation	0.45	0.45	11.00	The Company Group holds 100 percent stake	—
GC Logistics Solutions Company Limited	0.40	1.31	3.63	The Company Group holds 100 percent stake	—
PTT Green Energy (Thailand) Company Limited	0.39	1.48	1.77	The Company Group holds 100 percent stake	—
Combined Heat and Power Producing Company Limited	0.32	-	-	The Company Group holds 100 percent stake	—
PTT Global Management Company Limited	0.29	0.26	0.21	The Company Group holds 100 percent stake	—
GC Glycol Company Limited	0.22	-	-	The Company Group holds 100 percent stake	—
Siam Management Holdings Company Limited	0.19	0.11	-	The Company Group holds 100 percent stake	—
Thai Lube Blending Company Limited	0.14	0.14	2.05	The Company Group holds 100 percent stake	—
Thai Paraxylene Company Limited	0.13	-	-	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wirat Uanarumit) is a Director and Chairman of Thai Paraxylene Co., Ltd.
Thai Lubes Public Company Limited	0.13	-	-	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTTEP Services Limited	0.11	0.19	0.16	The Company Group holds 100 percent stake	—
PTTEP International Limited	0.11	-	-	The Company Group holds 100 percent stake	—
Global Management Holdings Limited	0.09	0.09	-	The Company Group holds 100 percent stake	—
Thai Oil Energy Services Company Limited	0.07	0.04	0.15	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT International Holding Limited	0.04	-	-	The Company Group holds 100 percent stake	—
PTT International Investment Limited	0.04	-	-	The Company Group holds 100 percent stake	—
PTT International (Singapore)	0.04	-	-	The Company Group holds 100 percent stake	—
PTTEP SP Limited	0.03	-	0.13	The Company Group holds 100 percent stake	—
PTT Mining Limited	0.03	-	-	The Company Group holds 100 percent stake	—
PTT (Lao) Co., Ltd.	0.02	0.01	2.19	The Company Group holds 100 percent stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Alpha Com Company Limited	0.02	-	-	The Company Group holds 100 percent stake	A PTT's executive (Mr. Noppadol Pinsupa) is a Director of Alpha Com Co., Ltd. A PTT's executive (Mr. Worawat Pitayasiri) is an advisor to the Board of Directors of Alpha Com Co., Ltd.
Swap & Go Company Limited	0.02	-	-	The Company Group holds 100 percent stake	—
Thai Oil Marine Company Limited	0.01	0.07	0.01	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai PET Resin Company Limited	0.01	0.02	-	The Company Group holds 74 No other PTT's personnel who may have conflict of interest holds the remaining stake	—
GC Maintenance and Engineering Co., Ltd.	-	3.32	0.03	The Company Group holds 100 percent stake	—
PTT Regional Treasury Center Pte. Ltd.	-	0.87	50.96	The Company Group holds 100 percent stake	—
PTT Oil Myanmar Co., Ltd.	-	0.70	25.04	The Company Group holds 100 percent stake	—
Sapthip Company Limited	-	0.13	-	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
IRPC Clean Power Company Limited	-	0.08	-	The Company Group holds 51 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT GL Investment Limited	-	0.03	0.01	The Company Group holds 100 percent stake	—
IRPC Oil Company Limited	-	0.02	0.03	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Top Solvent Company Limited	-	0.02	0.01	The Company Group holds 99.99 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
PTT Phenol Company Limited	-	0.01	0.02	The Company Group holds 100 percent stake	---
Solution Creation Company Limited	-	0.01	0.01	The Company Group holds 100 percent stake	---
Thai Oil Power Company Limited	-	-	2.59	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Wirat Uanarumit) is the Chairman of Thai Oil Power Co., Ltd.
PTTGC America LLC	-	-	1.09	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Duangkamol Setthanang) is a Director of PTTGC America LLC
GC Styrenics Company Limited	-	-	0.01	The Company Group holds 100 percent stake	---
GC Treasury Center Company Limited	-	-	0.01	The Company Group holds 100 percent stake	---
Joint ventures					
Trans Thai - Malaysia (Malaysia) Sdn. Bhd.	38.74	0.88	1.17	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Map Ta Phut Air Products Company Limited	13.45	13.45	-	The Company Group holds 51 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
OPG Energy Solutions Company Limited	7.75	0.67	0.68	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Trans Thai-Malaysia (Thailand) Limited	5.87	5.69	5.57	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Joint ventures (continued)					
Suez Environmental Services Company Limited	5.46	-	-	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
District Cooling System and Power Plant Company Limited	3.15	4.29	3.64	The Company Group holds 35 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT MCC Biochem Company Limited	0.75	3.75	2.72	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
HMC Polymers Company Limited	0.26	0.24	0.34	The Company Group holds 41.44 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT Asahi Chemical Company Limited	0.01	0.11	1.43	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai Ethoxylate Company Limited	-	0.01	-	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Nam Lik 1 Power Co., Ltd.	-	-	0.63	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.2 Other accounts receivable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Associates					
Eastern Fluid Transport Company Limited	5.53	5.44	-	The Company Group holds 37.65 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Thai Petroleum Pipeline Company Limited	1.02	0.61	2.91	The Company Group holds 49.59 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Buranin Rattanasombat) is a Director of Thai Petroleum Pipeline Co., Ltd.
Vinythai Public Company Limited	0.02	0.01	-	The Company Group holds 24.98 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Other related companies					
Sam Palung Social Enterprise Company Limited	0.34	2.00	0.57	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Duangporn Thiengwatanatham) is the Chairman of Sam Palung Social Enterprise Co., Ltd.
Ratchaburi Power Company Limited	-	0.21	-	The Company Group holds 15 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Ratchaburi Power Co., Ltd.
Total other accounts receivable	1,306.59	1,099.34	2,440.04		-
Less: Allowance for doubtful debts	-	-	-		-
Total other accounts receivable - net	1,306.59	1,099.34	2,440.04		-

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.3 Short-term advance payments

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Digital Solution Company Limited	12.90	6.38	8.58	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solution Co., Ltd.
PTT Tank Terminal Company Limited	-	-	62.24	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
Energy Complex Company Limited	-	-	2.95	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.
Other related copanies					
Dhipaya Insurance Public Company Limited	324.75	239.96	279.96	The Company Group holds 13.33 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Ms. Wilaiwan Kanjanakanti) is a Director of Dhipaya Insurance Plc.
Total	337.65	246.34	353.73		

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.4 Short-term lending

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Treasury Center Company Limited	4,986.74	3,142.20	-	The Company Group holds 100 percent stake	—
PTT LNG Company Limited	-	13,857.00	4,700.00	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
Energy Complex Company Limited	150.00	580.00	-	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.
Global Power Synergy Public Company Limited	-	3,790.07	-	The Company Group holds 75.23 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Mr. Atikom Terbsiri, Mr. Wittawat Svasti-xuto, Mr. Wuttikorn Stithit, Mr. Kongkrapan Intarajang, Mr. Wirat Uanarumit) are Directors of Global Power Synergy Plc. - A PTT's executive (Mr. Worawat Pitayasiri) is a Director and Secretary, Chief Executive Officer and President of Global Power Synergy Plc.

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.4 Short-term lending (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Oil and Retail Business Public Company Limited	-	-	2,500.00	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/Executive (Mr. Auttapol Rerkpibool) is the Chairman of the Board of Directors of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraphon Kawswat) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.
PTT Regional Treasury Center Pte. Ltd.	-	-	134.32	The Company Group holds 100 percent stake	—
Total short-term lending	5,136.74	21,369.27	7,334.32		
Less: Allowance for doubtful debts	-	-	-		
Total short-term lending	5,136.74	21,369.27	7,334.32		

9.2.3.5 Trade accounts receivable, other accounts receivable, advance payments and lending of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.5.5 Long-term lending

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Treasury Center Company Limited	44,345.77	24,594.89	-	The Company Group holds 100 percent stake	—
Energy Complex Company Limited	317.50	-	580.00	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.
PTT LNG Company Limited	-	387.00	12,944.00	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
PTT Oil and Retail Business Public Company Limited	-	-	17,000.00	The Company Group holds 100 percent stake	- A PTT's Director/Executive (Mr. Auttapol Rerkpibool) is the Chairman of the Board of Directors of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraphon Kawswat) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.
PTT Regional Treasury Center Pte. Ltd.	-	-	2,371.68	The Company Group holds 100 percent stake	—
Total	44,663.27	24,981.89	32,895.68		
Less: Allowance for doubtful debt	-	-	-		
Total long-term lending	44,663.27	24,981.89	32,895.68		

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies

9.2.3.6.1 Trade accounts payable

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Exploration and Production Public Company Limited	8,333.29	10,710.49	13,012.77	The Company Group holds 65.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director/executive (Mr. Auttapol Rerkpibool) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Atikom Terbsiri) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Montri Rawanchaikul) is the President of PTT Exploration and Production Plc.
PTT Oil and Retail Business Public Company Limited	2,905.74	3,963.65	4,913.50	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/Executive (Mr. Auttapol Rerkpibool) is the Chairman of the Board of Directors of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraphon Kawswat) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.1 Trade accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Global Chemical Public Company Limited	2,165.96	2,241.81	3,665.25	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	<ul style="list-style-type: none"> - A PTT's Director (Mr. Don Wasantapruet) is a Director of PTT Global Chemical Plc. - Some of PTT's executives (Mr. Wittawat Svasti-xuto, Ms. Arawadee Photisaro, Mr. Disathat Panyarachun) are Directors of PTT Global Chemical Plc. - A PTT's executive (Mr. Kongkrapan Intarajang) is a Director and Secretary, and Chief Executive Officer of PTT Global Chemical Plc.
PTTEP International Limited	1,915.83	2,378.84	2,751.44	The Company Group holds 100 percent stake	—
PTT International Trading Pte. Ltd.	1,745.14	707.95	3,755.38	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Acting Chairman of PTT International Trading Pte. Ltd.
PTTEP Siam Limited	988.71	1,457.76	2,597.11	The Company Group holds 100 percent stake	—
PTT LNG Company Limited	866.97	798.09	729.75	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
PTTEP SP Limited	625.54	715.59	1,319.69	The Company Group holds 100 percent stake	—

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.1 Trade accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
IRPC Public Company Limited	508.93	1.72	1.62	The Company Group holds 48.05 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Mr. Kris Imsang, Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chawalit Tippawanich) is a Director and Secretary and Chief Executive Officer of IRPC Plc.
PTT International Trading London Limited	274.42	2,137.90	45.35	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading London Ltd.
PTT Tank Terminal Company Limited	10.93	14.48	84.13	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
PTT Natural Gas Distribution Company Limited	1.17	1.91	2.85	The Company Group holds 58 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wuttikom Stithit) is the Chairman of PTT Gas Distribution Co., Ltd.

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.1 Trade accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Thai Oil Public Company Limited	0.29	0.15	85.44	- The Company Group holds 48.03 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Ms. Pannalin Mahawongtikul, Mr. Terdkiat Prommool, Ms. Duangporn Thiengwatanatham, Mr. Buranin Rattanasombat) are directors of Thai Oil Plc. - A PTT's executive (Mr. Wirat Uanarumit) is the Director and Secretary, Chief Executive Officer and President of Thai Oil Plc.
GC Logistics Solutions Company Limited	-	0.34	1.69	The Company Group holds 100 percent stake	—
PTT Retail Management Company Limited	-	0.02	0.07	The Company Group holds 100 percent stake	—
Global Green Chemicals Public Company Limited	-	-	0.06	The Company Group holds 72.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kongkrapan Intarajang) is the Chairman of Global Green Chemicals Plc.

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.1 Trade accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Joint operations					
Moattama Gas Transportation Company	1,876.45	2,348.11	2,770.85	The Company Group holds 25.50 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	—
Andaman Transportation Limited	1,190.13	1,384.61	1,633.25	The Company Group holds 80 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Orange Energy Company Limited	295.61	379.42	321.25	The Company Group holds 53.95 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
B 8/32 Partners Company Limited	295.61	379.42	321.25	The Company Group holds 25 percent stake No other person who may have conflict of interest with PTT holds the remaining stakes.	—
Taninthayi Pipeline Company LLC	159.74	367.81	-	The Company Group holds 19.32 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Joint ventures					
Trans Thai-Malaysia (Thailand) Limited	236.90	245.62	260.85	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Total	24,397.37	30,235.69	38,273.55		

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Oil and Retail Business Public Company Limited	4,537.27	5,073.71	9,308.73	The Company Group holds 100 percent stake	<ul style="list-style-type: none"> - A PTT's Director/Executive (Mr. Auttapol Rerkpibool) is the Chairman of the Board of Directors of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Peangpanor Boonklum) is a Director of PTT Oil and Retail Business Plc. - A PTT's executive (Ms. Jiraphon Kawswat) is a Director and Secretary, and Acting Chief Executive Officer and President of PTT Oil and Retail Business Plc.
PTT Treasury Center Company Limited	762.71	196.93	-	The Company Group holds 100 percent stake	—
PTT Digital Solutions Company Limited	694.87	681.65	507.86	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solutions Co., Ltd.
PTT International Trading Pte. Ltd.	523.61	102.29	1,430.85	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading Pte.
Business Services Alliance Company Limited	172.74	232.44	247.05	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Services Alliance Co., Ltd.
Energy Complex Company Limited	160.44	159.14	212.23	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT International Trading London Limited	96.09	1.74	0.64	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Disathat Panyarachun) is the Chairman of PTT International Trading London Ltd.
PTT Global Chemical Public Company Limited	58.78	54.28	40.05	The Company Group holds 48.42 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Don Wasantapruerk) is a Director of PTT Global Chemical Plc. - Some of PTT's executives (Mr. Wittawat Svasti-xuto, Ms. Arawadee Photisaro, Mr. Disathat Panyarachun) are Directors of PTT Global Chemical Plc. - A PTT's executive (Mr. Kongkrapan Intarajang) is a Director and Secretary, and Chief Executive Officer of PTT Global Chemical Plc.
PTT Exploration and Production Public Company Limited	41.87	19.31	9.43	The Company Group holds 65.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's Director/executive (Mr. Auttapol Rerkpibul) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Atikom Terbsiri) is a Director of PTT Exploration and Production Plc. - A PTT's executive (Mr. Montri Rawanchaikul) is the President of PTT Exploration and Production Plc.

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
IRPC Clean Power Company Limited	22.52	22.52	22.52	The Company Group holds 100 percent stake	—
PTT Energy Solutions Company Limited	20.15	68.07	74.58	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Wittawat Svasti-xuto) is the Chairman of PTT Energy Solutions Co., Ltd. - A PTT's executive (Mr. Chawalit Tippawanich) is the Vice Chairman of PTT Energy Solutions Co., Ltd.
PTTEP International Limited	17.11	24.57	20.11	The Company Group holds 100 percent stake	—
GC Maintenance and Engineering Company Limited	16.47	6.38	-	The Company Group holds 100 percent stake	—
Business Professional Solutions Company Limited	9.03	8.28	15.30	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Professional Solutions Co., Ltd.
NPC Safety and Environmental Service Company Limited	7.25	6.50	3.44	The Company Group holds 100 percent stake	—

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
PTT Natural Gas Distribution Company Limited	4.27	7.23	4.82	The Company Group holds 58 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Wuttikorn Stitith) is the Chairman of PTT Gas Distribution Co., Ltd.
Glow SPP 11 Company Limited	3.61	0.95	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 11 Co., Ltd.
IRPC Public Company Limited	1.43	10.23	1.67	The Company Group holds 48.05 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kris Imsang, Mr. Noppadol Pinsupa) are Directors of IRPC Plc. - A PTT's executive (Mr. Chawalit Tippawanich) is a Director and Secretary, Chief Executive Officer and President of IRPC Plc.
PTT Retail Management Company Limited	1.41	3.58	1.56	The Company Group holds 100 percent stake	—
Thai Oil Public Company Limited	1.08	1.08	3.45	The Company Group holds 48.03 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Ms. Pannalin Mahawongtikul, Mr. Terdiat Prommool, Ms. Duangporn Thiengwatanatham, Mr. Buranin Rattanasombat) are Directors of Thai Oil Plc. - A PTT's executive (Mr. Wirat Uanarumit) is a Director and Secretary, Chief Executive Officer and President of Thai Oil Plc. -

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
Global Power Synergy Public Company Limited	1.02	0.62	0.60	The Company Group holds 75.23 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- Some of PTT's executives (Mr. Atikom Terbsiri, Mr. Wittawat Svasti-xuto, Mr. Wuttikorn Stithit, Mr. Kongkrapan Intarajang, Mr. Wirat Uanarumit) are Directors of Global Power Synergy Plc. - A PTT's executive (Mr. Worawat Pitayasiri) is a Director and Secretary, Chief Executive Officer and President of Global Power Synergy Plc.
PTT Tank Terminal Company Limited	0.87	1.05	1.07	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
Sak Chaisidhi Company Limited	0.74	0.72	0.73	The Company Group holds 80.52 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
PTT (Cambodia) Limited	0.74	1.20	1.68	The Company Group holds 100 percent stake	—
PTTEP Services Limited	0.65	0.28	0.09	The Company Group holds 100 percent stake	—
PTT LNG Company Limited	0.61	1.66	2.37	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
PTT Phenol Company Limited	0.58	0.58	0.56	The Company Group holds 100 percent stake	—
PTTOR Singapore Pte. Ltd.	0.54	0.40	0.06	The Company Group holds 100 percent stake	—
Glow Energy Public Company Limited	0.53	0.51	-	The Company Group holds 99.83 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow Energy Plc.

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries (continued)					
GC-M PTA Company Limited	0.51	0.51	-	The Company Group holds 74.00 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
GC Oxirane Company Limited	0.45	0.44	-	The Company Group holds 100 percent stake	—
Glow SPP 3 Company Limited	0.44	0.47	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 3 Co., Ltd.
Tiger Energy Trading Pte. Ltd.	0.35	0.28	0.15	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Arawadee Photisaro) is a Director of Tiger Energy Trading Pte.
PTT Philippines Corporation	0.26	0.71	1.55	The Company Group holds 100 percent stake	—
GC Glycol Company Limited	0.21	0.20	1.01	The Company Group holds 100 percent stake	—
Alpha Com Company Limited	0.14	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is a Director of Alpha Com Co., Ltd. - A PTT's executive (Mr. Worawat Pitayasiri) is an advisor to the Board of Directors of Alpha Com Co., Ltd.
Global Green Chemicals Public Company Limited	0.07	0.14	0.07	The Company Group holds 72.29 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Kongkrapan Intarajang) is the Chairman of Global Green Chemicals Plc.
PTT Philippines Trading Corporation	0.07	0.07	0.02	The Company Group holds 100 percent stake	—
PTT Global Management Company Limited	0.07	0.05	0.07	The Company Group holds 100 percent stake	—
Siam Management Holdings Company Limited	0.06	-	-	The Company Group holds 100 percent stake	—

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
PTT Energy Resources Company Limited	0.05	0.12	0.25	The Company Group holds 100 percent stake	—
PTTEP Siam Limited	-	1.09	-	The Company Group holds 100 percent stake	—
Combined Heat and Power Producing Company Limited	-	1.93	-	The Company Group holds 100 percent stake	—
Glow SPP 2 Company Limited	-	0.98	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Glow SPP 2 Co., Ltd.
PTT Regional Treasury Center Pte. Ltd.	-	0.74	1.11	The Company Group holds 100 percent stake	—
PTT Oil Myanmar Co., Ltd.	-	0.14	0.45	The Company Group holds 100 percent stake	—
PTT (Lao) Co., Ltd.	-	0.14	1.37	The Company Group holds 100 percent stake	—
Solution Creation Company Limited	-	0.06	-	The Company Group holds 100 percent stake	—
PTTOR CHINA (Shanghai) Co., Ltd.	-	0.03	0.01	The Company Group holds 100 percent stake	—
PTT Maintenance and Engineering Company Limited	-	-	10.32	The Company Group holds 100 percent stake	—
PTTGC America LLC	-	-	0.07	The Company Group holds 100 percent stake	—

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Joint ventures					
Suez Environmental Services Company Limited	5.02	-	-	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Nava Nakorn Electricity Generating Company Limited	3.13	3.13	3.13	The Company Group holds 30 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
PTT Asahi Chemical Company Limited	2.48	2.39	2.39	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Map Ta Phut Air Products Company Limited	2.27	3.00	-	The Company Group holds 51.00 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
HMC Polymers Company Limited	0.80	0.77	0.77	The Company Group holds 41.44 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
District Cooling System and Power Plant Company Limited	0.72	0.72	0.72	The Company Group holds 35 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Trans Thai - Malaysia (Malaysia) Sdn. Bhd.	0.35	0.22	0.17	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Trans Thai-Malaysia (Thailand) Limited	-	0.27	-	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
OPG Energy Solutions Company Limited	-	4.98	-	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Nam Lik 1 Power Co., Ltd.	-	-	0.07	The Company Group holds 40 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.2 Other accounts payable (continued)

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Associates					
Bangpa-in Cogeneration Company Limited	6.83	6.83	6.93	The Company Group holds 25 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Eastern Fluid Transport Company Limited	3.42	-	4.28	The Company Group holds 37.65 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Thai Petroleum Pipeline Company Limited	0.95	4.69	4.76	The Company Group holds 49.59 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Buranin Ratanasombat) is a Director of Thai Petroleum Pipeline Co., Ltd.
Advanced Biochemical (Thailand) Company Limited	0.31	0.30	-	The Company Group holds 49.59 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Vinythai Public Company Limited	0.31	0.30	0.34	The Company Group holds 24.98 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	---
Ubon Bio Ethanol Company Limited	0.01	-	232.05	The Company Group holds 21.28 No other PTT's personnel who may have conflict of interest holds the remaining stake	
Related companies					
Ratchaburi Power Company Limited	31.80	31.80	-	The Company Group holds 15 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Mr. Worawat Pitayasiri) is a Director of Ratchaburi Power Co., Ltd.
Dhipaya Insurance Public Company Limited	10.43	3.49	3.21	The Company Group holds 13.33 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	- A PTT's executive (Ms. Wilaiwan Kanjanakanti) is a Director of Dhipaya Insurance Plc.
Sarn Palung Social Enterprise Company Limited	-	0.14	22.50	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Duangpom Thiengwatanatham) is the Chairman of Sam Palung Social Enterprise Co., Ltd.
Total	7,230.50	6,759.03	12,008.97		

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies
(continued)

9.2.3.6.3 Short-term borrowings

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Tank Terminal Company Limited	1,114.69	619.05	601.46	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Kris Imsang) is the Chairman of PTT Tank Terminal Co., Ltd.
PTT LNG Company Limited	816.04	2,632.23	2,412.85	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Atikom Terbsiri) is the Chairman of PTT LNG Co., Ltd.
PTT Global Management Company Limited	300.32	66.94	68.65	The Company Group holds 100 percent stake	—
Siam Management Holdings Company Limited	131.36	-	-	The Company Group holds 100 percent stake	—
PTT Energy Resources Company Limited	113.56	169.34	249.74	The Company Group holds 100 percent stake	—
Alpha Com Company Limited	83.73	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is a Director of Alpha Com Co., Ltd. - A PTT's executive (Mr. Worawat Pitayasiri) is an advisor to the Board of Directors of Alpha Com Co., Ltd.
Global Management Holdings Limited	1.36	-	-	The Company Group holds 100 percent stake	—
Total	2,561.06	3,487.56	3,332.70		

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.6.4 Long-term borrowings

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
PTT Treasury Center Company Limited	45,181.01	23,872.73	-	The Company Group holds 100 percent stake	—
Total	45,181.01	23,872.73	-		

9.2.3.6.5 Lease liabilities due within 1 year

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
Energy Complex Company Limited	35.70	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Ms. Peangpanor Boonklum) is the Chairman of Energy Complex Co., Ltd.
PTT Digital Solutions Company Limited	1.50	-	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Noppadol Pinsupa) is the Chairman of PTT Digital Solutions Co., Ltd.
Business Services Alliance Company Limited	0.84	0.77	-	The Company Group holds 100 percent stake	- A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Services Alliance Co., Ltd.
Joint ventures					
Trans Thai-Malaysia (Thailand) Limited	383.24	374.86	400.42	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Total	421.28	375.63	400.42		

9.2.3.6 Trade accounts payable, other accounts payable, borrowing, lease liabilities of subsidiaries, joint operations, joint ventures, associates and other related companies (continued)

9.2.3.6.6 Long-term lease liabilities

Related companies	2020 (THB million)	2019 (THB million)	2018 (THB million)	Relationship	
				Shareholding (As of 31 December 2020)	Administration (As of 31 December 2020)
Subsidiaries					
Business Services Alliance Company Limited	2.15	2.98	-	The Company Group holds 100 percent stake	A PTT's executive (Mr. Terdkiat Prommool) is the Chairman of Business Services Alliance Co., Ltd.
Joint ventures					
Trans Thai-Malaysia (Thailand) Limited	2,811.94	3,180.60	3,841.51	The Company Group holds 50 percent stake No other PTT's personnel who may have conflict of interest holds the remaining stake	—
Total	2,814.09	3,183.58	3,841.51		

