



 **building on
our strong
foundation** 



Annual Report 2021
(Form 56-1 One Report)

Thai Oil Public Company Limited

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Financial Statements

Investors can find financial, related party transaction and company's past information in the Company's website www.thaioilgroup.com through 'Investor Relations'/'Financial Information' and 'Publication'

building on our strong foundation

From the first day to the 60th year...

Thaioil in its 60th year continues its stride into a secure future and grows to the centenary organization. To this end, we focus on ESG management, balancing our environmental, social, and governance practices with our vision of Empowering Human Life through Sustainable Energy and Chemicals, building on our robust foundation driving through 3 strategies known as 3V:

- 1) Value Maximization:
Integrated Crude to Chemicals
- 2) Value Enhancement:
Integrated Value Chain Management
- 3) Value Diversification:
Stable Earnings and New S-Curve.



**Value
Maximization**
Integrated Crude
to Chemicals



**Value
Enhancement**
Integrated Value Chain
Management



**Value
Diversification**
Stable Earnings and
New S - Curve



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Value Maximization

Integrated Crude to Chemicals

To strengthen Thailoil's status of leading regional refinery by growing the values of each individual molecules of our outputs from the Clean Fuel Project (CFP) and turning them into aromatics and olefins as well as high value products matching our customers' needs.



Clean Fuel Project: CFP

CFP enhances greater potential and competitiveness by way of process improvement, value addition through green products, and future business opportunities creation.



Petrochemical Investment in Indonesia

Instant investment earnings and low risks represent the upsides of investing in PT Chandra Asri Petrochemical Tbk (CAP) of Indonesia. This also accelerates the entry into high-value products and the petrochemical business.



Petroleum



Aromatics



Olefins



High Value
Product



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Value Enhancement Integrated Value Chain Management

To sustain present and future investment, we rely on supply chain management and establish a growth platform, ranging from feedstock supply to product delivery to regional customers. This is achieved through overseas affiliates' management of product distribution and logistics.



International Logistics & Infrastructure Project

Signing cooperation agreement with PTT under Project ONE is aimed to enhance competitiveness and growth opportunities.



Solvent and Chemical Business Expansion Project

Joint-venturing with JSKem Pte. Ltd. of Singapore and TSCChem India Pte. Ltd. of India, the region's leading solvent and chemical distributors.



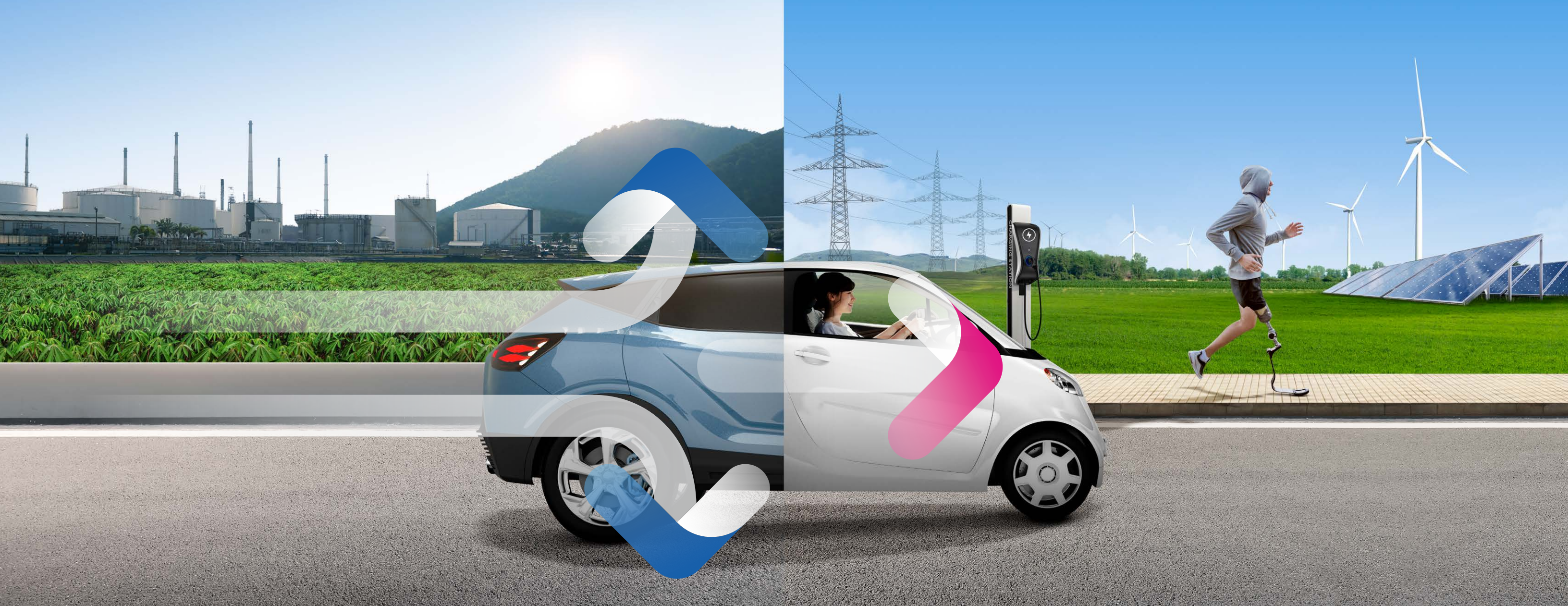
Regional Expansion



Integrated Value Chain Management as a Growth Platform



Joint Venture/ Mergers and Acquisitions



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Value Diversification

Stable Earnings and New S - Curve

For greater flexibility to sustain the volatility of the refining and petrochemical businesses, diversifying growth to lower profit fluctuation through stable revenue streams, emerging green businesses, and New S-Curve businesses, is executed.



Corporate Venture Capital (CVC) investment in pursuit of New S-Curve businesses

Investment in Venture Capital Alibaba, with an investment base in China.



Investment in startup businesses

Investment in Unabiz (a designer and manufacturer of Internet of Things (IoT) tools for various industries) and Mineed Technology Co., Ltd. (an innovator of detachable dissolvable microneedles for the medical industry).

 **Manufacturing
Technology**

 **Better-Living
Technology**

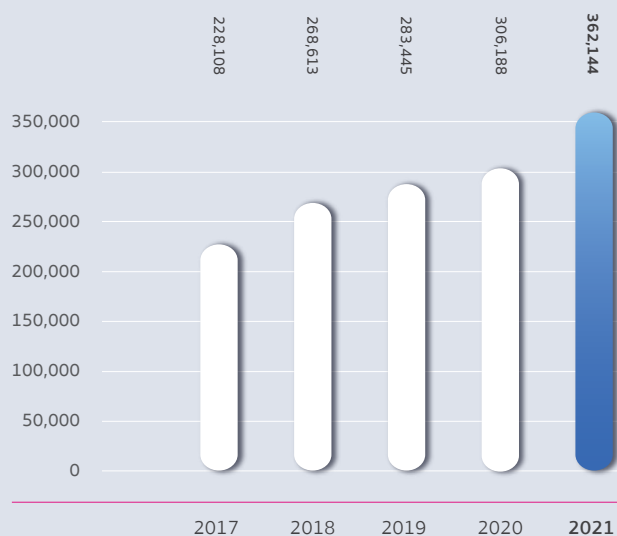
 **Mobility and
New Energy**

Financial Highlights

Total Assets

362,144

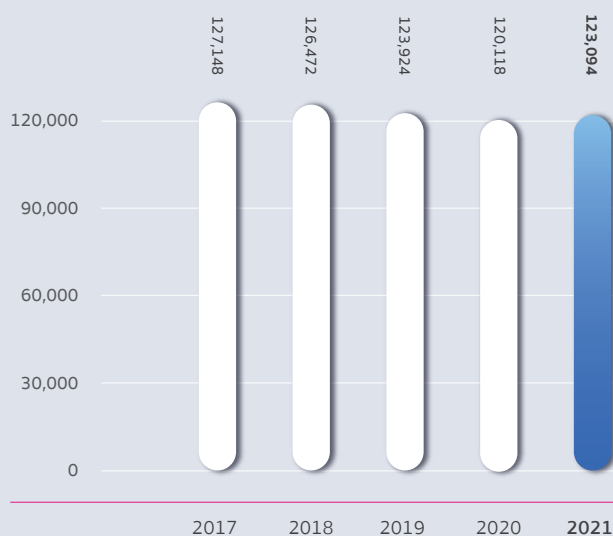
Million Baht



Total Equity

123,094

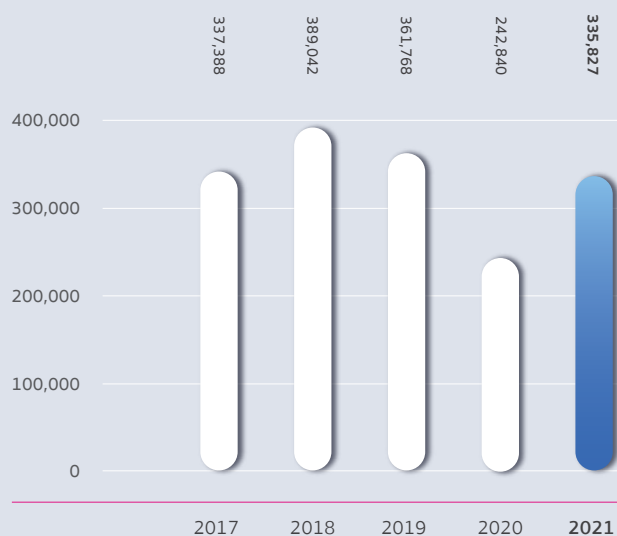
Million Baht



Sales Revenue

335,827

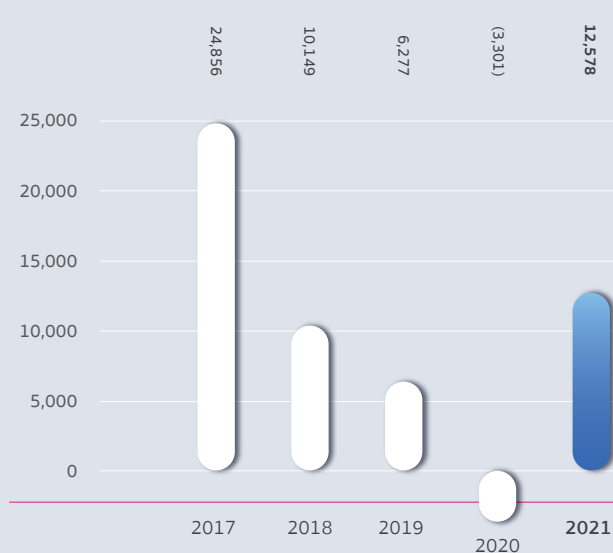
Million Baht



Net Profit

12,578

Million Baht



		2021	2020 ⁽¹⁾	2019 ⁽¹⁾	2018	2017
Operating Results						
Sales Revenue	Million Baht	335,827	242,840	361,768	389,042	337,388
EBITDA	"	28,142	(2,056)	14,149	20,239	36,925
Net Profit/(Loss)	"	12,578	(3,301)	6,277	10,149	24,856
Basic Earnings/(Loss)	Baht/Share	6.17	(1.62)	3.08	4.97	12.18
Financial Position						
Total Assets	Million Baht	362,144	306,188	283,445	268,613	228,108
Total Liabilities	"	239,050	186,069	159,521	142,141	100,960
Total Equity	"	123,094	120,118	123,924	126,472	127,148
Financial Ratios						
Interest Coverage Ratio	Times	7.8	(0.5)	4.3	5.1	11.2
Current Ratio	"	2.6	4.0	3.5	4.3	3.8
Net Debt to Equity Ratio	"	1.4	0.7	0.3	-	-
Return on Equity	Percent	10.6	(2.8)	5.2	8.3	21.7
Return on Assets	"	3.9	(1.0)	2.4	4.2	11.4
Important Information in Capital Market						
Annual Average	Baht/Share	54.38	43.95	68.26	86.88	84.23
Daily Closing Stock Price						
Market Capitalization	Million Baht	110,937	89,659	139,252	177,238	171,832
Dividend Payment	Baht/Share	2.60 ⁽²⁾	0.70	1.50	2.65	5.25
Dividend Yield ⁽³⁾	Percent	4.8	1.6	2.2	3.1	6.2
Book Value	Baht/Share	59.25	56.97	58.81	59.66	59.91

Remark :

⁽¹⁾ Re-presented the impact on the financial statements in accordance with Thai Financial Reporting Standards No. 5–Non-Current Assets Held for Sale and Discontinued Operations (TFRS 5).

⁽²⁾ Included the interim dividend for 2021 half-year results at the rate of 0.60 baht per share paid on September 23, 2021, and the remaining dividend of 2.00 baht per share is to be proposed to the 2022 Annual General Meeting of Shareholders for approval.

⁽³⁾ Calculated from the annual average of the daily closing stock price.

Message from the Board of Directors

For Thaioil and Subsidiaries, the year 2021 marked our 60th anniversary of existence. It was also another year that indeed challenged the knowledge, skills, and proficiency of the Company's personnel, as they faced several repercussions of the COVID-19 pandemic continuing from 2020



Professor Dr. Supot Teachavorasinskun
Chairman of the Board

Mr. Wirat Uanarumit
Chief Executive Officer and President



Dear Shareholders

For Thailoil and Subsidiaries, the year 2021 marked our 60th anniversary of existence. It was also another year that indeed challenged the knowledge, skills, and proficiency of the Company's personnel, as they faced several repercussions of the COVID-19 pandemic continuing from 2020, resulting in a sluggish global economy, and the growing environmental awareness which caused the changing trend of energy use, as well as control and limit of Greenhouse Gas (GHG) emissions. Hence, Thailoil and Subsidiaries must stand ready for such challenges and transformation with clear, efficient short-term and long-term strategic plans. The Board of Directors, management, and employees, to the best of their ability, leveraged their accrued knowhow, expertise, and experience to drive the management of the organization to overcome the crisis and achieve the performance goals without neglecting the investment projects according to strategic plans to ensure the foundation for future growth, sustainable quality of life, and bonding with human life.

Personnel: Key player in surviving the crisis

Thailoil and Subsidiaries are well aware that their personnel are the key force driving the organization through crises. It is therefore our top priority to protect, monitor, and control the spread of the COVID-19 virus among personnel by establishing and assigning the I-COVID Center to follow up, supervise, and prescribe measures to achieve the specified objectives such as work from homes, operation grouping, work clustering, and safe house arranged for those responsible for controlling and operating the refinery, as well as expedition of vaccinations to provide the most effective prevention of the spread of COVID-19 within the organization.

Navigating through the crisis with a strong foundation

The economic slowdown caused a plunge in demand for petroleum products and inevitably affected the performance of Thailoil and Subsidiaries. To deal with such adverse situation, Thailoil integrated the expertise, knowhow, and collaboration of all sectors to work on modifying process operation and production plans to align with shifting market conditions. Our strategies encompassed appropriate procurement of crude oil, a reduced proportion of the jet fuel output to only 7 percent, and increased outputs of marketable and High-Value Products (HVP). At the same time, we executed the following strategies: proactive marketing strategies to meet demand and maintain the customer base; expand the customer base to Indochina; research and develop innovation of HVP; and increase the proportion of commercial revenue, while execute efficient crude oil, product, and exchange rate hedging. Furthermore, new ideas were conceived to increase operational efficiency, margin improvement, as well as intensive measures to reduce operating expenses. As a result, Thailoil and Subsidiaries' profits surged by over THB 5,536 million and its expenses were trimmed by over THB 2,069 million.

With the cooperation and united efforts of all departments, including efficient and flexible operations throughout the business process, combined with the business structure with diversified risks from the volatility of the core business for which Thailoil had tirelessly striven to lay the foundation, balanced performance was achieved. In 2021, businesses relating to lube base oil, aromatics, and solvents commanded decent performances and were important contributors to Thailoil and Subsidiaries' profits of THB 12,578 million.

Scaling up the strength to a new sustainable chapter

Despite the unfavorable economic and industrial conditions for business operations in 2021, Thailoil and Subsidiaries maintained their commitment to moving forward under the direction and strategic plans for future growth, including the implementation of the Clean Fuel Project, the Euro 5 Fuels Project, and the capacity expansion of TOP SPP Co., Ltd., which continued to show steady progress despite the COVID-19 pandemic. as the business strategic plan also included the restructuring of power, marine transportation, and ethanol businesses, which were completed as planned. Furthermore, Thailoil and Subsidiaries continued to expand its business by investing in the olefins business in Indonesia, the procurement and distribution of chemicals and solvents in Singapore and India, as well as investing in technology and public health start-ups in an effort to pursue new business opportunities.

Strengthening the stability for sustainable success

In addition, Thailoil and Subsidiaries have executed measures to support the goals, operational outcomes, and future business growth, such as the preparation of capital by making long-term recapitalization plan, the extension of trade credit for the purchase of crude oil and condensate with PTT Plc, which had already been implemented, the sale of partly held shares in Global Power Synergy Plc, and the increase in its registered capital, which was in the process of submission to the shareholders for consideration and approval. As regards of information technology and the digital sector, Thailoil and Subsidiaries applied a digital system to enhance operational efficiency across the supply chain ranging from crude oil purchase to product distribution in parallel with the development of its cybersecurity system. Thailoil was certified ISO/IEC 20000-1: 2018, and the IT management was in accordance with the Information Technology

Infrastructure Library Framework, a specific standard for the management of IT services. As for developing personnel capability, Thaipol restructured its organizational management and prescribed guidelines for developing the skills and expertise of personnel to be prepared to drive the business in line with strategic plans in tandem with projects and activities organized to supervise and promote the quality of life of its personnel.

Sustainable growth alongside the community and society

Thaipol and Subsidiaries aimed to conduct business for sustainable growth and returns by adhering to the Environmental, Social, and Governance (ESG) aspects. To contribute to the solutions for the global climate change problems caused by GHGs, Thaipol set its sight on carbon neutrality by 2050 and net zero GHG emissions by 2060 (details in the Integrated Report 2021). Regarding social activities, Thaipol and Subsidiaries set up a project to help the public in the midst of the COVID-19 crisis, namely 'Sending out Energy, Buidling Will Power' by supplying fuels and cleaning agents, products of Thaipol and Subsidiaries, to public health agencies in Chonburi and all over the country to support their public services. In addition, a multitude of activities and projects were organized to improve the quality of life and well-being of the community and society on the occasion of our 60th anniversary such as volunteer projects to donate money to hospitals and various charities, construction of "Thaipol Eco Park" in Sriracha District, Chonburi, to serve as a green zone for public exercise and recreational activities, and the project to install solar power system for Laem Chabang Hospital, Chonburi, etc. To ensure confidence of all stakeholders in our compliance with the code of corporate governance, Thaipol upgraded the corporate governance across our supply chain through the Integrated Governance, Risk and Internal Control, Compliance (GRC) system to

ensure that all departments' operations were consistent, reduced redundancy, and achieved maximum efficiency.

Maintaining operational standard of excellence

The year 2021 was yet another one in which Thaipol and Subsidiaries were recognized and honored by various renowned organizations and institutions, both nationally and internationally, through awards and acknowledgment covering operation, management, finance, investor relations, and sustainability. Thaipol was selected as a member of Dow Jones Sustainability Indices (DJSI) for the ninth consecutive year in the oil & gas refining and marketing industry. We also won Thailand Energy Award 2021 in the category of energy management team in controlled plant by the Ministry of Energy, Honorable Mention Award at the NACC Integrity Awards 2021 event hosted by the Office of the National Anti-Corruption Commission, as well as SET Awards 2021 under the Sustainability Excellence, called Sustainability Awards of Honor, for the fourth consecutive year, among others. All these rewards indeed confirmed the standard of excellence in all aspects of Thaipol and Subsidiaries' operations.

In conclusion, the Board of Directors, management, and all employees extend their sincere appreciation to all shareholders for steadfastly supporting our operations. Thaipol and Subsidiaries maintains its commitment to utilizing over 60 years of knowhow, experience, and expertise passed on from generation to generation to form a robust foundation and dedicate itself to perform with its full potential to navigate through challenges and generate maximum benefits for the shareholders and all the stakeholders. We are now ready to build on that foundation to steadily march into the new and challenging chapter with preparedness in all aspects to create a good quality of life and sustainable growth alongside society.

Audit

Committee Report



Police General Aek Angsanonont
Chairman of the Audit Committee

Dear Shareholders,

Appointed by the Board of Directors (the Board), the current Audit Committee (AC) consists of four independent directors, all of whom command diverse expertise, skills, and experience. The AC is chaired by Police General Aek Angsanonont, with Associate Professor Dr. Pasu Decharin, Mr. Prapaisith Tankeyura, and Mr. Plakorn Wanglee serving as members. The AC's composition and qualifications are considered suitable, with Mr. Prapaisith and Mr. Plakorn qualified for reviewing financial statements' credibility against the requirements of Securities and Exchange Commission, Thailand (SEC) and Stock Exchange of Thailand (SET).

The AC independently executed Board-assigned and charter duties, which conform to the requirements and best practices for audit committees according to SEC and SET. In 2021, the AC held nine meetings with perfect attendance by all members, including consultation with the executives, the Chief of Corporate Internal Audit, the internal auditor, and the external auditor. In addition, the AC held one non-executive meeting with the external auditor for unrestricted consultation on the external auditor's work, its opinions, issues arising from audit and financial report scrutiny, together with its collaboration with the AC and Corporate Internal Audit Department.

The performance highlights of this year are as follows:

1. Financial Statements:

Collaborating with the external auditor and relevant executives, the Committee reviewed financial reports, including quarterly and annual, separate and consolidated financial data. It also examined disclosure of Key Audit Matters (KAMs) indicated in the auditors' report. To this end, the AC reviewed the credibility of estimated figures, executives' assumptions requiring discretion, transaction disclosure while obtaining clarification from the external auditor and executives to ensure that financial report preparation was accurately and credibly undertaken for the benefit of their users. The auditor has performed the auditing work and provided unqualified opinions.

2. Connected Transactions:

Having reviewed connected transactions or those posing potential conflicts of interest with that of Thailoil and Subsidiaries under SET's and SEC's announcements, the AC concluded that Thailoil and Subsidiaries had observed regular business practices, fairness, and sensibility in the best interests of Thailoil and its shareholders. Such transactions were also promptly disclosed to SET.

3. Review of Compliance with Laws, Corporate Governance, Risk Management, and Internal Control:

The AC reviewed management practices for systematic corporate governance and compliance to related laws and regulations. It closely kept track of preparation for new laws that will come into effect and reviewed risk management and risk management measures to ensure efficiency and effectiveness. Importantly, the AC paid attention to readiness for emerging risks and threats involving cyber security to ensure business continuity and prompt response to the fast-changing situation. The AC, moreover, followed the progress of Integrated Governance, Risk and Internal Control, Compliance (GRC), which links corporate governance, risk management and internal control, and proactive compliance with laws and regulations, to the operations, along with a clear assessment method. The AC also endorsed findings from internal control system sufficiency assessment as required by SEC to ensure that Thailoil commands appropriate and sufficient business internal control.

4. Internal Audit:

The AC approved strategic plans, annual and long-term audit plans, execution of plans, and audit outcomes while suggesting and monitoring improvements of significant issues together with reviewing internal audit freedom. The AC constantly valued the Corporate Internal Audit Department's manpower preparation and personnel development so that they become competent and perform efficiently and effectively. It advocated auditors' achievement of certificates for greater professionalism that creates sustainable value to the organization. The AC placed strong emphasis on continuous application of information technology to the audit process and upheld internal audit assessment of international professional standards, as well as assessed the performance of Vice President Corporate Internal Audit.

5. Appointment of the External Auditor for 2022 and Approval for Audit Fee:

In selecting the external auditor, the AC considered performance records, experience, independency, audit fees, and compliance with SEC's announcements. The AC resolved to nominate EY Office Limited (EY) as external auditor and the proposed audit fee for the Board's endorsement and submission to the 2022 AGM for shareholders' approval.

In conclusion, this year the Audit Committee executed its charter duties and responsibilities with diverse expertise, prudence, and freedom while providing creative views and advice for equal benefit of all stakeholders. The Committee concluded that Thailoil and Subsidiaries had valued efficient and effective business conduct, prepared credible and material financial reports in line with financial reporting standards, along with complete adequate disclosure of connected transactions with potential conflicts of interest. Thailoil and Subsidiaries commanded sound corporate governance, sufficient risk management, and a suitable and adequate internal control process in full compliance with applicable laws and regulations.

February 9, 2022

On behalf of the Audit Committee



(Police General Aek Angsanant)

Chairman of the Audit Committee

Thai Oil Public Company Limited

Risk Management

Committee Report



Dr. Buranin Rattanasombat
Chairman of
the Risk Management Committee

Dear Shareholders,

The Risk Management Committee (RMC), appointed by the Board of Directors (the Board), comprises of three members, who possess knowledge, capability, experience, and sound understanding of the business. Currently, the RMC is chaired by Dr. Buranin Rattanasombat, along with Ms. Phannalin Mahawongtikul and Mr. Wirat Uanarumit as members. To support the Board, the RMC supervises corporate risk management to ensure business goal attainment while creating confidence and creditability among investors and stakeholders.

The RMC defines and reviews the corporate risk management framework, policy, and processes, performing duties as indicated in the Risk Management Committee Charter. the Committee also provides recommendations for efficient and proper risk management approaches to ensure their suitability with business operation and their accordance with strategic directions and business plans. Moreover, the RMC consistently and effectively advocates and improves risk management practices throughout the organization on a par with international standards to forge corporate culture while continuously monitoring results of corporate risk management and that of

various projects' risk management. A total of seven committee meetings were held with full attendance of all members. The first two meetings were chaired by Ms. Chularat Suteethorn before completing her term. The RMC then agreed to appoint Dr. Buranin Rattanasombat as the chairman, who chaired the remaining meeting sessions. Highlights of the RMC meeting include:

1. Endorsing the risk management plan for investing in a petrochemical joint venture according to the strategy
2. Endorsing the risk management plan for commercial preparation for the Clean Fuel Project (CFP)
3. Endorsing risk management of interest payment of debentures issued in Thai baht due for maturity in March 2024
4. Endorsing corporate risk profiles together with measures and Key Risk Indicators (KRI) of 2022
5. Endorse the change of target price and framework for crude and product hedging
6. Acknowledging results of hedging and margin hedge strategy

7. Acknowledging the result report on FX Hedging, investment cost, and CFP progress
8. Acknowledging direction of FX hedging for assets and debts in US dollar (FX natural hedge)
9. Acknowledging, monitoring, and providing recommendations for results of corporate risk management and quarterly performance of the RMC

The RMC concluded that in 2021, Thailoil had developed a comprehensive corporate risk management system for all aspects of risks and commanded continual risk management practices to cope with prevailing circumstances. The meetings were regularly and timely arranged to review key and urgent risks, rendering Thailoil and Subsidiaries' risk management effectiveness. Thailoil indeed efficiently and suitably managed key corporate risks which were controlled within indicated risk appetite.

December 24, 2021

On behalf of the Risk Management Committee



(Dr. Buranin Rattanasombat)

Chairman of the Risk Management Committee

Thai Oil Public Company Limited

Nomination and Remuneration Committee Report



Air Chief Marshal Suttipong Inseeyong
Chairman of the Nomination
and Remuneration Committee

Dear Shareholders,

The Board of Directors (the Board) appointed the Nomination and Remuneration Committee (NRC), which consists of at least three directors, the majority of whom must be independent directors. The current NRC is chaired by Air Chief Marshal Suttipong Inseeyong (independent director), with Associate Professor Dr. Pasu Decharin (independent director) and Mr. Terdkiat Prommool serving as members.

The NRC is charged with selecting qualified persons under Thailoil's process and criteria for nomination as directors and the Chief Executive Officer (CEO) and President. It also selects directors to serve on Board Committees and reviews structure and criteria for directors remuneration, with outcomes proposed for the consideration of the Board and the Annual General Meeting of Shareholders (AGM) as required by law.

In 2021, the NRC executed all its charter duties, holding four meetings fully attended by all incumbent members (meeting attendances shown on page 97).

Below are the highlights of the NRC's execution in 2021:

Nomination

1. Selected and nominated qualified persons as directors for the Board in replacement of directors with term completion in 2021 and proposed the list to the Board and the AGM. The three directors nominated for another term were Professor Dr. Supot Teachavorasinskun, Associate Professor Dr. Pasu Decharin, and Mr. Wirat Uanarumit. The two new directors appointed to replace those completing their terms were Dr. Prasert Sinsukprasert and Dr. Sompop Pattanariyankool.
2. Recruited and nominated directors to replace Mr. Yongyut Jantararotai and Ms. Duangporn Thiengwatanatham, who resigned during the year, and proposed the list to the Board. The nominated directors included Dr. Pailin Chuchottaworn as an independent director and Mr. Suchat Ramarch as director, replacing those who resigned.
3. Selected and nominated directors for the Board Committees: namely, the NRC, the Corporate

Governance Committee (CGC), and the Risk Management Committee (RMC), and proposed the lists for the Board to appoint in replacement of vacancies due to resignation or term completion. Dr. Prasert Sinsukprasert was appointed to the CGC. Dr. Buranin Rattanasombat was vacated from member of the NRC to the RMC. Mr. Terdkiat Prommool was appointed member of the NRC, replacing Dr. Buranin Rattanasombat.

The recruitment and nomination of experts to the Board was strictly executed under the process and criteria stated in the Corporate Governance and Code of Conduct Manual for the endorsement or approval of the Board or the AGM as required by law. The committee added to the consideration the Directors' Pool of the State Enterprise Policy Office and the IOD Chartered Director of the Thai Institute of Directors Association. The Committee also reviewed individual and overall qualification components of the Board to suit business size, type, complexity, and diversity of businesses. The qualification taken into consideration includes education, proficiency, skills, experience, and specialized competency related to Thail's businesses as well as independency prescribed by the law and Thail.

4. Organized orientation and provided useful documents for performing duties to newly appointed directors. In 2021, four new directors were appointed: namely, Dr. Prasert Sinsukprasert, Dr. Sompop Pattanariyankool, Dr. Pailin Chuchottaworn, and Mr. Suchat Ramarch.
5. Encourage and supported the Company to create opportunity for minor shareholders to nominate candidates for directors before proposing to the 2022 AGM (during September 27 to December 31, 2021).

Remuneration

1. identified remuneration payment rate and criteria before proposing for the approval of the 2021 AGM. The survey of comparison with leading peer companies revealed that Thail's remuneration payment rate and structure remained appropriate. Therefore, the same remuneration rate as that of 2020 had been proposed and was already approved by the 2021 AGM.
2. Approved the 2020 performance assessment of the CEO and President as well as annual salary adjustment (merit) and bonus before tabling it for the Board's consideration.
3. Approved the review of the criteria of annual salary adjustment (% merit) of the CEO and President.
4. Acknowledged the Director Remuneration Survey Report 2021 by the Thai Institute of Directors Association.

January 21, 2022

On behalf of the Nomination and Remuneration Committee



(Air Chief Marshal Suttipong Inseepong)

Chairman of the Nomination and Remuneration Committee
Thai Oil Public Company Limited

Corporate Governance

Committee Report



Police General Aek Angsanonont
Chairman of the
Corporate Governance Committee

Dear Shareholders,

Good corporate governance (CG) and Code of Conduct represent an integral part of the core mission to which Thai Oil Plc has always been strictly committed since it is believed to be one of the essential factors to ensure sustainable growth. The Board of Directors (the Board) has, therefore, appointed the Corporate Governance Committee (CGC) to take charge of formulating of policies and guidelines, supervising, monitoring, and advocating Thailoil and Subsidiaries' operation to be in line with policy and practices indicated in CG and Code of Conduct. Made up of three directors, the CGC is chaired by Police General Aek Angsanonont (independent director), along with General Kukiat Srinaka (independent director) and Dr. Prasert Sinsukprasert (director).

In 2021, the CGC held four meetings with full attendance of all members. The Committee completely performed all their duties under the charter and as assigned by the Board with regular reports of the task outcomes submitted to the Board. The performance highlights are summarized below:

1. Development of CG Guidelines—In 2021, Thailoil reviewed policies, principles, and guidelines concerning corporate governance and anti-corruption, following up

and benchmarking them against regulations, announcements, and guidelines on corporate governance of the Securities and Exchange Commission, Thailand (SEC) and the Stock Exchange of Thailand (SET) as well as CG assessment criteria of various institutes. Policies, principles, and guidelines in Thailoil and Subsidiaries were found to be up to date, suitable, and fully in line with various criteria, as reflected in 2021 Corporate Governance Assessment of Thai Listed Companies (CGR), which Thailoil was scored 'excellence' (90-100 points)—the highest level for 13 consecutive years, and was ranked top score for three years consecutively.

2. Supervision, Promotion, and Monitoring of Compliance with CG Policy, Anti-corruption Policy, and Code of Conduct—Results in this area of work are summarized below:

- >> Allowing shareholders to propose items on the agenda of Annual General Meeting of Shareholders (AGM) and raise a proposed name of expert for nomination as director candidate
- >> Devising a work plan for the arrangement of 2021 AGM in line with laws and regulations, and guidelines

on good corporate governance as well as AGM Checklists of the Thai Investors Association, for which Thailoil was given full 100 marks for six consecutive years. Some measures were also laid down to prevent the spread of COVID-19 according to public health regulations and recommendations

- >> Designing an assessment form and making consideration of the 2021 performance of the Board
- >> Operating under Integration Corporate Governance, Risk and Internal Control, Compliance (GRC)
- >> Providing advice, suggestions, and recommendations in support of TOP Solvent Co., Ltd., one of Thailoil subsidiaries, to be certified as a member of Thai Private Sector Collective Action Against Corruption (CAC)
- >> Organizing activities to encourage staff to work transparently and free from corruption through online channels; for example, PTT Group CG Day 2021, CG Work from Home, among others

Thailoil, moreover, carried out some other projects and activities to promote CG among various groups of stakeholders. Some of the projects are:

- >> Using online channels to provide critical information concerning the operations for shareholders, investors, and analysts on a regular basis throughout the year
- >> Arranging and reviewing the compliance with Service Level Agreements (SLA) made with customers
- >> Developing digital tools for additional procurement in the tendering process and contractor management process in the refinery
- >> Raising workforce potential to ably drive current and future businesses, taking care of personnel's well-being through the 5 Happiness projects, implementing measures to prevent staff from COVID-19 infection, and continuously minimizing risks in business operations of Thailoil and Subsidiaries

3. Corporate Social Responsibility (CSR)—Regarding management of relations with community around the refinery neighborhood, Thailoil keeps local people updated with business movements, listens to their problems on a regular basis, and organizes various activities that benefit people's better quality of life. There were altogether over 150 activities in areas of education, public health, religion, culture and tradition, and environment conservation, some of them were carried out online to ensure the continuity of the projects despite COVID-19 pandemic. These activities are, for example, the **"Thailoil Sculpturing Youth's Dream to Excellence in Futsal and Football skills"** project, in which professional football players were invited to share their experience online and to give inspiration to the youth; online English teaching; supporting tools and equipment needed for COVID-19 prevention. Attempts to regularly organize these activities earned Thailoil as high as 97 percent in the survey on community engagement carried out by an independent consultant.

As for social development activities at the national level, Thailoil provided aid during the spread of COVID-19 pandemic under the **'Sending out Energy, Building Will Power'** project, in which Thailoil made a contribution of fuels and chemical cleaning agent produced by Thailoil and Subsidiaries, and contribution of medical supplies and other necessary products to public hygiene in Chonburi and other provinces across the country. Many social support activities in many other aspects have also been continuously carried out, including the **Installation of Solar Power System** project at Laem Chabang Hospital, Chonburi, and the **Smart Farming** project, in which innovation and technology were brought in to support farming and production of agricultural products to achieve higher income and increase product distribution channels. To commemorate Thailoil's 60th anniversary, **Thailoil's 60th**

Anniversary ‘You Start...We Fulfill Volunteer Project’ and ‘Thaioil’s 60th Charity Virtual Run 2021’ were held. In these two projects, the number of Thaioil staff’s volunteer activities and running distance were turned into cash contribution to hospitals and charity organizations. **Thaioil Eco Park**, a project initiated in Sriracha district, Chonburi, to provide a green area where local people can use as an exercise and recreational ground, is scheduled for completion in 2022.

4. Sustainable Development (SD)–The major SD activity was the study to achieve Net Zero Greenhouse Gas Emission target by 2060 in response to growing awareness of climate change and natural disasters. Improvements have been made to align the operations with sustainability assessment criteria, such as revision of human rights in workplace which was followed by announcement of additional policy on non-discrimination and prohibition of cruelty in the organization, revision of the tax policy to express determination to not use tax free countries–known as tax haven–to avoid tax payment, ISO 27001 certification of information security management standard for all key operations, and promotion of corporate culture involving sustainability among staff at all levels using various communication channels on a regular and continuous basis.

With the strong determination to execute various a forementioned activities, Thaioil has been widely accepted at national and international levels. This could be evidenced by being selected as a Dow Jones Sustainability Indices (DJSI) member for the ninth consecutive year, winning The honorable mention award at the NACC Integrity Awards 2021 from the Office of the National Anti-Corruption Commission, and winning the Sustainability Awards of Honor at SET Awards 2021 in the Sustainability Excellence group for the fourth consecutive year, among others.

These achievements have confirmed Thaioil and Subsidiaries’ standards of corporate governance, social responsibility and sustainability management, which were founded on efficient cooperation among the Board, executives and staff members. The CGC is, thus, confident that Thaioil will continue to prosper and be well accepted by all groups of stakeholders, able to create long-term added value to shareholders in a sustainable manner.

January 20, 2022

On behalf of the Corporate Governance Committee



(Police General Aek Angsanant)

Chairman of the Corporate Governance Committee

Thai Oil Public Company Limited

Thaioil and Subsidiaries' Vision, Mission, and Strategies



For over 60 years, Thaioil and Subsidiaries have been determined to refined knowledge and long-accrued experience to remain an organization steep in potential for production, marketing, and management in the energy industry, able to create sustainable quality of life for the Thai people in pursuit of proudly becoming a sustainable centenary entity.

In 2021, Thaioil and Subsidiaries continued to focus on operation to acheive the **Vision of Empowering Human Life through Sustainable Energy and Chemicals**, with the **Mission** to **enrich stakeholders' well-being and deliver sustainable returns built upon innovation, technology, and resilient portfolio, with top-class management and accountable corporate governance**. Their goal is to promote sustainable organizational growth by extending the petroleum business into the petrochemical and high-value product businesses to meet customers' future needs, achieve top-quartile investment returns, lower earnings volatility through business diversification to enhance the flexibility of investment portfolio with due consideration for all stakeholders' interests as well as Environmental, Social and Governance (ESG) to ensure the sustainability of business operation.

To achieve the Vision and Mission, Thailoil and Subsidiaries set **strategic goals to become a robust energy and chemical company in parallel with delivery of sustainable returns and an improved quality of life to all stakeholders** through three key strategies and approaches (3V) as follows:



Value Maximization: Integrated Crude to Chemicals—by integrating the value chains of current businesses in parallel with the pursuit of petrochemical investment and extension to high-value products to create value addition and to enhance operation flexibility to achieve increased competitiveness through optimization of the existing production base to respond to customers' needs. This is divided into 4 business units as follows:

Refinery: the core business and production base of feedstock for petrochemical products with investment in the Clean Fuel Project (CFP) to enhance operation flexibility and long-term competitiveness, contributing to enhancement of national energy security during the energy transformation

Aromatics: an extension of the refining business to satisfy aromatics demand in the region

Olefins: an extension of the refining business in the form of a joint venture in Indonesia, a breakthrough to regional market to grow further steadily

High-Value Product (HVP): product development through process adjustment and joint ventures with business allies to create HVPs cooperating with allies and customers and to counteract possible market volatility in the future



Value Enhancement: Integrated Value Chain Management—by integrating operations and value chain management within Thailoil and Subsidiaries to sustainably enhance competitiveness and making use of digital platform and cooperation with business allies, to facilitate product development and distribution as demanded by the market, with focus on the regional market where demand is high, and to seek for more proper investment opportunities in the region.

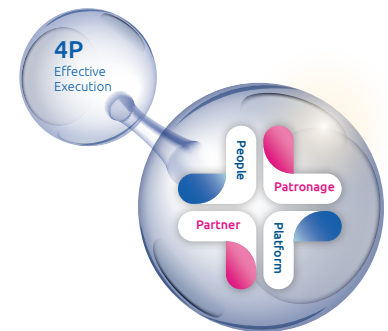


Value Diversification—by diversifying investment portfolio while seeking new business opportunities in accordance with future trends to secure stable income and greater investment portfolio resilience, through two strategies:

Stable Earnings from the Power Business: with emphasis on investment in the renewable-energy base power generation to support power security and generate stable earnings for Thaipower and Subsidiaries

New S-Curve Businesses: through investment in corporate venture capital (CVC) and step out businesses as well as commercialization of innovations for more resilient investment portfolio, in line with industrial trends and energy transformation

To efficiently realize these strategies, Thaipower and Subsidiaries focus on 4Ps for effective execution: namely, 1) People, by grooming their potential to drive current and future businesses; 2) Patronage, by focusing on delivering value and catering to the needs of customers, partners, investors, shareholders, the government, and communities, as well as forging cooperation for business expansion; 3) Partner, by forging collaboration with business allies both domestic and international for product and business development; and 4) Platform, by optimizing the current platforms, including the existing business platform, knowledge platform, and digital platform to enhance the efficiency of support for business expansion. In the meantime, Thaipower and Subsidiaries value stewardship of the environmental, social, and corporate governance to ensure the achievement of truly becoming a sustainable organization.



32 Awards and Certificates of our 2021 Achievements



4 Awards | Operation

- PTT Group OEMS Award 2021 (Platinum), recognizing Thailoil's Operational Excellence Management System (OEMS)
- Two PTT Group Operational Excellence Awards (Bronze), recognizing Best Practice Project
- The IT Service Management System Certificate for ISO/IEC 20000-1: 2018, presented by Bureau Veritas Certification (Thailand) Co., Ltd.
- No Major Non-Conformity found in the ISO management system audit, with the best ISO audit result in five years

5 Awards | Finance and Investment

- Fastest Growing Investor Relations Energy Company Award at the International Finance Awards 2021 event
- Fastest Growing Energy Company Thailand 2021 Award at the International Business Magazine Award 2021 event
- Most Organised Investor Relations Award, presented by the Alpha Southeast Asia journal
- Best Investor Relations by Company Award at the 11th Asian Excellence Award 2021 event
- Best Investor Relations Team Award at The Asset ESG Corporate Awards 2021 event

5 Awards | Management

- Asia's Best CEO Award at the 11th Asian Excellence Award 2021 event
- Asia's Best CFO Award at the 11th Asian Excellence Award 2021 event
- Thailand Top Company Awards 2021, Top Management Award category
- Model Organization for Human Rights Award 2021
- Score of 100 (top score) on the AGM Checklist 2021

11 Awards | Sustainability

- Ninth consecutive year of membership of Dow Jones Sustainability Indices (DJSI) in the Oil & Gas Refining and Marketing Industry group
- Gold Class sustainability rating (seventh year) in the Oil & Gas Refining and Marketing Industry group at the S & P Global Sustainability Award 2021 event
- Most Innovative Ecosystem Award, Public Utilities and Energy category, at the International Finance Awards 2021 event
- Strongest Commitment to Sustainable Energy in Southeast Asia Award, presented by the Alpha Southeast Asia journal
- The Asset ESG Corporate Awards 2021 (Platinum), presented by The Asset journal
- SET Award 2021, Sustainability Excellence category, entitled Sustainability Awards of Honor
- Thailand Sustainability Investment (THSI) Award 2021
- 'Sustainable Stock' for listed company from Sustainability Disclosure Award 2021, presented by Thaipat Institute
- Thailand Energy Award 2021, recognizing excellent team for energy management in controlled plant, presented by the Ministry of Energy
- Low Emission Support Scheme (LESS) certificate, presented by the Ministry of Natural Resources and Environment
- Excellence Award from Low-Carbon and Sustainable Business Ranking 2021, attested by Thailand Greenhouse Gas Management Organization (Public Organization)

5 Awards | Corporate Governance

- ASEAN Top 20 Publicly Listed Companies (PLCs) and Country Top 3 PLCs (Thailand), out of the ASEAN CG Score assessment
- The Strongest Adherence to Corporate Governance, presented by the Alpha Southeast Asia journal
- The Honorable Mention Award at the NACC Integrity Awards 2021, presented by the Office of the National Anti-Corruption Commission
- Renewed CAC membership and first-time CAC membership certification of TOP Solvent Co., Ltd.
- Excellent assessment of corporate governance report of Thai listed companies for 2021 (CGR), with the highest score

2 Awards | Social Responsibility

- Best Strategic Corporate Social Responsibility, presented by the Alpha Southeast Asia journal
- CSR-DIW Continuous Award



Summary of Business Achievement in 2021



1 Business Excellence amid Global Challenges and Changes



The year, 2021 is considered another year of big challenges for Thaipetroleum and Subsidiaries due to the spread of COVID-19, which has prolonged since 2020. The pandemic brought about structural change in both business operations and people's way of life, causing demand for petroleum products to shrink, particularly the falling demand for jet fuels affected by air travel restrictions around the world. In addition, there existed uncertainties in the energy industry, including increasing business competition, energy transformation trend, increase in the number of electric vehicles, and the use of renewable energy, as well as higher pressure on the environmental aspect. Various governments, including Thai government, introduced even stricter policies concerning the environment to move towards

Net Zero Greenhouse Gas (GHG) Emission. These factors altogether decelerated the world economy, especially Thai economy which has to rely on export and tourism sectors, thus resulting in decrease in energy demand.

By the corporate culture and by active cooperation of Thaipetroleum and Subsidiaries to achieve Business Excellence through Operational Excellence in parallel with attention to the environment, the society, and stakeholders, Thaipetroleum and Subsidiaries recorded Gross Refining Margin including stock gain/(loss) (Accounting GRM) of 6.9 USD per barrel and Gross Integrated Margin including stock gain (loss) (Accounting GIM) of 10.1 USD per barrel. This was due to of the continuous growth of the lube base oil, aromatics, and Linear Alkyl Benzene (LAB)



businesses coupled with power plant utilization and availability that could be achieved as planned. Moreover, the solvent business successfully made a continuous growth oversea. Thailo and Subsidiaries registered a net profit of THB 12,578 million.

In 2021, Thailo and Subsidiaries made some business adjustments to attain higher resilience, and to able to keep up with the changing situations in order to achieve Business Excellence. In this regard, Thailo and Subsidiaries emphasized on formulation of proactive plans and operations, focusing on three areas, namely short-term maximized profitability, long-term strategic execution, and protection of staff and contractors working on the premises of Thailo and Subsidiaries amid the spread of COVID-19 (People First Approach). Accomplishments of each area are detailed below:

1) **Short-Term Maximised Profitability**—through integrated organizational management to achieve operational

excellence, commercial excellence, and financial excellence, which stress productivity improvement and profit in tandem with cost saving. Successes in this aspect are:

>> **Operational Excellence:** with emphasis on Group Integration among refining, aromatics, lube base oil, and LAB businesses. A plan on joint production and product distribution was drawn to attain highest efficiency and to come up with products of the value and quality higher than simple refineries to satisfy market demand. Despite the prevailing COVID-19 pandemic and the fluctuating market during 2021, the effective and flexible operations throughout Thailo and Subsidiaries' value chain kept the refinery utilization at 100 percent of its capacity. Some adjustments were made to the refining process to ensure alignment with the changing market conditions, including selection of crude of the proper type and volume, reducing

jet fuel production while increasing production of high-value products and other products to meet market demand, such as gasoline, diesel, as well as feedstock required by subsidiaries. The effort was aimed for achieving production efficiency and highest possible profit. Such effort was also connected with power and solvent business to strengthen the value chain. Furthermore, Thailoil and Subsidiaries were fully aware of and prioritized safety of staff, operators, and neighboring communities. As a result of operational excellence, Thailoil and Subsidiaries have continuously been recognized as one of the refineries in the first quartile in Asia Pacific in terms of both continuous operational availability and safety.

- >> **Commercial Excellence:** with emphasis on proactive marketing strategy. Work processes were made more resilient with customer focus through expansion of customer base both in Thailand and abroad, and increase in production volume in Thailand and target countries with high economic growth, such as those in Indochina (CLMV) as well as Indonesia and India. Proportion of end users and high value product sales were increased to expand the customer base. The proper type and amount of crude oil and feedstock were acquired through more flexible procurement method while the good relationships with local and foreign customers were constantly upheld in a professional manner through products that meet the required standard with on time delivery, a wider range of product offerings, service and solutions rendered to customers quickly and accurately, along with product receiving process of acceptable safety standard.

As a result of the endeavors mentioned above, Thailoil and Subsidiaries remained the country's major fuel producer with sales volume accounting for

28 percent of the overall demand for petroleum products and domestic sales volume of 80 percent of production capacity while expansion of product distribution in Southeast Asian markets could be achieved. Importantly, customer engagement score reached 94 percent.

- >> **Financial Excellence:** with funding preparation to support investment plans and sustain the volatile financial situations, such as extended trade credit for crude and condensate procurement with PTT Plc, sale of some shares in Global power Synergy Plc, and increase in registered capital, as well as cost management and cash cost control at a competitive level of 2.6 USD per barrel.

Recognizing risks inherent in the business operations, Thailoil and Subsidiaries place emphasis on proactive risk management. To this end, assessment was given to uncertainties caused by both internal and external factors, which may affect both short-term and long-term operations and investments through risk management of strategies, corporate governance, and crude oil price. The Company focused on volatility of the spread between feedstock and products, as well as foreign exchange risk management is also recognized to avoid any possible effect. This year, Thailoil and Subsidiaries adopted the hedge accounting method under Thai Financial Reporting Standards No. 9 (TFRS 9) for managing risk from foreign currency exchange between USD debentures and sales revenue which was USD and linked to USD.

- >> **Productivity Improvement:** carried out by 'extraordinary people' from all sectors to achieve 'extraordinary efforts' and to come up with innovations to ultimately increase profit while decreasing operating cost, detailed below:

- Margin improvement—through various projects, including Hydrocarbon Management Review, of which most benefit was derived from the wider variety of unconventional crude, adjustment of crude procurement to search for better and more suitable types and amount of crude, adjustment of the production process to increase the proportion of high-value products, better energy efficiency in the production process, more sales of petroleum products both in domestic market and in Southeast Asian region, energy management and loss improvement, etc. Efforts on productivity improvement earned Thail and Subsidiaries margin improvement of over THB 5,536 million.
- Cost reduction management—through two main projects. One is operating cost management, dubbed as Orchestra, in which a number of subprojects are initiated including the Saving Tips Saving TOP (STST) project to forge a corporate culture, Maintenance Reliability Program in which analysis was made into equipment lifetime to investigate and efficiently identify maintenance plan, procurement management, a program to optimize catalysts and chemicals. The other project is financial cost reduction management, known as Symphony, in which subprojects are searching for new sources of investment funding, working capital management, value addition to excess cash, and tax management, among others, thus reducing expenses over THB 1,313 million. In addition to these projects, combined efforts from all work units resulted in an additional cost reduction of THB 756 million, higher than the set target.

Endeavors to achieve business excellence through brainstorming for planning and implementation in response to the market demands and volatile situations, to maintain competitiveness, and to increase profit in parallel with cost control are

recognized as integral parts to increase Thail and Subsidiaries' overall operating results to a good level.

2) Long-Term Strategic Execution—by earnestly developing and driving business plans under the concept 'Building on Our Strong Foundation'. This is to use the strong foundation of Thail and Subsidiaries for expansion to sustainable energy and petrochemical businesses to realize the corporate vision while responding to short-term, medium-term, and long-term strategies continuously. Prompt and proper strategies will enable Thail and Subsidiaries to adjust to the changing environment and be ready for taking on new challenges and increasing competition, to develop potentials and enhance competitiveness, to create value addition and grow the businesses, which will benefit the society and the nation as a whole. This was executed through three aspects of business strategies (3V), i.e., Value Maximization: Integrated Crude to Chemicals; Value Enhancement: Integrated Value Chain Management; and Value Diversification. Projects Thail and Subsidiaries managed to complete in 2021 are:

- >> Investment in the petrochemical business with PT Chandra Asri Petrochemical Tbk (CAP), the largest petrochemical producer in Indonesia. The project is to minimize business risk, providing immediate return on investment for Thail and Subsidiaries and enabling Thail and Subsidiaries to move faster towards petrochemical and high-value product businesses.
- >> Construction of nine crude oil storage tanks with a combined storage capacity of 700 million liters or 4.4 million barrels and laying a three-kilometer pipeline to the refinery. A power substation was also constructed equipped with a pumping station to pump water and oil back to the refinery, which was completed in Q1/2021.

- >> Construction of a new raw water pipeline from Bang Phra Reservoir to increase efficiency and reliability of raw water supply system, also to replace the old pipeline and water pumping station which have a long service life and may impose risks future use. The new pipeline, which can also accommodate higher volume of water demand for future projects, was completed in Q4/2021.
- >> Entering into joint ventures with business allies for solvent and chemical distribution business, namely JSKem Pte. Ltd. in Singapore and TSCChem India Pte. Ltd. in India.
- >> Signing an agreement on cooperation with PTT Plc under the Project ONE aimed to synergize integrated international trade flows, and add value to petroleum and petrochemical trade, and the management of distribution and derivatives trading to enhance energy security and ensure value addition to PTT Group for sustainable international trading
- >> Restructuring the marine transportation and ethanol business units by selling all shares in Thailoil Marine Co., Ltd to Phurich Marine Co., Ltd., and selling and reducing shareholding in Ubon Bio Ethanol Plc (UBE) from 21.28 to 12.39 percent of the total shares after UBE's Initial Public Offering
- >> Investment in the form of Corporate Venture Capital (CVC), a key mechanism in searching for New S-Curve business opportunities for Thailoil and Subsidiaries. In 2021, such investment was made in one venture capital fund, the Alibaba fund whose investment base is in China, and investment in two startups, namely the Unabiz Group based in Singapore and Taiwan, a designer and producer of Internet of Things (IoT) equipment used in various industries; and Mineed Technology Co., Ltd., a designer of

detachable dissolvable microneedles used in the pharmaceutical industry. This is the Thailoil and Subsidiaries' first investment in Thailand's startup business.

- >> R & D commercialization—There were two innovative projects in 2021 that have been commercialized with some income already generated, namely TOP-PPC Pilot Plant Service, which is a cooperation between Thailoil and the Petroleum and Petrochemical Collage of Chulalongkorn University to provide catalyst analyses and tests for other companies; and Crude Compatibility Prediction Model, a system designed for prediction of sediment accumulation in crude blending.

3) People First: Continuous Providing Protection and Ensuring Well-being of Staff and Contractors Working in Thailoil and Subsidiaries amid the spread of COVID-19—

by administration through the I-COVID Center which was established in 2020 as a center for managing the situation and for devising measures to prevent virus spread in the organization. Under the 3P (Promote, Protect, Preserve) and 3C (Clustering, Control, Conformity) initiatives, preventive measures were launched to protect staff members according to their nature of work to ensure highest efficiency. Staff, meanwhile, were encouraged to follow the THAM-D measures of Thailoil and Subsidiaries. Thailoil Chana application was also introduced as a communication channel to regularly provide critical information needed for both workers and stakeholders. Moreover, two doses of the COVID-19 vaccine were procured and administered to staff and contractors working in the operating areas, followed by the booster dose in Q4/2021. Preparation was also made to get ready for staff's return to work under the 'new normal' way of life.



2

Enhancement of Organization's Core Competence through Continuous Human Resource Development and Application of Modern Technology



Thaioil and Subsidiaries recognize the need to enhance staff's competence to drive current and future business. The process covers recruiting suitable personnel, using matrix organization, and assigning staff overseas at joint venture companies, which corresponds to Thaioil and Subsidiaries' strategy. Staff were divided into two groups for development, comprising expertise development to achieve business excellence and potential development as a business explorer to drive growth of both core business and expansion into petrochemical and high-value products, solvent, power businesses, as well as new ventures as dictated by the strategies. Moreover, staff's work experience was enhanced by promoting and managing staff's quality of life to win staff satisfaction and bond with the organization, which enabled Thaioil and Subsidiaries to maintain their workforce productivity at the 75th percentile when compared with competitors in the same industry.

Notably, digitalization has been embraced in Thaioil and Subsidiaries to enhance their current operations and to support future business expansion. Digitalized systems have now been applied throughout the value chain to enhance production efficiency and competitiveness, ranging from crude procurement to product distribution under the Value Chain Digital Platform (VCD) project, which created a new experience for stakeholders

involved while reducing operating cost. In an attempt to become an organization with data-driven decision-making with quality and reliability, Thaioil and Subsidiaries carried out such projects as centralized data platform to keep data management at one single point, which benefited faster analysis and decision making; and OneTrust system established to ensure compliance with the Personal Data Protection Act (PDPA); as well as infrastructural preparedness and cyber security. In 2021, Thaioil and Subsidiaries received the ISO/IEC 20000-1: 2018 certification on IT service management system, demonstrating determination to raise IT management to international standard. In this respect, incident management, problem management, and change management have been carried out systematically based on the Information Technology Infrastructure Library (ITIL) Framework and IT Service Management (ITSM). The operation management for work from home has been undertaken amid the spread of COVID-19 through such practices as online meeting, use of the Two-Factor Authentication (2FA) method to access the various systems via Virtual Private Networks (VPN) to ensure cyber security and prevent cyber attack. The Digital Clearance system has been used for granting approval for work permit in the production area to minimize person-to-person contact.



3 Sustainable Business Management at National and International Levels



The 3E strategy (Enhance Environment, Engage Society, and Ensure Good Governance) and the Sustainability Index to measure both short-term and long-term sustainability were introduced in Thailoil and Subsidiaries to ensure vision and business goal attainment in parallel with sustainable growth and balance in all dimensions, covering Environmental, Social, and Governance (ESG). This includes stakeholders treatment and adaptability possible changes of environment affecting the industry; for example, response to the COVID-19 outbreak which affected well-being and livelihood, climate change, and cooperation to limit temperature increase within 1.5 degrees Celsius, growth of renewable energy, innovation and technology development, consumers' behavioral change, personal data protection, cyber attack, and the stricter laws and regulations. Actions taken in this regard include:

1) Enhance Environment

In 2021, Thailoil and Subsidiaries uplifted their environmental management and aligned it to the world's direction by drawing up a pathway heading towards net zero GHG emission with the goals of Carbon Neutrality by 2050 and Net Zero GHG Emission by 2060. Moreover, the masterplan on environmental and safety management has been carefully implemented in support of production expansion on the premises. In this regard, 13 projects to enhance energy efficiency have been undertaken, resulting in energy saving of 312,740.58 gigajoules, representing reduction in direct GHG emissions by as much as 17,544.75 tons of carbon dioxide equivalent. Thailoil and Subsidiaries also participated in the public sector's GHG reduction project to move

towards GHG reduction target of both Thailoil and Subsidiaries and of the country. These projects are, for example, TOP SPP's 239-MW combined cycle power plant, which was assessed and received carbon credit certification of over 310,358 tons of carbon dioxide equivalent from Thailand Voluntary Emission Reduction Program (T-VER) in the category of energy efficiency from clean fuels and high efficiency technology at the international standard for three consecutive years, resulting an accumulated carbon credit of 953,629 tons of carbon dioxide equivalent (during April 1, 2018-March 31, 2021 carbon credit calculation period). Another project is the Low Emission Supporting Scheme (LESS) project, in which three sub-projects on efficiency enhancement of energy by energy conservation were selected: namely, 1) production efficiency assessment of the Hydrogen Manufacturing Unit-1; 2) production process improvement to enhance energy consumption efficiency of the Hydrocracking Unit; and 3) efficiency improvement of the Crude Distillation Unit-2, bringing about reduction in GHG emissions of over 16,593 tons of carbon dioxide equivalent. In addition, the Circular Economy concept has been applied as guidelines for efficient operations and resource management under the project Thailoil CE WE GO, which covers life cycle of products through production process excellence. To elaborate, the 3Rs principle (Reduce, Recycle, Recover) has been applied to the production process together with efficiency improvement of energy consumption under an energy plan and support for environment-friendly procurement. Waste disposal target using the 3Rs principle was also set at 95

percent or more for 2021 with zero landfill continued from 2020 to reduce impact while promoting sustainable environmental quality.

2) Engage Society

Thaioil and Subsidiaries aimed to create concrete benefit while building bond with communities surrounding the refinery to grow together in the long term. Focus is placed upon three dimensions: namely, community, society, and nature, to improve quality of life and well-being of community and the society in parallel with support for reduction in carbon dioxide emissions. In 2021, Thaioil and Subsidiaries carried out a number of projects on promotion of social responsibility, including the 'Sending out Energy, Building Will Power' project in commemoration of Thaioil's 60th anniversary by handing over fuels and cleaning agents to public hygiene offices as a support to prevent the spread of COVID-19; the 'You Start, We Fulfil' volunteer project also for Thaioil's 60th anniversary; project to install solar power system (80.24 kw) on the Emergency Building of Laem Chabang Hospital, Chonburi; Thaioil 60th Anniversary Charity Virtual Run 2021; Smart Farming—a project to apply innovations and technologies to farming and new-method agricultural product manufacturing to achieve higher income and more product distribution channels; forestation project to add more green areas in honor of H.M. the King; a project to add 9,999,999 lives to marine population in the Ao U-dom coastal village; mangrove reforestation; the 'Thaioil Sculpturing the Youth's Dream to Excellence in Futsal and Football Skills' project to inspire children with interest in sports. These projects contributed to Thaioil and Subsidiaries' high score on community engagement index.

3) Ensure Good Governance

Thaioil and Subsidiaries uplifted their corporate governance throughout the supply chain in a fair, transparent, clear, and auditable manner. This has been carried out through Integrated Governance, Risk and Internal Control, Compliance (GRC) with focus on creating good balance between the rigidity of internal control measures and flexibility and agility in conducting business to increase operation efficiency. GRC also supports endeavor to promote anti-corruption and human rights. As a result, Thaioil and Subsidiaries achieved zero case of major non-major compliance and no fraud incidents.

The aforementioned operations clearly indicate that Thaioil and Subsidiaries are committed to combining knowledge and expertise as an energy leader, operational excellence together with corporate governance excellence, with responsibilities for the environment, communities, and the society, as well as capabilities to create highest satisfaction for stakeholders. This is to strengthen the business of Thaioil and Subsidiaries in parallel with sustainability of the society and the country. Such commitment and its achievement earn Thaioil and Subsidiaries various awards from leading organizations as detailed in the Awards and Certificates of our 2021 Achievements.

Milestones of 2021

January

01



Thaioil and Subsidiaries' executives joined in humbly wishing HRH Princess Maha Chakri Sirindhorn good health and continued recovery from her recent illness.

April

02



Thaioil held the 2021 Annual General Meeting of Shareholders.

03



TOP Solvent Co., Ltd. (TS) entered a joint-venture agreement with JSKem Pte. Ltd. (JSKEM), a procurement and distribution company of chemical and solvent products in Singapore, and acquired common shares in TSCHEM India Pte. Ltd., a subsidiary of JSKEM.

10



Thaioil and Subsidiaries supplied fuels and chemicals to King Chulalongkorn Memorial, the Thai Red Cross Society, in support of COVID-19 vaccination to the public under the 'Sending out Energy, Building Will Power' project.

11



Thaioil and Subsidiaries donated fuels and disinfectants to the Thai Red Cross Society in support of vaccine distribution to prevent COVID-19 transmission under the 'Sending out Energy, Building Will Power' project.

12



Thaioil invested in PT Chandra Asri Petrochemical Tbk, Indonesia's largest petrochemical company, via PT TOP Investment Indonesia.

04

June

05



Following Thaioil's marine transportation group restructure plan, Thaioil sold and transferred all common shares in Thaioil Marine Co., Ltd. (TM) to Phurich Marine Co., Ltd., thus leading to the termination of TM as its subsidiary.



Thaioil shut down its Fluidized Catalytic Cracking Unit, the Sulphur Recovery Unit, and related units for Major Turnaround.

06



Thaioil and Subsidiaries donated fuels and chemicals to Siriraj Hospital in support of vaccine distribution to prevent COVID-19 transmission under the 'Sending out Energy, Building Will Power' project.

13



S & P Global Ratings and Moody's Investors Service maintained Thaioil's credit rating after its investment in PT Chandra Asri Petrochemical Tbk.

14



Thaioil installed a new set of Distillation Columns under the Clean Fuel Project (CFP), made up of tallest Crude Distillation Column and the High Vacuum Column with longest diameter.

August

15



Thaioil and Subsidiaries supplied fuels to the Department of Health, Ministry of Public Health, in support of COVID-19 vaccine distribution to health centers nationwide under the 'Sending out Energy, Building Will Power' project.

07

July

08



Thaioil and Subsidiaries donated fuels and supported establishment of a vaccination center to prevent COVID-19 transmission in Laem Chabang Municipality, Sriracha, Chonburi, under the 'Sending out Energy, Building Will Power' project.



Thaioil and Subsidiaries donated fuels to Maw Lab Panda in support of sending COVID-19 patients to their domicile province for treatment under the 'Sending out Energy, Building Will Power' project.

09



Thaioil and Subsidiaries supported fire-extinguishing foam and donated survival kits to victims of a fire at a chemical plant in Samut Prakan.

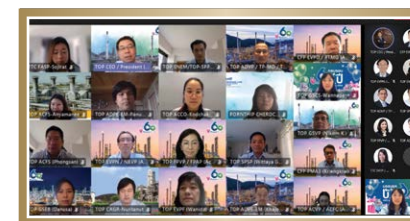
16

September

17



Thaioil installed a reactor in the Residue Hydrocracking Unit, which is CFP's heaviest reactor.



Thaioil Power Co., Ltd., completed its liquidation and liquidation registration with the Department of Business Development, Ministry of Commerce.

18



Thaioil and Subsidiaries delivered survival kits to flood victims in the wake of Tropical Storm Dianmu.

October

19



Thaioil staged the 2021 emergency drill in a simulated oil spill.

20



Thaioil and Subsidiaries joined in the declaration of intention on Thailand's climate management at the GCNT Forum 2021: Thailand's Climate Leadership Summit 2021

21



Thaioil and Subsidiaries together with communities around the refinery, held their annual Kathin ceremony under COVID-19 transmission prevention measures.

November

22



Thaioil and Subsidiaries donated to hospitals money derived from the Thaioil 60th Charity Virtual Run 2021 project.

23



Thaioil and Subsidiaries organized TOP Group QSHE Day 2021 to enhance and stimulate awareness among executives, employees, and contractors of the management of quality, security, safety, occupational health, environment, and energy conservation.

24



Employee volunteers of Thaioil and Subsidiaries joined in garbage collection, construction of a wall along the shore to prevent shore erosion, and mangrove planting to serve as marine lives' habitats under the "Good Deeds for the Late HM the King Rama 9" activities.

25

December

26



Thaioil installed a hydrogen reformer furnace, the largest furnace of CFP.



Thaioil and Subsidiaries staged the 2021 fire drill.

27



Thaioil and Subsidiaries participated in PTT Group CG Day 2021 under "The Power of Business Integrity" theme to illustrate their intention to engage in businesses with corporate governance.



Key Achievement and Development

2021

Investment and Business Expansion

- >> TOP Solvent Co., Ltd. (TS) entered into a joint-venture agreement with JSKem Private Limited (JSKEM), a chemical and solvent supply and distribution company in Singapore, with shares of up to 80 percent from existing shareholders, including the purchase of common shares in TSCHEM India Pte. Ltd., a subsidiary of JSKEM.
- >> Thailoil entered into a joint-venture agreement with PT Chandra Asri Petrochemical Tbk (CAP), Indonesia's largest integrated chemical producer, with 15 percent of CAP's total share.

Business Restructuring

- >> Share dilution and the shareholding restructure in Thailoil's power business group, including the sale of shares in Global Power Synergy Plc (GPSC), directly and totally held by Thailoil (8.91 percent), to PTT Plc and the entire business transfer from Thailoil Power Co., Ltd. (TP) as well as the registration of dissolution, liquidation and liquidation registration of TP, were completed
- >> Restructuring of Thailoil's marine transportation business group, including the purchase of all common shares in Thailoil Marine International Pte. Ltd. (TOMI) from Thailoil Marine Co., Ltd. (TM) and the sale and transfer of all common shares held by Thailoil in TM to Phurich Marine Co., Ltd., thus leading to the termination of TM as its subsidiary were completed. Currently, Thailoil is in the process of closing down TOMI and expects the liquidation to be completed by August 2022.

2020

Investment and Business Expansion

- >> Thailoil together with Eastern Water Resources Development and Management Plc signed a memorandum of understanding on a water distribution zone expansion and a water purchase agreement to support the Clean Fuel Project (CFP).
- >> TOP SPP Co., Ltd. signed a contract with an EPCC contractor and a project management consultant (PMC) for its power generation and steam production expansion project.

Business Restructuring

- >> Thailoil's Extraordinary General Meeting of Shareholders No. 1/2020 was held to consider and approve the shareholding proportion adjustment and the shareholding restructure of Thailoil's power business group.
- >> Thailoil entered a sales agreement of all its shares in TM with Phurich Marine Co., Ltd., a subsidiary of Prima Marine Plc.

Financing

- >> Thailoil Treasury Center Co., Ltd. (TTC) issued and offered unsecured and unsubordinated debentures to foreign institutional investors totaling USD 1 billion, fully guaranteed by Thailoil. The debentures were rated BBB+ and Baa2 by Standard and Poor's and Moody's respectively.
- >> Thailoil successfully secured 7-year loan facilities of THB 7 billion from Siam Commercial Bank Plc and THB 5 billion from TMB Bank Plc. The financing was aimed to provide financial investment readiness, strengthen the operating cash flow, and accommodate future project development of Thailoil.

2019

Investment and Business Expansion

- >> The 2019 Annual General Meeting of Shareholders approved the sale of assets to transfer the ownership of the Energy Recovery Unit (ERU), part of the CFP Project, and the entry into related contracts with GPSC or GPSC's subsidiaries, thus resulting in a reduced burden of investment in the CFP Project, increased liquidity, support of more investment in the future with higher efficiency, and a higher return on investment in the CFP Project.
- >> TS acquired shares to jointly invest in PT. Tirta Surya Raya (TSR) of Indonesia to expand Thailoil's overseas distribution of the solvent business which would strengthen its business structure by purchasing 15,410 common shares from the shareholders of TSR, representing a 67 percent stake.
- >> TTC established TOP Ventures Co., Ltd. and TOP Ventures Hong Kong Limited, holding 100 percent shares, to engage in corporate venture capital (CVC) transactions by investing in the venture capital (VC) fund and/or startup business. The objective was to expand investment in the business in which Thailoil and Subsidiaries had expertise, as well as new businesses to support the changing business environment.
- >> Thailoil and TP, with their equity of 8.91 percent and 20.78 percent respectively, supported a plan to increase the registered capital of GPSC by subscribing to the newly issued common shares based on their equity in accordance with the criteria and terms of subscription.

Financing

- >> TTC issued and offered USD 565 million of unsecured and unsubordinated debentures to foreign institutional investors, fully guaranteed by Thailoil. The debentures were rated BBB+ and Baa1 by Standard and Poor's and Moody's respectively.

Production Process

- >> Crude Distillation Unit-3 (CDU-3), related production units and tie-in activities of a new refining unit underwent a major turnaround as scheduled by the CFP plan from mid-June to mid-July 2019 for about 30 days. Other production units continued to operate normally during the turnaround.

Market Review and Outlook

Global Market and Economic Review

The International Monetary Fund (IMF) reported in October 2021 that the 2021 global economy would grow by 5.9 percent, compared to the 3.1 percent recession in 2020, the year that economic activities faced disruption due to lockdown in many countries. The economy started to recover in 2021 due to the more vaccination in various regions resulting in the improved COVID-19 situation. This was coupled with fiscal stimulus packages introduced in many countries. It is expected that the world economic growth rate in 2021 would exceed the usual growth rate of 3.4 percent.

Developed countries are anticipated to grow by 5.2 percent, recovering from the previous year when the economy sank by over 4.5 percent, due to the economic stimulus in various countries, the US and EU in particular. Meanwhile, developing countries would enjoy a growth of 6.4 percent compared to the previous year's 2.1 percent slump as economic activities in the Asian region started to resume after many countries could manage COVID-19 situation better. However, high inflation in various countries and the outbreak of the new strain of COVID-19 in the middle and at the end of 2021 were considered negative factors putting pressure on economic recovery, causing the government to restrict some activities.

IMF reported in October 2021 that the 2022 global economy is projected to continuously recover from 2021 with a 4.9 percent growth. This forecast was made with an expectation that the COVID-19 pandemic would finally be contained and many countries would relax their preventive measures against COVID-19, allowing economic activities around the globe to continuously

recover. Developed countries are expected to grow by 4.5 percent, particularly the US and EU whose growth may reach 5.2 percent and 4.2 percent respectively, due to high vaccination rates and lift of travel restrictions. Developing countries, meanwhile, are expected to grow by 5.1 percent from 2021, with the Chinese economy to expand by 5.6 percent and the Indian economy by 8.5 percent. However, the global economy is likely to face factors causing its slowdown; for example, the new strain of COVID-19, high inflation, and the US's decision to lower the ceiling of Quantitative Easing (QE) program.

Crude Oil Market and Refining Industry

The average price of Dubai crude is at 69 USD per barrel in 2021, increasing from 42 USD per barrel in 2020, due to the improved COVID-19 situation coupled with the lift of lockdown measures which resulted in the recovery of oil consumption. The higher oil demand also received a push from the higher natural gas price, which hit the highest level in several years. A number of power generation and industrial plants have, thus, turned to oil in place of natural gas. The International Energy Agency (IEA), in its December 2021 report, forecasted that world oil demand in 2021 would soar by 5.4 million barrels per day, against a drop of 8.7 million barrels per day in 2020. The Organization of the Petroleum Exporting Countries (OPEC) Plus nations, meanwhile, closely monitored the situation and gradually increased their crude output. Moreover, the negotiation between Iran and the superpowers to lift their sanctions on Iran did not make much progress, resulting in Iran refraining from increasing its crude production and export in 2021. Crude price at the end of 2021 was, however, pressured



by the new strain of COVID-19 (Omicron), causing some countries to re-impose strict travel restriction. Meanwhile, crude supply tend to increase since 18 million barrels of crude were released from the US strategic petroleum reserve (SPR) in December 2021.

The refining industry in 2021 made a good recovery from the previous year, supported by the higher demand for petroleum products after lockdowns were lifted. The gasoline market was supported by demand during the driving season in the US, which increased to a record high, while mobility index in many Asian countries resumed its pre-pandemic level. The diesel market also enjoyed higher demand from the transport and industrial sectors in Asia. Introduction of vaccine passport and measures to boost tourism in various

countries, coupled with the US announcement to lift border closure, resulted in the global aviation index to keep rising. The fuel oil market, however, was found weakened due to higher supply after Asian refineries increased their production in response to the higher demand for petroleum products.

In 2022, it is expected that Dubai crude oil price is to be supported by the improved COVID-19 situation, resulting in continuous recovery of economic activities. Global oil demand, thus, is likely to expand by 3.3 million barrels per day compared to that of the 2021 volume to 99.5 million barrels per day (as reported by IEA in December 2021). Crude price may still receive pressure from uncertain demand following the outbreak of the new strain of COVID-19 (Omicron) around the end

of 2021. Crude oil production, moreover, is likely to increase since the OPEC Plus countries would still increase their monthly production by 0.4 million barrels per day as planned. Meanwhile, non-OPEC producers, including the US, Canada, Brazil, etc., are likely to add around 2.9 million barrels to their daily production.

The refining industry is likely to be better in 2022, with support from the improved demand after the COVID-19 situation starts to unwind. Many countries have lifted their travel restriction while launching economic stimulus programs to boost investment and employment, which will consequently raise demand for gasoline and diesel for transport and industrial sectors. The jet fuel market, meanwhile, is likely to continuously recover; however, the pre-pandemic level may not be achieved in 2022 since many countries still keep strict control on incoming flights. The increase in international flights still limit. As for low-sulphur fuel oil, the market was supported by the marine transportation sector while high-sulphur fuel oil may receive pressure from higher supply after global refineries across the globe increased their production rate in response to the improved demand.

Domestic Market for Petroleum Products

The Office of National Economic and Social Development Council (NESDC) predicted that the 2021 domestic economy would recover by 1.2 percent from the previous year's 6.1 percent recession. The recovery was supported by the improved world economy and trade volume, favorable for Thailand's continuous export growth. Although affected by the outbreak of COVID-19 Delta strain, after the lift of preventive and controlling measures and the implementation of border lifting policy to welcome foreign tourists, in Q3/2021, Thailand's

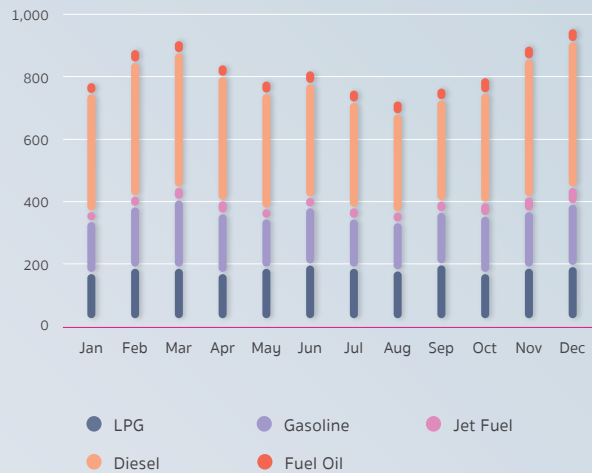
economy was considered to recover due to the private sector's higher consumption expenditure in Q4/2021, which received support from the government economic stimulus packages, such as the Half/Half Co-payment scheme, the State Welfare Card scheme, and other employment assistance schemes. However, the uncertainties of the spread of COVID-19 and virus mutation are to be closely monitored.

Domestic demand for petroleum products declined around 3.1 percent compared to that of 2020 due to lower consumption of both gasoline and diesel. This was caused by decreased road traveling following measures on travel restrictions and night-time curfew to curb the COVID-19 outbreak. Demand for all types of gasoline reduced by 8.5 percent and that of diesel also reduced by 2.9 percent while demand for jet fuel plummeted by as much as 35.2 percent in line with the reduction to the number of flights following various measures on air travel restrictions. Such measures included rescheduling of domestic flights during January-February 2021, announcement to prohibit aircraft from flying in and out of the country, and announcement on maximum control and strict control of some areas in July-August 2021, among others. As for fuel oil, demand increased by 15.6 percent following the growth of export sector, in line with the world economy and global trade.

The 2021 average refining throughput stood at 875,596 barrels per day, a decline from 886,738 barrels per day in 2020, in line with the lower domestic demand for petroleum products. Thairoil, however, maintained the country's largest proportion of refining output compared with other refineries, accounting for 28 percent of the total domestic output.

Domestic Demand for Petroleum Products, 2021

Thousand barrels per day



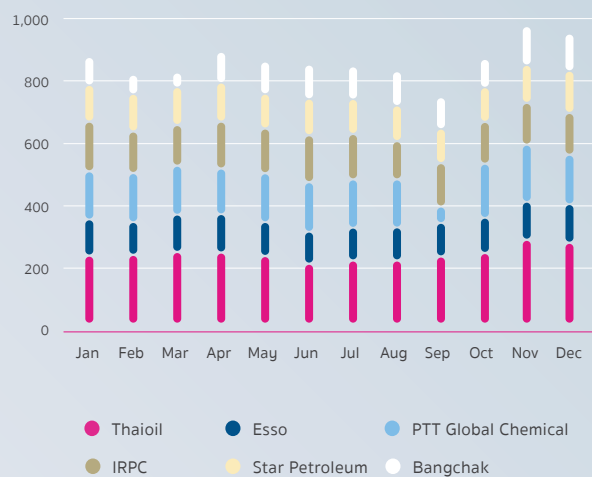
Source: Department of Energy Business, Ministry of Energy

The NESDC forecasted in its November 2021 report that Thailand's economy could achieve a growth of 3.5-4.5 percent. The export sector is expected to grow by 4.9 percent while private consumption and investment may expand by 4.3 and 4.2 percent respectively, supported by higher demand from both public and private sectors after the pandemic situation starts to subside. This will be coupled with the recovery of international tourism under the government policy to lift the border restriction after the slow growth in 2021 when the country was affected by the COVID-19 outbreak.

Domestic demand for petroleum products in 2022 is forecasted to expand by 6.5 percent. Considering by product type, consumption of gasoline, diesel, jet fuel, and fuel oil are expected to grow by 8.0, 5.4, 39.7, and 2.3 percent respectively. On the contrary, LPG consumption is likely to slightly drop by 0.3 percent.

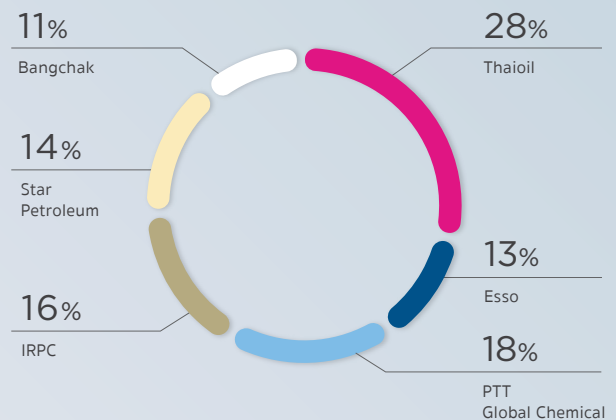
Domestic Refinery Production, 2021

Thousand barrels per day



Source: Department of Energy Business, Ministry of Energy

Share of Refining Output, 2021



Source: Department of Energy Business, Ministry of Energy

Aromatics Market

The 2021 paraxylene market remained stable compared with that of 2020 due to the oversupply situation. Paraxylene supply increased by 2.0 million tons per year after new petrochemical plants in China came onstream in Q3/2021 and Q4/2021. Most of them are crude-to-chemical plants. Demand, meanwhile, increased only by 1.0 million tons per year even though the pandemic situation in many countries began to improve with some demand for polyester fibers for clothing. A number of synthetic fiber production plants in China had to reduce or suspend their production at the beginning of Q4/2021 due to the policy on energy consumption control caused by shortages of coal. The situation resulted in lower demand for paraxylene.

The benzene market in 2021 improved when compared with 2020 due to the lower supply in Q1/2021 after the US temporarily ceased benzene production of around 1.9 million tons during the snowstorm in Texas. This was coupled with the recovering economy as the pandemic situation in many countries started to subside. Benzene inventory in China, therefore, reduced by 100,000 tons to 130,000 tons. At the beginning of Q4/2021, a policy energy consumption control was implemented since the shortages of coal impacted downstream production plants in many areas, resulting in the reduction of benzene demand.

The paraxylene market in 2022 is likely to be pressured by the stagnant market continued from late 2021. PTA production plants in China continue to control the power consumption while a new paraxylene plant in China is planned to start commercial operation. It is, therefore, expected that paraxylene supply in 2022 will grow by 5.2 million tons, higher than demand which is expected to increase by about 1.3 million tons. The paraxylene inventory in China is forecasted to stay

at a high level of around 4 million tons, comparable to the previous year's level, causing paraxylene production in the region to drop from 75.9 percent in 2021 to 75.1 percent in 2022. Nevertheless, the improved COVID-19 situation and recovery of economic activities are factors supporting for the paraxylene market.

The benzene market in 2022 is expected to slow down compared with 2021, due to supply expected to increase by 209 million tons. The launch of a new benzene plant is to cause the overall benzene production rate in the region to decline from 75.6 percent in 2021 to 74.6 percent in 2022. If the COVID-19 pandemic situation is improved and the automobile and electric appliance industries expand prime benzene consumers, benzene demand could possibly grow by 1.1 million tons.

Olefins Market

The High-Density Polyethylene (HDPE) and Polypropylene (PP) markets in 2021 improved from 2020 due to the lower supply of Polyethylene (PE) and PP in Q1/2021, after producers in the US temporarily caused their production during the snowstorm in Texas, coupled with the recovery of economic activities following better COVID-19 situations in many countries. Supply was found even tighter from the delay of commercial production of PE and PP plants in China and India since late 2021 to early 2022.

The HDPE and PP markets in 2022 are expected to weaken compared with 2021 due to the increased supply from a new PE and PP plant which has started its commercial operation. PE and PP supplies are forecasted to grow by 3.7 and 6.0 million tons respectively. Demands for PE and PP, meanwhile, are expected to grow by 1.7 and 3.3 million tons respectively. The ample supply will, therefore, put pressure on the market.

Lube Base Oil and Bitumen Market

The lube base oil market was in an upward trend in 2021 compared with 2020, supported by the recovering demand amid the limited supply. This was because refineries were still unable to resume their full capacity while more lube base oil plants carried out their maintenance shutdown than in the previous year. However, the market was pressured by the commissioning of new lube base oil group 2 and group 3 plants in the region, such as Hainan Handi Sunshine (with 700,000 ton-per-year production capacity) and Panjin Haoye (with 200,000 ton-per-year production capacity) in China.

In 2021, bitumen price was lower than that of 2020 due to the high supply after more refineries in the region resumed their operations. Meanwhile, demand slightly increased due to the spread of COVID-19. Bitumen demand for road construction and repair was also limited in the rainy season, resulting in the narrow spread between bitumen and fuel oil.

In 2022, the lube base oil demand is likely to recover since the COVID-19 situation tends to subside, the pressure continues from 2021 with more supply entering into the market—the supply is from new facilities of lube base oil Group 2 and Group 3, such as the Hainan Handi Sunshine refinery in China—and increased production capacity of refineries in the region.

The bitumen market in 2022 is projected to receive support from the higher demand following the more budget disbursement for road construction and repair if the COVID-19 situation subside. The market, however, would still be pressured by the expected increasing supply since refineries in the region are to resume their production and possibly increase their production following the economic recovery.

Linear Alkyl Benzene (LAB) Market

The 2021 LAB price and the spread between LAB and surfactant expanded compared with that of 2020 since surfactant price increased in line with the world oil price following crude production control by OPEC Plus due to the slow world economy. In addition, supply in the region was still limited compared with the supply in 2020. Demand for LAB in Asia grew continuously in accordance with the continuously increasing population and the better quality of life in developing countries. Importantly, people paid more attention to health during the COVID-19 outbreak.

The 2022 LAB market is projected to slow down compared to that of 2021 as tight supply in the region starts to relieve in line with the refineries' increased production and operation rate. Demand for LAB, however, is expected to grow in accordance with the recovering world economy and the continuous population expansion. More attention to hygiene due to the spread of COVID-19 has brought about higher consumption of detergent. This causes the overall LAB demand in Asia and the Middle East to grow at a satisfying level.

Solvent Market

The solvent market picked up during the first half of 2021 due to improved demand following COVID-19 vaccination in many countries, resulting in the world's better economy, particularly aviation and tourism businesses which earlier was considerable impacted. Around the mid Q2/2021, Asian nations, such as India and ASEAN countries, encountered the third and fourth wave of COVID-19 outbreak, causing another drop in demand. The COVID-19 pandemic, furthermore, affected the marine industry and other related industries, including shortages of drum and ISO tank containers,

marine route restrictions, cargo space limit for some types of goods, delayed delivery, higher freight and container costs, among others. This consequently resulted in higher cost and, thus, became an export constraint. Meanwhile, price competition of some products remained severe due to oversupply after some producers resumed their production after their shutdowns around late 2020.

In Thailand, the country's economy gradually recovered. In Q1/2021, the export significantly grew, particularly the automotive industry and the food industry where packaging items are required, resulting in high demand of solvent. The demand for solvent is, affected by the new wave of COVID-19, started to decline in Q3/2021, and recovered after the government lifted some preventive measures in Q4/2021.

It is expected that in Asian market, the solvent supply will be stable in 2022 while demand will pick up after the COVID-19 situation subsides. This will be favorable for the Asian economy to rebound to a high level. However, shortages of cargo vessels and the higher freight will hinder solvent export throughout 2022, particularly shortages of cargo vessels for export to India.

In Thailand, solvent demand in 2022 is predicted to grow in tandem with the economic expansion. Significant growth is foreseen for 2022-2023 following a dramatic economic recession during 2020-2021 compared with other countries. On the supply side, competition will be more intense since new domestic solvent producers, who aim for both domestic sales and exports, are coming on stream.

Ethanol Market

In 2021, ethanol demand for blending in gasohol production in the domestic market declined to 3.7 million liters per day, an 9.6 percent drop from 2020,

affected by preventive measures against COVID-19 outbreak, such as travel restrictions, curfew, and the measure to keep some businesses closed. This resulted in a significant drop of gasoline. Moreover, sales volume of vehicles using gasohol E20 and E85 continued to slow down from the previous year, in line with the economic situation as reflected in the lower consumer confidence indices and fewer gas stations offering gasohol E85. The government, nevertheless, continued their efforts to promote ethanol consumption as part of the energy conservation plan on promoting gasohol E20 as primary petrol.

Domestic ethanol supply in 2021 dropped from the previous year, but still higher than ethanol demand. This is due mainly to lower molasse-derived ethanol production. In 2020/2021 harvesting season, there were only 67 million tons sugar cane, lower than 75 million tons of the 2019/2020 season, due to the unusual drought or El Niño. The proportion of ethanol production from cassava increased due to the cassava production growth and the planting area expansion.

The 2021 ethanol price averaged at 25.4 baht per liter, a 9.5 percent improvement from 23.2 baht per liter in 2020, owing to the higher price of scarce raw material after the drought.

The 2022 ethanol demand is projected to grow in line with the rebound of gasoline demand after measures to curb the pandemic are lifted. On the supply side, the proportion of molasse-derived ethanol may rise in line with the expected higher volumes of sugar cane in 2021/2022 harvesting season. Overall ethanol production in 2022 will rise to 7.0 million liters per day under the production capacity expansion plan, resulting in the 2022 overall production to exceed domestic demand.

The price of ethanol in 2022 is expected to decrease compared to that of 2021 since it is expected that there would be 85-90 million tons of sugar cane from 2021/2022 harvesting season, increasing from 67 million tons in the previous year. Such sugar cane amount resulted from proper weather and sufficient rainfall that favor sugar cane planting after the severe drought that affected Thailand earlier. Cassava supply entering the market in October 2021 is another factor pressuring the ethanol price. It is predicted, in 2022, that the overall cassava production will expand to 32.7 million tons from 31.7 million tons in the previous year, in line with the expansion of planting and harvesting area encouraged by the government's income insurance for cassava growers, leading to motivation to expand planting area in all parts of the country.

Power Industry

As of December 12, 2021, Thailand recorded an electricity generating capacity of 46,682.4 megawatts, increasing by 2.6 percent from 2020. Peak electricity demand in the Electricity Generating Authority of Thailand (EGAT)'s system registered at 30,135 megawatts increasing by 5.23 percent on April 3, 2021, due to the high temperature of the summer season coupled with the work-from-home policy imposed by most business operators.

Electricity production and sale in EGAT's system totaled 194,989 million units, increased by 1.59 percent from that of 2020. Considering by fuel types, 56.3 percent of the total fuel was produced from natural gas, 23.3 percent from coal, 17.5 from renewable energy, and 2.9 percent from other sorts of fuel, such as palm oil, diesel, and fuel oil, as well as power purchase form Laos and Malaysia. Considering by consumers, industrial sector accounted for 45 percent, household sector 29 percent, business sector 22 percent, and others 4 percent.

The EGAT projects that electricity demand in the EGAT system in 2022 will be higher than 2021 by around 3 percent, in keeping with the country's Gross Domestic Product (GDP), which is expected to rise by around 4 percent. Moreover, power demand may be affected by other factors, including virus mutation, which may cause a new wave of COVID-19 outbreak and supply chain disruption, as well as international trade policy implementation which may be affected by the trade war between superpowers, among others.

Electricity demand in the EGAT system is projected to slightly decrease from that of 2021, i.e., from 80.3 percent to 80.2 percent. Independent power suppliers for their own use, meanwhile, will take a higher share of 6 percent, from 5.3 percent, due to more efficient technology with lower cost.

Within the EGAT system, the share of electricity generating capacity in 2022 will be changed. It is estimated that electricity produced by EGAT will command around 30.9 percent, slightly decrease from 2021 figures. The share of Small Power Producers (SPPs) will also decrease as contracts are due to expire. On the contrary, Independent Power Producers (IPPs) will acquire a larger share as new plants will start their commercial operations. Considering by fuel type, natural gas will account for 57 percent of the overall electricity generation, and is projected to climb up to 64.5 percent in 2026. The share of renewable energy will slightly increase to around 20 percent while power production from other types of fuel, such as oil and coal, will decline.

Feedstock Procurement, Product Distribution and Industrial Competition



Feedstock Procurement

Thaioil procures crude oil—the main feedstock for oil refining—from domestic and overseas sources, taking into consideration estimated yields from each type of crude against market demand at a given time for maximum returns. The Company's policy is to diversify crude procurement from different sources to reduce dependency on any particular supplier to mitigate risks in case crude cannot be delivered. Two types of crude supply agreement: namely, term contract and spot contract, are made to ensure balance between the security of feedstock procurement and the opportunity to profit from crude market fluctuation.

This year crude imports accounted for 98.6 percent of the total volume of crude and other raw materials. A majority of the crude, or 66 percent, was procured from Middle Eastern countries such as UAE, Qatar, and Saudi Arabia. Crude imports from the Far Eastern region, such as from Malaysia, Brunei, Indonesia, Vietnam, and Russia, accounted for 14 percent, imports from North America 0.5 percent, Africa 10 percent, and Europe (North Sea and Mediterranean) 0.5 percent. The remaining 9 percent was local crude. Local crude is transported by rail and vessel while imported crude is shipped directly to the refinery. Through a Single Buoy Mooring (SBM), Thaioil receives crude and other

raw materials delivered by large vessels, which has increased oil transportation efficiency while reducing the unit cost of crude shipping.

The table below shows costs of crude oil and other raw materials procured from various sources, excluding by-products provided by Thai Lube Base Plc (TLB) and Thai Paraxylene Co., Ltd. (TPX).

Source of crude and other raw materials	2021 (THB million)	percent of the total volume	2020 (THB million)	percent of the total volume	2019 (THB million)	percent of the total volume
Middle East	149,212	66	67,307	57	143,481	67
Far East	30,708	14	13,005	10	21,919	10
Thailand	22,963	9	11,395	9	10,149	5
Africa	23,559	10	21,931	14	6,559	3
Europe	871	0.5	2,688	1	13,667	6
North America	945	0.5	14,103	9	19,676	9
Total	228,258	100	130,429	100	215,451	100

Since crude oil trading depends on the crude market situation and output volumes, as much as 50 percent of our total crude oil is purchased from PTT Plc under Product Offtake and Crude Oil Supply Agreement (POCSA). The rest was sourced from other suppliers under term and spot contracts with a credit term of 30 days from the bill of lading date, a common practice in the market.

For other raw materials, Thailoil imports additives and product color substances in line with market demand and the applicable law. TLB procures long residue—a raw material for lube base production—from Thailoil as well as other domestic and overseas markets. TPX imports toluene as feedstock for aromatics production. Finally, LABIX Co., Ltd. (LABIX) imports normal paraffin to increase its production of Linear Alkyl Benzene (LAB)—a feedstock for detergents and cleaning agents—to its full capacity for economic value.

Product Sales

In 2021, Thairoil sold a total of 18,357 million liters of products as detailed below.

Products (Million liters/year)	2021		2020		2019	
	Sales volume	Percent of total sales	Sales volume	Percent of total sales	Sales volume	Percent of total sales
LPG	693	4	685	4	795	4
Unleaded Gasoline ⁽¹⁾	3,292	18	3,564	19	3,241	15
Light Naphtha	138	1	79	0	465	2
Isomerase/Reformate	2,197	12	2,232	12	2,077	10
Jet/Kerosene	2,076	11	2,616	14	4,479	21
Low-speed Diesel/ High-speed Diesel	7,339	40	7,005	38	7,520	36
Fuel Oil ⁽²⁾	1,580	9	1,409	8	1,421	7
Long Residue	1,012	5	1,000	5	965	5
Sulphur	30	0	27	0	40	0
Total	18,357	100	18,617	100	21,003	100

Remarks:

⁽¹⁾ Including Gasohol sales

⁽²⁾ Including Refinery Slop Oil

Thairoil sells petroleum product to PTT Oil and Retail Business Plc (OR) under the POCSA. Both companies agreed to buy and sell refined products at market prices. By the procedures for setting product volumes, OR must first nominate the types and volumes of the desired products, which must account for at least 49.99 percent of Thairoil's capacity. Thairoil will then notify OR of the types and volumes to be delivered by an agreed time. In addition, if Thairoil has surplus products, OR is eligible to buy them before other buyers at market prices under the terms including in POCSA. OR would buy Thairoil's products for domestic sale. Thairoil must set production goals, both commercial and technical, to be in line with OR's demand, which is

stated in the terms and requirements for product purchase. Other surplus products, including unleaded gasoline, are exported through OR and other oil traders. To date, Thairoil still exports these products based on suitability and favorable market conditions both domestically and regionally.

Domestic petroleum product pricing is referenced to the Singapore market prices at that period for the same products, which benchmarked to the ex-refinery prices. Such prices at the Singapore market reflect regional supply and demand and are set daily in US dollars. Thairoil's product pricing for domestic sales is based on an import parity basis while export pricing is based on an export parity basis. Thairoil sells to its customers at

the ex-refinery prices and calculated prices base on sale conditions as FOB (free on board).

In 2021, about 80 percent of Thailoil's total petroleum products were sold domestically, comprising 29 percent to OR, 22 percent to Thailoil's subsidiaries (namely TLB, TPX, and LABIX), 18 percent to PTG Energy Plc (PTG), 3 percent to Shell Company of Thailand Ltd.

(SHELL), 1 percent to Chevron Thailand Exploration and Production Ltd. (CHEVRON), 1 percent to Susco Plc (SUSCO), 1 percent to Bangchak Corporation Plc (BCP), and 5 percent to other buyers. The remaining 20 percent was for export. Details of types and volume of Thailoil's petroleum product sold in for 2019-2021 together with percentage comparison of total sales are shown below:

Petroleum products sold and percentage comparison of total sales by Thailoil (Million liters/year)	2021		2020		2019	
	Sales volume	Percent of total sales	Sales volume	Percent of total sales	Sales volume	Percent of total sales
Domestic						
OR	5,274	29	6,614	36	7,742	37
Thailoil's subsidiaries	4,119	22	4,036	22	3,977	19
PTG	3,205	18	3,210	17	3,390	16
SHELL	620	3	835	4	1,240	6
CHEVRON	235	1	327	2	748	4
SUSCO	164	1	272	1	487	2
BCP	188	1	128	1	103	0
Others ⁽¹⁾	951	5	837	4	835	4
Total	14,756	80	16,259	87	18,522	88
Export						
OR	1,125	6	1,020	6	1,107	5
Others ⁽²⁾	2,544	14	1,377	7	1,381	7
Total	3,669	20	2,397	13	2,488	12
Total sales	18,425	100	18,656	100	21,010	100

Remarks:

⁽¹⁾ Including Refinery Slop Oil

⁽²⁾ Including sales to PTT International Trading Pte. Ltd. in Singapore, wholly owned by PTT Plc



Industrial Competition in 2021

Currently, Thailand has six major refiners: namely, Thailoil, BCP, Esso (Thailand) Plc (ESSO), PTT Global Chemical Plc (GC), Star Petroleum Refining Plc (SPRC), and IRPC Plc (IRPC), with a combined refining capacity of 1,242,000 barrels per day. BCP and Esso are the two refiners operating integrated businesses having their own service stations, whereas the rest operate only the refining business under offtake agreements or free-market delivery, or both, for the sale of various products. Thailoil's major and secondary competitors are domestic refineries and those in the region. Major competitors are mostly national and international integrated oil companies operating several petroleum businesses, notably companies with exploration and production of crude oil, oil refining, and marketing.

With integrated businesses, massive investment and resources in addition to the ability to consistently procure crude oil, these companies thrive in volatile markets and ably compete in prices.

The oil refining business is highly competitive in terms of price and product yields. Thailoil's advantage lies in its complex refinery with sophisticated refining system and the country's largest in size, which enables the Company to produce high-value products in one of the highest proportions in Asia. Thailoil can also leverage its refining flexibility since its distillation units are connected to petrochemical and lube base oil units, benefiting maneuverability of production in response to volatile market prices. For example, Thailoil can hike its output of various grades of gasoline

to meet domestic demand including gasohol 91, gasohol 95, and E20. Thailoil is the sole domestic refiner of gasoline (octane 95) that also tops the Indochina market. The Company can produce gasoline and diesel of high quality as required by standards while adjusting the volumes of jet fuel and diesel in line with prevailing market circumstances. In view of the COVID-19 pandemic throughout 2021, Thailoil successfully lowered its output of jet fuel by about 54 percent to meet domestic needs while increasing export volume to countries in the region. Outputs of gasoline and diesel, meanwhile, were raised to maintain competitiveness. The cost of product distribution to major market countries including those in Indochina with high demand was considered low due to short distance. Also Thailoil has various channels of product distribution and transportation, detailed as follows: 1) Pipeline directly connected to the refinery, capable of distributing various petroleum products to support each region's demand;

2) Lorry Loading open 24 hours a day to meet demands of domestic and Indochina customers; 3) Jetty and Conventional Buoy Mooring (CBM) distributing by vessels in different size. The proportion of distribution and transportation was 36, 35 and 29 percent of total sales respectively. To cater to public policy, Thailoil arranged for diesel distribution to all groups of consumers, namely high-speed diesel and B7 high-speed diesel for passenger cars, and B20 high-speed diesel for trucks and buses. To this end, Thailoil's lorry loading is capable of efficient dispensing all grades of diesel while adjusting biodiesel blends to meet the government policy at different times. As for the fuel oil group, Thailoil could flexibly produce fuel oil of various grades, namely fuel oil with low, medium, and high sulphur content with proportion of 0.5, 2.0, and 3.5 percent respectively, to satisfy the needs from industrial and transport sectors.

Production Process and Development



In 2021, Thailoil's refining capacity of crude oil and other feedstock totaled 275,000 barrels per day, or 100 percent of the nameplate capacity, while Thai Lube Base Plc (TLB) managed to continuously produce around 243,000 tons per year of lube base oil, accounting for 91 percent of its nameplate capacity. Thai Paraxylene Co., Ltd. (TPX) produced around 727,000 tons per year of aromatics, or 87 percent of the nameplate capacity, while LABIX Co., Ltd., following production expansion during the year, was able to process Linear Alkyl Benzene (LAB) for as high as 134,000 tons per year, representing 112 percent of its nameplate capacity.

As COVID-19 pandemic still lingered on into its second year, the 'new normal' way of life, business and industrial operations, and amendment of policies, rules and regulations in various countries became favorable

factors, in line with recovery of global economy, pushing demand for petrochemical products used as feedstock for many different types of chemicals, cleaning agents, as well as lubricants, and many other goods. However, demand for petroleum products, compared to the normal situation, remained low with price fluctuations, particularly jet fuels demand which was still waiting for recovery due to air travel restrictions both domestically and internationally.

To address the situation, Thailoil and Subsidiaries made adjustments to their diverse production units to accommodate market changes at each different time to achieve highest economic value. While Thailoil's 2021 Gross Refining Margin (GRM) was low, other types of products in subsidiaries were able to generate high profit for most of the year. The petroleum refining process was, therefore, adjusted to produce feedstock

for subsidiaries to accomplish value chain maximization. Meanwhile, the production process was adjusted in accordance with demand for petroleum products, particularly that of the domestic market. High-Value products were developed to satisfy market demand, recognized as part of margin improvement, resulting from production process management to create value addition to hydrocarbon along with supply chain management in parallel with cost reduction under the Productivity Improvement Project that has been continuously carried out. In 2021, Thailoil and Subsidiaries managed to generate an overall profit of 236 USD per barrel, or THB 7,605 million, from the Productivity Improvement Project, under which major activities were as follows:

Thailoil Refinery

- >> Procured crude of highest economic value with logistic management to ensure that crude vessels are used to their full capacity to save freight cost along with management of crude tanks to ensure their availability for crude purchase in advance when the price was foreseen to increase
- >> Separated crude with high sulphur content from that with low sulphur content, enabling the refinery to produce higher volume of Low Sulphur Fuel Oil (LSFO with 0.5 percent sulphur content by weight) while using less low-sulphur diesel as a component, resulting in maximum economic value
- >> Made some adjustments to production units, such as adjusting the temperature range of the crude distillation unit, adjusting the Continuous Catalyst Regeneration Platformer (CCR) Unit in the platformate production, and the production unit of Thai Paraxylene Co., Ltd. to achieve a suitable octane value, as well as adjusting the Hydrocracking Unit-1/2 to produce diesel, naphtha, gasoline, and aromatics at the volumes demanded by the market

- >> Successfully solved the pressure drop across the CCR Unit-2, and applied the Deep Bed Filtration system to completely solve the pressure drop across the Hydrocracking Unit-2, consequently avoiding a loss of business opportunities due to shutdown maintenance
- >> Improved various production processes to achieve energy efficiency, resulting in energy saving of around 142,557 gigajoules (GJ); for example, keeping control of steam consumption of the Crude Distillation Unit-2 at an appropriate level, managing feedstock to reduce temperature in the furnace of the Sulphur Recovery Unit, and conducting assessment of energy efficiency of the Sour Water Stripper Unit-2/5 to keep only one unit running during low demand for water caused by decreased production rate, etc.
- >> Executed the business restructure to streamline the operations by accepting business transfer of Thailoil Power Co., Ltd. as of February 1, 2021, with determination to continuous development of the production process.

Thai Lube Base Plc

- >> Installed Plate Heat Exchanger for heat transfer from Thailoil's long residue to Propane Deasphalting Unit and Solvent Dewaxing Unit, bringing waste energy into reuse in the production process to enhance energy efficiency, resulting in energy saving of 48,284 GJ per year. A shorter time was also taken for keeping a sufficient reserve of long residue for the monthly lubricant production planning, allowing Thailoil to adjust production plan for its crude distillation unit to produce petroleum products of higher economic value and, thus, higher profit.
- >> Increased lube base oil production capacity by keeping intermediate products from the MP Refining Unit and Hydrofinishing Unit in storage tanks, enabling isolation of Solvent Dewaxing Unit's

production process, resulting in all production units to function at their full capacities

- >> Executed the Feedstock Selection Project, in which feedstock from new sources can be tested with higher speed and more accuracy, enabling procurement of new types of long residue with economic value, thus increasing in more capacity of imported long residue and lower overall production cost
- >> Brought Hydrocracker Bottoms (HCB) from Thairoil for blending with long residue to increase lube base oil production volume during the price surge
- >> Produced bitumen penetration grade 40/50, which has higher quality and better price than the bitumen penetration grade 60/70, to serve rising customers' need
- >> Improved the lorry loading station to achieve more efficient distribution of lube base oil in flexi bags, designed for easy loading into shipping containers, to respond customers who want the product in small volumes, which can sell at a higher price than the previous packaging
- >> Used low-price short residue from Thairoil as feedstock for bitumen production to increase product value and volume

Thai Paraxylene Co., Ltd.

- >> Carried out efficient production, resulting in 100 percent operational availability
- >> Adjusted production units in response to market conditions to increase production of high value products and to consequently achieve better economic value. This included adjustment of solvent per feed ratio of the ED Sulfolane Unit to an appropriate level to reduce loss of benzene, increase in temperature range for distillation of mixed xylenes in the Mixed Xylenes Unit to feed the Parex Unit, resulting in increased paraxylene production volume

>> Operated the PXMax Unit to turn toluene into such higher value products as paraxylene and benzene while procuring and importing toluene used as additional feedstock whenever economic value is envisioned

>> Improved production units to achieve energy efficiency. This included increasing the capacity to receive higher volume of heavy aromatics (C9) feeded to Parex Unit. The heavy aromatics was separately distilled from the Xylene Rerun Column, resulting in lower energy consumption of the Xylene Rerun Column by 62,010 GJ.

LABIX Co., Ltd.

- >> Increased production capacity of LAB, known as LABIX Debottleneck Project, by improving and expanding the production capacity of n-Paraffin Complex Unit (Normal Paraffin Complex) to reduce import of Normal Paraffin, while improving and increasing the production capacity of LAB Complex Unit, resulting in the production of LAB to increase from 385 tons to 405 tons per day
- >> Increased the production capacity of Transalkylation Reactor in the Detal Unit to turn Heavy Alkyl Benzene (HAB) into the higher value LAB products and to consequently increase LAB volume
- >> Improved the method to change catalysts of Pacol Unit, to ensure higher efficiency, causing change of catalysts to complete sooner than planned while reducing loss of LAB
- >> Produced Molex Raffinate, a compound in steel paint, to meet customers' demand
- >> Improved production processes for better energy efficiency. This included pressure reduction of the distillation column for eliminating desorbents and raffinates of the Molex Unit and PEP Unit to an appropriate level, and the calibration and control of

the process of the LAB distillation column and the Finishing distillation column of the Detal Plus Unit to improve energy efficiency. These resulted in an overall reduction of energy consumption of around 59,890 GJ.

TOP SPP Co., Ltd.

- >> Improved the quality of lubricant for power generators by installing an oil filter for higher reliability while reducing risk from unplanned shutdown caused by deteriorated lubricant
- >> Received endorsement from the Industrial Works Department, allowing extension of boiler statutory inspection period from one to three years, providing time saving for boiler and power generator maintenance, resulting in increased sales volume of both electricity and steam as demanded by customers
- >> Reduced major inspection time through maintenance of stationary machinery's rotors, resulting in shorter maintenance time while avoiding loss of opportunity for electricity sale as demanded by customers
- >> Arranged for a third party to examine the Primary Energy Saving (PES) Index of the cogeneration process of power production units in the two projects stated in the power sale-purchase agreement. Power and steam generators were found to have PES Index higher than the requirements, resulting in ultimate fuel saving (FS).
- >> Installed the Reverse Osmosis Unit (R.O. Unit) for water recycling
- >> Installed an additional Inter-trip system at the 2nd project, according to the requirements of the Electricity Generating Authority of Thailand (EGAT) and the Provincial Electricity Authority (PEA), enabling uninterrupted power transmission to EGAT without the need to disconnect from the grid during EGAT's Ao Phai Station upgrade, thus increasing

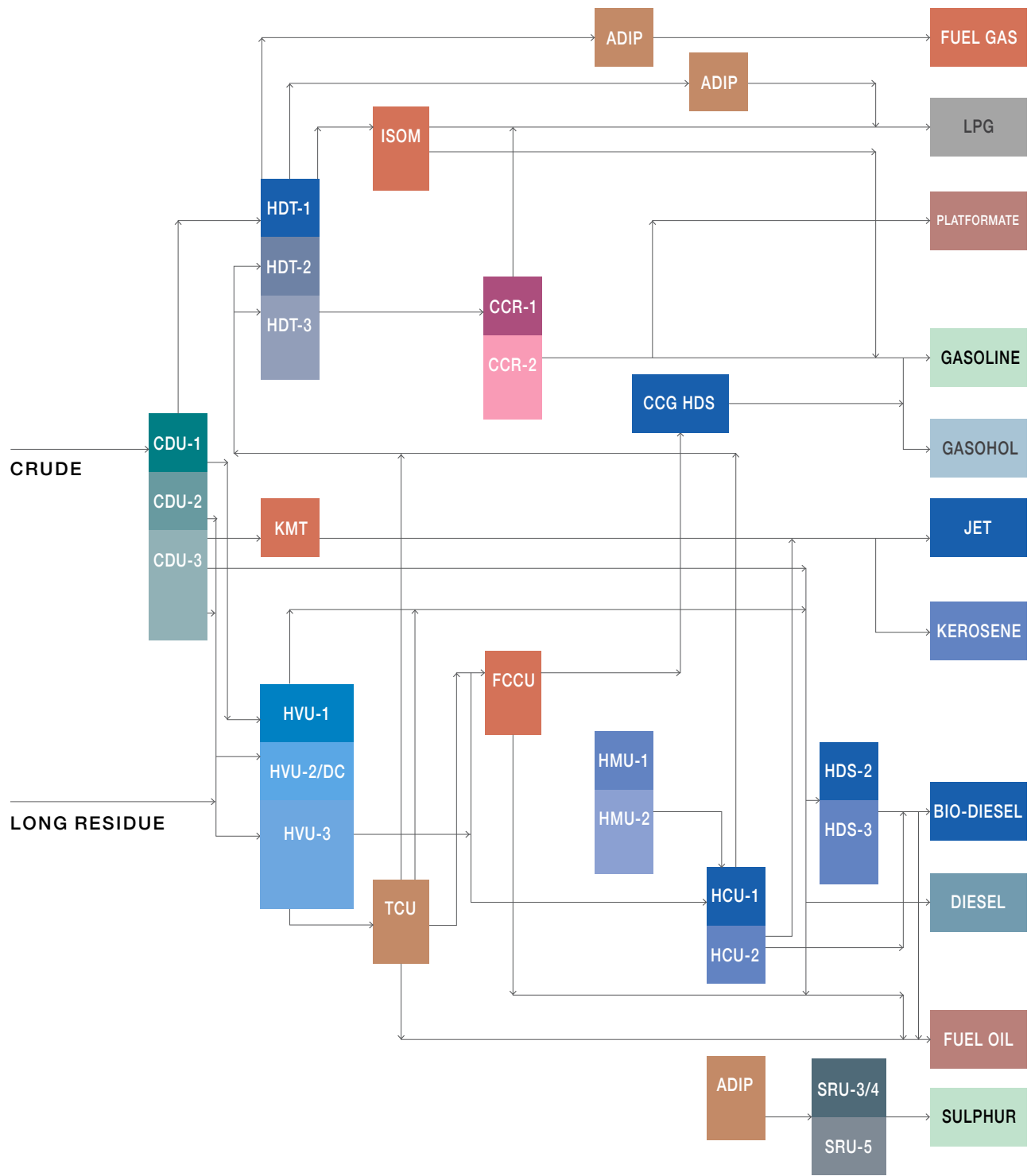
reliability of TOP SPP's power system and meeting EGAT's power generation requirements

- >> Controlled production process to achieve energy conservation goals and cost reduction, such as:
 - Used Heat Recovery Steam Generator to produce ultra-high-pressure steam instead of a fired boiler
 - Increased the usage cycle of the demineralization unit in the boiler feed water to reduce the consumption of regenerative chemicals in the demineralization unit.

Refining Performance Assessment

With to proactive management to ensure plant efficiency, swift response to market demand could be enhanced, Thailoil and Subsidiaries managed to maintain plant utilization excellence through integrated effort from all parts of the operations. Thailoil and Subsidiaries demonstrated high level of productivity improvement and excelled in energy efficiency with continuous improvement except for Thailoil, which achieved lower production rate than its target. This was caused by the spread COVID-19 which has prolonged since 2020, causing lower energy efficiency because the production units were operated at significantly lower rates than the design, which resulted in deteriorated machine performance. Moreover, at Thai Lube Base Plc, a leakage was found on the additionally installed heat exchanger, resulting in a shutdown and energy efficiency slightly lower than the target. For Thai Paraxylene Co., Ltd. and LABIX Co., Ltd., a project was implemented to continuously increase energy efficiency and was successful as targeted, resulting in achievement of energy intensity index as targeted. However, Thailoil and Subsidiaries continued earnestly and constantly conduct the energy conservation projects to ensure highest efficiency of energy utilization. Thailoil and Subsidiaries was committed to continuous improvement and development of petroleum refining capability to maintain its position as a leading refinery in the Asia Pacific.

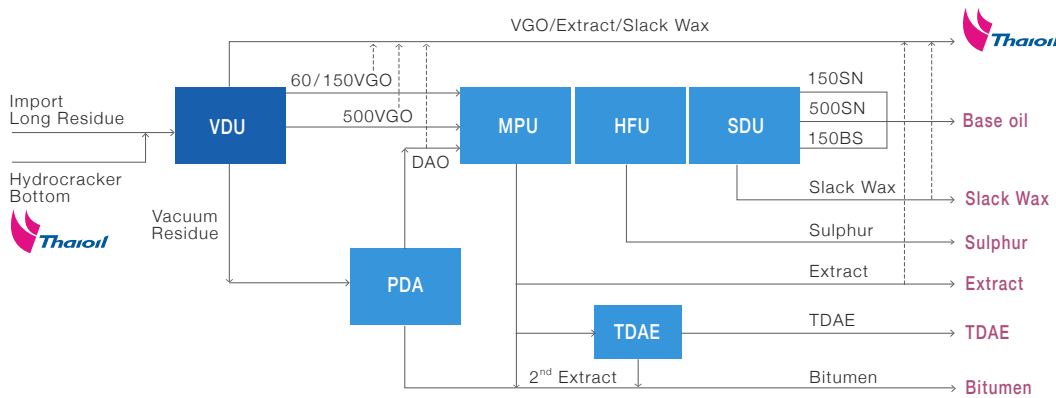
CRUDE AND FEEDSTOCK REFINING PROCESSES



INCLUDING PETROCHEMICAL AND LUBRICATING OIL PROCESSING OF THAI OIL AND SUBSIDIARIES

SIMPLIFIED LUBE CONFIGURATION

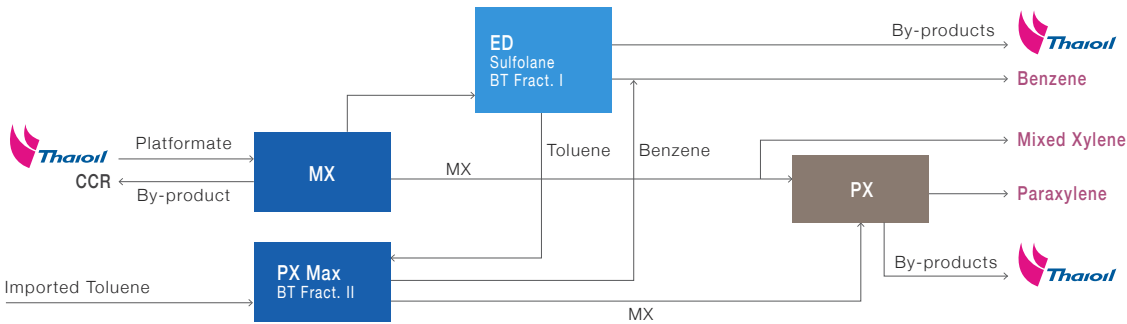
- DISTILLATION
- QUALITY IMPROVEMENT
- PRODUCT



Flow Diagram of TLB, with lube base oil as products

SIMPLIFIED AROMATICS CONFIGURATION

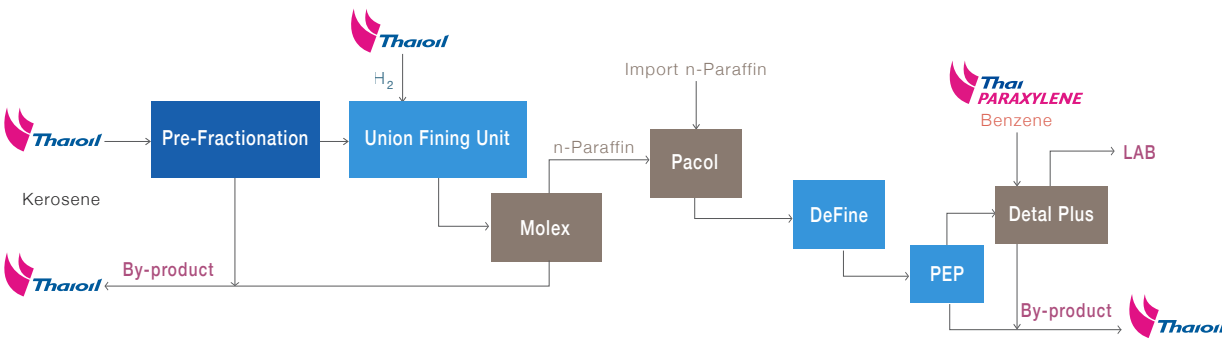
- DISTILLATION
- QUALITY IMPROVEMENT
- UPGRADING
- PRODUCT



Flow Diagram of TPX, with aromatics outputs as feedstock for the downstream petrochemical industry

SIMPLIFIED LAB CONFIGURATION

- DISTILLATION
- QUALITY IMPROVEMENT
- UPGRADING
- PRODUCT



Flow Diagram of Labix for the production of Linear Alkyl Benzene (LAB)

Details related to the production processes of petroleum products from crude oil and other feedstock, including the production of lubricants and petrochemicals of Thai Oil and Subsidiaries, are disclosed on the website (www.thaioilgroup.com) on the topic 'Thai Oil and Subsidiaries' Business/oil refining business, lube base oil business, petrochemical business, and other businesses'.

Future Projects



In response to the vision ‘**Empowering Human Life through Sustainable Energy and Chemicals**’, Thailoil and Subsidiaries are committed to creating sustainable growth according to strategic plans by investing in various projects to enhance competitiveness in areas where Thailoil and Subsidiaries are specialized. These projects are, for example, expanding production capacities, extending businesses from petroleum to petrochemicals and high-value products, enhancing efficiency and competitiveness, and creating innovative products to meet consumers’ demand. A diversified investment portfolio has been instituted to reduce dependence on petroleum refining business by obtaining a steady revenue stream from the power business. Opportunities have been sought in the green business and new innovative businesses that are in line with future trends for a more flexible portfolio. Development has been executed to

infrastructure and utilities for greater security in Thailoil and Subsidiaries’ distribution and delivery of products and services. Investment has been extended to countries with economic potential, such as ASEAN countries, to embrace new business opportunities. Importantly, Thailoil and Subsidiaries focus on investment plans suitable with dynamic market conditions for optimal benefit of the corporate and stakeholders.

Ongoing Projects

Clean Fuel Project (CFP)

To improve the production process and enhance competitiveness in response to higher demand in Thailand and countries in the ASEAN Economic Community, where imports of petroleum products are continuously rising, Thailoil and Subsidiaries launched the CFP—a project to increase competitiveness by upgrading production process efficiency to achieve

higher values from production of environment-friendly products. In this regard, Thailoil constructed a refining unit that converts fuel oil into more diesel and jet fuels together with expansion of refining capacity from 275,000 to 400,000 barrels per day for more operation flexibility. A larger volume and more diverse types of crude could thus be processed, resulting in economies of scale and lower costs. CFP also contributes to national energy security while supporting drive the country's economy in the long term.

The CFP investment is worth USD 4.825 billion. The sale of Energy Recovery Unit (ERU) has lowered CFP investment cost by USD 757 million, thus keeping the total cost of CFP within USD 4.174 billion. The project is currently under construction.

Euro 5 Standard Fuels

Under the government's policy to raise domestic fuel specifications to the Euro 5 standard with effect from January 1, 2024, Thailoil and Subsidiaries have started making adjustment to the Hydrodesulphurization unit for quality improvement. the project is expected to complete and ready for commercial operation by the end of 2022; it is considered a support for Thailoil and Subsidiaries' higher competitiveness.

Expansion of Power and Steam Production at TOP SPP Co., Ltd.

As the power purchase agreement (SPP-PPA) will expire in 2023, Thailoil and Subsidiaries decided to expand the capacity of TOP SPP's power and steam unit to ensure supply security of power and steam on Thailoil Refinery premises. It is expected that the construction will complete and commercial operation will start in Q2/2023.

Projects under Feasibility Study

Design and Construction of RHCU Pilot Plant

The Residue Hydrocracking Unit (RHCU) pilot plant works for providing technical information required for production planning to achieve highest possible benefit. The RHCU process is to be analyzed to identify the specifications of heavy crude with low price and compatibility with its process. It can also test the catalyst quality so that the proper type of catalyst can be selected.

Petrochemical Business Expansion

Thailoil and Subsidiaries invested in PT Chandra Asri Petrochemical Tbk (CAP)—the largest petrochemical producer in Indonesia, to expand the downstream value chain. The investment provides a better opportunity to enhance operation flow from petroleum to petrochemical business. CAP is currently under the expansion of production capacity.

Heavy Naphtha Upgrading Project

Thailoil and Subsidiaries are carrying out a study to revamp the aromatics production unit to turn heavy naphtha, a by-product of the CFP, into products of higher value, such as gasoline, paraxylene, etc. This is to satisfy rising demand in CLMV countries.

Expansion of High-Value Products (HVP)

Thailoil and Subsidiaries have established a goal to increase the production ratio of HVP by implementing a strategic plan to leverage regular commodities into products of higher value, thus attracting new customers with specific needs. Studies have been carried out on creating value addition, ranging from light-end products to heavy-end products by emphasizing delivery of products that meet the needs and satisfaction of

customers in chemical, surfactant, and lube base oil businesses. HVP will also respond to specific needs of customers in such downstream industries as health care, home appliances, and personal care, as well as automobile, electric and electronic appliances, among others.

Expansion of Solvent and Chemicals Business

Thaioil and Subsidiaries aim to increase sales volume and maintain market shares of the domestic solvent and chemical products through TOP Solvent Co., Ltd., and existing distribution platform. Focus is given to expanding customer bases in new target countries in Southeast Asia with high economic growth through joint ventures, and mergers and acquisitions as well as through cooperation with manufacturing partners to achieve a diverse product portfolio, thus meeting customers' demand better.

Expansion of International Logistic and Infrastructure

Thaioil and Subsidiaries are planning to acquire a solvent and chemical depot in Vietnam and invest in improving and developing logistic management systems, utility systems, and infrastructures in Indonesia and India. Such investment will be made through joint ventures with allied chemical product distributors. This will be a supporting pillar for Thaioil and Subsidiaries' regional distribution plans, an essential foundation of future growth.

Investigating Investment in the Power Sector

Thaioil and Subsidiaries have a strategy to increase investment proportion in the power business with a consistent income structure to diversify risk from the

refining and petrochemical businesses. A joint effort with the PTT Group has been made for driving strategic growth Global Power Synergy Plc by seeking opportunities to invest in businesses related to energy efficiency and new energy sources. Also, the investment is aimed at both domestic and international power businesses using renewable energy, such as solar farms and wind power plants.

Corporate Venture Capital (CVC) through TOP Ventures Co., Ltd.

To grasp new business opportunities in the new S-curve industries, Thaioil and Subsidiaries decided to invest in the form of CVC. The investment was made in three business groups: namely, 1) technology to maximize production capacity which can leverage products and services for other future industries; 2) environment-friendly technology to raise quality of life; and 3) transport technology in support of new forms of mobility and new energy.

Investment in Step Out Business

Thaioil and Subsidiaries has drawn up a strategic plan to enhance flexibility to the investment portfolio to achieve growth and meet requirements of future market through joint ventures or mergers and acquisitions. Investment framework includes two business groups, namely 1) green-driven businesses, for example, hydrogen business, bio business, and business concerning circular economy; and 2) new quick win business, such as resource management, cleaning and hygiene technology business, and digital technology business.

Risk Factors and Corporate Risk Management

This year, the entire world has continued to reel from the COVID-19 pandemic that mutated and quickly spread around the world, causing numerous countries, including Thailand, to close down their borders, seek public cooperation in refraining from travel and canceling non-essential activities, and seek private companies' cooperation in having their employees work from home to ward off and curb infection. As a result, recovery of the economy and petroleum product demand was delayed, notably that of jet fuels. The New Normal—particularly the application of novel technologies relying on online media facilitate work from home and increase its efficiency—has significantly raised cyber attacks. These factors have direct impacts on business operation, prompting Thaipol and Subsidiaries to upgrade them to major risk factors.

To ensure higher efficiency of risk management and handling of potential impacts and maintain business competitiveness in a state of high uncertainty and volatility, Thaipol and Subsidiaries applied the risk management approach under the model of The Committee of Sponsoring Organizations of the Treadway Commission Enterprise Risk Management 2017 (COSO ERM) and ISO 31000: 2018 (Risk Management Principles and Guidelines), considered universal practices. The emphasis is on integrated management embracing Thaipol and Subsidiaries' risk management and risk appetite, consisting of seven elements: performance and investment; compliance; safety, occupational health and environment; reputation; fraud and corruption; ICT security; and Clean Fuel Project (CFP). Thaipol then linked the risk appetite framework to the process of mapping out the strategic plan, investment plan, and business plan to align with corporate objectives and

goals. This was complemented by the identification of key risk factors, both internal and external, under stakeholders' expectations and their roles in defining measures and plans for each factor. Finally, key risks were identified along with Key Risk Indicators (KRIs) to closely track key risks and risk management outcomes. Reports were then regularly made to the Risk Management Steering Committee (RMSC), the Risk Management Committee (RMC), and the Board of Directors (the Board) for efficient and effective steering of enterprise risk management. Finally, we defined risk management among the Key Performance Indicators (KPIs) of Thaipol and Subsidiaries' executive teams.

Currently, the severity of threats tends to increase; also, calamities and situations that could disrupt businesses are approaching, so Thaipol has readied itself by defining its Business Continuity Plan (BCP) to comprehensively cover critical processes and key support processes under the ISO 22301: 2019 Business Continuity Management. Simulated disaster defined as part of the BCP drills in conjunction with continual emergency drills of the refinery. Also, the Integrated Governance, Risk and Internal Control, Compliance (GRC) system was improved to enable Thaipol to grow sustainably, command ethics, in line with corporate governance, conduct risk management systematically, and comply with laws, regulations and articles of associations.

Corporate Risk Management and Mitigation Plans

Thaipol has systematically advocated monitoring and reviewing risks and the effectiveness of mitigation plans. Thaipol and Subsidiaries' risks, mitigation plans, and outcomes of KRI management monitoring for 2021 were

tabled for RMC's endorsement before pursuing the Board's approval. Thailoil and Subsidiaries' risks were divided into three aspects, 11 key risks, with defined corresponding preventive or mitigation plans or measures to achieve goals, as described below:

Business as Usual

1. Market/Commercial Risks

This year, the crude price and the spread between crude oil and petroleum products (both of which directly affect Thailoil and Subsidiaries' profitability) varied wildly amid the COVID-19 pandemic. Thailoil therefore more actively adjusted its margin hedging. To this end, the Hedging Steering Committee regularly screened and together reviewed the strategic plan and set hedging goals under the scope endorsed by RMC and the Board. We also engaged in productivity improvement and cost reduction to minimize such risks.

As for commercial risks, we valued risk management of our reliance on major customers by selling petroleum products to PTT Oil and Retail Business Plc (OR) under the Product Offtake and Crude Oil Supply Agreement (POCSA), to give us the volumes of petroleum products needed by our customers ahead of time, so that we might plan our refined volumes most accurately matching customers' demand. We also sold petroleum products to other traders in and outside the country, and sold them as feedstock to Thai Paraxylene Co., Ltd., and Thai Lube Base Plc, as well as expanding our business to the petrochemical business and to Indonesia, a major step to diversify our investment to ease commercial risks to in turn meet our risk appetite.

2. Black Swan Event

The COVID-19 pandemic is a Black Swan Event—unexpected with a low likelihood, but leading to detriment and great change, posting major impact on

our business and how employees and contractors operate. Thailoil have continually tracked the situation by setting up an I-COVID Center to exercise proactive measures to prevent transmission among employees and contractors. We also drew up a BCP and continually rehearsed plans to be better prepared, should infection occur in Thailoil.

3. Risks from major incidents affecting or disrupting business (due to external factors including natural disasters, terrorism, and protests and internal factors including unplanned shutdowns from equipment breakdowns, and other unsafe acts)

Apart from affecting business operations, these risks affect our reputation, communities, society, and the environment. Thailoil prepared preventive measures and mitigation plans by adding measures for security, safety, occupational health, and the environment in the operation of employees and related persons. We stress process safety management; advocate safety activities of operators and contractors to embrace and further strengthen every work process; advocate inspection, maintenance, and assurance that all machinery works efficiently; coordinate with nearby communities, local government agencies, and industry groups to form collaboration on equipment and resources for safe and ongoing operations. In addition, we regularly revise, improve, and rehearse our BCP. Thailoil have engaged in applicable insurance, namely physical loss or damage and business interruption insurance, third party liability insurance, miscellaneous insurance, and environmental liability insurance, to safeguard our properties and properties under our care, including the refinery, tank farm, supplies and equipment, and others; and insure against damages and losses of life and properties of third parties, including public liability, pollution liability, and product liability in addition to protection against potential loss to the environment and rehabilitation expenses.

This year, the domestic water situation was considered a key risk to the business operation, so Thailoil ceaselessly tracked the situation, with measures to adjust its water consumption plan and properly allocate its use with the 3R principles. We also defined strategies for sustainable water consumption.

4. Cyber Threats and IT Security

Modification of work models and more reliance on technology, including work from home during the spread of COVID-19 and work in digital workplaces where staff connect, communicate, and collaborate through multiple channels, and application of digital technology to increase efficiency in every step of business, have become major factors leading to cyber security risks including data leaks and infrastructure attacks, among others. Thailoil therefore elevated its safety measures for its information system to safeguard itself from external threats, including compliance with ISO 27001; relentless system monitoring and inspection; communication of measures and guidelines to related parties; and regular testing of protection systems by third party experts to detect defects and seek additional protection guidelines. We also assessed security maturity level according to international standards, and commissioned an external expert to conduct vulnerability assessment in addition to engagement in a BCP drill on the IT disaster recovery plan to ensure that our business could proceed seamlessly and continually meet customers' and stakeholders' needs without affecting communities, society, and the environment.

Strategic Initiatives

5. CPF Execution and Readiness for Startup & Operation

CPF is a major project impacting Thailoil's growth and sustainability. We therefore value and manage this project's risks together with our contractors and related stakeholders in all sectors. Six aspects are

involved: occupational health and safety, management of communities around the refinery, project period, capital management, quality, and preparedness of current and future process units. This is to ensure that CPF can operate commercially as planned. Although CPF was affected by the spread of COVID-19 this year, the project management team had prepared mitigation plans. The mitigation plan included the proper prioritization of engineering and procurement work under the situation and compliance with the COVID-19 preventive measures.

6. New Project, New Investment, Product Development and Market Expansion

Thailoil maps out investment strategies to expand the business and pursue business opportunities in refining and non-refining undertakings to foster overall growth and sustainability. To elaborate, key risks are assessed and strategic projects monitored, including olefins investment, capacity expansion of TOP SPP Co., Ltd., and the High-Value Products (HVP) Project. Such moves enable project implementation to proceed as planned as well as lowering risks.

7. Long-Term Business Disruption Risks

Due to consumers' increasing awareness of environment, the energy consumption pattern has gradually changed. The use of Electric Vehicles (EVs) instead of combustion engines and the Net Zero Greenhouse Gas (GHG) Emission policy. This could hasten a plunge in fossil fuel demand, thereby affecting Thailoil's business in the long term or disrupting it altogether. Thailoil has therefore decided to expand to the olefins business by investing in PT Chandra Asri Petrochemical Tbk of Indonesia to sustain Thailand's demand for olefins products, which would support its business structural growth to embrace the entire spectrum of the petroleum and petrochemical businesses. Thailoil and Subsidiaries

also engaged in long-term planning and implementation of assorted strategic plans to get ready for a low-carbon society, as pledged by Thailand to the 26th Meeting of the United Nations Framework Convention on Climate Change Conference of the Parties (COP26). The strategy, for example, is increasing process efficiencies to curb and lower GHG emissions and investigating investment in the green business.

Strategic Enablers & Sustainability

8. Financial Risks due to Foreign Exchange & Funding of Major Projects and Inability to Maintain Credit Rating

Foreign exchange fluctuation affects our business, since key payment of our production cost covering crude oil and feedstock is made of in the US dollar. Thailoil and Subsidiaries have therefore structured its debts in US dollar to match income structure (Natural Hedge) as well as engaging in forward contracts for currencies, disbursed and repaid loans in amounts matching actual receipt and expenses, and developed new financial tools to add options and flexibility for securing loans through the money and capital markets. Finally, we structure our investment capital to ensure sustainable growth by closely monitoring movements of money and capital markets.

9. Staff Readiness

To enable the CFP and New S-Curve Business growth to proceed seamlessly, we have restructured our workforce and modified our strategies for recruiting and improving competence to match business needs and align with the New Normal. Our actions have included proactive recruitment focusing on accessing integrated HR resources through a wider variety of channels, personnel development planning that satisfies our future needs by designing essential expertise and enhancing knowhow among related

personnel, as well as introducing technology to support personnel development. In addition, we have created learning media, added communication channels and nurtured relations within the organization to address all generations' needs, apart from growing our welfare schemes' diversity to meet everyone's needs. Finally, we took steps to modify our personal administration for greater flexibility to address Thailoil's needs while supporting compliance with the human rights in the workplace.

10. Failure to Comply with Laws and Regulations (Including PDPA)

Changes in public policies, which now value economic development in tandem with the development of society, communities, and the environment, have wielded impacts on our current businesses as well as the expansion of business and investment in various projects under our strategic plans. Thailoil and Subsidiaries therefore follow up and examine laws and regulations to ensure that our businesses align with laws, regulations, articles of associations as well as applicable announcements, rules, and directives of the public sector with legally binding effect. We systematically track changes in public policies and draft new laws to promptly cope with them and forge awareness of the significance of compliance among staff and operators at all levels. We also command self-assessment to verify the efficiency and effectiveness of alignment between our businesses and public policies, rules, regulations, and laws. Thailoil and Subsidiaries took steps to ready themselves for the Personal Data Protection Act (PDPA) by appointing a taskforce in 2020 to steer and define a direction for managing personal data management in line with the PDPA B.E. 2562 (2019) so that data owners may be

assured of data security. The actions taken included staff education and counsel, development of information system and personal data management for greater efficiency, as well as corrective actions as instructed by a consultant company.

11. Community Complaints including Social Concerns

Thaioil and Subsidiaries value their businesses in parallel with community development for a better quality of life through Corporate Social Responsibility (CSR) projects around the refinery as well as remote areas (in education, environmental conservation, energy, and natural resources) to achieve the goal of an admired, accepted, and trusted entity among communities and society. To this end, we give opportunities for various stakeholders to participate in administration through a coordination strategy involving Thaioil and Subsidiaries, communities, and local entities, all involved in together thinking, acting, resolving, learning, and developing. That way, all sectors would operate public services with the same goal. We comply with the environmental whistleblowing process, should our operations affect the lives of community residents. We also engage in community administration through our CFP Support Center to coordinate and receive complaints from community members affected strictly by CFP to ensure that Thaioil and Subsidiaries commands actions to ease environmental impacts on communities. Finally, we are committed to conducting our businesses with equitable treatment for all stakeholders for sustainable mutual benefit.

Emerging Risks

Amid changing political, economic, social, environmental, legal, and technological factors, our overall business is possibly effected and inevitably forced with emerging risks:

1. Risks from Laws and Regulations Changes due to Climate Change

The climate change has become important, reflecting in the COP26 Meeting during October 31 and November 12, 2021, to define new laws, regulations, rules, and scope of operation under the accord on GHG reduction. Thailand signed a pledge to increasingly lower GHG emissions from 20-25 percent to 40 percent by 2030 compared with the base year of 2015, to achieve Net Zero GHG emissions by 2050. In addition, the public sector is committed to monitoring, revising, and promoting participation in resolving global warming every five years. To this end, it requires applicable public agencies to improve laws concerning climate change, enforceable within three years; and in five years, they must define proper tools for giving economic incentives for the private sector to lower GHG emissions and define promotional measures for the public to adjust their everyday habits to jointly resolve such problems, including development and promotion of mass transport schemes and reduction of plastic bag use. To this end, despite unclear public policies, laws, and regulations tools and enforcement procedures, Thaioil has projected that the EV policy, reforestation, production efficiency improvement, and permission for private investment in the Carbon Capture, Utilization, and Storage (CCUS) all represent business transition risks in coming years.

Mitigation plan: Thaioil has drawn up plans embracing existing business and future investment to sustain such changes through market re-segmentation. This is done by lowering GHG emissions (Scope 1 and Scope 2) by raising process energy efficiency and investing in a new crude distillation unit under CFP with advanced technology and high efficiency. This helps the production of more high-value petroleum products such as jet fuels

and diesel while leveraging more heavy crude consumption in the process. These steps are in parallel with the shutdown of crude distillation units aged over 50 years old, in turn reducing GHG emissions in the business-as-usual plan and in market re-segmentation (lowering gasoline while raising diesel and jet fuel outputs to match future demand). We have also defined various goals, including planning and setting long-term GHG emissions against business-as-usual plans to define the annual and long-term goals for energy reduction as required by the Solomon Energy Intensity Index (EII). Also, we engaged in the monitoring of and participation in Thailand's GHG planning with PTT Group, including participation in giving recommendations on the draft climate change act. Our actions also included preparation of a life-cycle inventory with the Petroleum Institute of Thailand to obtain a database for participation in the Carbon Footprint Project and investigation of the approach and procedures of the Thailand Voluntary Emission Reduction Program (T-VER) Project to ready ourselves for changes in related laws concerning climate change by assessing and pursuing suitable guidelines and reviewing carbon pricing and carbon-credit certification to approach a low-carbon society. The required data are then used in revising plans to achieve GHG reduction goals. Finally, Thailoil has undergone portfolio restructuring to raise its investment proportion in non-refining businesses together with the formulation of a long-term GHG reduction plan, including TOP SPP Co., Ltd.'s project to expand its power generation and steam production capacities, studies on its investment in renewable energy businesses and reforestation.

2. Technology Disruption in Transport Energy

Technological transformation is looming large on alternative forms of energy replacing traditional

automotive fuels, thus affecting the energy industry. Today, one is witnessing vibrant technological development and improvement for alternative-energy production, including EVs and hydrogen fuels. In 2018, certain car manufacturers in Europe set a goal to reduce or cease manufacturing of combustion-engine cars. At the same time, Thai public sector has issued regulations to promote alternative energy, notably seen in Thailand Integrated Energy Blueprint (TIEB 2015) under Energy Efficiency Plan (EEP 2015), including support for charging stations for EVs and formulation of a plan to develop EV infrastructure. If consumers extensively and swiftly change their behavior to use EVs, the oil industry could find itself unable to timely adjust and be thereby affected on revenue and long-term growth.

Mitigation plan: Thailoil launched CFP to improve process efficiency with emphasis on diesel and jet fuel outputs, and restructured their investment portfolio to raise the portion for non-refining businesses over the long term by setting a 50 percent revenue proportion goal as well as pursuing new investment opportunities, including HVP products. We have also addressed the trend of future technological development with the Earnings Diversification Strategy, including investment in the startup business through Venture Capital (VC). To elaborate, our scope consists of investment in three businesses: 1) technology for greater performance in production and scaling up to goods and services for other future industries; 2) technology for better human quality of life with due regard for the environment; and 3) technology on for transportation, mobility, and novel forms of energy. This year, Thailoil and Subsidiaries made another investment through VC and two startup companies domestically and internationally. We are also pursuing additional investment opportunities to maintain our growth rate in line with this goal.

Internal Controls

Thaioil is aware of the importance of the internal control system under the international framework of The Committee of Sponsoring Organizations of Treadway Commission 2013 (COSO 2013) to attain all of the three aspects of internal control goals: namely, efficient and effective operations, credibility of financial and other reports, and full compliance with laws and regulations. The Board of Directors (the Board) assigns the Audit Committee to review results of internal control assessment, while the Operational Risk Management Section takes charge of monitoring and reviewing the adequacy of internal control system on an annual basis.

In 2021, the Board examined the assessment using the Securities and Exchange Commission, Thailand (SEC)'s form, which was prepared by Thaioil's executives and subsequently reviewed by the Audit Committee, and concluded that Thaioil's internal control system was indeed adequate and suitable for its business operations to accomplish the objectives. the development of operations and working systems to support the five aspects of internal control system under COSO 2013, are as follows:

1. Control Environment

The Board and executives of Thaioil support for the corporate culture that stresses honesty and business ethics, consistent with the organization's vision and mission, by managing a sound and suitable environment for internal control system as detailed below:

>> Corporate governance policies and code of conducts including anti-corruption as operation guidelines for directors, executives, and employees–Conflict of interest is to be reported via an electronic system every year. Emphasis is made on giving or acceptance of present, asset, or other benefits. Executives, and employees are obliged to comply with such policies

and guidelines. Importantly, preparation has been made for Personal Data Protection Act, which will come into effect on June 1, 2022. This earns Thaioil, in 2021, a number of achievement awards at national and international levels.

>> independency of the Board and the executives–Roles and responsibilities of the Board and executives are to review and endorse key strategies and policies, as well as objectives, financial goals, risks, work plans, and budget. They are to also uphold compliance with laws while ensuring that the executives pursue business policies and strategies efficiently and effectively.

>> Organizational structure–The organization is structured with emphasis on efficient internal control, equipped with checks and balances through different functions of work, whose authority, duties, and responsibilities are independent from one another. Each line of work has its own top executive. The organizational structure is regularly reviewed to keep pace with business strategies and plans.

>> Human resource development plan–Thaioil devised an HR policy that enhances employees' competency in a systematic, duly embracing aspects of personnel attraction, development, and retention and engagement, with a succession plan of key positions readily prepared. The Company also values the process of fair performance management that reflects the ability to perform against Key Performance Indicators (KPIs). A long-term strategy was identified for personnel recruitment to support of the prevailing business needs.

>> Integrated Governance, Risk and Internal Control, Compliance (GRC)–Thaioil moves forward with ethics and good governance as well as systematic risk management. In 2021, Thaioil incorporated

integrated GRC into all key operating processes. GRC has been continuously promoted to support oversight, review, monitoring, and enhancement of operations to ensure maximum efficiency. Thailoil also encourages awareness and understanding of GRC using 'tone at the top' approach through CEO Connect activities.

2. Risk Assessment

Thailoil values risk management and incorporates it into the entire organization to drive the business towards both short-term and long-term goals with confidence, with The Risk Management Committee (RMC) and the Risk Management Steering Committee (RMSC) supervising of efficient risk management.

To this end, Thailoil devised a risk management plan embracing risk assessment, analysis, and review in line with its strategies and business plans to pursue objectives and goals. The plan takes into account corruption probability as well as external and internal factors that may influence both current and future business. Moreover, Risk Appetites and Key Risk Indicators (KRIs) are defined to facilitate performance monitoring and reporting; managing details of which can be found in the 'Risk Factors and Corporate Risk Management' section. In 2021, Thailoil set up the I-COVID Center to assess risks and impacts from the COVID-19 pandemic so that timely response can be made. Regarding cyber security, risk was assessed and a business continuity plan was drawn.

Each year, process owners are to assess prevailing parameters affecting internal control and further develops an improvement plan or enhances control to ensure alignment and up-to-dateness.

3. Control Activities

Efficient and effective control activities help Thailoil mitigate risks within the acceptable risk appetite. Key control measures are as follows:

- >> Internal control measures based on good control principles—including segregation of duties, Corporate Authorization Procedures (CAP), review, and document filing. In 2021, Thailoil developed the Governance, Risk and Internal Control, Compliance Self-Assessment (GRCSA) form for applicable units to assess their respective risks and internal controls. Operational Risk Management Section was assigned to follow up that any additional control improvement plans would be executed within the timeframe to ensure Thailoil's adequate and suitable internal control.
- >> Preventive and monitoring control activities—both manual and automated systems inherent in work processes. All executives are responsible for supervising and inspecting their respective unit's work processes to ensure efficiency and propriety under work regulations with suitable, concise, and auditable internal controls. Also, the Continuous Control and Monitoring System (CCMS or SAP GRC) has been implemented to automatically prevent risks and monitor control activities.
- >> Control process of the information technology system—of the standard defined by National Institute of Standards of Technology (NIST). IT service management was reviewed and updated to keep pace with the changing situation, particularly the work-from-home practice. In 2021, the Two-Factor Authentication (2FA) system was installed and a manual for proper and safe use of Cloud system was launched.

4. Information and Communication

Thailoil values information technology and communication systems that systematically support business execution, operation, management, and financial reports to accommodate the Board and executives' decision making and to ensure efficiency and effectiveness of internal control. Policies and protocols in this regard have already been properly identified and prescribed.

To maintain proper communication within the organization, Thaioil has developed an internal communication manual, in which efficient guidelines for managing contents and practical communication channels are provided. Employees will, thus, receive prompt, complete, and accurate information. To this end, responsible parties have been appointed for each internal communication channel, including the intranet, e-mail, e-newspaper, and internal bulletin (Akanee). Notably, the CEO Connect activity was initiated as a communication channel between high-ranking executives and employees. In 2021, the CEO Connect activity was transmitted online to suit the 'new normal' way of life, while Micro Learning was initiated for employees as a learning channel. Communication between executives and staff was carried out to ensure goal attainment. To accommodate the Board's appropriate decision making, critical information such as meeting paper, is properly communicated and sent to the Board at least seven days prior to the meeting date.

As for external communication, Thaioil provides accurate and adequate business updates through public relations and advertising channels, including printed media, radio, commercial films, website, and social media such as Facebook. Moreover, analyst meeting to announce operating results was arranged online to allow stakeholders to access key information more conveniently and timely, which benefits their decision making on investment. Thaioil also realizes the importance of communication during crisis, and so set up a crisis communication center to provide appropriate, accurate, and timely information.

In addition, Thaioil has laid down measures for raising complaints and whistleblowing in writing. The process covers from receiving complaints, facts investigation, to case conclusion. Channels for lodging complaints are clearly specified with protection provided for whistle-blowers and other concerned persons to

encourage employees and third parties to report or provide information related to non-compliance, corruption, or any act seeking unlawful benefit.

5. Monitoring Activities

It is Thaioil executives' duty and responsibility to supervise and audit internal work systems to ensure efficiency and conformance to policies, requirements, and work regulations under the concise internal control system. Thaioil equally values the management of Security, Safety, Occupational Health and Environment (SSHE), in which energy management and social responsibility are currently included, by requiring executives to undergo annual self-assessment and to revise their operation as required. This will prevent and minimize losses concerning safety and occupational health of employees, contractors, and processes. More detail in this regard is provided on the 'Risk Factors and Corporate Risk Management' section.

Thaioil, on an annual basis, monitors results of internal control. To elaborate, at the corporate level, executives conduct an assessment using the SEC's internal control adequacy assessment forms; and at the process level, process owners using the GRCSA form. Should any change in tasks or work processes take place during the year, the Operational Risk Management Section is to duly update work procedures and control measures. The monitoring is also carried out through the SAP GRC system. Thaioil, in 2021, made a dashboard designed to facilitate real-time monitoring of any non-compliance, with a report submitted to process owners and the management meeting on a regular basis, to ensure that all parties realize the importance of compliance with business processes and internal control mechanisms. At the same time, the Corporate Internal Audit Department formulates annual audit plans based on key risks, changes or increase in work processes or systems, and requirement from executives and the Audit Committee (if any) to verify the adequacy and suitability of each activity.

Sustainability >



Thaioil and Subsidiaries' sustainable development management and performance report, covering environmental, social, and governance aspects, has been incorporated in the 2021 Integrated Report.

For more information:



Sustainability Management Policy and Goals

Thaioil and Subsidiaries is determined to operate and grow a sustainable business with attention to Environmental, Social, and Governance (ESG) dimensions as well as impact on stakeholders throughout the value chain. Thaioil and Subsidiaries' 2020 Sustainability Management Policy was launched in response to the prevailing circumstances and the organization's sustainable development management.



Additional information about Thaioil and Subsidiaries' Sustainability Management Policy is available on the company's website, on the topic 'Sustainability/Sustainability Management/Policy'.






In support of the corporate vision and the strategy to expand the business overseas as well as the United Nations Sustainable Development Goals (UN SDGs) while reflecting the global trend of ESG issues, which have become more and vital to stakeholders and business operations, Thaioil and Subsidiaries reviewed the sustainability management strategy and came up with a strategic plan and goals regarding ESG operations for 2021 as follows:

Sustainability dimension	(E: Environmental) 	(S: Social) 	(G: Governance) 
Strategy	Enhance Environment Enhancing environmental management in line with the global direction	Engage Society Bonding in parallel with creating value for communities and the society to achieve long-term mutual growth	Ensure Good Governance Building up confidence in good corporate governance and organizational transparency
Success indicators	>> Becoming an organization with net zero greenhouse gas (GHG) emission by 2060 >> Maintaining revenue from environment-friendly businesses and products at no less than 25 percent of sale revenue from 2023 onwards	>> Achieving social return on investment (SROI) at no less than twice the social investment cost by 2030 >> Giving support to net zero GHG emission tasks through projects relating to forest conservation, restoration, and forest area expansion >> Assessing stakeholder engagement with a target to achieve community engagement of over 90 percent	Achieving zero violation of laws, corporate rules and regulations, and articles of associations

Management of Impacts on Stakeholders along the Business Value Chain

Thaioil and Subsidiaries identified stakeholders by making analyzing into their involvement in the supply chain, ranging from crude procurement, crude receiving, and crude processing to waste disposal. Impacts between each other were analyzed as shown in the diagram below:

Stakeholders along the Value Chain

Crude Source 	Production Process 	Product Distribution 	Product Usage 	End of Use 
Supplier: Arranging crude delivery Society: Possibly affected by crude transport	Staff: Working in the refining process Contractor: Working in the refining process Government Agency: Issuing regulations and standards for production and business operations Community: Possibly affected by the operations	Customer: Receiving products Government Agency: Issuing regulations for products, such as oil specifications, etc.	Society: Consuming products	Partner: Collecting waste for disposal Customer: Collecting waste to create value addition Society: Possibly affected by airborne particles and waste

Shareholders-Fund owners

As a result of analysis into the value chain, stakeholders can be divided into six groups. An internal unit was established to take charge of continual communication with each group of stakeholders and exchange information with them to understand their expectations and points of view about the business. (More information is available in the 2021 Integrated Report on the topic '**Stakeholders and Material Matters**' on page 14-21.)

Sustainability Management in Environmental Aspect

Thaioil and Subsidiaries developed an environmental management system by devising a policy on quality, security, safety, occupational health, the environment, energy management, and corporate social responsibility (Thaioil Group QSHE Energy-CSR Policy).



Additional information about the policy on quality, security, safety, occupational health, environment, energy management, and corporate social responsibility is available on the company's website on the topic 'Sustainability/WORLD: Environment Well-being/ Environmental Quality Management'.

In addition, Thaioil and Subsidiaries have adopted the ISO 14001: 2015 environmental management system and arranged for a systemic environmental database to monitor, minimize impact, and conserve the good environment in parallel with driving sustainable business growth. The following environmental management issues are included in the database.

Environmental Management

Thaioil and Subsidiaries have systematically applied ISO 14001: 2015 to business operations while making regular reviews for improvements. The Compliance Unit was established to take charge of driving the assessment of compliance with laws and regulations while developing management tools and systems to achieve higher operating efficiency. In 2021, following an examination by the Management System Certification Institute (Thailand), Foundation for Industrial Development, Industry Network, Thaioil and Subsidiaries were found with no major non-compliance with laws and regulations concerning the environment. (More information is available in the 2021 Integrated Report on the topic '**Environmental Impact Management**' on page 38-47.)

Water Management

Thaioil and Subsidiaries have an efficient and systematic water management under the project 'Thaioil Circular Economy-WE GO Theme' (Thaioil CE WE GO) initiated to minimize risk from water shortage of water required for the production process while preventing any possible conflict with neighboring communities. Water consumption volume must be accurately and clearly reported to the public. A business continuity plan has also been developed and reviewed taking into consideration shortage of water needed for the production process to reduce consumption of water resources while raising water management efficiency in the long run. In 2021, Thaioil and Subsidiaries managed to substitute 37 percent of raw water with sea water. (More information is available in the 2021 Integrated Report on the topic '**Circular Economy**' on page 56-67.)

Waste and Hazardous Substances Management

Thaioil and Subsidiaries have in place systematic industrial waste management including listing a waste inventory, minimizing industrial waste from the beginning of the operation using the circular economy principle and the 3Rs strategy (Reduce, Reuse, and Recycle), and keeping control of waste collection, transport, and safe disposal as suggested by laws and technical principles. In 2021, Thaioil and Subsidiaries successfully reached the goal of zero landfill. (More information is available in the 2021 Integrated Report on the topic 'Circular Economy' on page 56-67.)

Energy Management

Thaioil and Subsidiaries have been determined to continuously execute the energy conservation project to achieve energy efficiency at various levels of production. In 2021, there were a total of 13 projects involving energy conservation, capable of reducing 312,740.58 gigajoules of energy or 17,544.75 tons of carbon dioxide equivalent per year. The attempt resulted in cost saving of around THB 64.62 million. (More information is available in the 2021 Integrated Report on the topic 'Circular Economy' on page 56-67.)

Biodiversity Management

In addition to conducting business with strict and continuous adherence to measures entailed in the Environmental Impact Assessment (EIA), Thaioil and Subsidiaries have joined PTT Group Biodiversity and Ecosystem Service in reviewing the manual on biodiversity and ecosystem management. The manual serves as guidelines for managing responsibilities for habitats and natural resources surrounding the refinery to ensure that the operations of Thaioil and Subsidiaries will not produce any adverse impact on the ecosystem,

considered one of the nation's precious resources. (More information is available in the 2021 Integrated Report on the topic 'Environment Impact Management' on page 38-47.)

Climate Change Actions

To achieve the net zero GHG emission target by 2060, Thaioil and Subsidiaries have carried on with reduction of GHG emission in the production process. Risks were assessed and opportunities were analyzed to initiate production control plan and systematically monitor climate change actions to support Thaioil and Subsidiaries, and the country's GHG reduction goal. In 2021, direct emission of GHG from the operations of Thaioil and Subsidiaries amounted to 3.15 million tons of carbon dioxide equivalent, overtaking the target of no more than 3.20 million tons of carbon dioxide equivalent. (More information is available in the 2021 Integrated Report on the topic 'Climate Change Risks' on page 48-55.)

Air Quality Management

Air quality management at Thaioil and Subsidiaries' operations is reflected in production process design, maintenance planning, control of sulphur content in fuels, greater use of fuels with low emission than those with high emission, use of clean production equipment and process, use of technology with efficient combustion that releases low nitrogen oxide, and implementation of projects to minimize impact on the environment and the community, as well as control of ventilation ratio and regular air quality test based on 2007 Shell International Practice Standard. All of these attempts are to reduce environmental impact at source. (More information is available in the 2021 Integrated Report on the topic 'Environment Impact Management' on page 48-55.)

Sustainability Management in Social Aspect

Thaioil and Subsidiaries are always committed to being a sustainable organization, valuing business operations along with responsibility for the society as well as safety and occupational health. Possible impacts on all groups of stakeholders have been taken into consideration. Stakeholders are treated equally and fairly with respect for their rights in a systematic manner using the Plan-Do-Check-Act approach. This could be witnessed in, for example, the announcement of policy, risk assessment, formulation of measures to control and minimize impact together with result monitoring and reporting for further improvement, as well as implementation of various projects to promote corporate culture and to raise awareness of honesty, perseverance, patience, and social responsibility to build a balanced society with upgraded living.

Safety and Occupational Health Management

Thaioil and subsidiaries have followed the five-year plan on safety, occupational health, and emergency and crisis management, with determination to achieve the corporate safety goal of 'No Harm, No Leak, Goal Zero' stated in the strategic plan to achieve Operational Excellence and become Business Excellence (O2Bx), thus able to move forward as a world-leading refinery. In this regard, safety is a major factor to be improved and upgraded. The operational strategic plan was, therefore, adjusted from Safe White Green to All Safe White Green to reinforce awareness and leadership in safety at work among staff and contractors at all levels. The Management Walk and Talk activity was held by high-ranking executives and the QSHE Roll Out activity was alternately held at various construction sites and operating areas of the various projects, particularly during the annual maintenance shutdown. The activities promote the common sense and participation of operators in the actual work area. In 2021, Thaioil and Subsidiaries registered a total recordable incident rate (TRIR) of 0.30 cases per one million manhours, better than the target of 0.35 cases per one million manhours. (More information is available in the 2021 Integrated Report on the topic 'Human Health and Safety' on page 76-81.)

Human Rights Management

Thaioil and Subsidiaries are strongly determined to drive the business with recognition for human rights throughout the value chain. The organization stands firm on principles of international organizations advocating human rights, including the United Nations Global Compact (UNGC), the Universal Declaration of Human Rights (UNDHR), the United Nations Guiding Principles on Business and Human Rights (UNGPs), the International Covenant on Civil and Political Rights (ICCPR), the International Covenant on Economic, Social and Cultural Rights (ICESCR), and the International Labour Organization (ILO)'s Declaration on Fundamental Principles and Rights at Work. In 2021, Thaioil and Subsidiaries made a review to see suitability of human rights practice and introduced these two following policies:

- >> Thaioil Group Human Rights Policy in the Workplace to protect employees' human rights
- >> Thaioil Group Business and Human Rights Policy together with guidelines on suppliers' human rights, aiming to support human rights and prevent risks for Thaioil and suppliers from any activity which may violate human rights

These two policies address sexual harassment and other types of harassment as well as illegal labor, both child labor and forced labor in domestic business operations, and compliance with international regulations for overseas businesses.



Additional information relating to policies and principles on human rights of Thailo and Subsidiaries is available on the company's website on the topic 'Sustainability/ I: Our well-being/Human Rights'.

In 2021, business activities of Thailo and Subsidiaries, accounting for 100 percent of those in Thailo's core business and those in partnership with others, were assessed against Human Rights Due Diligence (HRDD). No complaints were lodged by staff and suppliers about human rights abuse by any internal or external stakeholders under corporate risk management principles that are systematically aligned with those of the United Nations. (More information is available in the 2021 Integrated Report on the topic 'Human Rights' on page 70-75.)

Social Responsibility Management

Thailo and Subsidiaries are confident that organizational sustainability stems from the balanced coexistence between business operations, communities and the society. The Board of Directors, in this respect, launched **Thailo Group Corporate Social Responsibility Policy** together with guidelines for policy implementation and continuous monitoring. The executives and the unit responsible for social and community development were assigned to formulate a strategic plan and a long-term development plan. Importantly, visits to neighboring and remote communities were arranged to nurture relationships. Work results are to be regularly reported to the Corporate Governance Committee to ensure goal attainment regarding community and social development to create mutual relationships while moving forward together.



Additional information relating to policies on social and environmental responsibility of Thailo and Subsidiaries is available on the company's website on the topic 'Sustainability/ WE : People's well-being/Corporate Social Responsibility'.

The 2021 Community Engagement Index, arranged by an independent consultant to measure relationships between communities and Thailo and Subsidiaries, was scored at 96.74 percent, which is better than the target of 85 percent. (More information is available in the 2021 Integrated Report on the topic 'Social and Community Responsibility' on page 88-97.)



Thaioil and Subsidiaries' Research and Development

Thaioil and Subsidiaries are committed to achieving maximum process efficiency and developing high-value products (HVPs) by focusing on research and development (R & D) as a key equipment driving of business toward the goals of the corporate strategic plan. This is achieved through cooperation between Manufacturing Function, Commercial Department, and Business Development Department to meet customers' specific needs better basing the product development on customers' requirement. Our R & D section is the center for technology for the Carbon Capture, Utilization, and Storage Taskforce of carbon dioxide under the Net-Zero Greenhouse Gas Emissions by 2060 Plan. Thaioil and Subsidiaries also engage in low-carbon business development, including production of hydrogen and the biological business.

Below are Thaioil and Subsidiaries' product development structure divided into three major pillars as follows:

- Pillar One** : Strengthening competitiveness for current petroleum and petrochemical businesses through R & D
- Pillar Two** : Developing new high-value products (HVPs)
- Pillar Three** : Developing new businesses on clean energy, including hydrogen and biojet fuels.

The goals of these three pillars are explicitly stated, notably concerning HVP development. In 2022, Thaioil and Subsidiaries' goal is to develop 3-5 products by leveraging the caliber of the R & D team together with academic partners to achieve this goal.

As for innovation, Thaioil and Subsidiaries conducted promotion by advocating and stimulating creativity among staff to ensure the awareness of the value of innovation and open-mindedness for novelties to keep up with today's world. Thaioil and Subsidiaries aspire to be a learning organization where employees are knowledgeable about innovation and that innovator DNA is inherent in each of them. It is everyone's responsibility to advocate innovation.

This year, Thaioil and Subsidiaries produced the following key R & D and intellectual property:

R & D

This year, Thaioil and Subsidiaries completed the four projects, ready for implementation:

1. **Project to investigate and design a pilot plant for crude oil research for the Clean Fuel Project (CFP):**
Study by R & D section was completed and ready for tabling for the Board's approval in 2022, the goal of Pillar One
2. **Project on the model for crude oil heterogeneity:**
The project facilitates crude oil selection for refining process which extend the work life of the heat exchanging system in distillation processes, an energy-saving practice. It also broadens opportunities for using more diverse crude oil grades while lowering Thaioil's reliance on technical advice from third parties. Thaioil and Subsidiaries derived about THB 9 million from the project this year and planned to scale up the project involving more diverse crude oil in 2022.

3. Project on development of CVD graphene from C5

compounds: This continuation of a research project undertaken with Vidyasirimedhi Institute of Science and Technology (VISTEC) featured joint development with Planartech Asia Co., Ltd., to upgrade semi-industrial production. Resulting from this project was awareness of processes, process conditions, properties of the CVD graphene product, preliminary production cost, application, and property testing methods.

4. Project to develop heat-resistant ceramic paint

applied to insulating materials: An extension by Thailoil's researchers with the laboratory results showing such paint could stand over 800 degrees celsius with greater cohesion to the surface of the insulating materials than the materials themselves, more corrosion resistance in acidic (pH 2-3) conditions, and re-emissivity, thus raising the overall efficiency of furnaces, among others.

For the past three years (2019-2021), Thailoil and Subsidiaries spent THB 28 million, THB 82 million, and THB 28 million on R & D respectively. Most of the 2020 budget represented investment on the design of a pilot plant for crude oil research for CFP.

Creating an Innovation Culture

The year 2021, marked the first year in which Thailoil and Subsidiaries initiated a project to promote creativity, unorthodox thinking, and a growth thinking concept, which was conducted through a weekly e-mail to incubate innovator's qualifications and forge awareness of the significance of innovation to nurture quality innovators. The project also provides sophisticated technological data, resulting in staff's driving force and warm responses. Articles were read over 3,055 times and more than 90 percent of the readers were highly satisfied with the project.

After years of constantly stimulating the development of innovation in the Company, this year also saw Thailoil has won an award from International Finance Awards (IFA) for the Most Innovative Ecosystem 2021 in the category of public utilities and energy. IFA is a London-based leading journal of business and finance awards selecting worldwide entities with outstanding performance in various areas for nine years. The award criteria concerned an entity's strategic development that successfully created an ecosystem favoring innovation to in turn give rise to products and services measurable in economic, innovation culture, and sustainability aspects for itself and society. Thailoil deployed the 3E + E concept in promoting corporate innovation: educate, execute, exhibit, and evaluate.

Intellectual Property

In 2021, Thailoil and Subsidiaries filed for four patents:



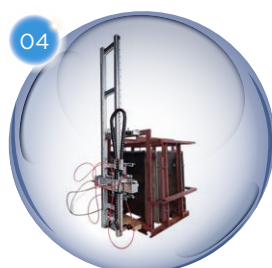
1. **Solution for preparing catalysts (Mo and Group 8 metals) for the synthesis of catalysts for hydrodesulfurization:** A patent was filed for this invention in Thailand for this process to obtain efficient catalysts.



2. **Procedures for preparing graphene from a mixture of hydrocarbons with 4-6 carbon atoms:** A patent was filed for this invention in Thailand for the procedure of graphene preparation from PN3 (mixed C5) obtained from Sak Chaisidhi Co., Ltd. The synthesized graphene finds application in assorted models, including batteries, capacitors, and anti-corrosion substances.



3. **High Emissivity Coating Compositions and Processes for Preparing and Applying the Same:** A patent was filed for this invention in Thailand and the USA for the formula and procedures for preparing ceramic-coating materials and processes of ceramic coating on required metals to maximize the efficiency of heat exchange.



4. **A cleaning system for heat exchangers:** This petty patent was filed in Thailand for the application, appearance, components, mechanism, structure, and processes of a robot for cleaning welded-plate heat exchangers, which is highly efficient for cleaning. To this end, one applies a high-accuracy laser beam to identify the plate grooves needing cleaning. By designing special high-pressure nozzles, one can readily access points where cleaning is difficult, resulting in heat exchanger with efficiency as the new one.

Human Resource and Organization Development



Following the strategy to expand the business both in Thailand and abroad to realize the vision ‘Empowering Human Life through Sustainable Energy and Chemicals’ while having to face the challenge from the spread of COVID-19, which created a tremendous impact, Thailoil and Subsidiaries not only reviewed its strategy for human resource and organization development but also expanded on what was founded 60 years ago. Management and operations have been adjusted to ensure higher flexibility and agility to provide staff with safety and good experience. This will help maintain productivity and move towards becoming a ‘high performance organization’; with the operation guidelines as follows:

1. Strategic Workforce Planning is intended for supporting business growth while maintaining workforce

productivity competitiveness in the industry. The Planning is also aimed to increase the ability to design organizational structure and to recruit and select staff more efficiency.

1.1 Matrix Organization combine the functional organization with the business unit organization concepts, resulting in the design of organizational structure, decision-making scopes, and human resource management in various aspects, such as workforce planning, performance assessment, and human resource development that drive each business unit towards their clearly-stated goals while still maintaining functional excellence and cost optimization.

1.2 Proactive Recruitment Strategy involves raising staff recruitment efficiency through Thail Energy Services Co., Ltd. by proactively searching for the right candidates from various quality recruitment source and creating various channels. Emphasis is placed upon the reformation of selection process to ensure highest efficiency which must be fast and of the desired quality. Importantly, operations in this regard have been fully digitalized in response to business needs.

2. People Capability Development—Thail and Subsidiaries strongly stress development of human resources to ensure they have the required knowledge and skills for driving the business, both current and future. Staff are to be equipped with leadership skills to stably grow on their career path.

2.1 Intensive Dual Track Development is a project to get human resources readily equipped for driving both current and future business.

Intensive Dual Track Development

Speedy development of human resources to drive current and future business to achieve sustainable growth

Core Competency Development	Expert Development	Business Explorer Development
Equip staff with key knowledge and skills to drive the organization's strategy	Equip staff with specialized knowledge and skills to uphold the organization's competitive advantage	Equip staff with knowledge and skills required for new business opportunities
Target Group		
 All staff	 Staff in support of core business	 Staff in support of new business development
Development Method		
 Action Based Learning	 Project Assignment	 Business Project Assignment
 Knowledge Sharing	 Coaching and Mentoring from specialists	 Coaching and Mentoring from both internal and external specialists

2.2 Leadership Development is to build up leadership skills through Empathetic Leadership course implementing for two consecutive years to ensure leaders' empathy for staff, able to handle changes and capable of efficiently managing his/her team to drive the organization towards sustainable growth.

3. People Experience is to give equal treatment to staff, providing them with fair and competitive benefits and remuneration as well as work safety while promoting good corporate culture to ensure staff well-being.

3.1 Good Labor Practice: Labor Rights and Equality

Commitment to respect for human rights in workplace and at all Thailoil and Subsidiaries' operating sites is clearly reflected in Human Rights Policy and Thailoil and Subsidiaries' Human Rights Impact Assessment Procedure, which have been posted on Thailoil's website (www.thailoilgroup.com) on the topic of 'Sustainability/I: Our well-being/Human Rights'. Thailoil and Subsidiaries realize its duties and responsibilities regarding respect for human rights while playing an important role on driving Thailoil Value Chain for respect for and compliance with human rights. To this end, Human Rights Due Diligence process has been developed for all business activities undertaken by Thailoil and Subsidiaries as well as suppliers along the supply chain every year, and risk assessment in this regard is to be carried out every three years. Thailoil's Human Rights Due Diligence has also been developed in line with Human Rights Due Diligence Handbook of International Finance Corporation (IFC), United Nations Guiding Principles, and NAP Implementation, as well as organization's risk management. It was thus

drawn up as 'Thailoil Group Human Rights Impact Assessment and Management Procedure.

Thailoil and Subsidiaries continuously recognize human rights and organized activities to promote human rights during 2021 to ensure that executives, staff, and stakeholders clearly understand policies and regulations in this regard. This is to prevent human rights violation in workplace and any possible human rights violation by suppliers along the value chain. This is an endeavor to upgrade human rights in workplace under the '3 Parts for Fulfilling Human Rights' guidelines, carried out for the 2nd consecutive year, which consist of 1) communication to ensure awareness of human rights among all parties; 2) improving staff physical and mental health care; and 3) placing primary importance to 'humans' in terms of human rights and staff well-being amid the COVID-19 outbreak.

To achieve the objective of growing a sustainable business, Thailoil retains high-caliber staff and considers, on an annual basis, fair remuneration and welfare comparable to similar industries and leading companies in Thailand while refraining from discrimination and allowing freedom of association to negotiate as association. In 2021, bilateral negotiation on demands was collaboratively held with decent labor relations between Thailoil and the Union of Thai Oil Refinery Company without labor dispute, resulting in the agreement on employment conditions for 2021 (a 2-year agreement). Thailoil recorded no significant labor dispute during the past three years. As of December 31, 2021, the Union of Thai Oil Refinery Company registered 468 members, representing 75.24 percent of the total staff. There was not any protest nor strike with 100 percent of business transactions examined.

The aforementioned operation has earned Thailoil a Human Rights Award on Model Organization for the 2nd consecutive year. Moreover, Thailoil has been certified as a member of DJSI for nine consecutive years, with a score of 100 percent for human rights.

3.2 Employees' Remuneration-Excluding Executives

Remuneration packages for employees of Thailoil and Subsidiaries' are made up of salary and allowance, overtime payment, welfare, annual pay, and other financial assistance, as well as contribution to provident fund. Housing allowance, medical treatment, children's education support, and other benefits, such as annual leave, military service leave, maternity leave, and funeral aid are also provided. Thailoil understands that each individual staff looks for post-retirement financial security, a pension project was thus initiated, in which a lump sum of money will be given to staff depending on their respective service period. Staff is allowed to withdraw part of the sum every ten years. Thailoil makes a contribution to the project every month.

The details of total employees' remuneration for the fiscal year ending December 31, 2021 are as follows:

Total remuneration for Thailoil staff

Type of Remuneration	Remuneration (THB Million)	
	2021	2020
Salary and Allowance	881.91	918.30
Bonus Payment	241.50	111.16
Contribution to Provident Fund	85.46	93.62
Retirement (Gratuity) Fund	111.07	128.02
Overtime	65.01	73.97
Miscellaneous	387.17	335.17
Total	1,772.12	1,660.24

Total remuneration for staff of Thailoil Energy Services Co., Ltd.

Type of Remuneration	Remuneration (THB Million)	
	2021	2020
Salary and Allowance	986.96	867.53
Bonus Payment	240.44	119.86
Contribution to Provident Fund	54.42	48.18
Overtime	62.16	61.59
Miscellaneous	192.09	214.94
Total	1,536.07	1,312.10

In addition to the remuneration described above, Thailoil set up a Provident Fund in 1990 under the Provident Fund Act B.E. 2530 (1987). Thailoil contributes 15 percent of employees' salary to the fund with options for each employee to contribute 5-15 percent of the salary. About 549 employees or 93.53 percent of the total Thailoil employees and 1,098 employees or 91.81 percent of Thailoil Energy Services Co., Ltd., have joined the fund.

The management and investment of the Member Companies of Thai Oil Group-Registered Provident Fund is the key to sustainability growth. A fund management company must, therefore, be carefully selected by the Provident Fund's Board, who will look for a fund management company with past records of administrative system that is appropriate, secure, and beneficial for staff. Consideration is based upon 1) administrative system, which involves decision-making process and supporting data for investment, as well as services provided; and 2) business security, which lies in past performance, experience, expertise, policy, operation, and damage insurance. The Provident Fund's Board will give equal weight for the two criteria, however, changes can be made as appropriate. A new fund management company is to be selected and the Provident Fund's Board will also follow Thailoil and Subsidiaries' procurement policy.

3.3 Employee Satisfaction and Engagement Enhancement

Thaioil and Subsidiaries carries out a survey on employee engagement on an annual basis. Results of the survey will be analyzed to assist strategy formulation. Activities are continuously organized to enhance staff engagement while the head of all business units are encouraged to hold activities considered appropriate for staff in their respective functions using PEOPLE Model, designed to promote staff relations, more efficient communication channels among staff, and development of work environment to enhance mutual trust among staff. Moreover, staff performance is valued while opportunities are opened for them to acquire new experience. Importantly, positive attitude between staff and the organization is built and nurtured.

In 2021, Thaioil and Subsidiaries introduced the Care Package: Insightful Leader Manual for staff at supervisory level. The manual particularly assists in communication between the superior and the subordinate to ensure correct understanding about fair performance assessment. It provides advice and support for staff 's growth on their career path. A special activity, dubbed as

'True Fans of TOPS', was arranged to enhance communication with staff regarding what they should know about the organization, including staff information, strategy, and investment in key projects so that staff will have a clear picture of the strategy and business direction. Staff will also be able to realize how each unit in the organization is interconnected in order to move towards the same goal.

3.4 5 Happiness Project

Thaioil and Subsidiaries are determined to take good care of staff from the first until the last day of their employment. Impressive work experience is to be provided to staff through the '4 happiness' strategy: namely, physical happiness, mental happiness, financial happiness, and social happiness, which has been implemented for its second year. Thaioil and Subsidiaries, in 2021, aimed to elevate staff's happiness by building a corporate culture of appreciation, known as 'appreciative happiness'. This fifth element of happiness recognizes mutual encouragement and creation of good work atmosphere through the use of Admire Application. Interaction among staff is to be upheld, which will benefit staff's bond with the organization, particularly during the time of remote working caused by the spread of COVID-19.

Physical Happiness—enjoying digital lifestyle with good health



Proactive staff healthcare was introduced on Health Meter Application, designed to provide health record keeping, health risk assessment, and health advice.

Mental Happiness—enriching your heart with positive energy



No matter big or small problems, or worries about work or personal matter, appointment with the psychiatrist or psychologist can be made on OOCA Application.

Social Happiness—just a click anytime, anywhere



Staff relations on virtual society are encouraged through SAP JAM Application.

Financial Happiness—exchangeable welfare



Some staff welfares can be exchanged for products and services that match staff's need and lifestyle on Flexible Benefits Application.

Appreciative Happiness—passing on good feeling



Appreciative culture is created to encourage staff to express appreciation and send out positive energy to show gratitude, give support, and create good work atmosphere through Admire Application.

3.5 Pandemic Management and Prevention

Thaioil and Subsidiaries established I-COVID Center to manage and prevent the spread of COVID-19. Some policies and measures have been enforced, including vaccine supply and administration for staff and family, issuance of the work-from-home policy, stringent access control

at all operating sites in line with the practice in the public sector, staff clustering for mission critical activities, and provision of a safe house for operators, etc. This is to boost staff's confidence while preventing any business disruption at operating sites caused by the pandemic.

Employee Data

Headcount (excluded executives) of Thai Oil Plc (TOP) and Thaioil Energy Services Co., Ltd. (TES)

Key Function	Number of Employees			
	As of December 31, 2021		As of December 31, 2020	
	TOP	TES	TOP	TES
Corporate Strategic Risk Department	3	7	3	7
Movement Marine and Logistic Department	51	80	53	81
Technology Department	11	40	10	36
Refinery Department	159	216	162	221
Treasury Department	3	22	5	13
Commercial Department	13	30	14	25
Corporate Affairs Department	11	26	14	23
Procurement and Contract Department	9	22	11	22
Quality Management Department	13	22	14	20
Supply Chain Optimization Management Department	3	19	4	18
Accounting Department	14	37	14	31
Petrochemical and Lube Base Department	11	146	11	144
Business Development Department	2	13	2	13
Asset Development Department	14	26	13	26
Financial Planning Department	6	10	7	12
Commercial Planning Department	3	13	3	12
Engineering Department	90	194	99	169
Efficient Operations Support Department	29	83	29	68
New S-curve Business Development Department	5	12	3	8
Corporate Resources and Transformation Management Department	2	5	1	7
Digitalization Department	11	15	9	10

Key Function	Number of Employees			
	As of December 31, 2021		As of December 31, 2020	
	TOP	TES	TOP	TES
Clean Fuel Project	55	63	56	61
Corporate Governance, Regulatory Compliance, and Legal Department	3	7	2	4
Group Company Secretary and Sustainability Department	8	13	11	13
Corporate Internal Audit Department	2	9	2	7
People and Organization Management Department	20	30	20	33
People and Organization Excellence Department	2	10	2	8
Finance and Accounting Function	6	4	4	4
Manufacturing Function	28	6	28	6
Strategic Planning Department	-	16	-	16
Total	587	1,196	606	1,118

Remarks:

Under the above mentioned structure, Thairoil's employees are divided into four groups:

1. Junior—consisting of technician, operator, and administrative staff
2. Supervisory—consisting of team leader, assistant engineer, and semi-professional
3. Senior—consisting of section head, engineer, senior engineer, and professional
4. Executives

Headcount Change (Excluding Executives) During the Past Three Years:**Thai Oil Plc**

- >> as of December 31, 2021, a total of 587
- >> as of December 31, 2020, a total of 606
- >> as of December 31, 2019, a total of 627

Thaioil Energy Services Co., Ltd.

- >> as of December 31, 2021, a total of 1,196
- >> as of December 31, 2020, a total of 1,118
- >> as of December 31, 2019, a total of 981

Corporate Governance Policy



Committed to conducting a fair, honest, and transparent business, Thaioil founds its business on good corporate governance principles and Code of Conduct to build confidence among investors and all groups of stakeholders and to raise competitiveness while promoting sustainable growth for Thaioil and Subsidiaries. The Board of Directors (The Board) developed the 'Corporate Governance Policy' and assigned the Corporate Governance Committee to monitor and promote business operations in compliance with the policy and guidelines involving good corporate governance and Code of Conduct. Corporate Governance policies, principles, and guidelines are regularly reviewed along with implementation of business best practices are applied, and in accordance to national and international standards, for example, Corporate Governance Code for Listed Companies 2017 (CG Code 2017) of the Securities and Exchange Commission, Thailand (SEC), which is

regarded as a benchmark. The policy and policy implementation in regard to good corporate governance are detailed below:

Policy and Guidelines Relevant to the Board

Nomination and Appointment of the Board

Nomination Criteria

Thaioil realizes that the composition of the Board of Directors is crucial for efficient and effective execution of duties. The nomination criteria for directors, therefore, were established in accordance with relevant laws and regulations, as described in Thaioil's Corporate Governance and Code of Conduct Manual (CG Manual). Thaioil's nomination criteria stipulate that directors must hold qualifications that comply with laws and regulations. Consideration is made into experience, knowledge, and skills that benefit the business. Thaioil will not bring diversity factors such as gender, race, ethnicity, nationality,

or country of origin as Directors' qualification restrictions. Thailoil also attaches importance to directors' independence, conflict of interest (COI), and diversity of expertise. Thailoil developed Board Skill Matrix, as a tool to assist in the selection process. This is to ensure that the Board has wide range of expertise and in line with Thailoil's business strategy. Names of qualified candidates are also searched from the State Enterprise Policy Office's (SEPO) Director's Pool and the IOD Chartered Directors, which have compiles lists of qualified candidates with knowledge, competence and expertise in various fields. As of December 31, 2021, nine of 15 directors are listed in SEPO's Director's Pool.

Independent Directors' Qualifications

Independent Directors shall be independent from major shareholders, groups of major shareholders, or Thailoil's executives. Qualifications of independent directors are stated in the CG Manual, which are in line with - and more stringent than - what is defined by the Thai Capital Market Supervisory Board. For example, the person is allowed to hold no more than 0.5 percent of the total shares with voting rights of Thailoil, its parent company, subsidiary, affiliate, major shareholder or controlling person, including shares held by their related persons. An independent

director shall serve no more than six consecutive years from the date of the appointment.

Directors' Remuneration

The Nomination and Remuneration Committee (NRC) was appointed by the Board to consider director's annual remuneration taking into account such factors as directors' responsibilities, business performance, and overall economic circumstances while making comparisons with other companies in the same industry to come up with a comparable and motivating remuneration package. The NRC will then make a proposal to the Board for endorsement before submission to the Annual General Meeting of Shareholders (AGM) for consideration and approval.

Following the comparison with companies of the similar size in the same industry and taking the business circumstances into consideration, it was found that the criterion structure and remuneration for the Board were still suitable. Therefore, the remuneration of the same rate as the year 2020 are proposed without bonus offered. The package already received approval from the 2021 Annual General Meeting of Shareholders (AGM) and was disclosed on the topic 'Directors' Remuneration in 2021' on page 95.

Remuneration Structure

Board's Remuneration ⁽¹⁾

Retainer Fee	50,000 Baht/Month
Per-Attendance Fee (for Directors who attend the meeting)	40,000 Baht/Meeting

Board-Committees' Remuneration ⁽¹⁾

Per-Attendance Fee (for Directors who attend the meeting)	45,000 Baht/Meeting
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Special Bonus for the Board	-Withheld-
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Other Remunerations	-None-
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Remark:

⁽¹⁾ Chairman of the Board and Chairman of the Board-Committees shall receive remuneration of 25 percent higher than the directors.

Directors' Remuneration in 2021

(THB)

No.	Name-Surname	Meeting Fee	Board of Directors Fee	Board-Committees				Total Remunerations	Annual Bonus for 2020 Performance ⁽¹⁾ (Withheld)
				Audit Committee	Corporate Governance Committee	Nomination and Remuneration Committee	Risk Management Committee		
1	Prof. Dr. Supot Teachavorasinskun	900,000.00	750,000.00	-	-	-	-	1,650,000.00	-
2	Pol. Gen. Ask Angsananont	720,000.00	600,000.00	506,250.00	225,000.00	-	-	2,051,250.00	-
3	Dr. Pailin Chuchottaworn	480,000.00	400,000.00	-	-	-	-	880,000.00	-
4	ACM Suttipong Inseeyong	720,000.00	600,000.00	-	-	225,000.00	-	1,545,000.00	-
5	Mr. Praphaisith Tankeyura	720,000.00	600,000.00	405,000.00	-	-	-	1,725,000.00	-
6	Gen. Kukiatt Sirinaka	720,000.00	600,000.00	-	180,000.00	-	-	1,500,000.00	-
7	Ms. Phannalin Mahawongtikitul	720,000.00	600,000.00	-	-	-	315,000.00	1,635,000.00	-
8	Dr. Buranin Rattanasombat	720,000.00	600,000.00	-	-	135,000.00	281,250.00	1,736,250.00	-
9	Dr. Prasert Sinsukprasert	600,000.00	438,333.33	-	135,000.00	-	-	1,173,333.33	-
10	Assoc. Prof. Dr. Pasu Decharin	720,000.00	600,000.00	405,000.00	-	180,000.00	-	1,905,000.00	-
11	Mr. Plakorn Wanglee	720,000.00	600,000.00	405,000.00	-	-	-	1,725,000.00	-
12	Mr. Terdkiat Prommool	720,000.00	600,000.00	-	-	45,000.00	-	1,365,000.00	-
13	Dr. Sompop Pattanariyankool	600,000.00	438,333.33	-	-	-	-	1,038,333.33	-
14	Mr. Suchat Ramarch	160,000.00	150,000.00	-	-	-	-	310,000.00	-
15	Mr. Wirat Uanarumit	720,000.00	600,000.00	-	-	-	315,000.00	1,635,000.00	-
Directors who Completed the Term in the 2021 Annual General Meeting of Shareholders (AGM)/Resigned during the Year 2021									
1	Mr. Yongyut Jantarotai	40,000.00	50,000.00	-	45,000.00	-	-	135,000.00	-
2	Ms. Chularat Suteethorn	120,000.00	161,666.67	-	-	-	112,500.00	394,166.67	-
3	Mr. Praphon Wongtharua	120,000.00	161,666.67	-	-	-	-	281,666.67	-
4	Ms. Duangporn Thiengwatanatham	560,000.00	450,000.00	-	-	-	-	1,010,000.00	-
Total		10,780,000.00	9,000,000.00	1,721,250.00	585,000.00	1,023,750.00	23,695,000.00	-	-

Remarks:

⁽¹⁾ No special bonus payment for 2020 Company Performance as resolved by the 2021 AGM on April 7, 2021 due to net loss on operating profit

Remuneration of Director who take a position of Subsidiaries' Board of Director in 2021

No.	Name-Surname	(THB)		
		Thai Paraxylene Co., Ltd.	Thaioil Power Co., Ltd.	Total Remuneration
1	Mr. Wirat Uanarumit	71,250.00	58,035.71	129,285.71

Board Meeting

Each year, board meetings schedule and agenda are setting in advance. The Board was informed in November 2021 of the schedule and agenda for board meetings during 2022, so that they can make themselves available for the meetings. Meeting invitation together with documents required for the meeting will be delivered to all directors at least seven days, or at least five business days, prior to the scheduled meeting date, with exception to urgent matters. The Board sets a policy that requires no less than two-thirds of the current Board members in attendance and vote counts to make a quorum, unless where there is an urgent need to conduct a meeting which may otherwise jeopardize Thaioil's operation, or in the event of an urgent call for a meeting, or any other reasons where the Board deems appropriate.

In 2021, a total of 17 Board meetings and one Strategic Thinking Session (STS) were held. One non-executive directors meeting without executives and one independent directors meeting were also held to allow non-executive directors/independent directors to exchange their views freely without the presence of the executives. Directors were encouraged to discuss and make recommendations in support of business administration. The outcomes of the meeting were passed on to the executives by the Company Secretary for taking actions. In the event of the COVID-19 pandemic, the Company held Board meetings, both in the form of physically and online (E-Meeting). Information regarding meeting attendance of each individual director is disclosed on the topic 'Meeting Attendance of the Board, Board-Committees, and Shareholders' Meeting in 2021' on page 97.



Meeting Attendance of the Board of Directors, Board-Committees, and Shareholders' Meeting in 2021

No.	Name-Surname	Board of Directors Meeting (18 times) ^{(1), (2)}	Audit Committee Meeting (9 times)	Nomination and Remuneration Committee Meeting (4 times)	Corporate Governance Committee Meeting (4 times)	Risk Management Committee Meeting (7 times)	Annual General Meeting of Shareholders (AGM) (1 time) ⁽²⁾	Independent Directors Meeting (1 time)	Non-Executive Directors Meeting (1 time)
1	Prof. Dr. Supot Teachavorasinskun	18/18					1/1	1/1	1/1
2	Pol. Gen. Aek Angsananon	18/18	9/9		4/4		1/1	1/1	1/1
3	Dr. Pailin Chuchottaworn	12/13					N/A	1/1	1/1
4	ACM Suttipong Inseeeyong	18/18		4/4			1/1	1/1	1/1
5	Mr. Praphaisith Tankeyura	18/18	9/9				1/1	1/1	1/1
6	Gen. Kukiat Srinaka	18/18			4/4		1/1	1/1	1/1
7	Ms. Phannalin Mahawongtikitul	18/18				7/7	1/1	1/1	1/1
8	Dr. Buranin Rattanasombat	18/18		3/3		5/5	1/1	1/1	1/1
9	Dr. Prasert Sinsukprasert	15/15			3/3		N/A	1/1	1/1
10	Assoc. Prof. Dr. Pasu Decharin	18/18	9/9	4/4			1/1	1/1	1/1
11	Mr. Plakorn Wanglee	18/18	9/9				1/1	1/1	1/1
12	Mr. Terdkiat Prommool	18/18		1/1			1/1	1/1	1/1
13	Dr. Sompop Pattanariyankool	15/15					N/A	1/1	1/1
14	Mr. Suchat Ramarch	4/4					N/A	1/1	1/1
15	Mr. Wirat Uanarumit	18/18				7/7	1/1		
Directors who Completed the Term in the 2021 AGM/Resigned during the Year 2021									
1	Mr. Yongyut Jantarotai	1/1			1/1		N/A		
2	Ms. Chularat Suteethorn	3/3				2/2	1/1		
3	Mr. Praphon Wongtharua	3/3					0/1		
4	Ms. Duangporn Thiengwatanatham	14/14					1/1		
Average Meeting Attendance of Board of Directors (Percent)		99.6	100	100	100	100			

Remark:

N/A means not attend since the director was appointed, completed the term or resigned during the year 2021.

⁽¹⁾ In 2021, Thai Oil Plc arranged the total of 18 meetings, 12 of which were scheduled meetings, and 6 of which were extras to the scheduled meetings. The meetings were organized both physically and online (E-Meeting).

⁽²⁾ The reason for absence from meetings was due to directors' urgent and necessary assignments or the Company's urgent calls for extra meetings. Directors would submit absence letter prior to the meeting.

Information of Directors, Executive Officers and Control Executives as of January 1, 2022

[illegible]

Information of Directors, Executive Officers and Control Executives as of January 1, 2022

Name	Thai Oil Ltd.	Subsidiaries										Indirect Subsidiaries										Associates				Related Companies	
		Thai Lub Base Pte.	Thai Paraxylene Co., Ltd.	Thaioil Solvent Co., Ltd.	PTTOP Investment Indonesia ⁽¹⁾	TOP SP Co., Ltd.	Thaioil Marine International Pte. Ltd. ⁽²⁾	Thaioil Energy Services Co., Ltd.	Thaioil Ethanol Co., Ltd.	Thaioil Treasury Center Co., Ltd.	LUBIX Co., Ltd. ⁽³⁾	TOP Solvent Co., Ltd. ⁽⁴⁾	Sak Chaisidhi Co., Ltd. ⁽⁵⁾	TOP Solvent (Vietnam) LLC ⁽⁶⁾	PT. Tina Surya Raya ⁽⁷⁾	JSKern Pte. Ltd. ⁽⁸⁾	Saphip Co., Ltd. ⁽⁹⁾	Saphip Green Energy Co., Ltd. ⁽¹⁰⁾	TOP Ventures Co., Ltd. ⁽¹¹⁾	TOP Ventures Hong Kong Ltd. ⁽¹²⁾	TOP Ventures America LLC ⁽¹³⁾	Global Power Synergy Pte. ⁽¹⁴⁾	Ubon Bio Ethanol Pte. ⁽¹⁵⁾	PTT Digital Solutions Co., Ltd. ⁽¹⁶⁾	PTT Energy Solutions Co., Ltd. ⁽¹⁷⁾	Thai Petroleum Pipeline Co., Ltd. ⁽¹⁸⁾	Sam Pung Social Enterprise Co., Ltd. ⁽¹⁹⁾
37 Ms. Duangpoom Teerapabpaissit *	*			*									*	*		*											
38 Mr. Thirayoot Limanond	*																										
39 Ms. Torsang Chairaprat	*					*								*													
40 Ms. Tarika Devalastin	*			*					*			*															
41 Mr. Nikom Kongnok	*																										
42 Mr. Nitas Krongvanchayakul	*						*				*																
43 Ms. Papin Thongnium	*																										
44 Ms. Pinchanok Sakolwaree	*																										
45 Mr. Phunchit Talsareprasert	*																										
46 Mr. Mongkol Janchookiat	*																										
47 Ms. Rungtip Maneesarachun	*																										
48 Mr. Luck Saraya	*								*								*		*	*	*						
49 Mr. Worachart Ruangragool	*								*								*	*	*	*	*						
50 Ms. Wanwisa Yanchinda	*						*			*				*				*	*	*	*						
51 Mr. Vivat Wongnirund	*														*			*	*	*	*						
52 Mr. Visit Thangpakom	*														*			*	*	*	*						
53 Mr. Sarunyu Limwongse	*														*			*	*	*	*						
54 Ms. Sakowat Yamouthai	*						*							*				*	*	*	*						
55 Mr. Sarayut Jitprasertngam	*																	*	*	*	*						
56 Mr. Somboon Chaengkoblap	*																	*	*	*	*						
57 Ms. Somporn Bunluesriuang	*																	*	*	*	*						
58 Mr. Santi Wasanasiri	*	*	*	*			*					*															
59 Ms. Siranan Jantarasiri	*				*																						
60 Ms. Suchada Deechaiya	*																										
61 Mr. Anawat Chansaksoong **	*	*												*					*	*	*						
62 Ms. Acharee Thyabhorn	*													*					*	*	*						
63 Mr. Udom Wongsirinooplekthun	*					*													*	*	*						
64 Ms. Sudarat Orrattanasakul ***	*																										

Notes: ★ = Chairman ☆ = Director 🟡 = Chief Executive Officer or Managing Director 🔴 = Executive Officer

* Resigned from Directorship of Sak Chaisidhi Co., Ltd., effective on January 13, 2022. ** Appointed as Director of Sak Chaisidhi Co., Ltd., effective on January 14, 2022. *** Retired on December 31, 2021.

- (1) PT TOP Investment Indonesia founded on July 12, 2021, is a subsidiary of Thai Oil Plc (Thaioil), in which Thaioil holds 100% of shares.
 (2) Thaioil Marine International Pte. Ltd. is a subsidiary of Thai Oil Plc (Thaioil), in which Thaioil holds 100% of shares.
 (3) LUBIX Co., Ltd. is a subsidiary of Thai Paraxylene Co., Ltd. (TPX), in which TPX holds 75% of shares.
 (4) TOP Solvent Co., Ltd. is a subsidiary of Thaioil Solvent Co., Ltd. (TOS), in which TOS holds 100% of shares.
 (5) Sak Chaisidhi Co., Ltd. is a subsidiary of TOP Solvent Co., Ltd. (TS), in which TS holds 80.52% of shares.
 (6) TOP Solvent Vietnam LLC. is a subsidiary of TOP Solvent Co., Ltd. (TS), in which TS holds 100% of shares.
 (7) PT. Tina Surya Raya is a subsidiary of TOP Solvent Co., Ltd. (TS), in which TS holds 60% of shares.
 (8) JSKern Pte. Ltd. is a subsidiary of TOP Solvent Co., Ltd. (TS), in which TS holds 50% of shares.
 (9) Saphip Co., Ltd. is a subsidiary of Thaioil Ethanol Co., Ltd. (TET), in which TET holds 50% of shares.
 (10) Saphip Green Energy Co., Ltd. is a subsidiary of Saphip Co., Ltd. (SAPTHIP), in which SAP holds 100% of shares.
 (11) TOP Ventures Co., Ltd. is a subsidiary of Thaioil Treasury Center Co., Ltd. (TTC), in which TTC holds 100% of shares.
 (12) TOP Ventures Hong Kong Ltd. is a subsidiary of Thaioil Treasury Center Co., Ltd. (TTC), in which TTC holds 100% of shares.
 (13) TOP Ventures America LLC. is a subsidiary of TOP Ventures Hong Kong Ltd. (TVHK), in which TVHK holds 100% of shares.
 (14) Global Power Synergy has become a public company limited since November 27, 2014.
 (15) Ubon Bio Ethanol Pte is an associate company of Thaioil Ethanol Co., Ltd. (TET) and become public company limited on April 23, 2018, in which TET holds 12.39% of shares.
 (16) PTT Digital Solutions Co., Ltd. is an associate company of Thai Oil Plc (Thaioil), in which Thaioil holds 20% of shares.
 (17) PTT Energy Solutions Co., Ltd. is an associate company of Thai Oil Plc (Thaioil), in which Thaioil holds 20% of shares.
 (18) Thai Petroleum Pipeline Co., Ltd. is a related company of Thai Oil Plc (Thaioil), in which Thaioil holds 9.19% of shares.
 (19) Sam Pung Social Enterprise Co., Ltd. is a related company of Thai Oil Plc (Thaioil), in which Thaioil holds 15% of shares.

Board's Performance Assessment

Thaioil arranges for performance assessment of the Board on an annual basis. The assessment is divided into two parts:

- 1) Board and Board-Committee Assessment
- 2) Individual Self-Assessment and Peer Assessment

Thaioil has guidelines to be evaluated by independent advisors every 3 years in accordance with the guidelines of the Corporate Governance Code for Listed Companies 2017 (CG Code), which was implemented in 2019 by AON Hewitt (Thailand) Co., Ltd.

Board's Performance Assessment Criteria

The Corporate Governance Committee agreed upon the 2021 Board's performance assessment forms, which were sent to each individual director for assessment and returning to Thaioil for analysis. Thaioil, then, raised the assessment results together with comments to the Corporate Governance Committee and the Board, respectively, for acknowledgement. Suggestions and recommendations following the assessment will benefit further development of the Board's performance.

Performance assessment of the Board and Board-Committees consists of such key matters as the Board composition, information management, business performance management, directors' development, etc. Individual assessment (self-assessment and peer assessment) consists of, for example, participation, knowledge and skills, teamwork, and director's ethics. The assessment criteria are divided into five levels as follows:

- Level 1 - Need significant improvement
- Level 2 - Partially meet expectations
- Level 3 - Meet expectations
- Level 4 - Exceed expectations
- Level 5 - Exemplary (best practice)

The 2021 Board's Performance Assessment can be summarized as follows:

Assessment Results		2021
Part 1:	Board of Directors and Board-Committees Assessment	4.9
	- Audit Committee	5.0
	- Corporate Governance Committee	5.0
	- Nomination and Remuneration Committee	4.9
	- Risk Management Committee	4.9
Part 2:	Individual Director Assessment (Self-Assessment)	4.8
Part 3:	Individual Director Assessment (Peer-Assessment)	4.9
Average Score (Part 1-3)		4.9

The overall result of the 2021 Board performance assessment brought about an average score of "4.9".

Directors' Development

Orientation for New Directors

For new directors, Thaioil arranges an orientation session facilitated by high-level executives with knowledge about the business and business direction as well as related laws and regulations and other information required for performing the director's duties. A Welcome Package for TOP's New Director, containing information required, is prepared for new directors before assuming office.

Directors' Performance Development

The Board has a policy to encourage all directors to keep on learning as a support for directors' better performance. In the normal situation (without COVID-19 pandemic), one session of Board meeting will be held at the refinery, together with a site visit to monitor progress of key projects.

Director's Training Course in year 2021

No.	Name - Surname	Director's Training Course in year 2021
1	Prof. Dr. Supot Teachavorasinskun	<ul style="list-style-type: none"> >> Director Leadership Certification Program (DLCP 2/2021) >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: <ul style="list-style-type: none"> • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc >> Trade and Development Regional Forum 2021: "Recharging Asia: Inclusive Growth and Sustainable Development amidst Post Pandemic World" by International Institute for Trade and Development >> Conference Call on Q4/2021 Outlook: "Navigating a Vulnerable Recovery" by Standard Chartered Bank (Thai) Plc >> Director's Briefing No.14/2021: "The Choices of Dispute Resolution in the time of COVID-19" by Thai Institute of Directors Association and Thailand Arbitration Center >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"
2	Pol. Gen. Aek Angsanant	<ul style="list-style-type: none"> >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
3	Dr. Pailin Chuchottaworn	<ul style="list-style-type: none"> >> STS Expert Session: <ul style="list-style-type: none"> • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
4	ACM Suttipong Inseepong	<ul style="list-style-type: none"> >> IOD National Director Conference 2021: "Leadership Behind Closed Door"

No.	Name - Surname	Director's Training Course in year 2021
5	Mr. Praphaisith Tankeyura	<ul style="list-style-type: none"> >> Director Leadership Certification Program (DLCP 1/2021) >> Ethical Leadership Program (ELP 23/2021) >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: <ul style="list-style-type: none"> • "Business Transformation and Innovation", The Siam Cement Plc (SCG)
6	Gen. Kukiart Srinaka	<ul style="list-style-type: none"> >> Director Accreditation Program (DAP 185/2021) >> Boardroom Success through Financing and Investment (BFI 10/2021)
7	Ms. Phannalin Mahawongtikul	<ul style="list-style-type: none"> >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: <ul style="list-style-type: none"> • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc >> 2021 PTIT Special Lecture by Khunyong Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"
8	Dr. Buranin Rattanasombat	<ul style="list-style-type: none"> >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: <ul style="list-style-type: none"> • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc
9	Dr. Prasert Sinsukprasert	<ul style="list-style-type: none"> >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: <ul style="list-style-type: none"> • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc >> 2021 PTIT Special Lecture by Khunyong Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"

No.	Name - Surname	Director's Training Course in year 2021
10	Assoc. Prof. Dr. Pasu Decharin	>> Ethical Leadership Program (ELP 23/2021) >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc
11	Mr. Plakorn Wanglee	>> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) >> Conference Call on Q4/2021 Outlook: "Navigating a Vulnerable Recovery" by Standard Chartered Bank (Thai) Plc >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"
12	Mr. Terdkiat Prommool	>> IOD National Director Conference 2021: "Leadership Behind Closed Door"
13	Dr. Sompop Pattanariyankool	>> Director Certification Program (DCP 309/2021) >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"

No.	Name - Surname	Director's Training Course in year 2021
14	Mr. Wirat Unanarumit	>> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> STS Expert Session: <ul style="list-style-type: none"> • "Oil Demand Forecast & Scenario and Power & New Energies Perspective" and "Chemicals Market Perspective & Energy Transition Scenarios", Boston Consulting Group (BCG) • "Market Snapshots: Oil", Facts Global Energy (FGE) • "Global Trends-Beyond Energy", McKinsey & Company • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group) • "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc

Directors who completed their terms and resigned during the year 2021

No.	Name - Surname	Director's Training Course in year 2021
1	Ms. Duangporn Thiengwatanatham	>> Boardroom Success through Financing & Investment (BFI 11/2021) >> IOD National Director Conference 2021: "Leadership Behind Closed Door" >> Director Forum No. 1/2021: "GRC Through the Perfect Storm" >> Independent Director Forum No.1/2021: "It's Time for Board Meeting Reformation" >> Director's Briefing No.14/2021: "The Choices of Dispute Resolution in the time of COVID-19" by Thai Institute of Directors Association and Thailand Arbitration Center >> STS Expert Session: <ul style="list-style-type: none"> • "Business Transformation and Innovation", The Siam Cement Plc (SCG) • "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)

Remarks :

Ms. Duangporn Thiengwatanatham resigned from directorship on October 1, 2021.

Policies and Guidelines Relating to Shareholders and Stakeholders

Shareholders' Rights and Equal Treatment

Thaioil protects shareholders' rights and respects their rights, thus treating all shareholders equally, be they major or minor shareholders or institutional investors. Thaioil, moreover, promotes the exercise of shareholders' rights extensively, for example, encouraging them to propose agendas for the AGM and to nominate candidates to the Board prior to the AGM, etc.

The 2021 Annual General Meeting of Shareholders (AGM)

Thaioil held the 2021 AGM on April 7, 2021, at 09:00 hrs., at Bangkok Convention Center, 5th floor, Central Plaza Ladprao, where shareholders can conveniently reach by car, underground, and other means of public transport. Some additional measures were implemented to prevent the risk of Covid-19 infection, for example, sterilizing the event venue prior to the meeting day, seating arrangement with sufficient distancing, and live broadcast of the meeting.

To hold an AGM, Thaioil normally follows AGM Checklists of the Thai Investors Association, the Thai Listed Companies Association, and the SEC. For the 2021 AGM, Thaioil received full 100 scores for meeting arrangement for six straight years, reflecting determination to hold an AGM of the required standard and with good corporate governance principles applied. This includes:

- >> **Allowing shareholders to propose agenda items and qualified persons for nomination to the Board** during September 21-December 31, 2020, for which criteria and process were announced on the electronic system of Stock Exchange of Thailand (SET) and websites of Thaioil, while **welcoming questions from shareholders prior to the meeting date** stated in the AGM invitation notice.
- >> For the 2021 AGM, none of the shareholders has proposed an agenda nor nominated any candidate to the Board, which Thaioil disclosed in the AGM invitation notice.

- >> **Posting the 2021 AGM invitation notice**, both in Thai and English, **on the website 35 days prior to the meeting date** while arranging for **distribution of AGM invitation notice** together with all documents required for the meeting, Annual Report, and 2020 Integrated Report in the form of QR code to shareholders **22 days prior to the meeting date**
- >> **Allowing shareholders to be volunteer as witnesses in the vote counting and arranging for an independent legal expert to inspect vote counting to ensure voting and vote counting transparency**

Roles toward the Stakeholders

Thaioil established guidelines for treating each group of stakeholders in the CG Manual, which can be accessed on the website and downloaded for use as instructions for managing fair business practices with equal treatment for all groups of stakeholders, summarized below:

Shareholders, Investors, and Analysts

Apart from what is stated in the 'Shareholders' Rights and Equal Treatment' section, Thaioil held a number of activities through various online channels to provide opportunities to meet shareholders, investors, and analysts, as detailed on the topic 'Investor Relations' on page 107.

Customers

Thaioil pays special attention to delivering products of the quality required by customers by honoring the contract with transparency, completeness, and accuracy to win customer satisfaction and trust while fostering good and sustainable relationships with customers. According to the 2021 customer engagement survey, Thaioil gained an average point of as high as 94 percent. Details of customer treatment are described in the 2021 Integrated Report on the topic 'Customer Relations Management'.

Business Partners

Recognizing business partners as partners that will grow together, Thaioil established procurement procedures and strictly complies with them. Thaioil has a selection

process that requires business partners to meet certain qualifications. Criteria for assessing business partners' capability have also been clearly set to ensure equality and transparency. Details of treatment for partners are stated in the 2021 Integrated Report on the topic 'ESG risks in Supply Chain Management'.

Employees

Thaioil pays attention to employee's well-being to build up bond and morale to ultimately achieve higher operating results. To this end, Thaioil promotes corporate cultures and provides fair compensation while adhering to human rights principles based on fairness and equality, which are turned into action as follows:

- >> Basing treatment for employees, and as stakeholders on human rights principles, both at national and international levels, while strictly observing labor laws and other related regulations by launching the **'Human Rights Policy in Workplace'** and disclosing information about compliance with human rights in the 2021 Integrated Report on the topic 'Human Rights'
- >> Introducing a policy on fair remuneration and welfare that is tied to performance of each individual executive and employee. The remuneration structure is reviewed annually to ensure that Thaioil's remuneration package is part of the top quartile companies in the industry. **Thaioil employees' remuneration are aligned with short-term and long-term corporate performance**, Thaioil considered salary adjustment for the executives and employees once a year by utilizing the four dimensions of Balance Scorecard Concept, namely: sustainability, stakeholders, internal process, and people & organizational competency. The balance scorecard is used to develop Corporate Key Performance Indicator (Corporate KPI), which is cascaded down to Individual KPI for measuring individual's current performance (short term) and ability to respond to long-term strategy. The practice ensures that remuneration packages of both

executive and employee are aligned to short-term and long-term business strategies

More details about human resource management can be found in 'Human Resource and Organization Development' on page 86 and in the 2021 Integrated Report on the topic 'Human and Organization Development'.

Creditors

Thaioil professionally and disciplinary operates its businesses in accordance with agreements made with creditors. It strictly honors agreed conditions and guarantee terms while making full and timely repayments of loans and interests and honestly submitting accurate financial status report to creditors on time. Should there be any failure to comply with the payment terms and conditions, Thaioil will inform creditors in advance and hold a discussion to solve the problem to prevent any possible damages.

Competitors

Thaioil treats all business competitors equally under the laws concerning trade competition and within the extent of liberalized international competition. Thaioil adheres to fair competition while not seeking competitors' confidential information, nor defaming competitors using slander, nor entering into any agreement with competitors or any person that may lead to reduction or limitation of trade competition.

Communities, Society, and Environment

Thaioil has in place policies on Quality, Security, Safety, Occupational Health, Environment, Energy, and Social Responsibility Management to support its attempt to foster better quality of life for the community, the society, and the environment, which are recognized as essential elements of business operations. In doing so, Thaioil strictly adheres to transparency and Code of Conduct while trying to minimize risk and impact from the operations. Thaioil builds up good relationships and raises quality of life for people in both neighboring and

distant communities. Thail's Corporate Social Responsibility (CSR) covers four areas of work, namely education, energy and natural resources, environmental conservation, and quality of life. Details about operations concerning quality, security, safety, occupational health, environment, energy, and social responsibility management can be found in the 2021 Integrated Report on the topics 'Human Health and Safety' and 'Corporate Social Responsibility'.

Disclosure and Transparency

Information Disclosure

Thail attaches importance to information disclosure to stakeholders. Guidelines were laid down for disclosure of both financial information and non-financial information as required by various regulations. Information, both in Thai and English, is posted on the electronic system of the SET and SEC, Thail's website, and social media channels, including Facebook, Line, among others, with regular updates.

In addition to disclosure channels mentioned above, Thail provides business updates through public media, both printed and electronic, on a regular basis. Moreover, two press conference sessions were held on the occasions of Thail's 60th anniversary and when Thail bought shares in Indonesia's PT Chandra Asri Petrochemical Tbk.

Investor Relations

Thail has its Investor Relations Section as the contact point to facilitate communication with shareholders, investors, analysts, and regulatory authorities. Through this section, information that is adequate, accurate, complete, transparent, and are equally provided. Shareholders or investors or interested persons can reach Investor Relations Section by email at ir@thailgroup.com or by telephone number 0-2797-2961 (Direct Line).

During 2021, Thail executives met with shareholders, analysts, and investors on various occasions, detailed below:

Meeting with Shareholders, Analysts, and Investors

Company Visit-Local Investors	2 times (virtual and audio)
Conference Call-Local Investors	5 times
Local Roadshow	6 times (virtual and audio)
Company Visit-International Investors	16 times (virtual and audio)
Conference Call-International Investors	5 times
International Roadshow	14 times (virtual and audio)
SET's Opportunity Day	4 times
SET Digital Roadshow	3 times
Analyst Meeting	4 times
Information provided via telephone (average per day)	5 times

Review of Policies, Principles, and Guidelines on Corporate Governance

Thail has a policy to review its policies, principles, and guidelines on corporate governance on a regular basis. A review was conducted in 2021 along with studies into measures, announcements, and guidelines on corporate governance of the SET and SEC as well as principles and assessment criteria regarding corporate governance of various institutes. No significant change was found; Thail's policies on corporate governance and anti-corruption remain aligned and suitable.

In some cases, however, Thail sees the need to have some practice guidelines that better match with business environment, such as the **Cumulative Voting**, which, by the Company's Article of Association, director nomination relies on the majority vote from shareholders whose votes equal to the number of shares they are holding. But as Thail values minor shareholders, they are allowed to propose candidate for director nomination. Additionally' **the number of Directors**, basing on good corporate governance principles, the Board should consist of 5-12 directors. As of December 31, 2021, Thail's Board of Directors consisted of 15 members, in accordance with the Company's Article of Association, which stated that the number of Board members should not be fewer than five and not greater than 15, considered suitable for the size and complexity of the business.

Corporate Governance Report

Code of Conduct

To manage an ethical business, Thailoil established its **Code of Conduct** as guidelines for directors, executives, and employees to follow, for example, code of conduct for purchasing, intellectual properties, the application of information and communication technology, etc. the Board of Directors (the Board) and executives shall take the lead in performing their duties as role models with honesty, fairness, transparency, and accountability to promote a sustainable corporate governance culture.

Thailoil established **Corporate Governance and Code of Conduct (CG Manual)**, which features corporate governance principles, business ethics, and anti-corruption policy for distribution to directors, executives, and all employees. Upon receiving the CG Manual, they are required to study the content and sign the “Acknowledgment Form”, as a promise that they will adhere to the principles and act accordingly. The manual was also posted on Thailoil’s website so that all stakeholders and the public can easily access.

Communication and Support for Compliance

To emphasize corporate governance, Thailoil continuously organizes various communication and promotional activities to build up knowledge and understanding among employee at all levels of Thailoil and Subsidiaries. Such activities are, for example, CG Work from Home, CG Three Words Challenge, PTT Group CG Day 2021, and No Gift Policy promotion, etc. A CG survey was conducted among employees to assess their knowledge and understanding about corporate governance and Code of Conduct. Analysis into the survey result will benefit development of work plans to enhance organizational culture concerning corporate governance and Code of Conduct. More details in this regard can be found in the ‘Anti-Corruption’ section of the 2021 Integrated Report.

Monitoring Compliance with Corporate Governance and Code of Conduct

Thailoil requires directors, executives, and all employees to acknowledge and act in accordance with policies and regulations stated in the **CG Manual**. Compliance with the Code of Conduct is monitored through whistle-blowing measures and whistle-blower protection mechanisms as well as the internal control process. If the Directors, executives, or employees violate the corporate governance principles, they will face strict disciplinary punishment. If it is suspected that they have violated any law, regulations, rules, and requirements laid down by the government sector, they will be handed to public officials for prosecution.

Corporate Governance in Thailoil and Subsidiaries

Thailoil formulated TOP Way of Conduct Policy as guidelines to govern Thailoil and Subsidiaries by assigning personnel to represent the Company to strive in the same strategic direction. Corporate governance and Anti-Corruption policies are part of the policies that all Thailoil and Subsidiaries must implement in managing their businesses.

Connected Transaction and/or Acquisition or Disposal of Asset

Thailoil established its **Connected Transaction Policy** on a fair and at arm’s length basis. This is also in compliance with rules and regulations of the regulatory authorities as well as in accordance with the accounting and tax standards. **The Audit Committee will provide opinions on the suitability of connected transactions.** Any matters or connected transactions requiring specific expertise, Thailoil will secure opinions from a qualified person. These opinions will be proposed to the Board or Annual General Meeting of Shareholders (AGM) for case-by-case approval.

In case Thailoil or Subsidiaries* is discovered having connected transactions and/or involving in an activity, in which substantial assets as categorized by regulatory authorities are acquired or disposed of, Thailoil is obliged to take actions stipulated by the regulatory authorities, which requires approval from the shareholders to enter into such connected transactions. This will require a majority vote of no less than three-fourths of the shareholders or proxies attending the meeting with entitlement to vote, excluding the votes of shareholders with conflicts of interest.

* meaning companies in which Thailoil, directly or indirectly, holds more than 50 percent of the registered paid-up capital

Use of Inside Information

The Board is fully aware that the supervision on the use of inside information is crucial and necessary for all listed companies. It, therefore, always keeps this matter under close supervision to avoid misuse of inside information. Following measures in this respect were laid down:

- >> Establishing 'Code of Conduct on Maintaining Confidentiality and the Use of Inside Information', which is incorporated in the CG Manual.
- >> Issuing a policy to prevent the use of inside information for buying and selling securities. Directors, executives, and their close contacts are prohibited from buying, selling, or transferring Thailoil's shares or entering into derivatives in connection with Thailoil shares for at least one month before the performance report is submitted to the Stock Exchange of Thailand (SET) or until inside information that could possibly affect Thailoil's share price is disclosed to the public.
- >> Sending out a notification to directors and executives asking for cooperation in refraining and prohibiting themselves and their close contacts from buying, selling, or transferring Thailoil's shares at least one month prior to submission of the quarterly performance report to the SET.

>> Requiring directors and executives, as defined by the Securities and Exchange Commission, Thailand (SEC), to report the intention to purchase or sell Thailoil's shares, either by self, by spouse, unmarried partner, and minor child to the Company Secretary at least one business day in advance. They are also required to report the Company's shareholding changes when firstly assuming the position and within three working days to the SEC whenever there's a change (purchase, sale, and transfer of shares) of their shareholding.

>> Notifying directors, executives, and employees of regulations and policies involving the use of inside information on a regular basis through various channels, such as on the agenda of matters to be informed by Chairman at each Board meeting, etc.

>> Arranging a 'Personal Non-Disclosure Agreement' between Thailoil, its executives and employees who involve in ongoing projects and undisclosed projects to be cautious when using critical information.

Prevention of Conflict of Interest

Thailoil has included 'Code of Conduct on Conflict of Interest' in the CG Manual as guidelines for its personnel to act in a bid to prevent conflict of interest. Actions taken in this regard include:

- >> Introducing policies and guidelines for directors in the Board meeting. Directors having involvement in matters with possible conflict of interest shall leave the meeting unless the Chairman grants a permission to stay to answer the questions from other directors. However, the person must abstain from voting on that particular agenda.
- >> Arranging a conflict of interest report form for directors and executives according to Thailoil's rules and regulations. A director or an executive is required to submit a report when he/she firstly assumes the position, followed by every quarter and on an annual basis.

>> Introducing an electronic conflict of interest report for employees of all levels in Thailoil and Subsidiaries. All employee is required to submit the report once they are accepted for employment, then at the beginning of each year, or each time when a suspected conflict occurs. In 2021, Thailoil achieved 100 percent of such report submission from employees.

Anti-Corruption

Thailoil understands that corruption is a major obstacles to achieving goals as well as to the country's social and economic development. The "Anti-Corruption Policy", was thus introduced with definitions, roles and responsibilities, guidelines, and implementation measures provided. The policy was announced for enterprise-wide implementation, and that all directors, executives, and employees must acknowledge and act accordingly. The Anti-Corruption Policy is reviewed annually to seek further improvement and keep pace with the changing business circumstances and environments.

In addition to formulation of policies and guidelines, Thailoil pays attention to actual implementation of policies, guidelines, and measures, followed by regular monitoring, which brings about revision and improvement. Also part of Thailoil's anti-corruption effort are assessment on corruption risk, internal control to prevent corruption, communication to provide knowledge together with training concerning corruption for both internal and external parties, as well as monitoring of implementation of policy and related regulations. More information about 'Anti-Corruption' is provided in the 2021 Integrated Report.

To demonstrate Thailoil's commitment to countering corruption, as a listed company, it is the Company's responsibility to foster confidence among shareholders and stakeholders. In addition to internal activities, Thailoil became a "CAC Certified Company" with Thai Private Sector Collective Action Against Corruption (CAC) on

April 4, 2014. As the certification is valid for three years, Thailoil was successful in re-certification from the CAC in 2017 and 2020.

Whistle-Blowing Measures

Thailoil established **whistle-blowing measures and whistle-blower protection mechanisms**, which are published on the CG Manual and Thailoil website. This allows all stakeholders to monitor the performance of directors, executives, and employees of Thailoil and Subsidiaries to ensure their compliance with laws, regulations, corporate governance principles, and the Code of Conduct, while refraining from doing any action that may lead to fraud and corruption. Those who experience violation of their rights and are affected by Thailoil and Subsidiaries' operations, stakeholders, employees, relevant authorities, and external parties coming across or are aware of such clues may file a complaint or whistle-blow a report through the following channels:



Chairman of the Board/

Chairman of Corporate Governance Committee/

Chairman of Audit Committee/

Chief Executive Officer and President/

Company Secretary

Thai Oil Public Company Limited

555/1 Energy Complex Building A, 11th Floor

Viphavadi Rangsit Road, Chatuchak, Chatuchak,

Bangkok 10900



cgcoordinate@thailoilgroup.com

(Manager-Governance and Compliance

will acknowledge receipt of the matter and duly forward to responsible parties)

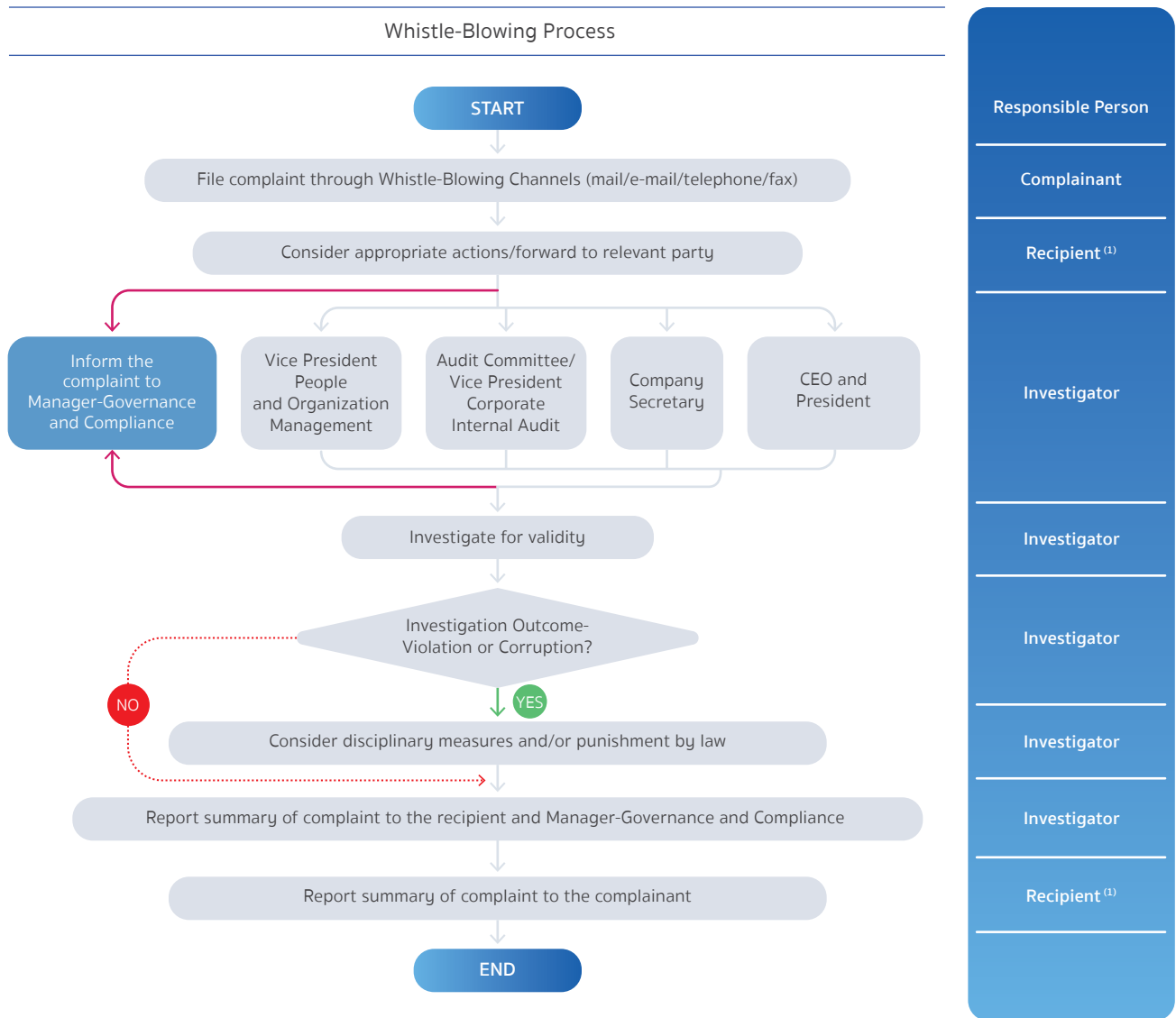


+66(0) -2797-2900, 66(0) -2797-2999,

+66(0) -2299-0000 ext. 43500, 43505



+66(0) -2797-2973



Remark: ⁽¹⁾ Chairman of the Board/Chairman of the Audit Committee/Chairman of Corporate Governance Committee/ CEO and President/Company Secretary

Protection for Complainants, Whistle-blowers and Related Parties

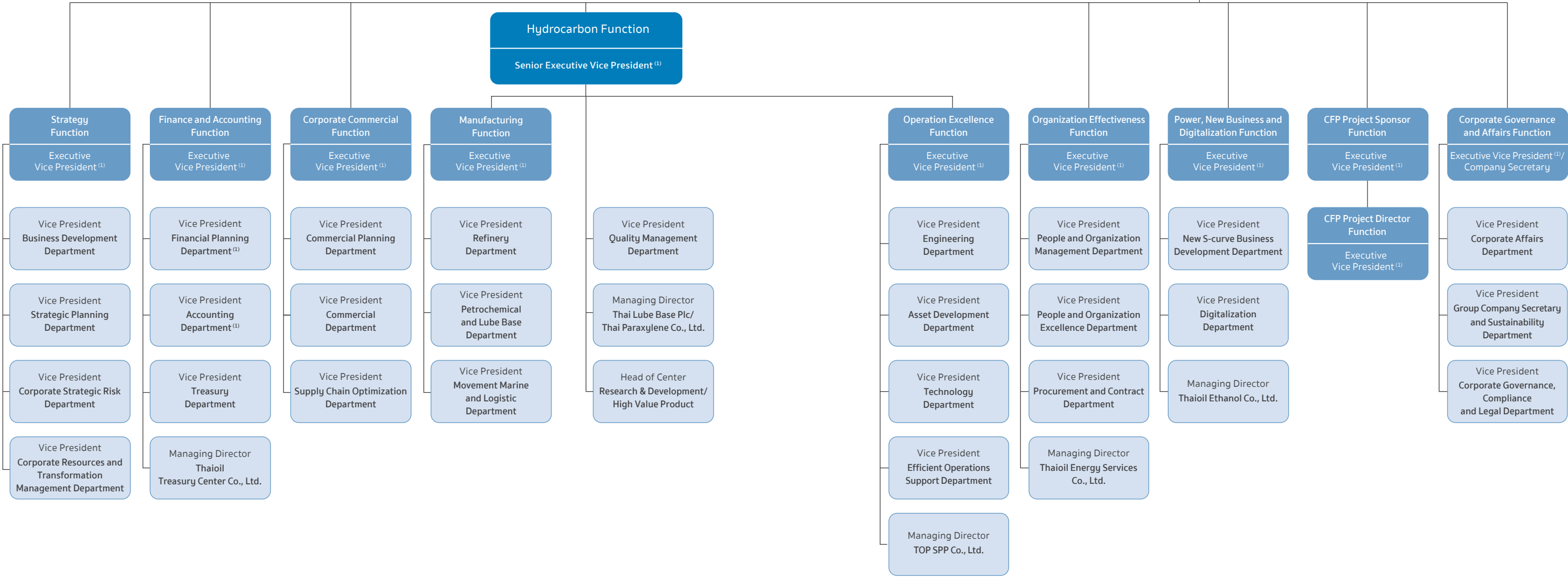
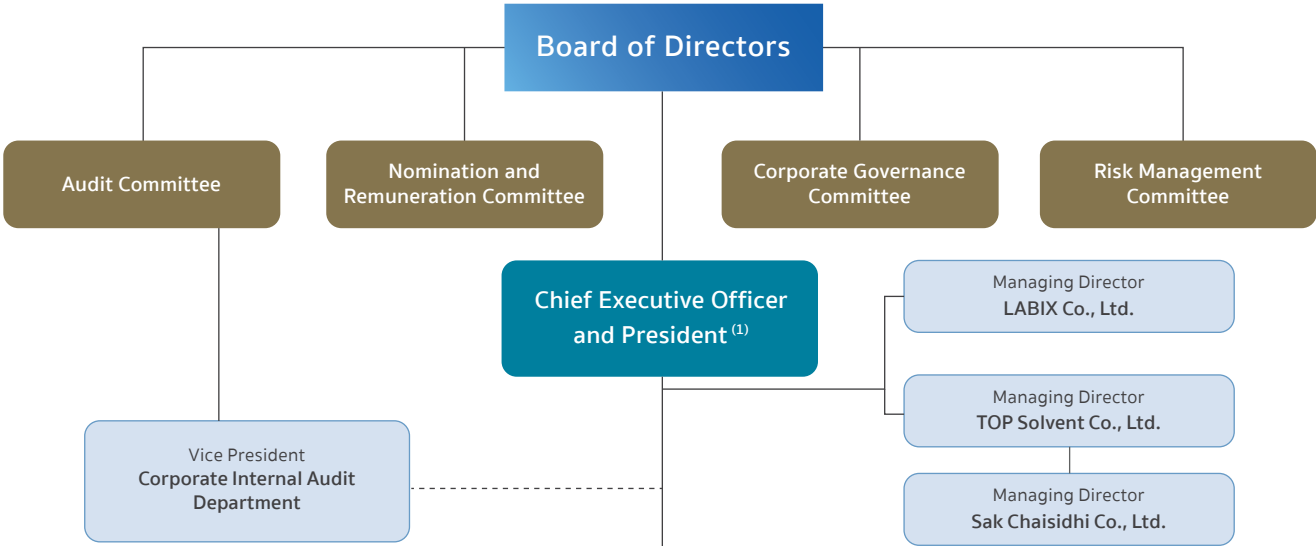
Complainants or whistle-blowers of legal violation or non-compliance are to be suitably and fairly protected by Thaioil, which implies no change in job titles, threats, job interference, dismissal, or any unfair acts. Thaioil will keep information about their complaints confidential

and not disclose them to unrelated parties, except when required by the law.

In 2021, Thaioil received one complaint from the whistle-blowing channel and launched an investigation, which found no misconduct nor violation of regulation. The complainant was already notified of the investigation outcome.

Organization Structure

As of January 1, 2022



Remark ⁽¹⁾ The position is considered managerial executives as defined by SEC announcement.

Board of Directors ➤

Professor Dr. Supot Teachavorasinskun
Independent Director (Non-Executive)
and Chairman of the Board
Age 56 Yrs.



Director Term Duration

- >> Independent Director (Non-Executive) (Appointed on November 25, 2020 and effective from December 1, 2020: 5 months)
- >> Independent Director (Non-Executive) (Re-elected on April 7, 2021: 8 months)
- >> Independent Director (Non-Executive) and Chairman of the Board (Elected on December 22, 2020: 1 year)

Board-Committee Term Duration

-None-

Education

- >> Bachelor of Engineering (Civil Engineering), Chulalongkorn University
- >> Master of Engineering (Civil Engineering), University of Tokyo
- >> Doctor of Engineering (Civil Engineering), University of Tokyo

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 269/2019)
- >> Financial Statements for Director (FSD 32/2019)
- >> Director Leadership Certification Program (DLCP 2/2021)

Other Trainings

- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 10, Thailand Energy Academy
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "Business Transformation and Innovation", The Siam Cement Plc (SCG)
 - >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
 - >> "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc
- >> Trade and Development Regional Forum 2021: "Recharging Asia: Inclusive Growth and Sustainable Development amidst Post Pandemic World" by International Institute for Trade and Development
- >> Conference Call on Q4/2021 Outlook: "Navigating a Vulnerable Recovery" by Standard Chartered Bank (Thai) Plc
- >> Director's Briefing No.14/2021: "The Choices of Dispute Resolution in the time of COVID-19" by IOD and Thailand Arbitration Center
- >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"

Working Experience in the 5 Preceding Years

- | | |
|-------------------|---|
| 2014-June 2016 | <ul style="list-style-type: none"> >> Head of Civil Engineering Department, Faculty of Engineering, Chulalongkorn University >> Head of Center of Excellence in Earthquake Engineering and Vibration, Department of Civil Engineering, Faculty of Engineering, Chulalongkorn University |
| July 2016-Present | <ul style="list-style-type: none"> Dean, Faculty of Engineering, Chulalongkorn University |

Current Positions

- | | |
|---|--------|
| 1. Listed Company (1) | |
| >> Independent Director and Chairman of the Board, Thai Oil Plc | |
| 2. Public Company | -None- |
| 3. Limited Company | -None- |
| 4. Other Organizations/Institutions (1) | |
| >> Dean, Faculty of Engineering, Chulalongkorn University | |
| 5. State Enterprise | -None- |
| % of Shareholding in Thaioil | -None- |
| Conflict of Interest | -None- |
| Family Relation with Other Directors | -None- |
| Dispute in the 10 Preceding Years | -None- |

Police General Aek Angsananont
Independent Director (Non-Executive),
Chairman of the Audit Committee
and Chairman of the Corporate Governance Committee
Age 65 Yrs.



Director Term Duration

- >> Independent Director (Non-Executive) (Elected on April 7, 2017: 3 years 2 months)
- >> Independent Director (Non-Executive) (Re-elected on June 10, 2020: 1 year 7 months)

Board-Committee Term Duration

- >> Member of the Corporate Governance Committee (Appointed on May 26, 2017 and completed the term in the 2020 Annual General Meeting of Shareholders: 3 years)
- >> Chairman of the Corporate Governance Committee (Elected on June 21, 2017 and completed the term in the 2020 Annual General Meeting of Shareholders: 2 years 11 months)
- >> Member of the Corporate Governance Committee (Appointed on June 23, 2020: 1 year 7 months)
- >> Member of the Audit Committee (Appointed on June 23, 2020: 1 year 7 months)
- >> Chairman of the Corporate Governance Committee (Elected on September 10, 2020: 1 year 4 months)
- >> Chairman of the Audit Committee (Elected on September 18, 2020: 1 year 3 months)

Education

- >> Bachelor of Law (1st Class Honor), Ramkhamhaeng University
- >> Master of Law, Chulalongkorn University
- >> Barrister-at-Law, The Institute of Legal Education, Thai Bar Association
- >> Certificate of Senior Police Command, Police College Bramshill, United Kingdom

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 111/2008)
- >> Board Matters and Trends (BMT 4/2017)
- >> Role of the Chairman Program (RCP 42/2018)
- >> Ethical Leadership Program (ELP 16/2019)
- >> Corporate Governance for Capital Market Intermediaries (CGI 22/2019)

Other Trainings

- >> The Joint State-Private Sector Course, Class 4414, National Defence College
- >> Capital Market Academy Leader Program, Class 7, Capital Market Academy
- >> The Program for Senior Executives on Justice Administration, Batch 8, Judicial Training Institute, National Justice Academy
- >> Advanced Administration Program, Class 34, Institute of Administration Development
- >> Advanced Certificate Course in Politics and Governance in Democratic Systems for Executives, Class 7, King Prajadhipok's Institute
- >> Training Course on Good Governance for Directors and Executives of State-Owned Enterprises and Public Organization, Class 3, King Prajadhipok's Institute

- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 1, Thailand Energy Academy
- >> Training Course on Administrative Justice for Executives, Class 3, Office of the Administration Courts of Thailand
- >> Top Executive Program in Commerce and Trade (TEPCoT), Class 3, Commerce Academy, University of the Thai Chamber of Commerce
- >> The Public Legal Executive Training Program, Class 1, Office of the Council of State
- >> The Rule of Law for Democracy, Class 1, College of the Constitutional Court
- >> Executive Program Good Governance for Sustainable Development, Class 1, Office of the Public Sector Development Commission
- >> ASEAN Executive Management Programme (AseanEx), Class 2, Office of the Civil Service Commission, The Secretariat of the Prime Minister, Office of The National Economic and Social Development Board, Ministry of Foreign Affairs, Sasin Graduate Institute of Business Administration of Chulalongkorn University
- >> Thailand Insurance Leadership Program, Class 7, Office of Insurance Admission
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"

Working Experience in the 5 Preceding Years

2015-2016 Permanent Secretary, Office of the Permanent Secretary, The Prime Minister's Office

Current Positions

1. Listed Company (3)

- >> Independent Director, Chairman of the Audit Committee and Chairman of the Corporate Governance Committee, Thai Oil Plc
- >> Independent Director and Member of the Audit Committee, Royal Orchid Hotel (Thailand) Plc
- >> Independent Director and Chairman of the Board, Nex Point Plc

2. Public Company (2)

- >> Independent Director and Chairman of the Board, Big C Supercenter Plc
- >> Director and Chairman of Nomination and Remuneration Committee, Glow Energy Plc

3. Limited Company

-None-

4. Other Organizations/Institutions (2)

- >> Member of Committee of Property Management Office, Thai Red Cross Society
- >> Member of King Mongkut's Institute of Technology Ladkrabang Council

5. State Enterprise

-None-

% of Shareholding in Thai Oil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Dr. Pailin Chuchottaworn
Independent Director (Non-Executive)
Age 65 Yrs.



Director Term Duration

>> Independent Director (Non-Executive) (Appointed on April 23, 2021 and effective from May 1, 2021: 8 months)

Board-Committee Term Duration

-None-

Education

- >> Bachelor of Engineering (Chemical Engineering) (1st Class Honor), Chulalongkorn University
- >> Master of Engineering (Chemical Engineering), Tokyo Institute of Technology, Japan (Japanese Government Scholarship)
- >> Doctor of Engineering (Chemical Engineering), Tokyo Institute of Technology, Japan (Japanese Government Scholarship)

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 51/2004)
- >> Director Accreditation Program (DAP 24/2004)
- >> Finance for Non-Finance Director (FND 14/2004)
- >> Diploma Examination (Exam 15/2005)
- >> Anti - corruption for Executive Program (ACEP 4/2012)
- >> Role of the Chairman Program (RCP 37/2015)
- >> Boards that Make a Difference (BMD 2/2016)

Other Trainings

- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 1, Thailand Energy Academy
- >> Corporate Governance for Directors and Senior Executives of State Enterprises and Public Organization, Class 7, King Prajadhipok's Institute
- >> The Joint State-Private Sector Course, Class 22, National Defence College
- >> Top Executive Program, Class 8, Capital Market Academy
- >> Top Executive Program in Commerce and Trade (TEPCoT), Class 1, Commerce Academy, University of the Thai Chamber of Commerce
- >> Industrial Liaison Program (ILP) 2005, Massachusetts Institute of Technology, USA
- >> NIDA-Wharton Executive Leadership Program 2007, Wharton, University of Pennsylvania, USA
- >> PTT-GE Executive Leadership Program 2008, GE Crotonville, USA
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)

Working Experience in the 5 Preceding Years

2015-2017	Advisor, Sasin Graduate Institute of Business Administration of Chulalongkorn University
2015-Nov 17, 2017	Chairman of VISTEC Council, Vidyasirimedhi Institute
2017-Nov 17, 2017	Advisor, Chulalongkorn University Council
2017-Jul 15, 2019	Deputy Minister of Transport
Mar 11-Jul 15, 2019	Advisor to the Prime Minister

Current Positions

1. Listed Company (3)

- >> Independent Director, Thai Oil Plc
- >> Independent Director and Chairman of the Board, Global Power Synergy Plc
- >> Independent Director, Member of the Executive Committee and Member of the Technology Committee, Siam Commercial Bank Plc

2. Public Company

-None-

3. Limited Company (1)

- >> Director, SCB 10X Co., Ltd.

4. Other Organizations/Institutions (9)

- >> Chairman of the Council, Vidyasirimedhi Institute of Science and Technology (VISTEC)
- >> Chairman of the Governing Board, Kamnoetvidya Science Academy
- >> Chairman, Committee on Economic Steering
- >> Member of the Executive Board, Office of National Higher Education Science Research and Innovation Policy Council
- >> Member, the Board of Investment of Thailand
- >> Advisor to the Prime Minister
- >> Director, The National Electric Vehicle Policy Committee, Ministry of Energy
- >> Advisory Board, Devawongse Varopakarn Institute of Foreign Affairs, Ministry of Foreign Affairs
- >> Senior Expert, National for the Development of Special Economic Zones, The Office of the National Economic and Social Development Council

5. State Enterprise

-None-

% of Shareholding in Thailoil 40,000 shares equivalent to 0.00196%

Conflict of Interest -None-
Family Relation with Other Directors -None-
Dispute in the 10 Preceding Years -None-

Air Chief Marshal Suttipong Inseeyong
Independent Director (Non-Executive)
and Chairman of the Nomination
and Remuneration Committee
Age 64 Yrs



Director Term Duration

- >> Independent Director (Non-Executive) (Appointed on January 22, 2016 and effective from February 1, 2016: 1 year 2 months)
- >> Independent Director (Non-Executive) (Re-elected on April 7, 2017: 3 years 2 months)
- >> Independent Director (Non-Executive) (Re-elected on June 10, 2020: 1 year 7 months)

Board-Committee Term Duration

- >> Member of the Corporate Governance Committee (Appointed on April 27, 2016 and completed the term in the 2017 Annual General Meeting of Shareholders: 11 months)
- >> Chairman of the Corporate Governance Committee (Elected on November 21, 2016 and completed the term in the 2017 Annual General Meeting of Shareholders: 4 months)
- >> Member of the Nomination and Remuneration Committee (Appointed on April 28, 2017 and completed the term in the 2020 Annual General Meeting of Shareholders: 3 years 1 month)
- >> Chairman of the Nomination and Remuneration Committee (Elected on May 17, 2017 and completed the term in the 2020 Annual General Meeting of Shareholders: 3 years)
- >> Member of the Nomination and Remuneration Committee (Appointed on June 10, 2020: 1 year 7 months)
- >> Chairman of the Nomination and Remuneration Committee (Elected on June 16, 2020: 1 year 6 months).

Education

- >> Bachelor of Science in Aeronautical Engineering, The Royal Thai Air Force Academy
- >> Bachelor of Political Science Program in International Relations and Comparative Government and Politics, Sukhothai Thammathirat Open University

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Accreditation Program (DAP 114/2015)
- >> Financial Statements for Directors (FSD 37/2018)
- >> Advanced Audit Committee Program (AACP 31/2018)
- >> Director Certification Program (DCP 267/2018)
- >> IT Governance and Cyber Resilience Program (ITG 14/2020)

Other Trainings

- >> Pilot Training Course, Flying Training School, The Royal Thai Air Force
- >> Flight Safety Course, The Royal Thai Air Force
- >> Air Command and Staff College Course, The Royal Thai Air Force
- >> Air War Course, The Royal Thai Air Force
- >> National Defence Course, Class 52, National Defence College
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 13, Thailand Energy Academy
- >> Advanced Master of Management (AMM), Class 3, Graduate School of Public Administration, National Institute of Development Administration
- >> Independent Director Forum 1/2019: "Tips and Tricks for Dealing with Questions in AGM"
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"

Working Experience in the 5 Preceding Years

Oct 2015-Sep 2016	Commander of Directorate of Air Operations Control, The Royal Thai Air Force
Oct 2016-Sep 2017	Assistant Commander-in-Chief, The Royal Thai Air Force
Oct 2017-Sep 2018	Deputy Chief of Defence Forces, The Royal Thai Armed Forces

Current Positions

1. Listed Company (1)

- >> Independent Director and Chairman of the Nomination and Remuneration Committee, Thai Oil Plc

2. Public Company

-None-

3. Limited Company

-None-

4. Other Organizations/Institutions

-None-

5. State Enterprise

-None-

% of Shareholding in Thaioil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Mr. Praphaisith Tankeyura
Independent Director (Non-Executive)
and Member of the Audit Committee
Age 67 Yrs.



Director Term Duration

- >> Independent Director (Non-Executive) (Appointed on August 30, 2019 and effective from September 1, 2019: 9 months)
- >> Independent Director (Non-Executive) (Re-elected on June 10, 2020: 1 year 7 months)

Board-Committee Term Duration

- >> Member of the Audit Committee (Appointed on August 30, 2019, effective from September 20, 2019 and completed the term in the 2020 Annual General Meeting of Shareholders: 8 months)
- >> Member of the Audit Committee (Appointed on June 23, 2020: 1 year 6 months)

Education

- >> Bachelor of Statistics (Applied Statistics for Business), Faculty of Commerce and Accountancy, Chulalongkorn University
- >> Master of Business Administration (Finance), Florida State University, USA

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 249/2017)
- >> Advanced Audit Committee Program (AACP 29/2018)
- >> Role of the Chairman Program (RCP 43/2018)
- >> Board Matters and Trends (BMT 7/2019)
- >> Board Nomination and Compensation Program (BNCP 7/2019)
- >> Successful Formulation & Execution of Strategy (SFE 33/2020)
- >> Director Leadership Certification Program (DLCP 1/2021)
- >> Ethical Leadership Program (ELP 23/2021)

Other Trainings

- >> Cyber Resilience Leadership, Class 3/6, Bank of Thailand
- >> Corporate Governance for Directors and Senior Executives of Regulator, State Enterprises and Public Organizations, Class 18, King Prajadhipok's Institute
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "Business Transformation and Innovation", The Siam Cement Plc (SCG)

Working Experience in the 5 Preceding Years

2005-Present	Managing Director, Boathouse Hua Hin Co., Ltd.
2012-2018	Director and Chief Executive Officer, Maboonyong Real Estate Co., Ltd.
2014-Present	Chairman of Advisory Board, JWS Construction Co., Ltd

Current Positions

1. Listed Company (2)

- >> Independent Director and Member of the Audit Committee, Thai Oil Plc
- >> Independent Director, Chairman of the Audit Committee, Corporate Governance and Corporate Social Responsibilities, and Member of Nomination and Remuneration Committee, Krungthai Card Plc

2. Public Company

-None-

3. Limited Company (2)

- >> Managing Director, Boathouse Hua Hin Co., Ltd.
- >> Chairman of Advisory Board, JWS Construction Co., Ltd.

4. Other Organizations/Institutions

-None-

5. State Enterprise

-None-

% of Shareholding in Thaioil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

General Kukiatt Srinaka

Independent Director (Non-Executive)
and Member of the Corporate Governance Committee
Age 61 Yrs.



Director Term Duration

- >> Independent Director (Non-Executive) (Appointed on November 23, 2018 and effective from January 1, 2019: 3 months)
- >> Independent Director (Non-Executive) (Re-elected on April 10, 2019: 2 years 9 months)

Board-Committee Term Duration

- >> Member of the Audit Committee (Appointed on July 19, 2019 and vacated on September 20, 2019: 2 months)
- >> Member of the Corporate Governance Committee (Appointed on August 30, 2019 and effective from September 20, 2019: 2 years 3 months)

Education

- >> Bachelor of Science, Chulachomklao Royal Military Academy
- >> Master of Public Administration, Burapha University

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 275/2019)
- >> Director Accreditation Program (DAP 185/2021)
- >> Boardroom Success through Financing and Investment (BFI 10/2021)

Other Trainings

- >> Thailand National Defence College, Class 57
- >> Joint Staff College, Class 48
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 15, Thailand Energy Academy
- >> 2020 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny: Water Crisis and Development Philosophy"
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"

Working Experience in the 5 Preceding Years

- 2016-2017 Commanding General of 1st Corps
- 2017-2018 Commanding General of 1st Army Area
- 2018-2019 Assistant Commander-in-Chief, The Royal Thai Army
- 2019-2020 Deputy Permanent Secretary for Defence, Ministry of Defence

Current Positions

1. Listed Company (2)

- >> Independent Director and Member of the Corporate Governance Committee, Thai Oil Plc
- >> Independent Director and Vice Chairman of the Board, Nirvana Daii Plc

2. Public Company

-None-

3. Limited Company

-None-

4. Other Organizations/Institutions

-None-

5. State Enterprise (1)

- >> Board Member of Provincial Waterworks Authority

% of Shareholding in Thaioil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Ms. Phannalin Mahawongtikul
 Director (Non-Executive)
 and Member of the Risk Management Committee
 Age 57 Yrs.



Director Term Duration

- >> Director (Non-Executive) (Appointed on September 28, 2018 and effective from October 1, 2018: 2 years 9 months)
- >> Director (Non-Executive) (Re-elected on June 10, 2020: 1 year 7 months)

Board-Committee Term Duration

- >> Member of the Risk Management Committee (Appointed on September 28, 2018, effective from October 1, 2018 and completed the term in the 2020 Annual General Meeting of Shareholders: 2 years 9 months)
- >> Member of the Risk Management Committee (Appointed on June 23, 2020: 1 year 6 months)

Education

- >> Bachelor of Science in Accounting, Thammasat University
- >> Master of Business Administration, Thammasat University

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Corporate Governance: Regulation and Disclosure (CG PTTEP/2017) (PTTEP In-house Course)
- >> Director Certification Program (DCP 279/2019)
- >> Strategic Board Master Class (SBM 9/2020)

Other Trainings

- >> Leadership Succession Program (LSP), Class 6, Institute of Research and Development for Public Enterprises
- >> CMA-Greater Mekong Subregion (CMA-GMS), Class 1, Capital Market Academy
- >> PTT-HBS Leadership Development Program (HBS) II, Harvard Business School, USA
- >> NIDA-Wharton Executive Leadership Program (ELP), The Wharton School, University of Pennsylvania, USA
- >> Executive Program for Senior Management (EX-PSM), Class 3, Fiscal Policy Research Institute Foundation
- >> Executive Development Program (EDP), Class 2, Thai Listed Companies Association
- >> Leadership Development Program (LDP) III, PTT Leadership and Learning Institute (PLLI)
- >> IOD National Director Conference 2019: "Board of the Future"
- >> Capital Market Academy Leader Program, Class 24, Capital Market Academy
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 15, Thailand Energy Academy
- >> E-learning CFO's Refresher Course 2020, The Stock Exchange of Thailand

- >> The TIJ Executive Program on the Rule of Law and Development (RoLD) 2020: The Resilient Leader, Thailand Institute of Justice
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "Business Transformation and Innovation", The Siam Cement Plc (SCG)
 - >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
 - >> "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc
- >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"

Working Experience in the 5 Preceding Years

Jan 2016-Sep 2018	Executive Vice President, PTT Plc secondment to PTT Exploration and Production Plc as Senior Executive Vice President, Finance and Accounting Group
Oct 2018-Apr 2019	Chief Financial Officer (Act.), PTT Plc
Apr 2019-Present	Chief Financial Officer, PTT Plc

Current Positions

1. Listed Company (2)

- >> Director and Member of the Risk Management Committee, Thai Oil Plc
- >> Chief Financial Officer, PTT Plc

2. Public Company

-None-

3. Limited Company

-None-

4. Other Organizations/Institutions (6)

- >> Member of the Council, Vidyasirimedhi Institute of Science and Technology (VISTEC)
- >> Member of Executive Committee, VISTEC
- >> Chairman of Finance and Budget Sub-Committee, VISTEC
- >> Executive Director, Thailand Energy Academy
- >> Director and Member of the Audit Committee, Thai Listed Companies Association (TLCA)
- >> Club President, Thai Investor Relations Club

5. State Enterprise

-None-

% of Shareholding in Thailoil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Dr. Buranin Rattanasombat
Director (Non-Executive)
and Chairman of the Risk Management Committee
Age 54 Yrs.



Director Term Duration

>> Director (Non-Executive) (Appointed on September 18, 2020: 1 year 3 months)

Board-Committee Term Duration

>> Member of the Nomination and Remuneration Committee
(Appointed on September 18, 2020 and vacated from April 23, 2021: 7 months)
>> Member of the Risk Management Committee
(Appointed on April 23, 2021: 8 months)
>> Chairman of the Risk Management Committee
(Elected on May 19, 2021: 7 months)

Education

>> Bachelor of Science, Prince of Songkhla University
>> Master of Business Administration, Chulalongkorn University
>> Ph.D. (Management), Silpakorn University

Director Training Courses of Thai Institute of Directors Association (IOD)

>> Company Secretary Program (CSP 40/2011)
>> Director Certification Program (DCP 174/2013)

Other Trainings

>> Capital Market Academy Leader Program, Class 30, Capital Market Academy
>> Public and Private Chief Innovation Leadership, National Innovation Agency (Public Organization)
>> Advanced Security Management Program, Class 10, The Association of National Defence College of Thailand Under The Royal Patronage of His Majesty The King
>> PTT Leadership Development Program (IMD Business School) 2018
>> Senior Executive Education Program, School of Management, MIT
>> Leadership Succession Program (LSP), Class 8, Institute of Research and Development for Public Enterprises
>> CMA-GMS International Program 2016, Capital Market Academy
>> Foreign Affairs Executives Programme, Class 7, Devawongse Varopakarn Institute of Foreign Affairs, Ministry of Foreign Affairs
>> PTT Leadership Development Program, Harvard Business School, Harvard University, USA
>> Advanced Certificate Course in Public Administration and Law for Executives, Class 12, King Prajadhipok's Institute
>> Executive Development Program (EDP), Thai Listed Companies Association

Working Experience in the 5 Preceding Years

2015-2018	Executive Vice President, Lubricant Business, PTT Plc
2018-2019	Senior Executive Vice President, Lubricant Business, PTT Oil and Retail Business Plc
2019-May, 2020	Senior Executive Vice President, Corporate Strategy, Innovation and Sustainability, & Chief Transformation Officer (CTO), PTT Oil and Retail Business Plc
June 2020-Sep 2021	Senior Executive Vice President, Downstream Business Group Alignment, PTT Plc
Oct 2021-Present	Senior Executive Vice President, Innovation and New Ventures, PTT Plc

Current Positions

1. Listed Company (3)

>> Director and Chairman of the Risk Management Committee, Thai Oil Plc
>> Senior Executive Vice President, Innovation and New Ventures, PTT Plc
>> Director and Member of the Risk Management Committee, PTT Oil and Retail Business Plc

2. Public Company

-None-

3. Limited Company (1)

>> Director and Chairman of the Board, Innobic (Asia) Co., Ltd.

4. Other Organizations/Institutions (3)

>> President Representative in IMT-GT Joint Business Council (Indonesia-Malaysia-Thailand Growth Triangle), The Federation of Thai Industries
>> Vice President, Industry Promotion Division, The Federation of Thai Industries
>> Director, Asia Logistics & Supply Chain Council, The Federation of Thai Industries

5. State Enterprise

-None-

% of Shareholding in Thailoil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Dr. Prasert Sinsukprasert
 Director (Non-Executive)
 and Member of the Corporate Governance Committee
 Age 55 Yrs.



Director Term Duration

>> Director (Non-Executive) (Elected on April 7, 2021: 9 months)

Board-Committee Term Duration

>> Member of the Corporate Governance Committee
 (Appointed on April 23, 2021: 8 months)

Education

>> Bachelor of Engineering (Electrical Engineering), Chulalongkorn University
 >> Master of Science in Energy Conversion, Power and Transmission,
 George Washington University, USA
 >> Ph. D. in Energy Management and Policy, University of Pennsylvania, USA

Director Training Courses of Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 229/2016)

Other Trainings

>> Capital Market Academy Leader Program, Class 29, Capital Market Academy
 >> Senior Executive Fellows, Harvard University, Boston, Massachusetts, USA
 >> National Defence Course, Class 58, National Defence College
 >> Top Executive Program in Commerce and Trade (TEPCoT),
 Commerce Academy, University of the Thai Chamber of Commerce
 >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
 >> STS Expert Session:
 >> "How H & R as a specialty marketer and refiner with primarily Group I refinery
 technology is planning to adapt to the changing refinery landscape",
 Hansen and Rosenthal Group (H & R Group)
 >> "Strategy and Business Direction towards Quality and Sustainable Growth",
 PTG Energy Plc
 >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat:
 "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through"
 to Propel the Country's Economy Forward"

Working Experience in the 5 Preceding Years

2014-2017	Deputy Director General, Energy Policy and Planning Office, Ministry of Energy
2017-May 2020	Inspector General, Ministry of Energy
June-Sep 2020	Deputy Permanent Secretary, Ministry of Energy
Oct 2020-Present	Director General, Department of Alternative Energy Development and Efficiency, Ministry of Energy

Current Positions

1. Listed Company (1)

>> Director and Member of the Corporate Governance Committee,
 Thai Oil Plc

2. Public Company

-None-

3. Limited Company

-None-

4. Other Organizations/Institutions (2)

>> Director General, Department of Alternative Energy Development
 and Efficiency, Ministry of Energy
 >> Director, Thailand Greenhouse Gas Management Organization
 (Public Organization)

5. State Enterprise

-None-

% of Shareholding in Thailoil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Associate Professor Dr. Pasu Decharin
Independent Director (Non-Executive),
Member of the Audit Committee
and Member of the Nomination
and Remuneration Committee
Age 53 Yrs.



Director Term Duration

- >> Independent Director (Non-Executive) (Elected on April 11, 2018: 3 years)
- >> Independent Director (Non-Executive) (Re-elected on April 7, 2021: 9 months)

Board-Committee Term Duration

- >> Member of the Audit Committee (Appointed on April 27, 2018 and completed the term in the 2021 Annual General Meeting of Shareholders: 2 years 11 months)
- >> Member of the Nomination and Remuneration Committee (Appointed on August 30, 2019, effective from September 20, 2019 and completed the term in the 2021 Annual General Meeting of Shareholders: 2 years 3 months)
- >> Member of the Audit Committee (Appointed on April 7, 2021: 9 months)
- >> Member of the Nomination and Remuneration Committee (Appointed on April 7, 2021: 9 months)

Education

- >> Bachelor of Business Administration (Management), Faculty of Commerce and Accountancy, Chulalongkorn University
- >> Master of Business Administration (General Management), University of Colorado (Boulder), USA
- >> Ph. D. in Management of Technology, School of Management, Asian Institute of Technology

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Accreditation Program (DAP 121/2015)
- >> Director Certification Program (DCP 280/2019)
- >> Director Leadership Certification Program (DLCP 0/2020)
- >> Ethical Leadership Program (ELP 23/2021)

Other Trainings

- >> Executive Development Program (EDP), Class 3, Thai Listed Companies Association (TLCA)
- >> Leadership Development Program (LDP), Class 6, Thai Listed Companies Association (TLCA)
- >> Audit Committee Forum: "Strategic Audit Committee: Beyond Figure and Compliance"
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "Business Transformation and Innovation", The Siam Cement Plc (SCG)
 - >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
 - >> "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc

Working Experience in the 5 Preceding Years

- | | |
|---------------|---|
| 2011-Mar 2019 | Dean, Faculty of Commerce and Accountancy, Chulalongkorn University |
| 1993-Present | Lecturer, Faculty of Commerce and Accountancy, Chulalongkorn University |

Current Positions

1. Listed Company (3)

- >> Independent Director, Member of the Audit Committee and Member of the Nomination and Remuneration Committee, Thai Oil Plc
- >> Independent Director, Member of the Audit Committee and Member of the Risk Oversight Committee, Siam Commercial Bank Plc
- >> Independent Director, Member of the Audit Committee and Member of the Governance and Nomination Committee, The Siam Cement Plc

2. Public Company (1)

- >> Independent Director, Aksorn Education Plc

3. Limited Company (2)

- >> Independent Director and Chairman of the Board, Warrix Sports Co., Ltd.
- >> Director, SCB Securities Co., Ltd.

4. Other Organizations/Institutions (1)

- >> Lecturer, Faculty of Commerce and Accountancy, Chulalongkorn University

5. State Enterprise (1)

- >> Board of Director, National Science Museum Thailand

% of Shareholding in Thaioil	-None-
Conflict of Interest	-None-
Family Relation with Other Directors	-None-
Dispute in the 10 Preceding Years	-None-

Mr. Plakorn Wanglee
Independent Director (Non-Executive)
and Member of the Audit Committee
Age 55 Yrs.



Director Term Duration

- >> Independent Director (Non-Executive) (Appointed on October 22, 2020 and effective from November 1, 2020: 1 year 2 months)

Board-Committee Term Duration

- >> Member of the Audit Committee (Appointed on October 22, 2020 and effective from November 1, 2020: 1 year 2 months)

Education

- >> Bachelor of Accounting, Chulalongkorn University
- >> Master of Business Administration (Finance), University of San Francisco, USA

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 229/2016)

Other Trainings

- >> National Defence Course, Class 62, National Defence College
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 8, Thailand Energy Academy
- >> Training Course on Good Governance for Directors and Executives of State-Owned Enterprises and Public Organization, Class 14, King Prajadhipok's Institute
- >> Capital Market Academy Leader Program, Class 10, Capital Market Academy
- >> The Programme for Senior Executives on Justice Administration, Batch 25, Judicial Training Institute, National Justice Academy
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "Business Transformation and Innovation", The Siam Cement Plc (SCG)
 - >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
- >> Conference Call on Q4/2021 Outlook: "Navigating a Vulnerable Recovery" by Standard Chartered Bank (Thai) Plc
- >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"

Working Experience in the 5 Preceding Years

- | | |
|--------------|---|
| 2012-2016 | Senior Executive Vice President, Corporate and Institutional Clients Standard Chartered Bank (Thai) Plc |
| 2016-Present | President and Chief Executive Officer, Standard Chartered Bank (Thai) Plc Thailand and Representative Offices |

Current Positions

1. Listed Company (2)

- >> Independent Director and Member of the Audit Committee, Thai Oil Plc
- >> Independent Director, Member of the Audit Committee, and Member of the Nomination and Remuneration Committee, U City Plc

2. Public Company (1)

- >> President and Chief Executive Officer, Standard Chartered Bank (Thai) Plc Thailand and Representative Offices

3. Limited Company (1)

- >> Independent Director, Thanathip Co., Ltd.

4. Other Organizations/Institutions

-None-

5. State Enterprise

-None-

% of Shareholding in Thai oil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Mr. Terdkiat Prommool
 Director (Non-Executive)
 and Member of the Nomination
 and Remuneration Committee
 Age 56 Yrs.



Director Term Duration

>> Director (Non-Executive) (Appointed on September 18, 2020
 and effective from October 1, 2020: 1 year 3 months)

Board-Committee Term Duration

>> Member of the Nomination and Remuneration Committee
 (Appointed on April 23, 2021: 8 months)

Education

>> Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
 >> Master of Engineering (Industrial & Manufacturing Systems Engineering),
 The University of Missouri-Columbia, USA

Director Training Courses of Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 223/2016)

Other Trainings

>> Leadership Succession Program (LSP), Class 10,
 Institute of Research and Development for Public Enterprises
 >> IOD National Director Conference 2021: "Leadership Behind Closed Door"

Working Experience in the 5 Preceding Years

2015-2018	Executive Vice President, Planning and Risk Control, PTT Plc
Oct 2018-Sep 2020	Managing Director, PTT Digital Solutions Company Limited as
Oct 2020-Sep 2021	Senior Executive Vice President, Organization Management and Sustainability, PTT Plc
Oct 2021-Present	Senior Executive Vice President, Corporate Strategy and Sustainability, PTT Plc

Current Positions

1. Listed Company (2)

>> Director and Member of the Nomination and Remuneration, Thai Oil Plc
 >> Senior Executive Vice President, Corporate Strategy and Sustainability,
 PTT Plc

2. Public Company

-None-

3. Limited Company (3)

>> Chairman, Business Services Alliance Co., Ltd.
 (Resigned from Directorship: February 1, 2022)
 >> Chairman, PTT Digital Solutions Co., Ltd.
 >> Chairman, Alpha Com Co., Ltd.

4. Other Organizations/Institutions

-None-

5. State Enterprise

-None-

% of Shareholding in Thailoil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Dr. Sompop Pattanariyankool
 Director (Non-Executive)
 Age 43 Yrs.



Director Term Duration

>> Director (Non-Executive) (Elected on April 7, 2021: 9 months)

Board-Committee Term Duration

-None-

Education

- >> Bachelor of Economics (1st Class Honors), Chulalongkorn University
- >> Master of Science in Economic and Policy, Department of Economics, University of Surrey, UK.
- >> Ph. D. in Economics, Tepper School of Business, Carnegie Mellon University, USA

Director Training Courses of Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 309/2021)

Other Trainings

- >> Civil Service Executive Program: Visionary and Moral Leadership, Office of the Civil Service Commission
- >> Advance Certificate Course in Public Administration and Law for Executives, King Prajadhipok's Institute
- >> Course for Ministry Spokesman, The Government Public Relation Department
- >> Leadership Development Program (LDP) II
PTT Leadership and Learning Institute (PLLI)
- >> Advanced Training Course on Energy for Executives, Ministry of Energy
- >> The New Wave Leader Development Program in Thai Civil Service, Office of the Civil Service Commission
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> STS Expert Session:
 - >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
 - >> "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc
- >> 2021 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny in the Next 30 Years; Must Have A "New Think Through" to Propel the Country's Economy Forward"

Working Experience in the 5 Preceding Years

2010-2017	Chief of Strategy Section, Strategy and Planning Division, Ministry of Energy
2018-2020	Director, Strategy and Planning Division, Ministry of Energy
2020-Present	Assistant Permanent Secretary/Spokesman, Ministry of Energy

Current Positions

1. Listed Company (1)

>> Director, Thai Oil Plc

2. Public Company

-None-

3. Limited Company

-None-

4. Other Organizations/Institutions (1)

>> Assistant Permanent Secretary/Spokesman, Ministry of Energy

5. State Enterprise

-None-

% of Shareholding in Thailoil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Mr. Suchat Ramarch
Director (Non-Executive)
Age 53 Yrs.



Director Term Duration

>> Director (Non-Executive) (Appointed on September 29, 2021 and effective from October 1, 2021: 3 months)

Board-Committee Term Duration

-None-

Education

>> Bachelor of Engineering (Mechanical Engineering),
Rajamangala University of Technology Krungthep
>> Master of Arts (Social Development Administration),
National Institute of Development Administration

Director Training Courses of Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 176/2017)

Other Trainings

>> Management Development Program (MDP) III, 2013
PTT Leadership and Learning Institute (PLLI)
>> Advance Management Program II, 2013
PTT Leadership and Learning Institute (PLLI)
>> Executive Development Program (EDP), 2011
Thai Listed Companies Association
>> Advanced Certificate Course in Public Administration
and Law for Executives, Class 13, King Prajadhipok's Institute
>> Leadership Development Program (LDP) III, 2019
PTT Leadership and Learning Institute (PLLI)
>> Capital Market Academy Leader Program, Class 28,
Capital Market Academy
>> Corporate Governance for Directors and Senior Executives of Regulator,
State Enterprises and Public Organizations, Class 22,
King Prajadhipok's Institute

Working Experience in the 5 Preceding Years

2016-2018	Executive Vice President, Retail Marketing, PTT Plc
2018-2019	Senior Executive Vice President, Retail Marketing, PTT Oil and Retail Business Plc
2019-Sep 2021	Senior Executive Vice President, Non-oil Retail Business PTT Oil and Retail Business Plc
Oct 2021-Present	Senior Executive Vice President, Organization Effectiveness and Corporate Governance, PTT Plc

Current Positions

1. Listed Company (2)

>> Director, Thai Oil Plc
>> Senior Executive Vice President,
Organization Effectiveness and Corporate Governance, PTT Plc

2. Public Company

-None-

3. Limited Company (2)

>> Director, Business Services Alliance Co., Ltd.
>> Director and Chairman of the Board,
Business Professional Solutions Co., Ltd.

4. Other Organizations/Institutions (1)

>> Member of Executive Committee,
Vidyasiramedhi Institute of Science and Technology

5. State Enterprise

-None-

% of Shareholding in Thailoil

-None-

Conflict of Interest

-None-

Family Relation with Other Directors

-None-

Dispute in the 10 Preceding Years

-None-

Mr. Wirat Uanarumit

Director (Executive),
Member of the Risk Management Committee,
Chief Executive Officer and President
and the Secretary to the Board of Directors
Age 59 Yrs.

**Director Term Duration**

- >> Director (Executive) (Appointed on June 21, 2019 and effective from September 1, 2019: 1 year 7 months)
- >> Director (Executive) (Re-elected on April 7, 2021: 9 months)

Board-Committee Term Duration

- >> Member of the Risk Management Committee (Appointed on June 21, 2019 and effective from September 1, 2019: 2 year 4 months)

Education

- >> Bachelor of Engineering (Electrical Engineering), Chulalongkorn University
- >> Master of Business Administration (Financial Management), Pennsylvania State University, USA

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 8/2001)
- >> Audit Committee Program (ACP 38/2012)
- >> Director Certification Program Update (DCPU 5/2015)
- >> Ethical Leadership Program (ELP 7/2017)

Other Trainings

- >> The Joint State-Private Sector Course, Class 2556, National Defence College
- >> Advanced Security Management Program, Class 2, The National Defence College Association of Thailand
- >> Advanced Certificate Course in Politics and Governance in Democratic Systems for Executives, Class 20, King Prajadhipok's Institute
- >> The Programme for Senior Executives on Justice Administration, Batch 16, Judicial Training Institute, National Justice Academy
- >> Capital Market Academy Leader Program, Class 4, Capital Market Academy
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 13, Thailand Energy Academy
- >> Executive Management with Business Development and Investment, Class 2, Institute of Business and Industrial Development
- >> Rule of Law for Democracy, Class 6, College of the Constitutional Court
- >> Executive Development Program (EDP), Class 1, Thai Listed Companies Association
- >> Advanced Management Program, INSEAD Business School, INSEAD Executive Education, France
- >> Advanced Management Program, Class 184, Harvard Business School, Harvard University, USA
- >> GE Global Customer Summit Crotonville
- >> Thailand CG Forum: Governance as a Driving Force for Business Sustainability, The Stock Exchange of Thailand
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"

Working Experience in the 5 Preceding Years

- | | |
|-------------------|---|
| May 2014-Sep 2016 | Chief Financial Officer, PTT Plc |
| Oct 2016-Aug 2019 | Chief Operating Officer, Upstream Petroleum and Gas Business Group, PTT Plc |
| Sep 2019-Present | Chief Executive Officer and President, Thai Oil Plc |

Current Positions**1. Listed Company (4)**

- >> Director, Member of the Risk Management Committee, Chief Executive Officer and President, and the Secretary to the Board of Directors, Thai Oil Plc
- >> Director and Member of the Risk Management Committee, Global Power Synergy Plc
- >> Chief Operating Officer under Chief Operating Officer, Downstream Petroleum Business Group, PTT Plc working on a secondment as Chief Executive Officer and President, Thai Oil Plc
- >> Director, Ubol Bio Ethanol Plc

2. Public Company

-None-

3. Limited Company (4)

- >> Director and Chairman of the Board, Thai Paraxylene Co., Ltd.
- >> Director and Chairman of the Board, LABIX Co., Ltd.
- >> Director and Chairman of the Board, Top Solvent Co., Ltd.
- >> Director, Sapthip Co., Ltd.

4. Other Organizations/Institutions (15)

- >> Director, The Federation of Thai Industries (FTI)
- >> Vice President - Economic and Academic Work, The Federation of Thai Industries (FTI)
- >> Advisory Committee, Promoting and Supporting Office of Industries, The Federation of Thai Industries (FTI)
- >> Director, The Joint Standing Committee on Commerce, Industry and Banking (JSCCB)
- >> Director, National Economic Reform Steering Committee
- >> Director, Power for Sustainable Future Foundation (PSF)
- >> Member of Council, Vidyasirimedhi Institute of Science and Technology (VISTEC)
- >> Executive Director, Thailand Swimming Association (TSA)
- >> Member of Trustee (as Company Representative), Petroleum Institute of Thailand (PTIT)
- >> Council of Trustee, Thailand Business Council of Sustainable Development (TBCSD)
- >> Executive Director, Thailand Energy Academy (TEA)
- >> Advisor to the President, Association of Capital Market Academy (ACMA)
- >> Chairman of TMA Council, Thailand Management Association (TMA)
- >> Director, Thai Listed Companies Association (TLCA)
- >> Advisory Committee of the Petroleum and Petrochemical College, Chulalongkorn University

5. State Enterprise

-None-

- | | |
|--------------------------------------|--------|
| % of Shareholding in Thailoil | -None- |
| Conflict of Interest | -None- |
| Family Relation with Other Directors | -None- |
| Dispute in the 10 Preceding Years | -None- |

Mr. Yongyut Jantararotai
 Director (Non-Executive)
 and Member of the Corporate Governance Committee
 (Resigned from Directorship: February 1, 2021)
 Age 62 Yrs.



Director Term Duration

- >> Director (Non-Executive) (Elected on April 2, 2014: 3 years)
- >> Director (Non-Executive) (Re-elected on April 7, 2017: 3 years 2 months)
- >> Director (Non-Executive) (Re-elected on June 10, 2020: 8 months)

Board-Committee Term Duration

- >> Member of the Corporate Governance Committee
 (Appointed on April 25, 2014 and completed the term in
 the 2017 Annual General Meeting of Shareholders: 3 years)
- >> Member of the Corporate Governance Committee
 (Appointed on May 26, 2017 and completed the term in
 the 2020 Annual General Meeting of Shareholders: 3 years)
- >> Member of the Corporate Governance Committee
 (Appointed on June 23, 2020: 8 months)

Education

- >> Bachelor of Engineering (Civil Engineering), Kasetsart University

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Corporate Governance for Executives Program (CGE 5/2015)
- >> Financial Statements for Directors (FSD 31/2016)
- >> Director Certification Program (DCP 237/2017)
- >> Board Matters and Trends (BMT 5/2018)
- >> Ethical Leadership Program (ELP 16/2019)

Other Trainings

- >> Civil Service Executive Program: Visionary and Moral Leadership, Class 59,
 Office of the Civil Service Commission
- >> The Joint State-Private Sector Course, Class 22, National Defence College
- >> Training Course on Government Fiscal Management for Executives, Class 1,
 Comptroller General's Department
- >> Training Course on Administrative Justice for Executives, Class 6,
 Office of the Administrative Courts of Thailand
- >> Academic Seminar: "Money Laundering in Daily Life that We Must Have"
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 10,
 Thailand Energy Academy
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to
 National Cyber Security Committee: "Cybersecurity in the Boardroom"

Working Experience in the 5 Preceding Years

Oct 26, 2015-Sep 15, 2017	Inspector General, Ministry of Energy
Oct 16, 2017-Oct 11, 2018	Deputy Permanent Secretary, Ministry of Energy
Oct 12, 2018-Sep 2020	Director General, Department of Alternative Energy Development and Efficiency, Ministry of Energy

Current Positions

1. Listed Company	-None-
2. Public Company	-None-
3. Limited Company	-None-
4. Other Organizations/Institutions	-None-
5. State Enterprise	-None-
% of Shareholding in Thaioil (as of resignation date)	-None-
Conflict of Interest	-None-
Family Relation with Other Directors	-None-
Dispute in the 10 Preceding Years	-None-

Ms. Chularat Suteethorn

Director (Non-Executive)
and Chairman of the Risk Management Committee
(Completed the term in
the 2021 Annual General Meeting of Shareholders)
Age 67 Yrs.

**Director Term Duration**

- >> Independent Director (Non-Executive) (Appointed on September 20, 2013: 1 year 7 months)
- >> Independent Director (Non-Executive) (Re-elected on April 3, 2015: 3 years)
- >> Independent Director (Non-Executive) (Re-elected on April 11, 2018: 1 year 6 months)
- >> Director (Non-Executive) (September 20, 2019: 1 year 6 months)

Board-Committee Term Duration

- >> Member of the Audit Committee (Appointed on September 20, 2013 and completed the term in the 2015 Annual General Meeting of Shareholders: 1 year 7 months)
- >> Member of the Audit Committee (Appointed on April 24, 2015 and completed the term in the 2018 Annual General Meeting of Shareholders: 2 years 11 months)
- >> Chairman of the Audit Committee (Elected on February 12, 2016 and completed the term in the 2018 Annual General Meeting of Shareholders: 2 years 2 months)
- >> Member of the Nomination and Remuneration Committee (Appointed on April 27, 2016 and completed the term in the 2018 Annual General Meeting of Shareholders: 1 year 11 months)
- >> Member of the Nomination and Remuneration Committee (Appointed on April 11, 2018 and vacated on September 20, 2019: 1 year 6 months)
- >> Member of the Audit Committee (Appointed on April 27, 2018 and vacated on September 20, 2019: 1 year 5 months)
- >> Chairman of the Audit Committee (Elected on May 10, 2018 and vacated on September 20, 2019: 1 year 5 months)
- >> Member of the Risk Management Committee (Appointed on August 30, 2019 and effective from September 20, 2019: 1 year 6 months)
- >> Chairman of the Risk Management Committee (Appointed on August 13, 2020: 8 months)

Education

- >> Bachelor of Economics (Banking and Finance) (2nd Class Honors), Kasetsart University
- >> Master of Development Studies (Economic Policy and Planning), Institute of Social Studies, The Netherlands

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Accreditation Program (DAP 40/2005)
- >> Director Certification Program (DCP 72/2006)
- >> Finance for Non-Finance Directors (FND 28/2006)
- >> Financial Statements for Directors (FSD 10/2010)
- >> Audit Committee Program (ACP 39/2012)
- >> Role of the Chairman Program (RCP 28/2012)
- >> Financial Institutions Governance Program (FGP 4/2012)
- >> Role of the Nomination and Governance Committee (RNG 3/2012)
- >> Anti-Corruption for Executive Program (ACEP 10/2014)
- >> Advanced Audit Committee Program (AAP 15/2014)
- >> Director Certification Program Update (DCPU 4/2015)
- >> Role of the Compensation Committee (RCC 20/2015)
- >> Ethical Leadership Program (ELP 7/2017)
- >> Board Nomination and Compensation Program (BNCP 1/2017)
- >> Board Matters and Trends (BMT 6/2018)
- >> Boards that Make a Difference (BMD 10/2020)
- >> Risk Management Program for Corporate Leaders (RCL 21/2020)
- >> IT Governance and Cyber Resilience Program (ITG 14/2020)

Other Trainings

- >> Civil Service Executive Program: Visionary and Moral Leadership, Class 41, Office of the Civil Service Commission
- >> Training course on Administrative Court and its Procedures Matter, The Administrative Court
- >> Strategic Thinking and Executive Action, Kellogg Executive Program, Northwestern University, USA
- >> The Joint State-Private Sector Course, Class 19, National Defence College
- >> Advanced Security Management Program, Class 1, National Defence College
- >> Capital Market Academy Leader Program, Class 12, Capital Market Academy
- >> Top Executive Program in Commerce and Trade (TEPCoT), Class 5, Commerce Academy, University of the Thai Chamber of Commerce
- >> The Executive Program in Energy Literacy for a Sustainable Future, Class 3, Thailand Energy Academy
- >> Thammasat Leadership Program, Class 4, Thammasat University
- >> Advanced Certificate Course in Politics and Governance in Democratic Systems for Executives, Class 18, King Prajadhipok's Institute
- >> Training Course on Good Governance for Directors and Executives of State-Owned Enterprises and Public Organization, Class 11, King Prajadhipok's Institute
- >> IOD National Director Conference 2019: "Board of the Future"
- >> Thailand Insurance Leadership Program, Class 9, Office of Insurance Commission
- >> 2020 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny: Water Crisis and Development Philosophy"
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"

Working Experience in the 5 Preceding Years

- | | |
|-----------|--|
| 2012-2014 | <ul style="list-style-type: none"> >> Director, Chairman of the Risk Management Committee, and Member of the Corporate Governance, the Government Savings Bank >> Director-General, Public Debt Management Office, Ministry of Finance |
| 2014-2015 | Vice Minister for Finance, Ministry of Finance |
| 2015-2019 | Minister of Finance Working Group |

Current Positions

- 1. Listed Company (3)**
 - >> Director, MFC Asset Management Plc
 - >> Director, Country Group Holdings Plc
 - >> Independent Director and Member of the Audit Committee, SEAFco Plc
 - 2. Public Company (1)**
 - >> Independent Director and Member of the Audit Committee, D.T.C. Enterprise Plc
 - 3. Limited Company** -None-
 - 4. Other Organizations/Institutions (1)**
 - >> Chairman of the Board, Neighbouring Countries Economic Development Cooperation Agency (Public Organization)
 - 5. State Enterprise** -None-
- | | |
|--------------------------------------|------------------------|
| % of Shareholding in Thai Oil | 10,000 shares |
| (as of resignation date) | equivalent to 0.00049% |
| Conflict of Interest | -None- |
| Family Relation with Other Directors | -None- |
| Dispute in the 10 Preceding Years | -None- |

Mr. Praphon Wongtharua

Director (Non-Executive)

(Completed the term in
the 2021 Annual General Meeting of Shareholders)
Age 61 Yrs.

Director Term Duration

>> Director (Non-Executive) (Appointed on February 15, 2019: 2 years 1 months)

Board-Committee Term Duration

-None-

Education

>> Bachelor of Engineering (Mechanical Engineering),
King Mongkut's University of Technology North Bangkok
>> Master of Engineering (Mechanical Engineering), Chulalongkorn University

Director Training Courses of Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 218/2016)
>> Financial Statements for Directors (FSD 31/2016)
>> Boards that Make a Difference (BMD 4/2017)
>> Risk Management Program for Corporate Leaders (RCL 13/2018)
>> IT Governance and Cyber Resilience Program (ITG 8/2018)
>> Advanced Audit Committee Program (AAP 32/2019)
>> Successful Formulation & Execution of Strategy (SFE 31/2019)
>> Ethical Leadership Program (ELP 19/2020)
>> Strategic Board Master Class (SBM 9/2020)

Other Trainings

>> Systematic Problem Solving and Decision Making (SPSDM),
Office of the Civil Service Commission in cooperation with
ACI Consultants Co., Ltd
>> Joint Staff College, Class 45
>> Civil Service Executive Program: Visionary and Moral Leadership, Class 55,
Office of the Civil Service Commission
>> National Defence Course, Class 56, National Defence College
>> Inspector General Training Program 2015
>> The Executive Program in Energy Literacy for a Sustainable Future, Class 8,
Thailand Energy Academy
>> Capital Market Academy Leader Program, Class 27, Capital Market Academy
>> The Leadership Grid
>> 2019 PTIT Special Lecture by Khunying Thongtip Ratanarat:
"Revisiting the Resource Revolution Arsenal & Defining Thailand's Destiny"
>> Top Executive Program in Commerce and Trade (TEPCoT), Class 12,
Commerce Academy, University of the Thai Chamber of Commerce
>> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to
National Cyber Security Committee: "Cybersecurity in the Boardroom"

Working Experience in the 5 Preceding Years

Aug 2015-Oct 2016 Deputy Permanent Secretary, Ministry of Energy
Oct 2016-Oct 2018 Director General, The Department of
Alternative Energy Development and Efficiency,
Ministry of Energy
Oct 2018-Oct 2021 Inspector General, Ministry of Energy

Current Positions

1. Listed Company -None-
2. Public Company -None-
3. Limited Company -None-
4. Other Organizations/Institutions -None-
5. State Enterprise -None-

% of Shareholding in Thai oil -None-
(as of resignation date)
Conflict of Interest -None-
Family Relation with Other Directors -None-
Dispute in the 10 Preceding Years -None-

Ms. Duangporn Thiengwatanatham

Director (Non-Executive)

(Resigned from Directorship: October 1, 2021)

Age 60 Yrs.

**Director Term Duration**

- >> Director (Non-Executive) (Appointed on September 28, 2018 and effective from October 1, 2018: 6 months)
- >> Director (Non-Executive) (Re-elected on April 10, 2019: 2 years 6 months)

Board-Committee Term Duration

-None-

Education

- >> Bachelor of Engineering (Chemical Engineering), Chulalongkorn University
- >> Master of Chemical Engineering, The University of British Columbia, Canada
- >> Master of Business Management, Sasin Graduate Institute of Business Administration of Chulalongkorn University

Director Training Courses of Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 135/2010)
- >> Financial Statements for Directors (FSD 8/2010)
- >> The Board's Role in Mergers and Acquisitions (M&A 2/2012)
- >> Board Matters and Trends (BMT 8/2019)
- >> Director Development Program (DDP 1/2019) (PTT In-house Course)
- >> Boardroom Success through Financing & Investment (BFI 10/2021)

Other Trainings

- >> PTT Executive Leadership Program, General Electric, New York, USA
- >> Enterprise Risk Management Framework, PricewaterhouseCoopers
- >> Strategic Marketing Management, Stanford Graduate School of Business, USA
- >> 2018 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Clean Energy and Smart Transportation: Global Trend for Sustainable World"
- >> 2019 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Revisiting the Resource Revolution Arsenal & Defining Thailand's Destiny"
- >> The TIJ Executive Program on the Rule of Law and Development (RoLD) 2020: The Resilient Leader, Thailand Institute of Justice
- >> 2020 PTIT Special Lecture by Khunying Thongtip Ratanarat: "Thailand's Destiny: Water Crisis and Development Philosophy"
- >> Special Lecture by Dr. Prinya Hom-Anek, Special Consultant to National Cyber Security Committee: "Cybersecurity in the Boardroom"
- >> IOD National Director Conference 2021: "Leadership Behind Closed Door"
- >> Director Forum No. 1/2021: "GRC Through the Perfect Storm"
- >> Independent Director Forum No.1/2021: "It's Time for Board Meeting Reformation"
- >> Director's Briefing No.14/2021: "The Choices of Dispute Resolution in the time of COVID-19" by IOD and Thailand Arbitration Center

>> STS Expert Session:

- >> "Business Transformation and Innovation", The Siam Cement Plc (SCG)
- >> "How H & R as a specialty marketer and refiner with primarily Group I refinery technology is planning to adapt to the changing refinery landscape", Hansen and Rosenthal Group (H & R Group)
- >> "Strategy and Business Direction towards Quality and Sustainable Growth", PTG Energy Plc

Working Experience in the 5 Preceding Years

Jan-Sep 2016	Executive Vice President, Downstream Business Group Planning, PTT Plc
Oct 2016-Mar 2017	Executive Vice President, Downstream Business Group Collaboration, PTT Plc
Apr-Dec 2017	Executive Vice President, PTT Research and Technology Institute, PTT Plc
Jan-Sep 2018	Executive Vice President, Innovation Institute, PTT Plc
Oct 2018-Apr 2019	Senior Executive Vice President (Act.), Downstream Business Group Alignment, PTT Plc
Apr-Oct 2019	Senior Executive Vice President, Downstream Business Group Alignment, PTT Plc
Nov 2019-Sep 2021	Senior Executive Vice President, Corporate Governance and Regulatory Affairs, PTT Plc

Current Positions

1. Listed Company	-None-
2. Public Company	-None-
3. Limited Company	-None-
4. Other Organizations/Institutions	-None-
5. State Enterprise	-None-
% of Shareholding in Thaioil (as of resignation date)	600 shares equivalent to 0.00003%
Conflict of Interest	-None-
Family Relation with Other Directors	-None-
Dispute in the 10 Preceding Years	-None-

Management Structure

Thai Oil Plc's management structure comprises of:

- The Board of Directors (the Board)
- Four (4) Board-Committees appointed by the Board of Directors to supervise significant matters, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee, and the Risk Management Committee
- Executives, having the Chief Executive Officer (CEO) and President as the highest ranking official

The Board of Directors (as of December 31, 2021)

The Board of Directors comprised 15 members, detailed below:

- Fourteen (14) Non-Executive Directors, eight (8) of whom are Independent Directors
- One (1) Executive Director, namely the CEO and President

Board Composition

By the Company's Article of Association, the number of Board members shall consist of at least five (5) but not more than fifteen (15) members, all of whom must be proficient and widely accepted, and are elected by shareholders at the Annual General Meeting of Shareholders (AGM). In this regard, a policy on the Board's diversity is readily in place. Consideration for appointment is made on experience, knowledge, and capability that benefits the business while gender, race, ethnicity, nationality, or country of origin are not regarded as any restriction. A Board Skill Matrix was developed for mapping out skills, knowledge, and expertise required for the business, such as energy, petroleum and petrochemicals, accounting and finance, information technology and digital, and innovation and environment, among others. The Board should consist of at least three directors with knowledge in the Company's business, at least one director in the law, and at least one director in financial and accounting. Additionally, Independent Directors must also be fully qualified by Thail's Independent Directors' Qualification. Such details can be found on page 94. Moreover, the Board must consist of Independent Directors of at least one-third of all Directors and the number must be at least three (3).

To assure that the Board devotes their time and effort to perform their duties for the highest benefit of the Company, the Board established criteria of the number of directorship in listed companies in the Stock Exchange of Thailand (SET), in which Thail's Directors can serve no more than three (3) listed companies.

Directors

15 Persons

Executive Director
1 Person;

7%

Non-Executive Directors
14 Persons;

93%

Independent Directors
8 Persons;

53%

Genders



Female

1 Person



Male

14 Persons

Ratio

Independent Directors:
All Directors

8 : 15

Non-Executive Directors:
All Directors

14 : 15

The Tenure of Directors

Average 2.56 years

Board Expertise

Energy/Petroleum/
Petrochemicals

8 Persons

Engineering

7 Persons

Accounting/Finance

5 Persons

Law

5 Persons

Economics

4 Persons

Political Science/
Social Science

4 Persons

Security

3 Persons

Information
Technology/Digital

3 Persons

Business Management/
Organizational
Management/
Corporate Governance

14 Persons

Science/Innovation/
Environment

5 Persons

Shareholding Report of the Board of Directors in 2021

(Inclusive of Spouse, Unmarried Partner, and Minor)

Information as of December 31, 2021

No.	Name - Surname	No. of Share (Shares)			Remark
		as of December 31, 2021	as of December 31, 2020	Addition/(Reduction) During the Year (Shares)	
1	Prof. Dr. Supot Teachavorasinsku	-None-	-None-	-No Change-	-
2	Pol. Gen. Aek Angsananont	-None-	-None-	-No Change-	-
3	Dr. Pailin Chuchottaworn	40,000	N/A	N/A	New Director, effective on May 1, 2021.
4	ACM Suttipong Inseeyong	-None-	-None-	-No Change-	-
5	Mr. Praphaisith Tankeyura	-None-	-None-	-No Change-	-
6	Gen. Kukiat Srinaka	-None-	-None-	-No Change-	-
7	Ms. Phannalin Mahawongtikul	-None-	-None-	-No Change-	-
8	Dr. Buranin Rattanasombat	-None-	-None-	-No Change-	-
9	Dr. Prasert Sinsukprasert	-None-	N/A	N/A	New Director, effective on April 7, 2021. (Not holding any share of the Company)
10	Assoc. Prof. Dr. Pasu Decharin	-None-	-None-	-No Change-	-
11	Mr. Plakorn Wanglee	-None-	-None-	-No Change-	-
12	Mr. Terdkiat Prommool	-None-	-None-	-No Change-	-
13	Dr. Sompop Pattanariyankool	-None-	N/A	N/A	New Director, effective on April 7, 2021. (Not holding any share of the Company)
14	Mr. Suchat Ramarch	-None-	N/A	N/A	New Director, effective on October 1, 2021. (Not holding any share of the Company)
15	Mr. Wirat Uanarumit	-None-	-None-	-No Change-	-

Remark: N/A means no information since the director was appointed during the year 2021.

Directors who Resigned and Completed the Term during the Year 2021

No.	Name - Surname	No. of Share (Shares)			Remark
		as of December 31, 2021	as of December 31, 2020	Addition/(Reduction) During the Year (Shares)	
1	Mr. Yongyut Jantararotai	N/A	-None-	N/A	Resigned on February 1, 2021. (Not holding any share of the Company during his directorship in year 2021)
2	Ms. Chularat Suteethorn	N/A	10,000	N/A	Completed the term in the 2021 Annual General Meeting of Shareholders (No trading transactions of Company shares during the year 2021)
3	Mr. Praphon Wongtharua	N/A	-None-	N/A	Completed the term in the 2021 Annual General Meeting of Shareholders (Not holding any share of the Company during his directorship in year 2021)
4	Ms. Duangporn Thiengwatanatham	N/A	600	N/A	Resigned on October 1, 2021 (No trading transactions of Company shares during the year 2021)

Remark: N/A means no information since the director resigned or completed the term during the year 2021.

Authorized Directors

According to the Company's Articles of Association, (1) the Chief Executive Officer or (2) Two (2) authorized directors shall sign with affixation of the Company's seal to represent the Company. The Board of Directors has the right to prescribe and rectify the list of the Company's authorized directors.

In the Board of Directors Meeting No. 9/2021 on Wednesday, September 29, 2021, the Board of Directors

resolved to approve directors and the number of directors, authorized to sign on behalf of the Company: namely, Mr. Wirat Uanarumit, CEO, signing with affixation of the Company's seal; or, Mr. Terdkiat Prommool, Ms. Phannalin Mahawongtikul, and Mr. Buranin Rattanasombat, any two of the three representative directors jointly sign together with the affixation of the Company's seal. This is effective as of September 29, 2021.

Roles, Duties, and Responsibilities of the Board, Chairman of the Board, and CEO and President

Thaioil clearly separated roles, duties, and responsibilities of the Board, Chairman of the Board, and the CEO and President to make clear between roles and responsibilities of the Board and those of Company's executives. Information in this regard is included in the CG Manual and posted on Thaioil's website. In summary, the Board of Directors' key roles and responsibilities are to define business vision, review and endorse key strategies and policies, supervise executives' performance, and provide suggestions and recommendations to ensure operations are transparent, fair, and for the highest benefit of the Company. The Board also supervises strict compliance with laws and regulations as well as disclosure of information and financial report following examination by independent auditors to ensure accuracy, clarity, and reliability of the information. Key roles, duties, and responsibilities of Chairman of the Board are to work with the CEO and President to set meeting agenda, keep an efficient meeting, allocate sufficient time for executives to present their respective information, encourage questions and answers at the meeting while allowing directors to freely express their views, keep the discussion focused, and bring meeting to conclusion. The CEO and President, meanwhile, is assigned by the Board to manage normal business operations. Key roles, duties, and responsibilities are to prepare and present business plans and strategies to the Board while translating those plans and strategies into actions within the budget approved by the Board, among others.

Board's Approval Authority

The Board is authorized to grant approvals for various operations within the extent of the laws, the Company's Article of Association and resolutions of shareholders' meeting. Approval authority of the Board and that of

the management are clearly defined. The Board's authorization includes:

- Authority concerning the Company's business: for example, granting approval for vision, mission, values, strategies, financial goals, as well as budget and plans. Vision, mission, and strategies are to be reviewed once a year in the Strategic Thinking Session meeting (STS), which is also held on an annual basis. The executive make progress reports of various projects under the strategies every quarter so that the Board is able to closely monitor implementation of strategies and review suitability of each project under the changing situation. The Board also considers connected transactions which require the Board's consideration and approval.
- Authority concerning the Shareholders: for example, making consideration and agreement on dividend payment, shareholders' meeting invitation, etc.
- Authority concerning the Board and Senior Executives: for example, making consideration and agreement on the appointment of directors and Board-Committee members, as well as the appointment and performance assessment of CEO and President, etc.

Board-Committees

The Board appoints Board-Committees to scrutinize specific issues as assigned. Charters of each Committee have been developed, which define each Committee's qualifications, tenure, roles and responsibilities, as well as reporting procedures. The Charters, are regularly reviewed and readily available on Thaioil's website for study and download.

1) Audit Committee consists of fully qualified members against the regulatory authorities' requirement, with minimum of three Independent Directors and at least one of whom must processed sufficient knowledge and experienced in reviewing credibility of financial statements.

The Audit Committee, as of December 31, 2021, comprised four Independent Directors as follows:

Name	Position
1. Pol. Gen. Aek Angsanant	Chairman of the Audit Committee (Independent)
2. Assoc. Prof. Dr. Pasu Decharin	Member of the Audit Committee (Independent)
3. Mr. Praphaisith Tankeyura ⁽¹⁾	Member of the Audit Committee (Independent)
4. Mr. Plakorn Wanglee ⁽¹⁾	Member of the Audit Committee (Independent), an Accounting Graduate

Remark:

⁽¹⁾ Director with sufficient knowledge and experience in accounting for reviewing credibility of financial statements

Ms. Rungtip Maneesarachun, Vice President Corporate Internal Audit, serves as Secretary to the Audit Committee.

The Audit Committee completed its duties as assigned, for example, reviewing financial statements to ensure accuracy and credibility, in line with the Thai Financial Accounting Standards; reviewing connected transactions or transactions with potential conflict of interest; considering information disclosure to ensure compliance with laws and regulations of regulatory authorities; considering, selecting, nominating or re-electing, and terminating external auditors; reviewing and endorsing internal audit plans and internal audit system according to generally accepted methods and standards; considering independence of internal auditors; and endorsing appointment, transfer, and assessment the annual performance of the Vice President Corporate Internal Audit Department.

In 2021, the Audit Committee performed its duties as detailed in the Audit Committee Report on page 16.

2) The Nomination and Remuneration Committee consists of at least three Non-Executive Directors, majority of whom must be Independent Directors and must possess qualifications stated in the Nomination and Remuneration Committee Charter.

The Nomination and Remuneration Committee, as of December 31, 2021, comprised three Directors as follows:

Name	Position
1. ACM Suttipong Inseeyong	Chairman of Nomination and Remuneration Committee (Independent)
2. Assoc. Prof. Dr. Pasu Decharin	Member of the Nomination and Remuneration Committee (Independent)
3. Mr. Terdkiat Prommool	Member of the Nomination and Remuneration Committee

Mr. Viroj Meenaphant, Executive Vice President Corporate Governance and Affairs, and Company Secretary, serves as Secretary to the Nomination and Remuneration Committee.

The Nomination and Remuneration Committee's roles and responsibilities include:

Nomination: considers the structure and qualifications of the Board, both overall and individual, and proposes suitable names to the Board. The Nomination and Remuneration Committee also nominates qualified persons for Board-Committees and seeks approval from the Board in case of vacancy. Importantly, considers qualifications of the CEO and President to ensure suitability for driving the business so that business vision can be attained. In addition develops and reviews a succession plan of the CEO and President to ensure business continuity.

Remuneration: reviews and proposes remuneration packages that suit Board's roles and responsibilities, which are tied to business performance, and seeks approval from shareholders at the AGM. The Nomination and Remuneration Committee also makes annual assessment of the CEO and President's performance and considers adjustment of remuneration before raising to the Board for approval.

In 2021, the Nomination and Remuneration Committee performed its duties as detailed in the Nomination and Remuneration Committee Report on page 20.

3) Corporate Governance Committee: consists of at least three Non-Executive Directors, majority of whom are independent directors and must possess qualifications stated in the Corporate Governance Committee Charter.

The Corporate Governance Committee, as of December 31, 2021, comprised three Directors as follows:

Name	Position
1. Pol. Gen. Aek Angsanant	Chairman of the Corporate Governance Committee (Independent)
2. Gen. Kukiart Srinaka	Member of the Corporate Governance Committee (Independent)
3. Dr. Prasert Sinsukprasert	Member of the Corporate Governance Committee

Mr. Viroj Meenaphant, Executive Vice President Corporate Governance and Affairs, and Company Secretary, serves as Secretary to the Corporate Governance Committee (Act.).

The Corporate Governance Committee's key roles include formulating policies and guidelines on corporate governance and dealing with key issues and related matters. These are, for example, sustainability management and corporate social responsibility, in line with principles, standards and regulations defined by the regulatory authorities and other recognized institutions domestically and internationally. The Corporate Governance Committee,

then, monitors implementation of such policies and guidelines to ensure compliance.

In 2021, the Corporate Governance Committee performed its duties as described in the Corporate Governance Committee Report on page 22.

4) Risk Management Committee: consists of at least three Directors with the CEO and President serving a member. All members must possess qualifications stated in the Risk Management Committee Charter.

The Risk Management Committee, as of December 31, 2021, comprised three directors as follows:

Name	Position
1. Dr. Buranin Rattanasombat	Chairman of the Risk Management Committee
2. Ms. Phannalin Mahawongtikul	Member of the Risk Management Committee
3. Mr. Wirat Uanarumit	Member of the Risk Management Committee/ Chief Executive Officer and President

Mr. Rathakorn Kampanathsanyakorn, Executive Vice President of Strategy, serves as Secretary to the Risk Management Committee.

The Risk Management Committee defines and reviews risk management framework, maps out risk management policies and processes, proposes guidelines on the management of risks that relate to business operations. The Risk Management Committee also supports and develops enterprise risk management while promoting the corporate culture on risk management. Moreover, supervises, monitors, and reviews key risk management plans and reports.

In 2021, the Risk Management Committee performed its duties as described in the Risk Management Committee Report on page 18.

Executives

As of January 1, 2022 ⁽¹⁾



Mr. Wirat Uanarumit
Chief Executive Officer and President



Mr. Bandhit Thamprajamchit
Senior Executive Vice President Hydrocarbon
and Executive Vice President Manufacturing (Act.)



Mr. Jeerawat Pattanasomsit
Executive Vice President
Power, New Business and Digitalization
and Vice President
New S-Curve Business Development (Act.)



Mr. Chatapong Wungtanagorn
Executive Vice President
Corporate Commercial



Mr. Charlee Balmongkol
Executive Vice President
CFP Project Director



Mr. Pongpun Amornvivat
Executive Vice President
secondment to PTT Plc



Mr. Rathakorn Kampanathsanyakorn
Executive Vice President Strategy



Ms. Rungnapa Janchookiat
Executive Vice President
Operation Excellence



Ms. Wanida Boonpiraks
Executive Vice President
Finance and Accounting



Mr. Viroj Meenaphant
Executive Vice President
Corporate Governance and Affairs,
and Company Secretary



Mr. Viroj Wongsathirayakhun
Executive Vice President
Organization Effectiveness, Vice President
People and Organization Management (Act.)
and Managing Director,
Thaioil Energy Services Co., Ltd.



Mr. Surachai Saengsamran
Executive Vice President
CFP Project Sponsor



Ms. Jidapa Soontraratpong
Vice President Technology (Act.)



Ms. Jariya Oonmeechai
Vice President Special Assignment



Mr. Jumpon Thapanapong
Vice President Corporate Strategic Risk



Mr. Chatchai Siriwit
Vice President Strategic Planning (Act.)



Mr. Chet Prongchit
Vice President Movement Marine and Logistic



Mr. Narongsak Chaviengpob
Vice President Engineering



Mr. Nattapong Tumsaroj
Vice President assigned as
Director-Strategy & Business Development,
PT Chandra Asri Petrochemical Tbk



Mr. Nuttapol Nopparatwong
Vice President Commercial Planning (Act.)



Mr. Nuttapon Meerit
Vice President Refinery



Ms. Duangporn Teerapabpaisit
Head of Research & Development/
High Value Product Center



Mr. Thirayoot Limanond
Vice President Corporate Affairs (Act.)



Ms. Torsang Chaipravat
Vice President Financial Planning



Ms. Tarika Devahastin
Vice President Treasury
and Managing Director,
Thailoil Treasury Center Co., Ltd.



Mr. Nikom Kongnok
Vice President Group Company Secretary
and Sustainability



Mr. Nitas Krongvanitchayakul
Senior Vice President assigned as
Managing Director, LABIX Co., Ltd.



Ms. Prapin Thongnium
Vice President Procurement and Contract



Ms. Pimchanok Sakolwaree
Vice President Commercial (Act.)



Mr. Phumchit Tatsanaprasert
Vice President Quality Management



Mr. Mongkol Janchookiat
Vice President Corporate Resources &
Transformation Management



Ms. Rungtip Maneesarachun
Vice President Corporate Internal Audit



Mr. Worrachart Ruangtragool
Vice President assigned as
Managing Director, Thaioil Ethanol Co., Ltd.



Ms. Wanwisa Yanchinda
Vice President Accounting



Mr. Vivat Wongnirund
Vice President Supply Chain Optimization



Mr. Sarungyu Limwongse
Vice President Petrochemical and Lube Base



Mr. Sarayut Jitprasertngam

Vice President Corporate Governance,
Compliance and Legal

Mr. Somboon Chuaykoblap

Vice President Digitalization

Ms. Somporn Bunluesriruang

Vice President Efficient Operations Support



Mr. Santi Wasanasiri

Vice President assigned as
Managing Director,
Thai Lube Base Plc and Thai Paraxylene Co., Ltd.

Ms. Suchada Deechaiya

Vice President
People and Organization Excellence

Mr. Anawat Chansaksoong

Vice President assigned as
Managing Director,
Thaioil Solvent Co., Ltd. and TOP Solvent Co., Ltd.



Ms. Acharee Tiyaabhorn

Vice President Business Development

Mr. Udom Wongsirinopphakhun

Vice President Asset Development,
and Managing Director, TOP SPP Co., Ltd.



Ms. Sudarat Orrattanasakul

Vice President Special Assignment
(Retired on of December 31, 2021)

Remark:

⁽¹⁾ Management's biography, qualification, experience, and shareholding report are shown in the Company's website at www.thaioilgroup.com

⁽²⁾ Ms. Sudarat Orrattanasakul, who was assigned as Vice President Special Assignment, retired on December 31, 2021

Shareholding Report of Company's High-Level Executives (as defined by SEC) in 2021

(Inclusive of Spouse, Unmarried Partner, and Minor)

Information as of January 1, 2022

No.	Name - Surname Of High-Level Executives, and Finance & Accounting Executive	No. of Share (Shares)			Remark
		as of January 1, 2022	as of February 1, 2021	Addition/(Reduction) During the Year (Shares)	
1	Mr. Wirat Uanarumit	-None-	-None-	-No Change-	-
2	Mr. Bandhit Thamprajamchit	2,200	7,200	(5,000)	-
3	Mr. Jeerawat Pattanasomsit	-None-	-None-	-No Change-	-
4	Mr. Chatapong Wungtanagorn	97,400	97,400	-No Change-	-
5	Mr. Charlee Balmongkol	-None-	-None-	-No Change-	-
6	Mr. Pongpun Amornvivat ⁽¹⁾	N/A	43,000	N/A	-
7	Mr. Rathakorn Kampanathsanyakorn	-None-	N/A	N/A	New Executive, effective on October 1, 2021 (Not holding any share of the Company)
8	Ms. Runghana Janchookiat	-None-	-None-	-No Change-	-
	By Spouse, Unmarried Partner, and Minor	100	100	-No Change-	-
9	Ms. Wanida Boonpiraks	6,000	6,000	-No Change-	-
10	Mr. Viroj Meenaphant	-None-	-None-	-No Change-	-
11	Mr. Viroj Wongsathirayakhun	21,600	21,600	-No Change-	-
12	Mr. Surachai Saengsamran	98,500	98,500	-No Change-	-
13	Ms. Torsang Chaipravat	-None-	-None-	-No Change-	-
14	Ms. Tarika Devahastin	-None-	-None-	-No Change-	-
15	Ms. Wanwisa Yanchinda	5,000	5,000	-No Change-	-

Remark: N/A means no information since the executive was appointed or position was changed during the year 2021.

⁽¹⁾ Mr. Pongpun Amornvivat; secondment to PTT Plc since October 1, 2021

Nomination, Appointment, Position-Holding Policy and Succession Plan for Chief Executive Officer and President

To nominate a CEO and President to fill the vacancy, the Nomination and Remuneration Committee is to consider on professional experience and some specific qualifications that benefit business operations. The Committee will then raise the proposed name(s) to the Board of Directors (the Board) for consideration and approval.

Thaioil has also developed a succession plan to prepare future leaders for the position. Candidates in the pipeline will be considered. The succession plan is to be reviewed every year so that shareholders and investors can rest assured of business continuity.

Additionally, the Board developed the ‘principles in the event that executives and employees are invited to take position in other companies, agencies, or organizations’, which is included in the CG Manual. Such position holding, CEO and President must be informed to the Board for acknowledgement or endorsement as the case may be prior to taking office. However, CEO and President, is allowed to hold directorship in Thaioil’s subsidiaries to ensure that Thaioil’s business and that of Subsidiaries are aligned and mutually support one another.

Assessment of CEO and President’s Performance

Thaioil arranges for assessment of CEO and President’s performance on an annual basis. The Nomination and Remuneration Committee takes charge of the assessment, which is divided into two main parts (with different assessment weight given) as follows:

Part 1–Assessment of Corporate KPI

Part 2–Assessment of Leadership Competency

Results of the performance assessment will dictate CEO and President’s remuneration, which will be presented to the Board for consideration and approval.

CEO and President’s Remuneration

Criteria for the remuneration of CEO and President are clear and tangible and are earlier agreed. **The Nomination and Remuneration Committee will make an annual assessment of CEO and President’s performance for**

the Board to consider. Then, the Chairman of the Board will inform the CEO and President of the outcome of the Board’s consideration. Thaioil has a policy to award compensation for current performance (short-term) and performance in response to the long-term strategy. This is to ensure that the remuneration package for CEO and President is a foundation for growth and is attractive and comparable to companies in the industry. Balance scorecard, featuring four assessment dimensions namely sustainability, stakeholders, internal process, and people & organizational competency, is used for defining corporate KPI and as part of the performance assessment criteria.

Executives’ Remuneration

As of the fiscal year ending on December 31, 2021, the remuneration of 35 executives totaled to THB 280.15 million. This comprised of remuneration in the forms of monthly salary and allowance of THB 183.03 million, special bonus of THB 43.85 million, provident fund contributions of THB 20.64 million, retirement gratuity fund payments of THB 19.13 million, and other payments of THB 13.50 million.

Remark: The remuneration for 35 executives as of December 31, 2021, excluded the following executives who was on secondment to work in the subsidiary companies:

Ms. Duangporn Teerapabpaisit

Mr. Vivat Wongnirund

Mr. Worrachart Ruangtragool

Mr. Nitas Krongvanitchayakul

Mr. Santi Wasanasiri

Mr. Viroj Wongsathirayakhun

(partially included according to the proportion of the managing position of companies within Thaioil and Subsidiaries)

Mr. Udom Wongsirinopphakhun

(partially included according to the proportion of the managing position of companies within Thaioil and Subsidiaries)

Executive Biography

(Disclosure Required by Law)

Person Taking the Highest Responsibility in Finance and Accounting and Person Supervising Accounting

Person Taking the Highest Responsibility in Finance and Accounting: Executive Vice President Finance and Accounting

Brief Biography

Name: Ms. Wanida Boonpiraks
Education: >> Bachelor of Accountancy, Chulalongkorn University
 >> Master of Business Administration (Finance), University of St. Thomas, USA

Working Experience in the 5 Preceding Years

Nov 2016-Jan 2018 Chief Financial Officer, Global Power Synergy Plc
 Feb 2018-Mar 2020 Executive Vice President Finance and Accounting, Global Power Synergy Plc
 Apr-Dec 2020 Chief Financial Officer, Global Power Synergy Plc
 Jan 2021-Present Executive Vice President Finance and Accounting, Thai Oil Plc

Training

Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 195/2014)

Other Institutes

>> Executive Development Program (EDP), Class 9, Thai Listed Companies Association
 >> Chief Financial Officer Certification Program, Class 19, the Federation of Accounting Professions under the Royal Patronage of His Majesty the King
 >> Leadership Development Program (LDP) II, PTT Leadership and Learning Institute

>> Orchestrating Winning Program (OWP) 2018, IMD Business School, Switzerland
 >> Leadership Development Program (LDP) III, IMD Business School, Singapore

Person Supervising Accounting:

Vice President Accounting

Brief Biography

Name: Ms. Wanwisa Yanchinda
Education: >> Bachelor of Accountancy, Bangkok University
 >> Master of Business Administration, Ramkhamhaeng University
Others: >> Certified public accountant

Working Experience in the 5 Preceding Years

Jan 2016-Mar 2020 Accounting Manager-Consolidation
 Apr-Sep 2020 Vice President Account (Act.)
 Oct 2020-Present Vice President Account

Training

Thai Institute of Directors Association (IOD)

>> Director Certification Program (DCP 299/2020)

Other Institutes

>> Modern Banking Executive Development Program (MOBEX)
 >> Chief Financial Officer Certification Program, Class 4, the Federation of Accounting Professions under the Royal Patronage of His Majesty the King
 >> Strategic CFO in Capital Markets Program,
 >> Finance Transformation
 >> Leadership Development Program (LDP) I & II, Thai Oil Plc
 >> Certificate of Tax Law, Class 1
 >> IT Governance & IT Risk Management 4.0, Class 1/64, the Federation of Accounting Professions under the Royal Patronage of His Majesty the King

Person taking the highest responsibility in finance and accounting and person supervising accounting are qualified as required by Securities and Exchange Commission, Thailand and Stock Exchange of Thailand, with education and experience relating to finance and/or accounting, and the continuous participation in training courses on accounting at least 6 hours per year.

Company Secretary

The Board of Directors (the Board) appointed the Company Secretary to take responsibilities in providing advices to the Board and executives regarding the applicable laws and regulations that the Board must recognize and act upon, the corporate governance policies as well as the arrangement of the Board meetings and the Meeting of Shareholders. The Company Secretary must monitor and coordinate to ensure that the Board and shareholders' resolutions are thoroughly executed. The Company Secretary is also assigned to keep the Company's important documents as required by the laws. In the Board of Directors Meeting No. 9/2018 held on September 28, 2018, the Board resolved to appoint Mr. Viroj Meenaphant as the Company Secretary, effective from October 1, 2018.

Brief Biography

Name: Mr. Viroj Meenaphant

Education: >> Bachelor of Engineering (Chemical Engineering), Chulalongkorn University

Working Experience in the 5 Preceding Years

May 2015-Sep 2018	Assistant Executive Vice President Corporate Governance
Oct-Dec 2018	Assistant Executive Vice President Corporate Governance and Company Secretary
Jan 2019	Executive Vice President Corporate Governance and Affairs (Act.), and Company Secretary

Feb-June 2019	Executive Vice President Corporate Governance and Affairs (Act.), Vice President Corporate Affairs (Act.), and Company Secretary
Jul 2019-Dec 2021	Executive Vice President Corporate Governance and Affairs, Vice President Corporate Affairs (Act.), and Company Secretary
Jan 2022-Present	Executive Vice President Corporate Governance and Affairs; and Company Secretary

Training

Thai Institute of Directors Association (IOD)

- >> Company Secretary Program (CSP 31/2009)
- >> Director Certification Program (DCP 185/2014)

Other Institutes

- >> Leadership Development Program (LDP) II: 2018
- >> Executive Development Program (EDP),
Thai Listed Companies Association
- >> ACSN 2nd Webinar 2020, Board of the Future:
“How will the role of the Company Secretary evolve”
- >> Special Lecture by Dr. Prinya Hom-Anek,
Special Consultant to National Cyber Security
Committee: “Cybersecurity in the Boardroom”
- >> STS Expert Session:
 - “Oil Demand Forecast & Scenario and Power & New Energies Perspective” and “Chemicals Market Perspective & Energy Transition Scenarios”,
Boston Consulting Group (BCG)
 - “Global Trends - Beyond Energy”,
McKinsey & Company
 - “Business Transformation and Innovation”,
The Siam Cement Plc (SCG)

Chief of the Internal Audit:

Vice President Corporate Internal Audit

The appointment, removal, and replacement of the Chief of the Internal Audit Unit must be considered and approved by the Audit Committee. The Committee also assesses the performance of the Chief of the Internal Audit against the responsibilities indicated in the Audit Committee Charter.

In the Audit Committee Meeting no. 7/2020 on December 15, 2020, the Committee appointed Ms. Rungtip Maneesarachun (effective on January 1, 2021) as the Chief of the Internal Audit Unit due to qualified knowledge, competency, experience, and continuous improvement through various trainings.

Brief Biography

Name: Ms. Rungtip Maneesarachun

Education:

- >> Bachelor of Accountancy, Thammasat University
- >> Graduate Certificate in Auditing, Thammasat University
- >> Bachelor of Laws, Sukhothai Thammathirat Open University
- >> Master of Business Administration Program, Thammasat University
- >> Master of Arts Program in English for Careers, Thammasat University

Working Experience in the 5 Preceding Years

2017-2020 Vice President Treasury

Jan 2021-Present Vice President Corporate Internal Audit

Training

Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 245/2017)
- >> Ethical Leadership Program (ELP 9/2017)
- >> Anti-Corruption: The Practical Guide (ACPG 42/2017)

Other Institutes

- >> Management Development Program (MDP), Class 22, Thailand Management Association
- >> Leadership Development Program (LDP) 1, Class 2, PTT Plc
- >> Financial Executive Development Program (FINEX), Class 27, Thai Banking Academy
- >> COSO Internal Control-Integrated Framework (2013), the Federation of Accounting Professions under the Royal Patronage of His Majesty the King
- >> Certified Professional Internal Audit of Thailand (CPIAT), Class 65, The Institute of Internal Auditors of Thailand

Chief of the Compliance:

Vice President Regulatory Compliance

Brief Biography

Name: Ms. Sudarat Orrattanasakul
(vacating the office as from January 31, 2021)

Education:

- >> Bachelor of Business Administration, Assumption University
- >> Master of Business Administration (International Program), Bangkok University

Working Experience in the 5 Preceding Years

Jan 2015-Dec 2018 Vice President
Commercial Planning

Jan 2019-Jan 2020 Vice President
Regulatory Compliance

Feb-Dec 2021 Vice President,
Special Assignment

Training

Thai Institute of Directors Association (IOD)

- >> Director Certification Program (DCP 249/2017)
- >> Financial Statements for Directors (FSD 36/2018)

Other Institutes

>> Leadership Development Program (LDP) II: (2018)

The Company appointed Mr. Sarayut Jitprasertngam as Vice President Regulatory Compliance in replacement of Ms. Sudarat Orrattanasakul which will be transferred to other duties. Mr. Sarayut will be responsible for law and regulatory compliance, effective from February 1, 2021. On the 1st of April 2021, the Company has adjusted the scope of work of Regulatory Compliance Department by including Governance; the position, therefore, has been renamed as Vice President Corporate Governance, Compliance and Legal.

Chief of the Compliance:

Vice President Corporate Governance,
Compliance and Legal

Brief Biography

Name: Mr. Sarayut Jitprasertngam
(Effective on February 1, 2021)

Education: >> Bachelor of Laws,
Thammasat University
>> Master of Laws,
University of Nottingham

Working Experience in the 5 Preceding Years

Sep 2016-Aug 2018	Specialist Investment and corporate legal affairs department, PTT Plc
Sep 2018-Jan 2021	Vice President Investment and corporate legal affairs department, PTT Plc
Feb-Mar 2021	Vice President Regulatory Compliance, Thai Oil Plc
Apr 2021-Present	Vice President Corporate Governance, Compliance and Legal, Thai Oil Plc

Training

Thai Institute of Directors Association (IOD) -None-

Other Institutes

>> Corporate Legal Counsel Forum 2018
>> Asia Pacific Disputes Summit Singapore 2019
>> Director Development Program

Investor Relations Manager:

>> Mr. Nuttapol Nopparatwong
(vacating the office as from December 31, 2021)
>> Ms. Torsang Chaipravat (Act.)
(Effective January 1, 2022)

Communication Channel for Investors Relations Section



Thai Oil Plc

Investor Relations

555/1 Energy Complex Building A, 11th floor,
Vibhavadi Rangsit Road, Chatuchak,
Chatuchak, Bangkok 10900



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+66(0) -2797-2999, +66(0) -2299-0000
ext. 42060-42063



Assets and

Shareholders Information

Registered and Paid-up Capitals

Ordinary Shares

On the share registration book closing date as of September 10, 2021, Thailoil's registered capital was THB 20,400,278,730 and the paid up capital was THB 20,400,278,730, comprised of 2,040,027,873 ordinary shares at the par value of THB 10 per share.

Shareholders

As of September 10, 2021, the major shareholders (holding 0.50 percent and more of paid up capital) are as follows:

Major Shareholders	Number of Shares	Shareholding Percentage
1. PTT PUBLIC COMPANY LIMITED ⁽¹⁾	918,565,183	45.027 %
2. THAI NVDR COMPANY LIMITED ⁽²⁾	165,548,280	8.115 %
3. SIAM MANAGEMENT HOLDING COMPANY LIMITED	61,200,000	3.000 %
4. GIC PRIVATE LIMITED	59,903,003	2.936 %
5. SOCIAL SECURITY OFFICE	51,731,100	2.536 %
6. SOUTH EAST ASIA UK (TYPE C) NOMINEES LIMITED	46,357,234	2.272 %
7. STATE STREET EUROPE LIMITED	38,146,284	1.870 %
8. THE BANK OF NEW YORK MELLON	28,790,726	1.411 %
9. MISS VARUNYA CHATPHIRIYAPHAN	15,500,000	0.760 %
Total	1,385,741,810	67.927 %

Remark:

⁽¹⁾ As a major shareholder of Thailoil, PTT Plc, whose major shareholder is Ministry of Finance, participates in formulating the Company's management and operational policies via Directors nominated to Thailoil's Board of Directors and casting their votes in Board meetings. As of December 31, 2021, there are five Directors from a total of 15 who are also holding position as PTT's executives.

⁽²⁾ Thai NVDR Co., Ltd., a subsidiary of the Stock Exchange of Thailand with the objective of promoting investor's investment, particularly foreign investors, in order to invest in common stock of listed companies without being restricted by the foreign shareholding limit which does not have the rights to vote at meetings of listed companies.

Issuance of Other Financial Instruments

Debentures

As of December 31, 2021, Thailoil and Subsidiaries had issued nine sets of debentures with denomination in US dollars totalling USD 3,565 million. All of them are senior unsecured bond, detailed below:

Table 1: Debentures with denomination in US dollars issued by Thai Oil Plc

Debenture Set No.	Type of Instrument	Issuance Date	Maturity	Coupon Rate (Percent per annum)	Value (USD Million)	Credit Rating (S & P's/Moody's)
1.	Rule 144A/	April 10, 2018	2023	3.625	216	BBB+/Baa1
2.	Regulation S		2043	4.875	173	
Total value					389	

Table 2: Debentures with denomination in US dollars issued by Thailoil Treasury Center Co., Ltd.

(Guaranteed by Thai Oil Plc)

Debenture Set No.	Type of Instrument	Issuance Date	Maturity	Coupon Rate (Percent per annum)	Value (USD Million)	Credit Rating (S & P's/Moody's)
1.	Rule 144A/ Regulation S	April 10, 2018	2023	3.625	284	BBB+/Baa1
2.			2043	4.875	328	
3.		November 20, 2018	2028	4.625	400	BBB+/Baa1
4.			2048	5.375	600	
5.		October 17, 2019	2049	3.500	565	BBB+/Baa1
6.		June 18, 2020	2030	2.500	400	BBB+/Baa2
7.			2050	3.750	600	
Total value					3,176	

Thaioil also issued three other sets of debentures, also senior unsecured bonds, with denomination in Thai baht worth altogether THB 17,500 million. The debentures were given credit rating of AA- level by Fitch Ratings (Thailand) as detailed below:

Debenture Set No.	Type of Instrument	Issuance Date	Maturity	Coupon Rate (Percent per annum)	Value (THB Million)	Credit Rating (Fitch)
1.	PP10	April 30, 2010	2022	4.800	3,000	AA- (Stable Outlook)
2.	II/HNW	March 12, 2014	2024	4.840	7,000	AA- (Stable Outlook)
3.	II/HNW	March 23, 2012	2027	5.050	7,500	AA- (Stable Outlook)
Total value					17,500	

Earnings from such debenture issuance were intended for long-term investment, business expansion, debt repayment, and/or working capital as well as for other purposes.

Dividend Policy

The Company's dividend payout policy is to pay at least 25 percent of the consolidated net profit after deductions of all categories of reserves as specified in applicable laws and the Company's Article of Association. Each year, the dividend payments are subjected to Thaioil and Subsidiaries' cash flows and investment plans and other necessities and factors the Board of Directors (the Board) deems appropriate. The Board may consider paying the annual dividend with approval from the Annual General Meeting of Shareholders (AGM), except to the payment of interim dividend, which the Board has the authority to approve periodically when the Company's profit deems appropriate. The interim dividend payment shall be reported at the following AGM.

The Dividend Policy for Subsidiaries of Thaioil shall be considered by the Board of each subsidiary, and later proposed to each subsidiary's AGM for approval each year. Consideration shall be made on investment plans and other requirements, such as adequacy of cash flow of each company after deducting reserve funds in compliance with the law.

Dividend Payout Information

Year	2020	2019	2018	2017	2016	2015
Earnings (Baht per share)	(1.62)	3.08	4.97	12.18	10.40	5.97
Dividend (Baht per share)	0.70	1.50	2.65	5.25	4.50	2.70
Dividend Payout (Percent)	N/A	49.0	53.0	43.0	43.0	45.0

Legal disputes

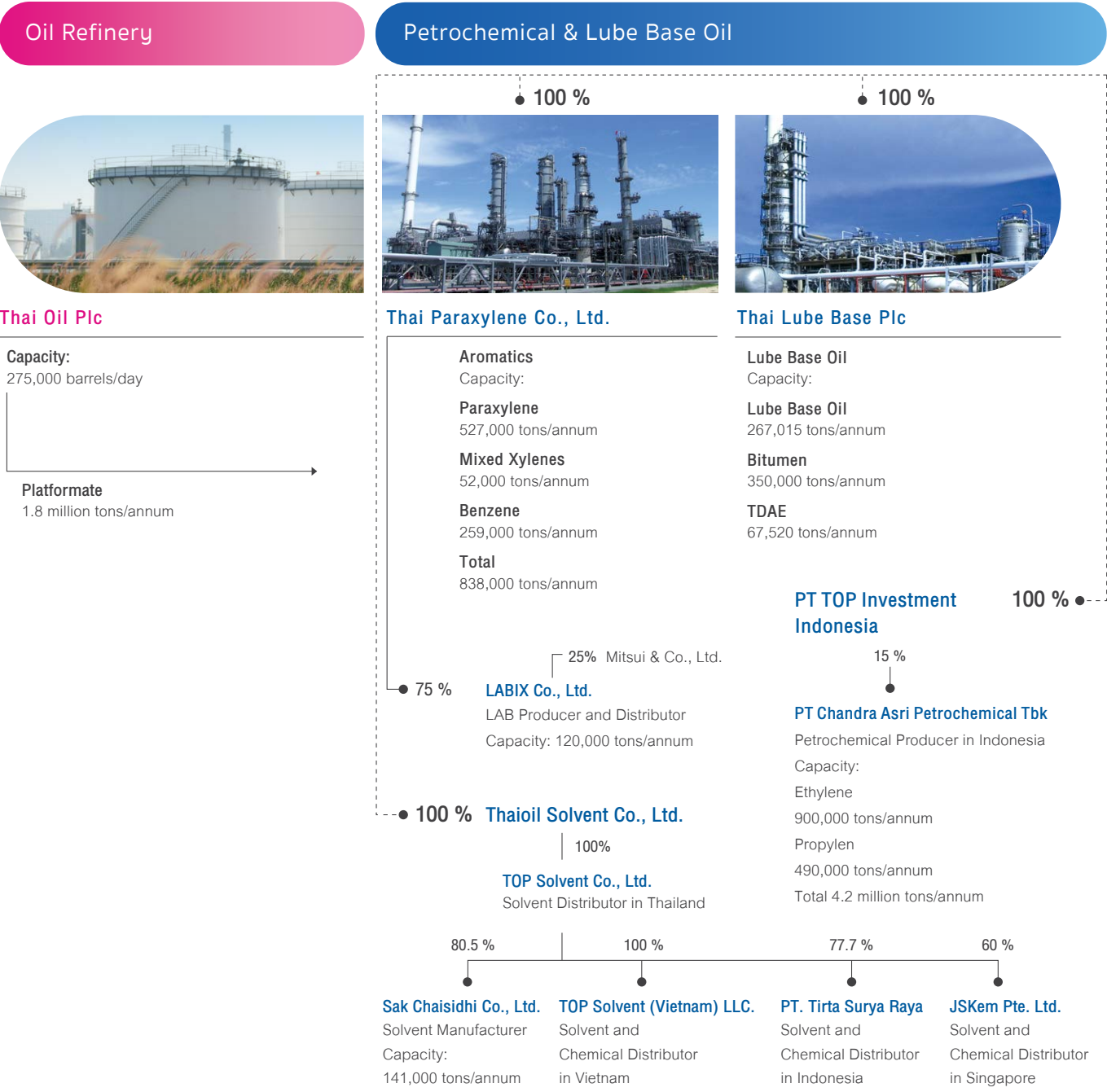
As of December 31, 2021, Thaioil and Subsidiaries were not engaged in any pending legal dispute that may affect Thaioil's or Subsidiaries' assets of over 5 percent of shareholders' equity, nor any dispute that may cause significant impacts on the business.

Relationship with Major Shareholders' Business Group

Thaioil's major shareholder is PTT Plc, the national energy company that engages in integrated petroleum and petrochemical businesses covering from upstream to downstream products. Currently, PTT Plc directly holds shares in three domestic refineries: namely, Thai Oil Plc 45.03 percent, PTT Global Chemical Plc 45.18 percent, and IRPC Plc 45.05 percent.

Thaioil engages in transactions and business collaboration with PTT Plc and companies in PTT Group, including purchase and sale of raw materials, feedstock, and products with one another. In these transactions, market-based pricing is applied while all terms and conditions of raw material and product quantity setting procedure are executed as specified in the agreements.

Thaioil and Subsidiaries' Business Structure



Corporate Information

Thai Oil Public Company Limited

Monogram	TOP
Registration Number	0107547000711
Business	<p>Thaioil is Thailand's largest refinery and supplier of petroleum products. Founded in 1961, we operate one of the leading efficient refineries in Asia Pacific with the current capacity of 275,000 barrels per day.</p> <p>Thaioil operates under the Operational Excellence principle, as an integrated group of businesses in oil refinery, petrochemicals and lube base with supporting businesses, e.g. power generation, solvents, pipeline transportation, renewable energy generation, olefins, LAB: an intermediate in the production of surfactants, business in the area of International Business Center and Treasury Center, as well as recruitment services for Thaioil and Subsidiaries. Thaioil leads the Thai refinery industry through a well-planned and integrated production process, yielding optimum efficiency and low-cost products. The product quality is high, rated in the top quartile of refineries in Asia Pacific, giving Thaioil production cost advantage and enhancing Thaioil's recognized competitiveness.</p>
Registered Capital	<p>20,400,278,730 Baht</p> <p>Comprising 2,040,027,873 fully paid-up common shares of 10 Baht per share</p>
Address	<p>Bangkok Office</p> <p>555/1 Energy Complex Building A, 11th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand</p> <p>Telephone : +66(0) -2797-2999, +66(0) -2797-2900, +66(0) -2299-0000</p> <p>Fax : +66(0) -2797-2970</p> <p>Sriracha Office and Refinery</p> <p>42/1 Moo 1, Sukhumvit Road Km.124, Tungsukla, Sriracha, Chonburi 20230, Thailand</p> <p>Telephone : +66(0) -3840-8500, +66(0) -3835-9000, +66(0) -3849-8900</p> <p>Fax : +66(0) -3835-9019</p>
Website	www.thaioilgroup.com
Investor Relations	<p>Telephone : +66(0) -2797-2961</p> <p>e-Mail : ir@thaioilgroup.com</p>

General Information of the Subsidiaries

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
Lube Base Oil Business Thai Lube Base Public Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2970	0107539000090	Lube base oil manufacturer and distributor	1,757,890,730	Common	175,789,073	10	100
Petrochemical Business Thai Paraxylene Company Limited 105/12 Moo 2, Sukhumvit Road, Tungsukla, Sriracha, Chonburi 20230, Thailand Tel : +66(0) -3835-1317-9, +66(0) -3835-1878 Fax : +66(0) -3835-1320	0105539103288	Upstream petrochemical manufacturer and distributor	2,572,414,160	Common	257,241,416	10	100
LABIX Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2974	0105556110246	LAB (an intermediate in the production of surfactants such as detergents) manufacturer and distributor	4,654,965,000	Common	465,496,500	10	75 (Shareholding through Thai Paraxylene Co., Ltd.)
Thaioil Solvent Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2970	0105551116050	Investment in solvent and petrochemical manufacturing and distributor business	1,250,000,000	Common	125,000,000	10	100

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
TOP Solvent Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2983	0105551116491	Solvent and petrochemical products distributor	1,200,000,000	Common	120,000,000	10	100 (Shareholding through Thailoil Solvent Co., Ltd.)
Sak Chaisidhi Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0003, +66(0) -2797-2993 Fax : +66(0) -2797-2983	0105527011880	Hydrocarbon solvent manufacturer and distributor	180,000,000	Common	1,800,000	100	80.52 (Shareholding through TOP Solvent Co., Ltd.)
TOP Solvent (Vietnam) Limited Liability Company Go Dau Industrial Zones, Long Thanh District, Dong Nai Province, Vietnam Tel : +84-83827-9030-4 Fax : +84-83827-9035	472043000745 (Registered in Vietnam)	Solvent and petrochemical product distributor in Vietnam	373,520,000,000 VND	Common	-	-	100 (Shareholding through TOP Solvent Co., Ltd.)
PT. Tirta Surya Raya Synergy Building Lt. 12 unit 09 Jl. Jalur Sutera Barat No.17, Kel. Panunggangan Timur, Kec. Pinang, Kota Tangerang, Banten Province, Indonesia 15325 Tel : +62-21808-21308 Fax : +62-21808-21307	9120102163812 (Registered in Indonesia)	Solvent and petrochemical product distributor in Indonesia	23,000,000,000 IDR	Common	23,000	1,000,000 IDR per share	77.7 (Shareholding through TOP Solvent Co., Ltd.)

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
#SKem Private Limited 24, Sin Ming Lane, #06-97 Midview City, Singapore 573970 Tel : +65-6659-1073 Fax : +65-6659-1075	201311162C (Registered in Singapore)	Solvent and petrochemical product distributor in Singapore	100,000 SGD	Common	100,000	1 SGD per share	60 (Shareholding through TOP Solvent Co., Ltd.)
TSCem India Private Limited Ram Nivas, Room No. 4, Tilak Nagar, Aarey Road, Goregaon East, Mumbai, Bandra Suburban, Maharashtra, India 400063	U11100MH2021 FTC354985 (Registered in India)	Solvent and petrochemical product distributor in India	100,000 INR	Common	10,000	10 INR per share	99.99 (Shareholding through JSKem Pte. Ltd.)
Olefin PT TOP Investment Indonesia Synergy Building LT. 12 Unit 08 Jl. Jalur Sutera Barat No. 17, Kel. Panungangan Timur, Kec. Pinang, Kota Tangerang, Banten Province, Indonesia, 15325 Tel : +62-21808-21308 Fax : +62-21808-21307	429914021416000 (Registered in Indonesia)	Investment in petrochemical business	10,000,000,000 IDR (equivalent to 700,000 USD) 12,332,250,000,000 IDR (equivalent to 913,500,000 USD)	Common	1,000 9,135,000	10,000,000 IDR per share (equivalent to 700 USD per share) 1,350,000 IDR per share (equivalent to 100 USD per share)	100
PT Chandra Asri Petrochemical Tbk Wisma Barito Pacific Tower A, 7 th floor, Jl. Let. Jend. S. Parman Kav. 62-63 Jakarta, Indonesia 11410 Tel : +62-21530-7950 Fax : +62-21530-8930	8120011061265 (Registered in Indonesia)	petrochemical manufacturer and distributor	12,264,785,664,000 IDR	Common	21,627,886,273	200 IDR per share	15 (Shareholding through PT TOP Investment Indonesia)

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
Power Generation Business Global Power Synergy Public Company Limited 555/2 Energy Complex Building B, 5 th Floor, Vibhavadi Rangsit Road, Chatuchak Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2140-4600 Fax : +66(0) -2140-4601	0107557000411	Operate power generation business, including invest and develop future projects in power business	28,197,293,710	Common	2,819,729,367	10	20.78
TOP SPP Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2974	0105556198933	Power and steam generator and distributor	3,500,000,000	Common	350,000,000	10	100
Transportation Business Thaioil Marine International Private Limited 391A Orchard Road #12-01104, #12-05 & 12-10 Ngee Ann City Tower A, Singapore 238873 Tel : +65-6734-6540 Fax : +65-6734-3397, +65-6734-5801	201021606H (Registered in Singapore)	Investment in marine transportation of crude oil and petroleum products	9,000,000 USD	Common	9,000,000	1 USD per share	100
Thai Petroleum Pipeline Company Limited 2/8 Moo 11, Lumlukka Road, Ladsawai, Lumlukka, Pathumthani 12150, Thailand Tel : +66(0) -2034-9199 Fax : +66(0) -2533-2687	0105534002696	Pipeline transportation of petroleum products	8,479,000,000	Common	84,790,000	100	9.19

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
Other Business							
Thaioil Energy Services Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2970	0105550078006	Recruiting management service	40,000,000	Common	4,000,000	10	100
Thaioil Ethanol Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2970	0105551121754	Investment in ethanol business and alternative energy	1,450,000,000	Common	145,000,000	10	100
Sapthip Company Limited 68 Soi Santipap, Sap Road, Sipraya, Bangrak, Bangkok 10500, Thailand Tel : +66(0) -2233-0444-5 Fax : +66(0) -2233-0441	0105539017543	Cassava-based ethanol manufacturer and distributor	800,000,000	Common	8,000,000	100	50 (Shareholding through Thaioil Ethanol Co., Ltd.)
Sapthip Green Energy Company Limited 49 Moo 6, Nikomlamalai, Chaibadan Lopburi 15130, Thailand Tel : +66(0) -3646-2438 Fax : +66(0) -3846-2475	0165561000615	Power from biogas, generator and distributor	25,000,000	Common	2,500,000	10	50 (Shareholding through Sapthip Co., Ltd.)

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
Ubon Bio Ethanol Public Company Limited 333 Moo 9, Nadee, Navear, Ubonratchatani 34160, Thailand Tel : +66(0) -4525-2777 Fax : +66(0) -4525-2776	0345550000315	Cassava-based and molasses-based ethanol manufacturer and distributor	2,740,000,000	Common	2,740,000	1,000	12.39 (Shareholding through Thailoil Ethanol) Co., Ltd.)
PTT Digital Solutions Company Limited 555/1 Energy Complex Building A, 4 th - 5 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2140-2000 Fax : +66(0) -2140-2999	0105549076496	IT and communication services	150,000,000	Common	15,000,000	10	20
PTT Energy Solutions Company Limited 888 Green Building, Mapchalood-Leamson Road, Huai Pong, Mueng Rayong, Rayong 21150, Thailand Tel : +66(0) -3897-8300 Fax : +66(0) -3897-8333	0105554075621	Engineering technique consultation and other services	150,000,000	Common	1,500,000	100	20
Thailoil Treasury Center Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2974	0105560167273	Financial service provider for Thailoil and Subsidiaries	956,200,000	Common	68,939,000	10	100

Company Name and Address	Registration Number	Business	Registered Capital (THB)	Type of Shares	Number of Shares (Issued)	Value of Share (THB per share)	Shareholding (Percent)
TOP Ventures Company Limited 555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2299-0000, +66(0) -2797-2999 Fax : +66(0) -2797-2974	0105562147342	Investments in Corporate Venture Capital and/or Startup Business	35,000,000	Common	1,925,000	10	100 (Shareholding through Thaioil Treasury Center Co., Ltd.)
TOP Ventures Hong Kong Limited 18 th Floor, One Exchange Square 8 Connaught Place, Central, Hong Kong Tel : +852-2582-2912 Fax : +852-2912-2600	2860983 (Registered in Hong Kong)	Investments in Corporate Venture Capital and/or Startup Business	1 HKD 15,300,001 USD	Common	1	1 HKD per share 15,300,001 USD per share	100 (Shareholding through Thaioil Treasury Center Co., Ltd.)
TOP Ventures America Limited Liability Company The Corporation Trust Company 1209 Orange Street, Wilmington, Delaware 19801 Tel : +1(888)-724-9870	7559091 (Registered in USA)	Investments in Corporate Venture Capital and/or Startup Business	10,700,002 USD	Common	1	10,700,002 USD per share	100 (Shareholding through TOP Ventures Hong Kong Limited)
Sarn Palung Social Enterprise Company Limited 555/1 Energy Complex Building A, 10 th Floor, Vibhavadi Rangsit Road, Chatuchak, Chatuchak, Bangkok 10900, Thailand Tel : +66(0) -2537-2971 Fax : +66(0) -2537-2978	0105560151628	Support execution of social enterprise of PTT Group	10,000,000	Common	1,000,000	10	15

Reference

Securities Registrar

Thailand Securities Depository Company Limited (TSD)

The Stock Exchange of Thailand Building,

93 Ratchadaphisek Road, Dindaeng,

Bangkok 10400, Thailand

Tel : +66(0) -2009-9999 (Call center)

Fax : +66 (0) -2009-9991

Debenture Registrar and Principal Paying Agent

TMBThanachart Bank Public Company Limited

Registrar and Paying Agent

Securities and Fund Services

3000 Head Office, Floor 5 A, Phahonyothin Road,

Chompon, Chatuchak, Bangkok 10900, Thailand

Tel : +66(0) -2299-1830

Fax : +66(0) -2242-3270

Bangkok Bank Public Company Limited

The Registrar and Debenture Holders' Representative

333 Head Office, 1st Floor, Trinity Building,

Silom Road, Silom, Bangrak, Bangkok 10500, Thailand

Tel : +66(0) -2230-1478, +66(0) -2230-2895

Fax : +66(0) -2230-1893

Auditor

PricewaterhouseCoopers ABAS Limited

179/74-80, 15th Floor, Bangkok City Tower,

South Sathorn Road, Bangkok 10120, Thailand

Tel : +66(0) -2844-1000

Fax : +66(0) -2286-2666

Other Services (Loss of Share Certificate, Change of Particulars in Securities Register and Other Services)

Counter Service

The Stock Exchange of Thailand Building, 1st Floor,

93 Ratchadaphisek Road, Dindaeng,

Bangkok 10400, Thailand

Tel : +66(0) -2009-9999 (Call center)

or

Office of Registration Services

Thailand Securities Depository Company Limited (TSD)

The Stock Exchange of Thailand Building,

93 Ratchadaphisek Road, Dindaeng,

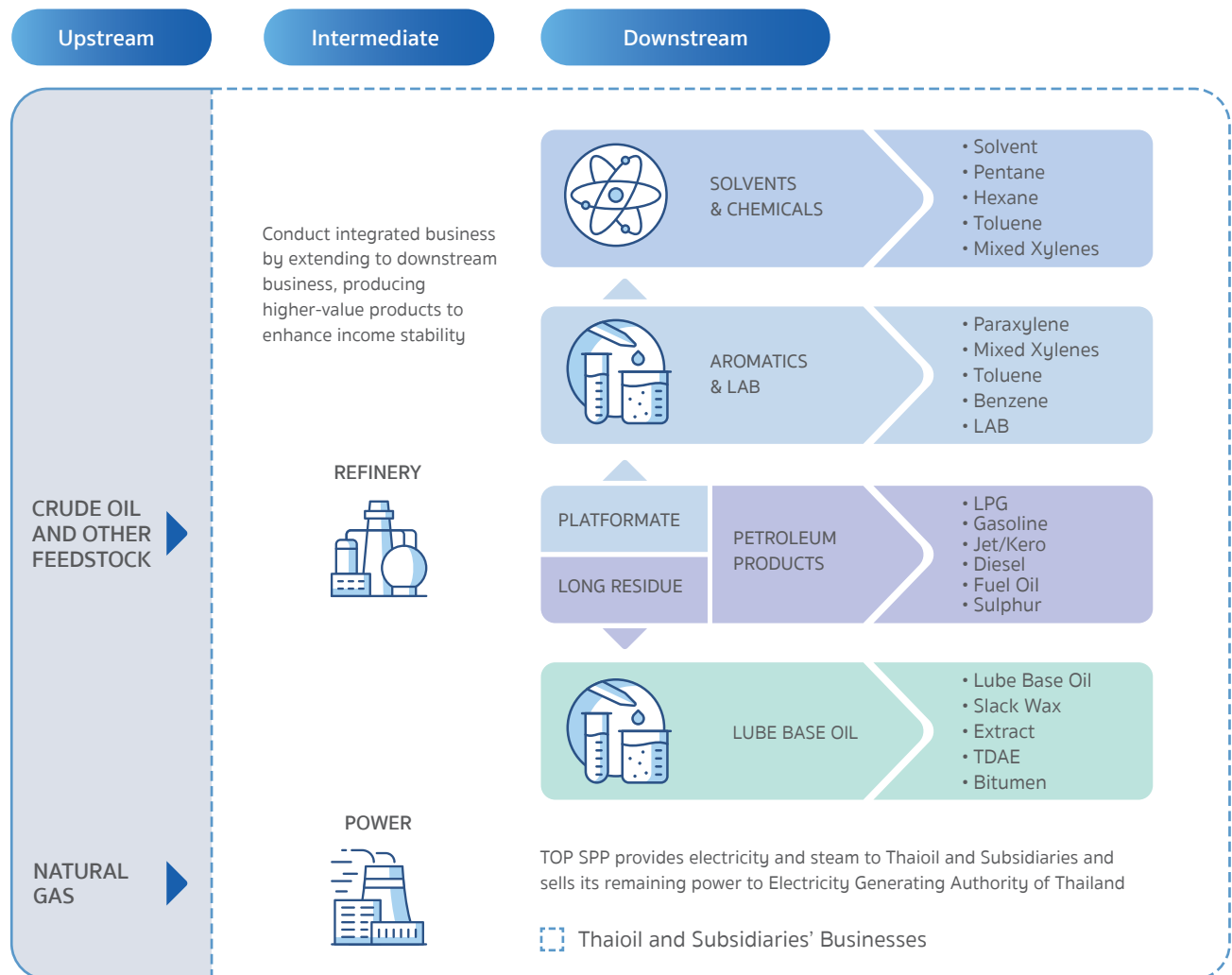
Bangkok 10400, Thailand

Tel : +66(0) -2009-9000,

+66(0) -2009-9999 (Call center)

Fax : +66(0) -2009-9991

Products and Services



Thaioil Refinery is the country's largest single-site refinery with the highest complexity and capacity to generate value-added products. It is a leading complex refinery with a capacity to produce and distribute wholesale of refined petroleum products (refining capacity of crude oil and other feedstock accounting for roughly 22 percent of the entire domestic refining capacity) to particularly serve domestic and regional markets. Unlike other refineries in Thailand, Thaioil's refining complexity and technologies also allow the Company to execute the major turnaround by unit

without the need to shut down the entire process, enabling Thaioil to constantly respond to customers' needs.

Lubricant Business

Thai Lube Base Plc (TLB) mainly produces and distributes lube base oil Group 1 which, when blended with additives, can be turned into lube oil or lubricating oil or commonly known as engine oil, use to provide lubrication and cooling for machinery with moving parts such as pistons and shafts. TLB also produces bitumen

for road pavement as well as treated distillate aromatics extract (TDAE), which eliminates carcinogens and air pollutants. Other products manufactured by TLB include slack wax, a raw material for multiple consumer products such as candles, shoe wax, gloss coating, cosmetics, and adhesive for plywood.

Petrochemical Business

Thai Paraxylene Co., Ltd. (TPX) is a producer of paraxylene, feedstock for purified terephthalic acid (PTA) production in the intermediate petrochemical industry. PTA is the monomer in the downstream petrochemical industry for polyester fiber or synthetic fiber used for manufacturing clothes and plastic bottles commonly known as polyethylene terephthalate (PET) such as drinking water bottles and soda bottles, as well as other consumer products such as film, food containers, and plastic bags for heat preservation. TPX also produces benzene, key feedstock for styrene monomer (SM), phenol, and cyclohexene, which are monomers for plastic packaging, electric appliances, and automobiles.

LABIX Co., Ltd. is Thailand's first producer of linear alkyl benzene (LAB) and the first fully integrated producer in Southeast Asia. LAB is a key compound for detergents and cleaning agents.

PT Chandra Asri Petrochemical Tbk (CAP) is Thailoil's investment through PT TOP Investment Indonesia. CAP is Indonesia's large olefins producer and the only naphtha cracker, having a wide range of petrochemical products from upstream to downstream including polyethylene, polypropylene, SM, butadiene, and many other olefins products. CAP is now undertaking a study on capacity expansion and construction of the second petrochemical plant, which will double the existing capacity.

Solvent Business

Thailoil invested in the solvent business to increase the product value chain through Thailoil Solvent Co., Ltd. (TOS), of which TOP Solvent Co., Ltd. (TS) is a subsidiary distributing solvents and chemicals in domestic and overseas markets. Through TS, TOS also owns Sak Chaisidhi Co., Ltd. (SAKC), a manufacturing plant of high-quality hydrocarbon solvent for industrial use. The overseas business is conducted through TOP Solvent (Vietnam) LLC., a distributor of solvents and chemicals in Vietnam with warehouses in both southern and northern Vietnam. In Myanmar, a representative office was established in Yangon. Through a partnership, PT. Tirta Surya Raya was established to distribute solvents and chemicals in Myanmar and Indonesia. The joint ventures with JSKem Pte. Ltd. (JSKEM) and TSChem India Pte. Ltd., a subsidiary of JSKEM, were executed for procurement and distribution of chemicals and solvents in Singapore and India.

Solvents and chemicals sold by TOS and subsidiaries can be divided as follows:

- >> Hydrocarbon solvent: is solvent consisting of hydrogen and carbon, such as paraffin and aromatics which is used in such industries as paint, polymer, and automobile tire.
- >> Chemical solvent: is solvent consisting of alcohol, ketone, ester, glycol ether, used in the paint industry and coating work.
- >> Other chemicals: include non-solvent chemicals, such as chemicals in the glycol group and monomer group as well as additives used in paints, binders, and resins.
- >> Specialty products: are chemicals used in food and beverage industries, such as acid regulators, sugar substitutes, and functional ingredients for nutritional objectives.

Power and Steam Businesses

Thaioil also invests in the cogeneration power business supplying power and steam for Thaioil and Subsidiaries' production process, leading to higher efficiency and securing revenue stream. Thaioil's power and steam businesses were invested through subsidiaries and joint ventures as follows.

- 1) TOP SPP Co., Ltd. (TOP SPP) is running two gas-fired cogeneration power and steam plants. Electricity produced by TOP SPP is sold to the Electricity Generating Authority of Thailand (EGAT) under two 25-year power sale-purchase agreements at a combined volume of 180 MW, 90 MW each. Electricity sale to EGAT generates 54 percent of TOP SPP's total income; the remaining 46 percent is contributed by the remaining electricity and the total steam distributed to Thaioil's subsidiaries.
- 2) Global Power Synergy Plc is another company for production and distribution of utilities both by its own operations and through joint ventures.

Ethanol Business

To strengthen its business capability, Thaioil invests through Thaioil Ethanol Co., Ltd. (TET) in the production and distribution of ethanol to produce a variety of gasohol including gasohol E10, E20 and E85, with 10, 20 and 85 percent of ethanol content respectively. TET invests through its two subsidiaries:

- 1) Sapthip Co., Ltd. (SAPTHIP) produces and distributes ethanol for fuel production using cassava as raw material. SAPTHIP also owns a subsidiary, Sapthip Green Energy Co., Ltd., a power producer from biogas.
- 2) Ubon Bio Ethanol Plc (UBE) produces and distributes ethanol from cassava and molasses for fuel production and for industrial use. UBE currently has two subsidiaries. One is Ubon Sunflower Co., Ltd., producer of food-grade and industrial-grade tapioca starch. Processed water and tapioca residue can be further turned into biogas, used as recycled fuel and for power production distributed to the Provincial Electricity Authority (PEA). The other subsidiary is Ubon Bio Agricultural Co., Ltd., distributor of agricultural product and organic product such as coffee beans, rice, tapioca starch, tapioca chips, soil enhancer from cassava residue and Napier grass. It also operates livestock-related business and agricultural land lease.

Summary of Thailoil and Subsidiaries'

Asset used in Business Operations

Primary Fixed Assets under the Ownership of Thailoil and Subsidiaries

As of December 31, 2021, the primary business assets under the ownership of Thailoil and Subsidiaries-after cumulative depreciation and allowance for impairment losses as shown in the financial statement amounted to THB 178,399 million:

Description	Net book value after cumulative depreciation and allowance for impairment losses (THB Million)
Land	7,347
Buildings	5,079
Leasehold improvement	212
Oil refinery and equipment	116,429
Power plant	17,702
Petrochemical plant	36,122
Machinery, tools and equipment	7,386
Furniture, fixtures, office equipment, etc.	1,068
Vehicles	14
Construction work in progress	108,568
Total Cost	299,927
Less-Cumulative depreciation and allowance for impairment losses	(121,528)
Total-Net value after cumulative depreciation and allowance for impairment losses	178,399
Total-Net book value of primary fixed assets	178,399
Less-Classified as non-current assets held for sale	-
Total-Net book value of primary fixed assets	178,399

Thai Oil Plc

As of December 31, 2021, Thailoil fixed assets are mainly land, building, oil refinery, machinery and equipment, of which the Company took ownership are as listed below:

Description	Net book value (THB Million)	Obligation (THB)
Land	4,941	-
Building	3,740	-
Oil refinery and equipment	108,034	-
Power plant	5,784	-
Machinery, tools and factory equipment	1,575	-
Furniture, fixtures, and office equipment, etc.	682	-
Construction work in progress	107,206	-
Total Cost	231,962	-
Less-Cumulative depreciation and allowance for impairment losses	(85,329)	-
Total-Net book value after cumulative depreciation and allowance for impairment losses	146,633	-
Total-Net book value of primary fixed assets	146,633	-

Subsidiaries

As of December 31, 2021, Thailoil's 21 subsidiaries, include Thai Paraxylene Co., Ltd., LABIX Co., Ltd., Thai Lube Base Plc, TOP SPP Co., Ltd., Thailoil Solvent Co., Ltd., TOP Solvent Co., Ltd., Sak Chaisidhi Co., Ltd., TOP Solvent (Vietnam) LLC., PT. Tirta Surya Raya, JSKem Pte., Ltd. TSCChem India Pte., Ltd., Thailoil Ethanol Co., Ltd., Sapthip Co., Ltd., Sapthip Green Energy Co., Ltd., Thailoil Marine International Pte. Ltd., Thailoil Energy Services Co., Ltd., Thailoil Treasury Center Co., Ltd., TOP Ventures Co., Ltd., TOP Ventures Hong Kong Limited, TOP Ventures America LLC., and PT TOP Investment Indonesia, of such subsidiaries, there are several primary fixed assets such as land, office buildings, power plants, factories, and machinery as detailed below:

Description	Net book value (THB Million)	Obligation (THB)
Land	2,406	-
Building	1,339	-
Leasehold improvement	212	-
Power plants, factories, machinery, and factory tools and equipment	62,246	<ul style="list-style-type: none"> - Land, machinery, buildings, and wastewater residue treatment unit of Sapthip Co., Ltd. have been used as collateral to secure a loan of THB 141 million from a financial institution. - Petrochemical plant of LABIX Co., Ltd. has been used as collateral to secure a loan of THB 5,400 million from a number of financial institutions. - Power production plant machinery and equipment of TOP SPP Co., Ltd. has been used as collateral to secure a loan of THB 8,500 million from a number of financial institutions.
Furniture, fixtures, and office equipment, etc.	386	-
Vehicles	14	-
Construction work in progress	1,362	-
Total Cost	67,965	-
Less-Cumulative depreciation and allowance for impairment losses	(36,199)	-
Total-Net book value after cumulative depreciation and allowance for impairment losses	31,766	-
Total-Net book value of primary fixed assets	31,766	-
Less-Classified as non-current assets held for sale	-	-
Total-Net book value of primary fixed assets	31,766	-

Investment Properties

As of December 31, 2021, investment properties which can generate profit from rental or from value appreciation or both under the ownership of Thaioil and Subsidiaries registered a net value-after cumulative depreciation and allowance for impairment losses-of THB 103 million, as shown in the financial statements.

Intangible Assets

Right of use Water Pipelines and Natural Gas Pipelines

Under the water consumption contract, Thaioil made with Eastern Water Resources Development and Management Plc, Thaioil is entitled to pipe water from the Nong Pla Lai-Nong Khaw and Nong Khaw-Laem Chabang water pipelines to the oil refining system. Permission has also been granted by relevant agencies to lay connecting pipes through their land to Thaioil's water receiving point.

Additionally, Thaioil is entitled to share the use of gas pipelines belonging to PTT Plc for gas delivery to Thaioil's fuel plant on the refinery premises for 15 years. The pipeline fee is included as part of the monthly gas consumption charge, base on calculation formula specified in the agreement. The agreement can be renewed by Thaioil giving a written notification to PTT Plc no less than six months in advance.

Right under Land and Building Rental Contracts

Thaioil is entitled to use land belonging to the Treasury Department, Ministry of Finance, as oil refinery and staff housing sites. Located in Chonburi Province, the land, occupying 1,499 rai, 3 ngan, and 26 square wah (accounting for 65 percent of the total area of Thaioil refinery in Sriracha), is under a 30-year lease due for expiration on September 10, 2022. The rental is to increase by 15 percent every five years. The rental for the period of September 2012 to September 2017 was around THB 201 million per year and around THB 231 million per year for the period of September 2017 to September 2022.

On August 21, 2018, Thaioil entered into a land lease agreement with the Treasury Department, Ministry of Finance, for which Thaioil has to pay rental yearly for 30 years from 2022 to 2052. The annual rental for

September 2022 to September 2025 will be worth around THB 384 million. The total rental throughout the contract period, with an increase of 10 percent every three years, will be approximately THB 21,321 million. On the contract signing day, Thaioil had already paid THB 2,962 million in advance.

The Treasury Department has allowed Thaioil to allocate part of the rented land, accounting for 8 percent of the total refinery area, to subsidiaries and other companies related to Thaioil. In this respect, Thaioil will have to pay additional annual rental of around THB 7 million to the Treasury Department. Thaioil has moreover allowed subsidiaries and other related companies to lease 10 percent of the refinery area with a rental period and sublease period equal to the remaining validity of the rental contract Thaioil holds with the Treasury Department.

Investment in Equity Shares of Subsidiaries and Affiliates

As of December 31, 2021 and December 31, 2020, financial investment in equity shares of Thaioil's subsidiaries and affiliates, using the cost method according to separate financial statements, amount of total THB 64,285 million and THB 37,223 million respectively.

Policy on Investment in Subsidiaries

Thaioil has a policy on investment in subsidiaries and on future investment in businesses that support to Thaioil or strengthen Thaioil and Subsidiaries.

To supervise subsidiaries, Thaioil as a shareholder will appoint a representative to participate in the shareholders' meeting as proxy or representative and exercise the voting right at the shareholders' meeting according to the Board of Directors' principles or guidelines.

Moreover, Thaioil will appoint representatives to as directors and/or managing director of subsidiaries. The positions of representatives include Chairman of the Board, director, managing director, high-ranking executives or experts with the required knowledge and experience suitable for and without any direct conflict of interest with the business. The appointed representatives will manage subsidiaries under rules, regulations, and guidelines specified in the articles of association of each given subsidiary and related laws.



Investment Promotion Privileges

Thai Oil Plc has obtained investment promotion privileges from Thailand Board of Investment (BOI) according to the criteria and procedures stated in the Investment Promotion Act B.E. 2520 (1977), being entitled to rights and incentives for the oil refining business. This includes exemption of import duties on machinery and equipment, permit to bring into the Kingdom skilled workers and experts to work in number and for the period agreed by BOI, and permit for sending or receiving money overseas in foreign currencies. Moreover in 2018, Thailoil's Clean Fuel Project (CFP) to expand refining capacity, received BOI investment promotion privileges for exemption of import duties on machinery and equipment. Then in 2020, additional BOI privileges were granted to support investment in power generation from renewable energy and sulfuric acid production. The investment is exempt from corporate income tax on the combined net profit of the promoted businesses up to 100 percent of investment cost, for eight years for power production and three years for sulfuric acid production, plus exemption for import duties.

BOI promotion privileges have, moreover, been granted for Thailoil's subsidiaries, including corporate income tax exemption on net profit for different periods depending on the type of business receiving incentives; exemption from import duties on machinery and equipment; permit to bring highly skilled foreign craftsman and experts into the Kingdom; permit for sending or receiving money overseas in foreign currencies; and exclusion of dividends received from promoted businesses from taxable income for a certain period, as detailed by company as follows:

>> TOP SPP Co., Ltd.–received BOI privileges for investment in power and steam production (239.65 megawatts of electricity and 445.9 tons per hour of steam) in 2014, being. The investment promotion privileges include corporate income tax exemption on the combined net profit of the promoted businesses up to 100 percent of investment cost for eight years from November 25, 2015 to November 24, 2023.

Moreover in 2021, TOP SPP received BOI privileges for investment in power and steam production (120 megawatts of electricity and 234.2 tons per hour of steam). The privileges include corporate income tax exemption on the combined net profit of the promoted businesses up to 100 percent of investment cost for three years. The project, however, is still under construction and the privilege of corporate income tax exemption has not yet been exercised.

>> LABIX Co., Ltd.–received BOI privileges in 2012 for investment in the production of Linear Alkyl Benzene (LAB) and its by-products. The business was granted corporate income tax exemption on the combined net profit of the promoted businesses up to 100 percent of investment cost for seven years as from the date income from the operation is generated (January 25, 2016 to January 24, 2023).

>> Sak Chaisidhi Co., Ltd.–received BOI privileges for investment in the production of Aliphatic Hydrocarbon and Aromatic Hydrocarbon. The business was granted corporate tax exemption for eight years from May 12, 2014 to May 11, 2022 and corporate income tax reduction at 50 percent of the usual rate on the net profit earned from the business as from the date corporate income tax exemption ends. The business also received permit for utility cost deduction twice the actual expense for 10 years.

>> Sapthip Green Energy Co., Ltd.–received BOI privileges in 2018 for power production from biogas. The business was granted corporate income tax exemption on the combined net profit of the promoted businesses up to 100 percent of investment cost for eight years as from January 1, 2020 to December 31, 2027. Then in 2019, the company was granted BOI privileges for its investment in steam production, receiving corporate income tax exemption on the combined net profit of the promoted businesses up to 100 percent of investment cost for five years from January 1, 2020 to December 31, 2024.

Revenue Structure

Thaioil's core earnings were derived from our oil refinery business. other revenue contributors were the lube base oil refinery, aromatics and LAB, power generation, marine transportation services (discontinued operations), solvent, ethanol, olefins and other businesses.

(THB Million)

			For the year ended December 31							
			Ownership Interest		2021		2020		2019	
					(Re-presented)		(Re-presented)			
Operator ⁽¹⁾	(%)		Amount	%	Amount	%	Amount	%		
A. Net Sales										
1. Oil refinery	TOP	-	358,390	102	254,316	98	379,717	103		
2. Lube base oil refinery	TLB	100	23,832	7	14,038	5	18,243	5		
3. Aromatics and LAB	TPX	100	60,547	17	36,676	14	52,198	14		
4. Power generation	TP/TOP SPP	74/100	7,573	3	6,655	3	7,380	2		
5. Marine transportation services (Discontinued operations)	TM	100	210	-	658	-	660	-		
6. Solvent	TOS	100	13,313	4	8,188	4	9,102	3		
7. Ethanol	TET	100	1,589	-	1,631	1	1,473	-		
8. Others	TES/TTC	100	6,330	2	5,792	2	4,295	1		
Less: Eliminations			(126,288)	(36)	(80,041)	(31)	(108,742)	(29)		
Total			345,496	99	247,913	96	364,326	99		
B. Net Derivative Gain on Hedging										
1. Aromatics and LAB	TPX	100	303	-	193	-	569	-		
2. Others	TTC	100	23	-	26	-	-	-		
Total			326	-	219	-	569	-		
C. Net Foreign Exchange Gain ⁽²⁾										
1. Oil refinery	TOP	-	-	-	1,692	-	1,847	-		
2. Lube base oil refinery	TLB	100	47	-	10	-	1	-		
3. Aromatics and LAB	TPX	100	117	-	75	-	22	-		
4. Power generation	TP/TOP SPP	74/100	8	-	2	-	4	-		
5. Marine transportation services (Discontinued operations)	TM	100	10	-	-	-	-	-		
6. Solvent	TOS	100	112	-	14	-	-	-		
7. Ethanol	TET	100	-	-	1	-	2	-		
8. Others	TES/TTC	100	-	-	-	-	8	-		
Less: Eliminations			(10)	-	-	-	-	-		
Total			284	-	1,794	-	1,884	-		

(THB Million)

			For the year ended December 31					
	Operator ⁽¹⁾	Ownership Interest (%)	2021		2020 (Re-presented)		2019 (Re-presented)	
			Amount	%	Amount	%	Amount	%
D. Other Revenues ⁽³⁾								
1. Oil refinery	TOP	-	2,198	1	12,164	5	3,472	1
2. Lube base oil refinery	TLB	100	65	-	80	-	83	-
3. Aromatics and LAB	TPX	100	264	-	185	-	316	-
4. Power generation	TP/TOP SPP	74/100	14,771	4	2,207	1	1,232	-
5. Marine transportation services (Discontinued operations)	TM	100	12	-	103	-	55	-
6. Solvent	TOS	100	28	-	23	-	19	-
7. Ethanol	TET	100	657	-	22	-	3	-
8. Others	TES/TTC	100	3	-	285	-	79	-
Less: Eliminations			(15,106)	(4)	(5,602)	(2)	(2,369)	-
Total			2,892	1	9,467	4	2,890	1
Total revenues (A-D)			348,998	100	259,393	100	369,669	100
Revenue for the period from continuing operations			348,998	100	259,393	100	369,669	100
Revenue for the period from discontinuing operations			-	-	515	-	450	-
Total revenues			348,998	100	259,908	100	370,119	100

Remarks:
⁽¹⁾ TOP is Thai Oil Plc

TLB is Thai Lube Base Plc

TPX is Thai Paraxylene Co., Ltd. having respective interests in LABIX Co., Ltd.

TP is Thairoil Power Co., Ltd.

TOP SPP is TOP SPP Co., Ltd.

TM is Thairoil Marine Co., Ltd. having respective interests in Thairoil Marine International Pte. Ltd. and TOP Maritime Service Co., Ltd. in 2019 and 2020. However, Thai Oil Plc having respective interests in Thairoil Marine International Pte. Ltd. in 2021.

TOS is Thairoil Solvent Co., Ltd. having respective interests in TOP Solvent Co., Ltd., Sak Chaisidhi Co., Ltd., TOP Solvent (Vietnam) LLC. and PT. Tirta Surya Raya

TET is Thairoil Ethanol Co., Ltd. having respective interests in Sapthip Co., Ltd.

TES is Thairoil Energy Services Co., Ltd.

TTC is Thairoil Treasury Center Co., Ltd. having respective interests in TOP Ventures Co., Ltd., TOP Ventures Hong Kong Limited and TOP Ventures America LLC.

⁽²⁾ Thairoil and Subsidiaries have net foreign exchange gain in 2019 and 2020 but there are net foreign exchange loss in 2021.

⁽³⁾ Comprises received interests, export tax subsidy, revenues from services provided to subsidiary companies, land lease, single buoy mooring service fee, oil storage tank lease, revenue from disposal of scrap, gain on disposal of investments, revenues from reclassified an investment, share of profit of joint ventures and associates.

Related Party Transactions ➤

For fiscal years 2020 to 2021 Thaioil and/or Subsidiaries engaged in key business transactions with subsidiaries and associates along with related parties with common major shareholders and/or directors, as shown in the notes to financial statements. All related party transactions are based on market prices wherever available or mutually agreed prices wherever market prices are unavailable. The relationships among parties are listed as follows:

Company	Relationship with Thaioil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
PTT Plc (PTT)	Major shareholder, holding 45.03% of Thaioil's total shares	>> Revenue			
		>> Gain on disposal of investment in an associate	-	8,965	
		>> Thaioil Marine Co., Ltd. ⁽¹⁾ provided marine transportation services	-	1	
		>> TOP Solvent Co., Ltd. sold solvent products	5	5	Occasional sale of solvent product. Considered normal business practice.
		>> Other income	8	15	
		>> Expenses			
		>> Thaioil purchased petroleum products	105,324	66,358	The Product Offtake and Crude Oil Supply Agreement (POCSA) and Feedstock Supply Agreement.
		>> Thaioil purchased natural gas	3,699	1,104	The 10-year and the 15-year natural gas supply agreements expire in 2022 and 2023 respectively.
		>> Thaioil Power Co., Ltd. ⁽²⁾ purchased natural gas	189	2,409	The 25-year natural gas supply agreement expires in 2023.
		>> Thai Lube Base Plc purchased natural gas	301	213	The 10-year natural gas supply agreements expires in 2026.
		>> TOP SPP Co., Ltd. purchased natural gas	4,615	4,141	The 25-year natural gas supply agreements expires in 2041.

Company	Relationship with Thaioil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
Thaioil Power Co., Ltd. ⁽²⁾	as at December 31, 2020 >> 26.01% owned by PTT >> 73.99% owned by Thaioil as at December 31, 2021 >> Dissolved and completed the liquidation on September 17, 2021.	>> SAK Chaisidhi Co., Ltd. purchased natural gas	71	54	The 10-year natural gas supply agreements expires in 2028.
		>> LABIX Co., Ltd. purchased natural gas	656	494	The 10-year natural gas supply agreements expires in 2025.
		>> Other expenses	83	84	
		>> Acquisition of assets	5	6	
		>> Other receivable	5	1	
		>> Right-of-use assets	7	8	
		>> Trade accounts payable	13,525	4,669	
		>> Other payable	-	48	
		>> Lease liabilities	6	7	
		>> Revenue			
Thaioil Power Co., Ltd. ⁽²⁾	as at December 31, 2020 >> 26.01% owned by PTT >> 73.99% owned by Thaioil as at December 31, 2021 >> Dissolved and completed the liquidation on September 17, 2021.	>> Thaioil generated revenue from sale of steam	39	521	The 25-year sale and purchase of power and steam agreement (1998-2022).
		>> Thai Paraxylene Co., Ltd. generated revenue from sale of steam	2	31	The 25-year sale and purchase of steam agreement (1998-2022).
		>> Thaioil received dividend	16,881	894	
		>> Thaioil Treasury Center Co., Ltd. received loan interest income	29	322	The 4.5-year loan agreement amount not exceeding to THB 11,385 million at 2.66% fixed interest.
		>> Other income	28	307	

Company	Relationship with Thaitoil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
		>> Expenses			
		>> Thaitoil paid the costs of electricity and steam	132	1,669	The 25-year sale and purchase of power and steam agreement (1998-2022).
		>> Thai Paraxylene Co., Ltd. purchased electricity and steam, including steam backup services	83	1,030	The 25-year sale and purchase of power and steam agreement (1998-2022).
		>> Thai Lube Base Plc purchased electricity and steam	49	617	The 25-year sale and purchase of power and steam agreement (1998-2022).
		>> Loss on impairment of investments	901	-	Impairment loss is a related transaction to the entire business transfer under common control.
		>> Other expenses	-	1	
		>> Trade accounts receivable	-	48	
		>> Other receivable	-	27	
		>> Finance lease receivable	-	2	
		>> Current portion of long-term borrowings	-	11,381	
		>> Trade accounts payable	-	266	
		>> Other payable	-	37	
		>> Other non-current liabilities	-	3	

Company	Relationship with Thaioil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
Global Power Synergy Plc (GPSC)	>> 42.53% owned by PTT >> 20.78% owned by Thaioil >> Common director: Dr. Pailin Chuchottaworn and Mr. Wirat Unanarumit. >> Thaioil's executive on GPSC Board: Mr. Jeerawat Pattanasomsit	>> Revenue			
		>> Thaioil generated revenue from services	2,600	18	The 25-year agreement to obtain compensation of the construction, cost of pipeline to supply water, including petroleum product and fuel oil reserve sales and purchase agreement (2023-2025).
		>> Thaioil received interest income from finance lease	1	2	The 25-year 9-month sublease agreement (December 1996-September 2023).
		>> Thaioil received dividend.	879	327	
		>> Thaioil Power Co., Ltd. ⁽²⁾ received dividend	-	762	
		>> TOP SPP Co., Ltd. generated revenue from backup power	2	1	The 7-year 3-month sale and purchase agreement of backup power expires in August 2025.
		>> Expenses			
		>> Other expenses	-	16	
		>> Trade accounts receivable	593	-	
		>> Other receivable	1	2	
		>> Finance lease receivable	-	6	
		>> Other non-current liabilities	7	10	

Company	Relationship with Thailoil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
Energy Recovery Unit Company Limited	>> Wholly owned by GPSC	>> Other non-current liabilities	2,192	2,192	The sale and purchase agreement of the Energy Recovery Unit (ERU) to support power and steam to the Clean Fuel Project. Thailoil transferred the rights of use of the ERU asset to Energy Recovery Unit Co., Ltd.
PTT Energy Solutions Co., Ltd. (PTTES)	>> 40% owned by PTT >> 20% owned by Thailoil >> Thailoil's executive on PTES Board: Ms. Rungrapa Janchookiat	>> Expenses >> Thailoil paid service expenses >> Other payable	97 -	127 26	The 3-year service agreement to provide technical solutions and advice expires in December 2022.
Thai Petroleum Pipeline Co., Ltd. (THAPP)	>> 40.40% owned by PTT Oil and Retail Business Plc >> 9.19% owned by Thailoil >> Thailoil's executive on THAPP Board: Mr. Chatapong Wungtanagorn	>> Revenue >> Other income >> Dividend income >> Expenses >> Thailoil paid transportation service expenses and other expenses >> Other payable	- 119 50 3	154 157 39 4	A 20-year service agreement, start from May 17, 1994 or goals achieved (which have not been met).

Company	Relationship with ThaiOil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
PTT Digital Solutions Co., Ltd. (PTTDG)	>> 20% owned by PTT >> 20% owned by ThaiOil >> ThaiOil's executive on PTTDG Board: Mr. Jeerawat Pattanasomsit	>> Revenue			
		>> Dividend income	26	19	
		>> Expenses			
		>> ThaiOil paid service expenses	257	250	The 1-year technology and telecommunication services and solutions agreement expires in December 2021 (The agreement is under a renewal process).
		>> Acquisition of assets	46	85	
PTT Global Chemical Plc (GC)	>> 45.18% owned by PTT	>> Other receivable	29	17	
		>> Right-of-use assets	3	-	
		>> Other payable	93	74	
		>> Lease liabilities	3	-	
		>> Revenue			
		>> TOP Solvent Co., Ltd. sold solvent products	168	94	Occasional sale and purchase of solvent product, including purchase of feedstock. Considered normal business practice.
		>> Expenses			
		>> ThaiOil paid the expenses on petroleum products	-	294	
		>> TOP Solvent Co., Ltd. purchased solvent products	33	13	
		>> Sak Chaisidhi Co., Ltd. purchased raw materials	786	1,291	
		>> Other expenses	1	-	
		>> Trade accounts receivable	15	16	
		>> Trade accounts payable	6	132	

Company	Relationship with Thaioil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
IRPC Plc (IRPC)	>> 45.05% owned by PTT	>> Revenue			
		>> Thaitoil sold petroleum products	34	-	Occasional sale and purchase of petroleum
		>> Thai Paraxylene Co., Ltd. sold petrochemical products	1,401	742	product, petrochemical product and solvent product.
		>> TOP Solvent Co., Ltd. sold solvent products	114	50	Considered normal business practice.
		>> Other income	1	-	
		>> Expenses			
		>> Thaitoil purchased petroleum products	45	-	
		>> Thaitoil Marine Co., Ltd. ⁽¹⁾ purchased petroleum products	11	34	
		>> Thai Paraxylene Co., Ltd. purchased petrochemical products	445	-	
		>> TOP Solvent Co., Ltd. purchased solvent products	1,247	767	
		>> Sak Chaisidhi Co., Ltd. purchased raw materials	222	141	
		>> TOP Solvent (Vietnam) LLC. purchased solvent products	567	439	
		>> Other expenses	-	118	
		>> Trade accounts receivable	14	74	
		>> Trade accounts payable	136	132	
		>> Other payable	-	11	

Company	Relationship with ThaiOil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
PTT Oil and Retail Business Plc (OR)	>> 75% owned by PTT >> Common director is Dr. Buranin Rattanasombat	>> Revenue			
		>> ThaiOil sold petroleum products	127,581	108,486	The Product Offtake and Crude Oil Supply Agreement (POCSA).
		>> Thai Lube Base Plc sold lube base oil products	3,918	2,086	Occasional sale of lube base oil. Considered normal business practice.
		>> Sapthip Co., Ltd. sold ethanol products	618	543	Occasional sale of ethanol. Considered normal business practice.
		>> Other income	10	10	
		>> Expenses			
		>> ThaiOil purchased petroleum products	141	49	Occasional purchase of petroleum product, lube base oil,
		>> ThaiOil Marine Co., Ltd. ⁽¹⁾ purchased petroleum products	-	23	petrochemical product and solvent product. Considered normal business practice.
		>> Thai Lube Base Plc purchased lube base oil products	12	10	
		>> Thai Paraxylene Co., Ltd. purchased petrochemical products	2	2	
		>> TOP Solvent Co., Ltd. purchased solvent products	25	11	
		>> Sapthip Co., Ltd. purchased petroleum products	4	3	
		>> Other expenses	4	5	
		>> Trade accounts receivable	8,309	6,139	
		>> Trade accounts payable	8	20	
		>> Other payable	1	2	

Company	Relationship with Thailoil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
GC Maintenance and Engineering Co., Ltd.	>> Wholly owned by GC	>> Acquisition of assets	12	-	
		>> Other expenses	2	1	
IRPC Polyol Co., Ltd.	>> 50% owned by IRPC	>> Revenue			
		>> TOP Solvent Co., Ltd. sold solvent products	3	-	Occasional sale of solvent product. Considered normal business practice.
NPC Safety and Environmental Service Co., Ltd.	>> Wholly owned by GC	>> Other expenses	1	1	
Energy Complex Co., Ltd.	>> 50% owned by PTT	>> Expenses			
		>> Other expenses	57	64	The 3-year property lease agreement expires in November 2024
		>> Interest expense-finance lease	-	2	and can be renewed on a three-year basis.
		>> Right-of-use assets	1	20	
		>> Other non-current assets	14	14	
		>> Other payable	1	1	
Global Green Chemicals Plc	>> 72.29% owned by GC	>> Lease liabilities	1	21	
		>> Expenses			
		>> Thailoil purchased petroleum products	2,644	1,813	Occasional purchase of petroleum product. Considered normal business practice.
		>> Trade accounts payable	200	146	

Company	Relationship with ThaiOil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
PTT International Trading Pte. Ltd.	>> Wholly owned by PTT	>> Revenue			
		>> ThaiOil sold petroleum products	4,980	1,221	Occasional sale and purchase of petroleum product, lube base oil and petrochemical product. Considered normal business practice.
		>> Thai Paraxylene Co., Ltd. sold petrochemical products	5,365	1,850	
		>> Thai Lube Base Plc sold lube base oil products.	199	30	
		>> ThaiOil Marine Co., Ltd. ⁽¹⁾ provided marine transportation services.	2	-	
		>> Other income	-	6	
		>> Expenses			
		>> Expenses on petroleum products	3,112	1,443	
		>> Thai Paraxylene Co., Ltd. purchased petrochemical products.	1,158	-	
		>> Expenses on oil price crack spread swap contract	35	-	
		>> Trade accounts receivable	944	339	
		>> Trade accounts payable	264	286	
		>> Other payable	16	5	
PTT Exploration and Production Plc (PTTEP)	>> 63.79% owned by PTT	>> Revenue			
		>> TOP Maritime Service Co., Ltd. ⁽¹⁾ provided transport services of crews and personal belongings in the Gulf of Thailand	34	140	Occasional provide transport services of crews and personal belongings in the Gulf of Thailand. Considered normal business practice.
		>> Expenses			
		>> ThaiOil purchased petroleum products	13	-	Occasional purchase of petroleum product. Considered normal business practice.
		>> Trade accounts receivable	-	22	

Company	Relationship with Thailoil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
PTTEP International Limited	>> Wholly owned by PTTEP	>> Revenue >> TOP Maritime Service Co., Ltd. ⁽¹⁾ provided transport services of crews and personal belongings in the Gulf of Thailand	-	20	
		>> Trade accounts receivable	-	4	
		>> Expenses >> Thailoil purchased petroleum products	13	-	Occasional purchase of petroleum product. Considered normal business practice.
Orange Energy Co., Ltd.	>> 53.95% owned by PTTEP				
		>> Expenses >> TOP Solvent Co., Ltd. purchased solvent products	226	166	Occasional purchase of solvent product. Considered normal business practice.
		>> TOP Solvent (Vietnam) LLC. purchased solvent products	156	143	
PTT Phenol Co., Ltd.	>> Wholly owned by GC	>> Trade accounts payable	23	29	
PTT MCC Biochem Co., Ltd.	>> 50% owned by GC	>> Revenue >> TOP Solvent Co., Ltd. sold solvent products	-	7	Occasional sale and purchase of solvent product. Considered normal business practice.
		>> Expenses >> TOP Solvent Co., Ltd. purchased solvent products	14	14	
Vencorex (Thailand) Co., Ltd.	>> Wholly owned by GC	>> Revenue >> TOP Solvent Co., Ltd. sold solvent products	6	11	Occasional sale of solvent product. Considered normal business practice.
		>> Trade accounts receivable	-	1	

Company	Relationship with ThaiOil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
GC Polyols Co., Ltd.	>> 82.10% owned by GC	>> Expenses >> TOP Solvent (Vietnam) LLC. purchased solvent products	2	-	Occasional purchase of solvent product. Considered normal business practice.
PTT Tank Terminal Co., Ltd.	>> Wholly owned by PTT	>> Expenses >> Sak Chaisidhi Co., Ltd. paid storage tank service expenses	23	22	The 24-year storage tank service agreement expires on September 30, 2038.
Thai Tank Terminal Co., Ltd.	>> 51% owned by GC	>> Expenses >> Sak Chaisidhi Co., Ltd. paid storage tank service expenses >> LABIX Co., Ltd. paid storage tank service expenses >> Other payable	17 - -	17 2 1	The 2-year storage tank service agreement expires on December 31, 2022.
GC Glycol Co., Ltd.	>> Wholly owned by GC	>> Expenses >> TOP Solvent (Vietnam) LLC. purchased solvent products >> PT. Tirta Surya Raya purchased solvent products >> Trade accounts payable	22 22 2	24 - 1	Occasional purchase of solvent product. Considered normal business practice.

Company	Relationship with Thailoil as at December 31, 2021	Related Party Transactions	Value (THB Million)		Conditions
			2021 Fiscal Year	2020 Fiscal Year	
Sarn Palung Social Enterprise Co., Ltd. (SPSE)	>> 20% owned by PTT >> 15% owned by Thailoil >> Thailoil's Executive on SPSE Board: Mr. Viroj Meenaphant	>> Other expenses	1	-	
		>> Thailoil paid interest expense on borrowings	91	-	The bridging loan, a period of not more than 18 months with a market rate of not more than 2.5% per annum, in an amount not exceeding USD 670 million, or approximately THB 22,154 million.
PTT Treasury Center Co., Ltd.	>> Wholly owned by PTT	>> Thailoil Power Co., Ltd. ⁽²⁾ paid interest expense on borrowings	10	113	The 4.5-year loan agreement amounting to THB 4,000 million at 2.82% fixed interest.
		>> Accrued interest	2	-	
		>> Other payable	-	1	
		>> Current portion of long-term borrowings	-	3,999	
		>> Long-term borrowings	14,000	-	

Remarks:

⁽¹⁾ On April 30, 2021, Thailoil disposed of and transferred all ordinary shares held by the Company in Thailoil Marine Co., Ltd. (TM) to Phurich Marine Co., Ltd., leading to TM's termination as a subsidiary of the Company. TM also has equity interests in TOP Maritime Services Co., Ltd., TOP Nautical Star Co., Ltd., T.I.M. Ship Management Co., Ltd., TOP-NTL Shipping Trust, and TOP-NTL Pte. Ltd.

⁽²⁾ On February 1, 2021, Thailoil accepted the transfer of the entire business of Thailoil Power Co., Ltd., (TP), the subsidiary in which the Company holds 74.0 percent of all shares of TP. After that, TP registered its company dissolution and completed the liquidation registration with the Department of Business Development, Ministry of Commerce on February 25, 2021 and September 17, 2021, respectively.

Opinion from the Audit Committee on Related Party Transactions

The Audit Committee does not have any difference in opinion from that of the Board of Directors.

Policy on Future Related Party Transactions

Thaioil is fully committed to full compliance with laws, rules and regulations set forth by the Securities and Exchange Commission, Thailand (SEC) and the Stock Exchange of Thailand (SET), including the generally acceptable accounting principles on the disclosure of related parties and entities and related party transactions defined by the Federation of Accounting Professions under the Royal Patronage of His Majesty the King.

In case of any accounting disagreement and discrepancy on related party transactions with either persons or entities, the Audit Committee is in charge of

reviewing and making decisions on the appropriateness of such transactions. Should any transactions need specific knowledge and expertise, Thaioil is to acquire comments and suggestions on such transaction from third party with relevant proficiency, such as external auditor or independent asset assessor and individuals with conflicts of interests. The opinions from the Audit Committee or proficient third party will be used as insights and information for the approval of the Board or the Shareholder as deemed applicable. This is to ensure that such transaction is not considered illegal transfer of benefit among and between Thaioil, subsidiaries, joint ventures and associates, or related parties and shareholders, but the transaction prioritizing the maximum benefit of each and every shareholder especially minor shareholder.

Management Discussion and

Analysis of Financial Position and Operating Results Fiscal Year 2021

Operating Results-Consolidated Financial Results

		2021	2020 ⁽²⁾	+ / (-)
Gross Integrated Margin (GIM)	USD/barrel	5.5	2.4	3.1
<u>excluding</u> Stock Gain/(Loss) ⁽¹⁾				
Group Integrated Margin (GIM)	"	10.1	0.1	10.0
<u>including</u> Stock Gain/(Loss) ⁽¹⁾				
Sales Revenue ⁽²⁾	Million Baht	335,827	242,840	92,987
Net Realized Gain/(Loss) on Financial Instruments	"	(2,461)	(174)	(2,287)
EBITDA	"	28,142	(2,056)	30,198
Net Gain/(Loss) on Fair Value Measured of Financial Instruments	"	55	(5)	60
Net Foreign Exchange Gain/(Loss) ⁽³⁾	"	(4,595)	1,784	(6,379)
Financial Costs	"	(3,595)	(4,292)	697
Reversing of Income Tax (Expense)	"	(2,034)	647	(2,681)
Net Profit/(Loss)	"	12,578	(3,301)	15,879
Basic Earnings/(Loss) per Share	Baht	6.17	(1.62)	7.79
Stock Gain/(Loss)	Million Baht	15,063	(7,399)	22,462
Reversal/(Write-Down) on Crude and Petroleum Product Inventory ⁽⁴⁾	"	332	(549)	881

Remarks:

- ⁽¹⁾ Gross Integrated Margin (GIM) is the integrated margin among Thairoil Refinery, Thai Lube Base Plc, Thai Paraxylene Co., Ltd., and LABIX Co., Ltd.
- ⁽²⁾ Re-presented the impact on the financial statements in accordance with the Thai Financial Reporting Standard No. 5-Non-Current Assets Held for Sale and Discontinued Operations.
- ⁽³⁾ Including net foreign exchange gain/(loss) on foreign currency assets and liabilities in 2020 and 2021 of THB 1,991 million and THB (4,584) million.
- ⁽⁴⁾ Including reversal/(write-down) of allowance for decline in value of crude and petroleum product inventories adjusted to realizable value and reversal/(write-down) of petroleum product at cost.

In 2021, Thailoil and Subsidiaries had sales revenue at THB 335,827 million, which rose by THB 92,987 million in 2020, mainly because of higher product prices, despite lower integrated intake. The GIM excluding stock gain/(loss), gained USD 3.1 per barrel to USD 5.5 per barrel in 2021. The higher GIM reflected the sharply wider spreads of gasoline over Dubai crude, lube base oil over fuel oil, and benzene over ULG95, including LAB gross margin improved sharply during the period. The inventory of crude stock turned from stock loss of THB 7,399 million in 2020 into stock gain of THB 15,063 million in 2021, due to the higher crude oil prices. In addition, there was a reversal on crude and petroleum product inventory of THB 332 million in 2021 against the write-down on crude and petroleum product inventory of THB 549 million in 2020. Together with net realized loss on financial instruments of THB 2,461 million, an increase of THB 2,287 million. Thailoil and Subsidiaries' EBITDA drastically turned from a loss of THB 2,056 million in 2020 into a profit of THB 28,142 million in 2021. Nevertheless, a significant depreciation in Thai Baht during 2021 resulted in a net loss in foreign exchange of THB 4,595 million. From Q3/2021, Thailoil and Subsidiaries adopted hedge accounting under the Thai Financial Reporting Standard No. 9 (TFRS9) to manage its foreign currency exchange risk between its USD debentures and its sales revenue which was USD and linked to USD, This mitigate volatile impacts on the financial statements.

Additional, in Q3/2021, Thailoil Ethanol Co., Ltd. (TET) sold no more than 5 percent of its share in Ubon Bio Ethanol Plc (UBE) along with the UBE's Initial Public Offering (IPO) transaction in September. From this transaction, Thailoil and Subsidiaries had lower shareholding in UBE from 21.3 percent to 12.39 percent, and recorded gain before tax of THB 624 million Q3/2021 which consisted of 1) realized gain from partial share sale and 2) gain on fair value measurement from changing in accounting

method from the equity method to long-term investment. Also reported in Q3/2021, Thailoil and Subsidiaries established PT TOP Investment Indonesia (TII) on July 12, 2021 as a vehicle to invest 15 percent of the total common shares in PT Chandra Asri Petrochemical Tbk (CAP), a major fully-integrated petrochemical producer in Indonesia, in September. TII recognized CAP as its associate company and applied the equity method to realized its gain/(loss) since September onwards. Besides, Thailoil and Subsidiaries reported an additional profit of THB 5,801 million from the sale of its investment in Global Power Synergy Plc (GPSC). Offsetting with finance costs of THB 3,595 million, a decrease of THB 697 million from capitalizing assets, depreciation and income tax expenses, Thailoil and Subsidiaries ended the 2021 financial balance of THB 12,578 million in net profit, a big leap from THB 3,301 million net loss in 2020.

Results by Company for the Year 2021 Compared to 2020

Thailoil Refinery (Thailoil) reported a throughput of 100 percent this year, a 1-percent loss from 2020. Its total sales revenue climbed from THB 99,478 million to THB 348,721 million, mainly due to higher average sales prices. The Gross Refining Margin (GRM) excluding stock gain/(loss) surged USD 1.8 per barrel to USD 2.2 per barrel, resulting from wider gasoline and jet/kerosene spreads, after easing of lockdowns and travel restrictions in many countries. Thailoil also posted stock gain of THB 15,063 million in 2021 whereas stock loss of THB 7,399 million was booked in 2020. There was also a reversal on crude and petroleum product inventory of THB 332 million, compared with a write-down on crude and petroleum product inventory of THB 549 million in the prior year. With net realized loss on financial instruments of THB 2,717 which was higher by THB 2,358 million, Thailoil's EBITDA stood at THB 15,500 million, against THB 9,914 million loss

in 2020. A net foreign exchange loss of THB 4,873 million was reported in 2021 against a net foreign exchange gain of THB 1,692 million in 2020, from THB depreciation. Nevertheless, Thailoil recorded a profit from sales of investment in GPSC of THB 8,965 million and a decrease of finance costs of THB 575 million than the same period last year as a result of asset capitalization. In conclusion, Thailoil posted a net profit after depreciation and income tax expenses of THB 2,462 million in 2021 against a net loss of THB 4,568 million in 2020 (Thailoil's net profit in 2021 amounted to THB 24,652 million included dividend income, particularly from the dividend received from entire business transfer transactions with Thailoil Power Co., Ltd. (TP), were included.)

Thai Lube Base Plc (TLB) increased its capacity by 3 percent from 2020 to 91 percent in 2021, generating sales revenue of THB 23,832 million, a jump of THB 9,793 million year-on-year, mainly due to a higher sales volume and average selling prices. The product-to-feed margin also rose sharply by USD 97 per ton to USD 176 per ton, driven by significantly wider spreads between lube base oil and fuel oil, in turn resulting from tight supply after regional refinery cut their production and had annual maintenance shutdowns. TLB posted a final EBITDA of THB 4,745 million, a gain of THB 3,441 million. TLB's net profit, after depreciation, finance costs, and income tax expense, stood at THB 3,678 million, a gain of THB 2,768 million from 2020.

Thai Paraxylene Co., Ltd. (TPX) increased its aromatics throughput by 16 percent from 2020 to 87 percent, leading to a leap in sales revenue by THB 18,362 million to THB 45,089 million, mainly due to higher average selling prices and the higher product-to-feed margin by USD 3 per ton to USD 80 per ton, following the wider spread between benzene and ULG95 following higher

demand for packaging and tight supply as a result of Texas deep freeze in early 2021. Moreover, an additional THB 12 million was reported, driving net realized gain on financial instruments to THB 256 million, amid higher utility costs in line with higher crude oil prices. The final EBITDA of TPX stood at THB 2,975 million, down THB 88 million from 2020. In view of THB 48 million gain from the fair value measurement of the financial instruments, up THB 40 million, and the net gain from foreign exchange of THB 195 million, a rise of THB 119 million from 2020, TPX's net profit ended at THB 1,665 million in 2021, a surge of THB 56 million from 2020.

LABIX Co., Ltd. (LABIX) increased its throughput capacity of LAB by 9 percent to 112 percent, pushing its sales revenue up by THB 6,160 million to THB 16,744 million, mainly due to higher LAB prices tracking feedstock prices and tight supply from maintenance shutdowns of LAB plants in China and India. Thanks to higher LAB gross margin, LABIX reported an EBITDA of THB 2,014 million, a rise of THB 1,121 million. After consolidating with the net loss from foreign exchange of THB 78 million, THB 77 million higher loss than in 2020, LABIX ended 2021 with a net profit of THB 1,228 million against a net loss of THB 99 million in 2020.

For 2021, the aromatics business group (TPX holds 75 percent shares of LABIX), had consolidated sale revenue of THB 60,547 million in 2021, consolidated EBITDA of THB 4,989 million and consolidated net profit of THB 2,586 million.

TOP SPP Co., Ltd. (TOP SPP) reported sales revenue of THB 7,248 million, up THB 594 million, mainly due to higher average selling prices in line with the higher natural gas prices together with a higher sales volume of steam to meet higher customers' demand. TOP SPP ended 2021 with an EBITDA of THB 1,799 million, up

THB 61 million amid a lower finance costs by THB 22 million, following continuous long-term loan repayment. After deduction of depreciation and income tax expenses, TOP SPP reported a net profit of THB 986 million in 2021, up THB 102 million from 2020.

Moreover, Thailoil and Subsidiaries share of profit from investment in GPSC (without non-controlling interest) of THB 1,494 million, down THB 289 million from last year.

Thailoil Solvent Co., Ltd. (TOS) increased its solvent production capacity to 117 percent, up 5 percent from 2020, driving total sales volume of solvent up approximately 60,000 tons. With the significantly higher average selling price per unit of solvent in parallel to higher crude oil prices, the sales revenue was up THB 5,126 million to THB 13,314 million in 2021. Thanks to a higher gross profit margin from sales volumes of higher value products and supply-shortage products, TOS pushed its EBITDA up THB 409 million to THB 1,041 million in 2021. After a net gain of THB 112 million in foreign exchange, up THB 98 million from 2020, and deduction of depreciation, finance costs, and income tax expense, TOS ended 2021 with a net profit of THB 663 million, up THB 353 million from the same period of the previous year.

On July 1, 2021, the solvent business group, TOP Solvent Co., Ltd. (TS) to enter investment in JSKem Pte., Ltd. (JSKEM) by acquiring 60 percent of total shares. JSKEM supplies and distributes chemicals and solvents in

Singapore, having businesses with synergy and mutual benefit with TS.

Moreover, TS raised its holding in PT. Tirta Surya Raya from 67 percent to 77.7 percent on December 30, 2021.

PT TOP Investment Indonesia (TII) was under pressure throughout 2021 and ended the year with a booking of net loss equivalent to THB 90 million. Production of polyethylene (PE) and polypropylene (PP) was capped by plunging demand during the COVID-19 pandemic (Omicron variant) along with additional supplies from Northeast Asia, notably from China and South Korea. Moreover, CAP, TII's joint venture, had extraordinary items booking in its financial statements such as deferred tax expense, which the House of Parliaments of Indonesia had scrapped its plans to reduce their corporate income tax (CIT) to 20 percent from 2021 onwards and had opted the CIT to remain at 22 percent.

Thailoil Ethanol Co., Ltd. (TET) reported consolidated net profit of THB 579 million, up from THB 44 million reported in 2020. The consolidated sale revenue was slightly down to THB 1,589 million due to declines in purposes sales volume of ethanol and sanitation alcohol by Sapthip Co., Ltd. TET's EBITDA went down THB 36 million to THB 189 million. However, TET posted reported share of profit from investment in UBE of THB 44 million, up THB 25 million from 2020 due to higher ethanol sales and starch sales. With extraordinary gain from UBE IPO and investment reclassification.

Analysis of Consolidated Financial Position

Unit: THB Million

Financial Position	As at December 31, 2021	As at December 31, 2020	+/(−)
Total Assets	362,144	306,188	55,956
Total Liabilities	239,050	186,069	52,981
Total Equity-net	123,094	120,118	2,976

Total Assets

As of December 31, 2021, Thailoil and Subsidiaries had total assets of THB 362,144 million, increased by THB 55,956 million or 18.3 percent from December 31, 2020, with the following main reasons:

- >> Cash, cash equivalents and current investment were down THB 41,657 million. The decrease in cash and cash equivalents was from an acquisition of investment in an associate of THB 29,807 million, investments in several planned projects of THB 35,146 million, THB 5,972 million on dividend payment to non-controlling interests, THB 2,652 million on dividend payment to the shareholders of the parent, repayment of long-term loans from related parties of THB 3,999 million, and redemption of debentures of THB 3,000 million. However, there were proceeds from long-term borrowings from financial institutions and related parties totaling to THB 33,754 million, as well as net proceeds from short-term borrowings from financial institutions of THB 213 million.
- >> Other current assets rose THB 28,667 million, mainly from the THB 17,115 million higher inventories and THB 10,713 million from trade accounts receivable, in line with higher average crude oil prices between December 2021 and December 2020. Additionally, value added tax receivables increased by THB 1,457 million, and receivables from oil fuel fund rose by THB 1,578 million while assets held-for-sale dropped by THB 2,459 million.
- >> Non-current assets were up THB 68,947 million, mainly due to investments in associates of THB 30,891 million, including TII's investment in CAP with the 15 percent acquisition of total common shares as well as THB 33,174 million on the increasing value of property, plant and equipment from several project investments according to the business plan. Moreover, the right-of-use asset also rose THB 2,402

million, mainly due to mostly from VLCC rental agreement. The derivative assets were up THB 1,255 million from financial instruments recognition, and financial assets measured at fair value rose THB 1,337 million.

Total Liabilities

As of December 31, 2021, Thailoil and Subsidiaries had total liabilities of THB 239,050 million, went up by THB 52,981 million, or 28.5 percent, mainly due to:

- >> Current liabilities gained THB 13,595 million, mainly due to increases in trade accounts payable of THB 13,484 million following higher average crude oil price in December 2021 than in December 2020.
- >> Long-term borrowings and debentures (including current portions) increased by THB 37,647 million, mainly due to the bridging loan agreement with PTT Plc (PTT), the major shareholders of the Company, and with financial institutions, thus raising our long-term loans from financial institutions and related parties to the total amount of THB 33,709 million. However, TP repaid long-term loans of THB 3,999 million to related parties, and Thailoil redeemed debentures worth THB 3,000 million.
- >> Other non-current liabilities jumped THB 1,739 million, mainly due to increases in lease liabilities of THB 2,864 million mostly from VLCC rental agreement and a THB 1,458 million drop in the value of derivatives liabilities.

Total Equity-Net

As of December 31, 2021, Thailoil and Subsidiaries had THB 123,094 million, rose THB 2,976 million or 2.5 percent. This resulted from a total comprehensive income for in 2021 of THB 12,396 million, offsetting with dividends paid of THB 8,624 million to non-controlling interests and the shareholders of the parent, and a subsidiary liquidation of THB 806 million.

Analysis of Cash Flow and Financial Ratios

In 2021, Thaioil and Subsidiaries had cash flows generated from operating activities of THB 10,504 million, mainly due to net profit for 2021 from continuing operations of THB 13,066 million and the adjustments to reconcile profit (loss) to cash of THB 16,003 million. Nevertheless, there was more cash used in operating assets and liabilities of THB 16,873 million, income tax paid of THB 1,331 million, and THB 361 million in cash used in operating activities of discontinued operations. However, Thaioil and Subsidiaries had cash flows used in investing activities of THB 43,337 million, mainly for an acquisition of investments in an associate at THB 29,807 million, mostly on TII's investment in CAP. In addition, there were purchases of property, plant and equipment totaling to THB 35,146 million, including THB 33,673 million investment by Thaioil Refinery and the Clean Fuel Project (CFP). THB 943 million was from TOP SPP's investment on the expansion project of power and steam generation. However, there were net proceeds from short-term investments of THB 19,162 million and proceeds from the restructuring of business of THB 1,560 million.

In addition, cash flows generated from financing activities were of THB 8,246 million, partly from THB 33,754 million in long-term loans with financial

institutions and related parties and partly from THB 213 million in short-term borrowings from financial institutions. However, there were finance costs paid of THB 6,929 million, dividend payments of THB 5,972 million for non-controlling interests and THB 2,652 million for the shareholders of the parent, cash repayments to long-term loans from related parties of THB 3,999 million, cash repayments to long-term loans from financial institutions of THB 1,014 million, redemption of capital paid to non-controlling interests of THB 806 million, and THB 3,000 million for debenture redemption.

According to the mentioned cash flows activities, Thaioil and Subsidiaries reported cash and cash equivalents decreased by THB 24,587 million from December 31, 2020. Nevertheless, Thaioil and Subsidiaries recorded gain on effect of exchange rate changes of THB 1,039 million. With the year's beginning cash and cash equivalents of THB 53,244 million, the ending cash and cash equivalents of Thaioil and Subsidiaries on December 31, 2021 stood at THB 29,696 million. Including deposits at financial institutions used as collaterals and short-term investments, Thaioil and Subsidiaries reported cash, cash equivalents, deposits at financial institutions used as collaterals, and short-term investments of THB 30,024 million.

Financial Ratios

		2021	2020 ⁽¹⁾
Current Ratio	Times	2.6	4.0
Interest Coverage Ratio ⁽²⁾	"	7.8	(0.5)
Long-terms Loans/Total Capitalization	Percent	62	57
Long-terms Loans/Total Equity	Times	1.6	1.3
Total Liabilities/Total Equity	"	1.9	1.5
Net Debt/Equity	"	1.4	0.7

Remarks:

⁽¹⁾ Re-presented the impact on the financial statements in accordance with Thai Financial Reporting Standard No. 5–Non-Current Assets Held for Sale and Discontinued Operations.

⁽²⁾ Excluding depreciation and amortization.

In 2021, Thailoil and Subsidiaries successfully managed the current ratio at 2.6, down by 1.4, and the interest coverage ratio at 7.8, up from 8.3 in the previous year, mainly due to our improved performance. The current ratio and liquidity ratio, as well as all other key financial ratios demonstrated in the table above, strongly indicated financial strengths, thus providing sufficient confidence

for Thailoil and Subsidiaries to continue their aggressive operations, future investments and ability to manage loan repayments and fully comply with all key debt covenants.

Nevertheless, Thailoil and Subsidiaries reported a higher long-term loans to total capitalization, long-term loans to total equity, and total liabilities to total equity than the last year.

Outstanding Consolidated Liabilities (Short-Term and Long-Term)

As of December 31, 2020 and 2021

Unit: THB Million

	For the year ended December 31	
	2021	2020
Short-term loans from financial institutions	929	713
Current portion of long-term loans from financial institutions, net	1,213	953
Long-term loans from financial institutions, net	30,476	12,121
Long-term loans from a third party	279	279
Current portion of long-term loans from related parties, net	-	3,999
Long-term loans from related parties, net	14,000	-
Current portion of debentures, net	3,000	3,000
Debentures, net	132,868	123,837
Total	182,765	144,902

Details of Long-Term Borrowings and Outstanding Debentures as of December 31, 2021

by Company and Denomination

Unit: THB Million

	Thai Oil Plc	LABIX Co., Ltd.	Thailoil Power Co., Ltd.	TOP SPP Co., Ltd.	Thailoil Solvent Co., Ltd.	Thailoil Ethanol Co., Ltd.	Thailoil Treasury Center Co., Ltd.	Total
USD-denominated Debentures ⁽¹⁾	12,930	-	-	-	-	-	105,438	118,368
THB-denominated Debentures	17,500	-	-	-	-	-	-	17,500
THB-denominated Borrowings	33,536	4,464	-	7,277	321	94	-	45,693
Other currencies denominated Borrowings ⁽¹⁾	-	-	-	-	275	-	-	275
Total	63,966	4,464	-	7,277	597	94	105,438	181,836

Remarks:

⁽¹⁾ Including foreign exchange gain/(loss) from foreign currency-denominated liabilities revaluation

Capital Expenditure by Company for the Year 2020 and 2021

Unit: THB Million

	For the year ended December 31	
	2021	2020
Thai Oil Plc	33,673	47,578
Thai Paraxylene Co., Ltd.	9	96
LABIX Co., Ltd.	21	283
Thai Lube Base Plc	453	95
Thaioil Power Co., Ltd.	2	2
Thaioil Marine Co., Ltd.	18	30
Thaioil Solvent Co., Ltd.	32	24
Thaioil Ethanol Co., Ltd.	98	124
Thaioil Energy Service Co., Ltd.	-	-
TOP SPP Co., Ltd.	943	1
Total	35,128	48,407
Capital expenditure from continuing operations	35,110	48,377
Capital expenditure from discontinued operations	18	30
Total	35,128	48,407

In 2021, Thaioil and Subsidiaries reported a total capital expenditure of THB 35,128 million, THB 33,673 million was under Thaioil and the remaining THB 1,455 million was under the subsidiaries. This capital expenditure was allocated to the following key projects:

- >> THB 32,139 million for CFP.
- >> THB 56 million for Thaioil Sriracha Buildings Project.
- >> THB 409 million for Jetty Expansion Project.
- >> THB 638 million for Digital Transformation Project.
- >> THB 672 million for New Bang Phra Reservoir Raw Water Line Project.
- >> THB 235 million for Fire-Extinguishing Water Improvement Project.
- >> THB 333 million for Crude Oil Tank Construction Project.

In 2020, Thaioil and Subsidiaries sanctioned THB 48,407 million as capital expenditure, THB 47,578 million managed under Thaioil and the remaining THB 655 million under the subsidiaries for the following key projects:

- >> THB 41,238 million for CFP.
- >> THB 525 million for Thaioil Sriracha Buildings Project.
- >> THB 449 million for Jetty Expansion Project.
- >> THB 215 million for Digital Transformation Project.
- >> THB 135 million for New Bang Phra Reservoir Raw Water Line Project.
- >> THB 84 million for Fire-Extinguishing Water Improvement Project.
- >> THB 39 million for Crude Oil Tank Construction Project.

Investors can access historical details under the “Management Discussion and Analysis” at the corporate website www.thaioilgroup.com under topic ‘Investor Relations/Financial Information’.

Summary of Financial Data

Summary of consolidated financial statements of Thai Oil Plc and Subsidiaries for the period 2019 - 2021

Statement of Financial Position

Unit: THB Million

Statement of Financial Position	As at 31 December		
	2021	2020	2019 ⁽¹⁾
Assets			
Current assets			
Cash and cash equivalents	29,696	53,244	74,854
Deposits at financial institutions as collaterals	328	327	325
Short-term investments	-	18,110	1,757
Trade accounts receivable, net	23,415	12,702	22,466
Current portion of finance lease receivables, net	-	8	-
Other receivables	1,009	1,082	1,288
Inventories, net	39,576	22,461	30,292
Derivative assets	414	251	-
Prepaid corporate income tax	428	248	1,269
Value added tax receivables	2,500	1,043	752
Assets related to discontinued operations	305	-	-
Assets held-for-sale	-	2,763	-
Other current assets	3,568	1,990	1,673
Total current assets	101,239	114,229	134,676
Non-current assets			
Financial assets measured at fair value through profit or loss	619	461	-
Financial assets measured at fair value through other comprehensive income	1,256	77	-
Available-for-sale investments	-	-	383
Investments in joint ventures	55,412	24,521	32,442
Investments in associates	-	-	617
Other long-term investments	-	-	820
Investments properties, net	103	103	103
Property, plant and equipment, net	178,399	145,225	106,559
Rights-of-use assets, net	17,131	14,729	-
Derivative assets	1,255	-	-

Unit: THB Million

Statement of Financial Position	As at 31 December		
	2021	2020	2019 ⁽¹⁾
Intangible assets, net	3,307	3,243	3,152
Deferred tax assets	2,585	2,678	671
Other non-current assets	838	922	4,022
Total non-current assets	260,905	191,959	148,769
Total assets	362,144	306,188	283,445
Liability and equity			
Current liabilities			
Short-term loans from financial institutions	929	713	1,576
Trade account payable	23,001	9,517	25,015
Other payables	6,561	5,749	9,106
Current portion of long-term loans from financial institutions, net	1,213	953	1,336
Current portion of long-term loans from related parties, net	-	3,999	-
Derivatives liabilities	2	109	-
Current portion of debentures, net	3,000	3,000	-
Current portion of lease liabilities, net	1,247	839	-
Excise duty payables	1,798	1,727	1,418
Income tax payables	725	439	216
Liabilities related to discontinued operations	-	-	-
Liabilities related to assets held-for-sale	-	1,575	-
Total current liabilities	38,476	28,620	38,667
Non-current liabilities			
Long-term loans from financial institutions, net	30,476	12,121	13,884
Long-term loans from a third party	279	279	219
Long-term loans from related parties, net	14,000	-	3,999
Debentures, net	132,868	123,837	97,184
Derivatives liabilities	373	1,832	-
Lease liabilities, net	14,135	11,272	-
Deferred tax liabilities	170	135	125
Other non-current liabilities	8,273	7,973	5,443
Total non-current liabilities	200,574	157,449	120,854
Total liabilities	239,050	186,069	159,521

Unit: THB Million

Statement of Financial Position	As at 31 December		
	2021	2020	2019 ⁽¹⁾
Equity			
Share capital			
Authorised share capital ⁽²⁾	20,400	20,400	20,400
Issued and paid-up share capital	20,400	20,400	20,400
Share premium on ordinary shares	2,456	2,456	2,456
Appropriated retained earnings			
Legal reserve	2,040	2,040	2,040
Other reserves	245	245	245
Unappropriated retained earnings	103,544	93,645	97,997
Other deficits	(6,665)	(2,117)	(3,361)
Other surplus held-for-sale	-	100	-
Other components of equity	(1,152)	(534)	196
Other components of equity related to discontinued operations	13	-	-
Other components of equity held-for-sale	-	(6)	-
Equity attributable to the owners of the parent	120,881	116,229	119,973
Non-controlling interests	2,213	3,889	3,951
Total equity	123,094	120,118	123,924
Total liabilities and equity	362,144	306,188	283,445

Notes:⁽¹⁾ Figures adjusted under new accounting classification⁽²⁾ Authorised share capital, issued and paid-up share capital 2,040,027,873 ordinary shares, at par value of THB 10 each, for a total of THB 20,400 million as at the year-end of 2019-2021

Statement of Income

Unit: THB Million

Statement of Income	For the year ended December 31		
	2021	2020 ⁽²⁾	2019 ⁽¹⁾
Revenues			
Revenue from sales and services	335,827	242,840	361,768
Subsidy from oil fuel fund	9,669	5,073	2,147
Net derivative from hedging	-	-	359
Net foreign exchange gain	-	1,784	1,778
Gain on disposal of investment in associate	-	5,801	-
Dividend income	7	14	167
Other income	1,129	1,100	1,560
Total revenue	346,632	256,612	367,779
Expenses			
Cost of sales of goods and services	(319,555)	(255,300)	(355,113)
Selling expenses	(770)	(538)	(405)
Administrative expenses	(2,286)	(2,111)	(2,141)
Loss from financial instruments	(2,406)	(179)	-
Net foreign exchange loss	(4,595)	-	-
Total expenses	(329,612)	(258,128)	(357,659)
Share of profits of joint ventures and associates, net	1,675	2,492	1,276
Profit before finance costs and income tax expense	18,695	976	11,396
Finance costs	(3,595)	(4,292)	(3,224)
Profit (loss) before income tax expense	15,100	(3,316)	8,172
Income tax benefits (expenses)	(2,034)	647	(1,240)
Profit (loss) for the period from continuing operations, net of tax	13,066	(2,669)	6,932
Loss for the period from discontinued operations, net of tax	(63)	(213)	(416)
Net profit (loss) for the year	13,003	(2,882)	6,516

Unit: THB Million

Statement of Income	For the year ended December 31		
	2021	2020 ⁽²⁾	2019 ⁽¹⁾
Other comprehensive income			
Changes in fair value of financial assets at fair value through other comprehensive income, net of tax	(61)	-	-
Loss from remeasurements of post-employment benefit obligation, net of tax	-	(40)	(289)
Changes in fair value of available-for-sale investments, net of tax	-	-	8
Cash flow hedges, net of tax	(1,267)	(654)	-
Cost of hedging, net of tax	(494)	355	-
Exchange differences on translating of financial statements	717	150	352
Share of other comprehensive income (expense) of an associate accounted for using the equity method, net of tax	474	(49)	(38)
Other comprehensive income (expense) for the year from discontinued operations, net of tax	24	12	(4)
Other comprehensive income (expense), net after tax	(607)	(226)	29
Total comprehensive income (expense) for the year	12,396	(3,108)	6,545
Profit (loss) attributable to:			
Owners of the parent	12,578	(3,301)	6,277
- continuing operations	12,641	(3,088)	6,693
- discontinued operations	(63)	(213)	(416)
Non-controlling interests	425	419	239
Net profit (loss) for the year	13,003	(2,882)	6,516
Total comprehensive income (expense) attribute to:			
Owner of the parent	11,973	(3,519)	6,312
- continuing operations	12,013	(3,318)	6,733
- discontinued operations	(40)	(202)	(421)
Non-controlling interests	423	412	233
Total comprehensive income (expense) for the year	12,396	(3,108)	6,545
Basic earnings (loss) per share (Baht)	6.17	(1.62)	3.08

Statement of Cash Flows

Unit: THB Million

Statement of Cash Flows	For the year ended December 31		
	2021	2020 ⁽²⁾	2019 ⁽¹⁾
Cash flow from operating activities			
Net profit (loss) for the year from continuing operations	13,066	(2,669)	6,932
Adjustments to reconcile profit (loss) to cash:			
Allowance for (reversal of) decline in value of inventories adjusted to net realisable value	237	215	(1,255)
Depreciation and amortisation	7,424	7,554	6,923
(Reversal of) expected credit loss	(2)	2	-
Finance costs	3,595	4,292	3,224
Net unrealised (gain) loss on foreign exchange	5,056	(2,234)	(1,808)
Share of profit of joint ventures and associates, net	(1,675)	(2,492)	(1,276)
Gain from investment reclassification	(504)	(154)	-
Dividends income	(7)	(14)	(167)
(Loss) Gain on lease termination	6	(1)	-
Gain on debt modification	-	(2)	-
Loss from the changes in the ownership interests in an associates	-	-	3
Gain on disposal of investment in associate	(102)	(5,801)	(4)
Loss on hedging of forecasted revenue transaction	44	-	-
(Gain) loss from changes in fair value of financial assets	(49)	9	-
(Gain) loss from changes in fair value of derivatives	(6)	(4)	-
(Gain) loss on disposal of property, plant and equipment	-	-	(1)
Loss on write-off of property, plant and equipment	6	183	66
Reversal of impairment loss on property, plant and equipment, and investment property	-	-	(11)
(Gain) loss on disposal of assets and liabilities held-for-sale	(41)	-	-
Amortisation of advance receipts for land lease and others	(13)	(12)	(23)
Income tax expense (benefit)	2,034	(647)	1,240
	29,069	(1,775)	13,843

Unit: THB Million

Statement of Cash Flows	For the year ended December 31		
	2021	2020 ⁽²⁾	2019 ⁽¹⁾
Changes in operating assets and liabilities			
Trade account receivable	(10,694)	9,705	1,940
Other receivables	84	437	(274)
Receivables from oil fuel fund	(1,578)	(317)	(284)
Value added tax receivables	(1,457)	(291)	(129)
Inventories	(17,340)	7,589	(301)
Other non-current assets	37	(45)	(53)
Trade account payable	13,456	(15,445)	3,089
Other payables	440	897	(519)
Excise duty payables	71	309	(3,397)
Other non-current liabilities	108	1,684	1,139
Income tax received (paid)	(1,331)	26	(1,798)
Cash used in operating activities of discontinued operations	(361)	(339)	(169)
Net cash generated from operating activities	10,504	2,435	13,087
Cash flow from investing activities			
Dividend received	1,110	1,281	763
Payments for deposits at a financial institution used as collateral	(1)	(2)	(25)
Proceeds from (repayment of) short-term investments, net	19,162	(17,221)	72,285
Proceeds from short-term loans to a third party	-	-	45
Payments for financial assets measured at fair value through other comprehensive income	(80)	(78)	-
Payments for financial assets measured at fair value through profit and loss	(91)	(53)	-
Payments for other long-term investments	-	-	(41)
Proceeds from long-term loans to savings co-operative of employees	46	43	46
Payment for long-term loans to savings co-operative of employees	(9)	(7)	(34)
Payments for property, plant and equipment	(35,146)	(48,377)	(27,497)
Proceeds from disposal of property, plant and equipment	-	-	1
Payments for rights-of-use assets	(42)	(40)	-
Payments for intangible assets	(248)	(273)	(218)
Payments for acquisition of investment in subsidiaries	(6)	-	(39)
Proceeds from disposal of investment in an associate	235	16,757	-

Unit: THB Million

Statement of Cash Flows	For the year ended December 31		
	2021	2020 ⁽²⁾	2019 ⁽¹⁾
Payments for acquisition of investment in an associate	(29,807)	-	(21,972)
Payments for acquisition of investment in joint venture	(2)	-	-
Proceeds for disposal of investment in joint venture	-	272	-
Proceeds from business restructuring	1,560	-	-
Cash generated from (used in) investing activities of discontinued operations	(18)	208	29
Net cash generated from (used in) investing activities	(43,337)	(47,490)	23,343
Cash flows from financing activities			
Finance costs paid	(6,929)	(6,262)	(3,174)
Dividends paid to the shareholders	(8,624)	(1,399)	(4,626)
Redemption of capital paid to non-controlling interests	(806)	-	-
Proceeds from short-term loans from financial institutions	6,034	6,209	6,723
Repayment of short-term loans from financial institutions	(5,821)	(6,731)	(7,783)
Proceeds from long-term loans from related parties	14,000	-	3,999
Repayment of long-term loans from related parties	(3,999)	-	-
Proceeds from long-term loans from financial institutions	19,754	66	109
Repayment of long-term loans from financial institutions	(1,014)	(763)	(1,115)
Proceeds from long-term loans from third parties	-	60	3
Proceeds from debenture	-	31,119	17,037
Payment for debentures and loans financing fee	(204)	(123)	(55)
Redemption of debenture	(3,000)	-	(3,000)
Repayment of principal of lease	(1,050)	(1,159)	-
Cash generate from (used in) financing activities of discontinued operations	(95)	(442)	12
Net cash generated from financing activities	8,246	20,575	8,130
Net increase (decrease) in cash and cash equivalents	(24,587)	(24,480)	44,560
Effect of exchange rate changes	1,039	2,870	(3,447)
Cash and cash equivalents at the beginning of the year	53,244	74,854	33,741
Cash and cash equivalents at the end of the year	29,696	53,244	74,854
Supplementary informations related to cash flow			
Payables on purchase of property, plant and equipment	2,211	2,024	6,225
Payables on purchase of intangible assets	167	324	344
Non-cash changes in the right-of-use assets	4,001	629	-
Contingent consideration from acquisition of investment in an associate	130	-	-

Key Financial Ratios

Financial Ratios	Unit	2021	2020 ⁽²⁾	2019 ⁽¹⁾
Liquidity ratios				
Liquidity ratio	times	2.6	4.0	3.5
Quick ratio	"	1.4	2.9	2.6
Cash flow current ratio	"	0.3	0.1	0.3
Receivable current ratio	"	18.6	13.8	15.5
Average debt collection period	day	19.4	26.1	23.3
Inventory turnover period	times	10.3	9.7	12.0
Average selling period	day	34.9	37.2	29.9
Payable current ratio	times	19.7	14.8	15.2
Loan repayment period	day	18.3	24.3	23.8
Cash Cycle	"	36.0	38.9	29.5
Profitability ratios				
Gross profit margin	percent	7.0	(2.1)	3.6
Operating profit margin	"	8.4	(0.8)	3.8
Other profit margin	"	3.1	5.4	1.6
Cash to profit margin	"	37.3	(118.4)	94.6
Net profit margin	"	3.8	(1.1)	1.8
Return on equity	"	10.6	(2.8)	5.2
Interest Bearing Debt to EBITDA Ratio	times	7.0	(76.4)	8.4
Debt coverage ratio	"	4.4	(0.2)	4.8
Efficiency ratios				
Return on assets	percent	3.9	(1.0)	2.4
Return on fixed assets	"	12.5	3.6	13.8
Asset turnover	times	1.0	0.9	1.3
Financial policy ratios				
Total debt to equity ratio	times	1.9	1.5	1.3
Net debt to equity ratio	"	1.4	0.7	0.3
Share price to book value	"	0.9	0.8	1.2
Interest coverage ratio	"	7.8	(0.5)	4.4
Dividend payout ratio ⁽³⁾	percent	42	N/A	49

Note:

⁽¹⁾ Adjustment by restating

⁽²⁾ Reclassification adjustment

⁽³⁾ Dividend payment for 2019, 2020 and 2021 was 1.50, 0.70 and 2.60 baht per share, respectively. Thailoil will present and seek approval for the 2021 dividend payment in the 2022 Annual General Meeting from the shareholders.

Credit Terms

Valuing credit administration by Thailoil and Subsidiaries, Thailoil appointed a Credit Committee to map out a policy and guidelines for governing, monitoring, administering, and analyzing credit for business partners and suppliers which would be the most suitable and based on the same standard for each business in Thailoil and Subsidiaries. For maximum efficiency, the committee meets at least quarterly to define business partners' and suppliers' qualifications and criteria for credit analysis. Their risks, both qualitative and financial, are scrutinized. In addition, the committee defines the approach for controlling individual partners' credit lines and follows up on their payment to ensure that they can indeed pay punctually the agreed amounts so as to manage cash flow and liquidity.

Analysis of the ratio of average debt collection periods and payment periods in the table above follows the Company's policy

Key Operating Information

	For the year ended December 31		
	2021	2020	2019
1. Refining Capacity (thousand barrels per day)	275	275	275
2. Intake Feedstock (thousand barrels per day) ⁽¹⁾	275	277	295
3. Refining Utilization (percent) ^{(2) (3)}	100	101	107
4. Gross Refining Margin-Refinery (USD per barrel) ⁽⁴⁾	2.2	0.4	3.1
5. Integrated Intake Feedstock (thousand barrels per day) ⁽⁵⁾	278	281	300
6. Gross Integrated Margin (USD per barrel) ⁽⁶⁾	5.5	2.4	4.7
6.1 Gross Refining Margin-Refinery (USD per barrel)	2.2	0.4	3.0
6.2 Gross Margin-Aromatics and Intermediate in the production of surfactants (USD per barrel)	1.7	1.5	1.1
6.3 Gross Margin-Lube base oil (USD per barrel)	1.6	0.5	0.6
7. Operating Cost-Refinery (USD per barrel) ⁽⁷⁾	1.7	1.5	1.9

Notes:

- ⁽¹⁾ Calculated from Intake of refinery feedstock for each period divided by the number of days of such period. After the disposal of mixed xylenes units to Thai Paraxylene Co., Ltd. on April 1, 2005, the average intake feedstock of each period excludes by-products from Thai Lube Base Plc, Thai Paraxylene Co., Ltd. and LABIX Co., Ltd., which become Thairoil Refinery's feedstock for refining and blending for refined products.
- ⁽²⁾ Calculated from 275,000 barrels per day refining capacity for the selected period.
- ⁽³⁾ Calculated from intake feedstock divided by refining capacity.
- ⁽⁴⁾ Gross Refining Margin excluding impact of oil stock, using average sales price converted into US dollars by the exchange rate announced by the Bank of Thailand for such specific period and calculated in unit value by using intake feedstock.
- ⁽⁵⁾ Calculated by integrated intake feedstock of the refinery, aromatics, an intermediate in the production of surfactants, and lube base oil in each period, divided by the number of days of such period.
- ⁽⁶⁾ Gross Integrated Margin is calculated from gross margin from Thairoil Refinery, Thai Lube Base Plc, Thai Paraxylene Co., Ltd., and LABIX Co., Ltd., excluding the impact of oil stock, divided by the average exchange rate of each period, and further divided by intake feedstock.
- ⁽⁷⁾ Including expenses on employees, maintenance, catalysts, insurance, land lease, and others.

Board of Directors' Responsibility for Financial Reporting

The accompanying financial statements of Thai Oil Public Company Limited and the consolidated financial statements of Thai Oil Public Company Limited and its subsidiaries have been prepared in conformity to the requirements of the Public Company Act B.E. 2535 (1992), the Securities and Exchange Act B.E. 2559 (2016), the Announcement of the Department of Business Development (No. 3) dated December 26, 2019 issued in accordance with Section 11, Paragraph 3 of the Accounting Act B.E. 2543 (2000), and the Financial Reporting Standards prescribed by the Federation of Accounting Professions under the Royal Patronage of His Majesty the King.

The Board of Directors is responsible for the financial statements which have been prepared to ensure that

the financial position, results of operations and cash flows are presented accurately; an effective internal control system has been established; and accounting records have been precisely, thoroughly and adequately maintained to safeguard assets and prevent fraud and other irregularities with material implications. Suitable accounting policies have been selected in preparation of the financial statements and consistently applied in accordance with Financial Reporting Standards, and key information has been adequately disclosed in the notes to the financial statements. The independent auditor has expressed opinion on the financial statements of Thai Oil Public Company Limited and the consolidated financial statements of Thai Oil Public Company Limited and its subsidiaries in the Auditor's Report.



(Professor Dr. Supot Teachavorasinskun)
Chairman of the Board



(Mr. Wirat Uanarumit)
Chief Executive Officer and President

Independent Auditor's Report

To the shareholders and the Board of Directors of Thai Oil Public Company Limited

My opinion

In my opinion, the consolidated financial statements and the separate financial statements present fairly, in all material respects, the consolidated financial position of Thai Oil Public Company Limited (the Company) and its subsidiaries (the Group) and the separate financial position of the Company as at 31 December 2021, and its consolidated and separate financial performance and its consolidated and separate cash flows for the year then ended in accordance with Thai Financial Reporting Standards (TFRS).

What I have audited

The consolidated financial statements and the separate financial statements comprise:

- the consolidated and separate statements of financial position as at 31 December 2021;
- the consolidated and separate statements of comprehensive income for the year then ended;
- the consolidated and separate statements of changes in equity for the year then ended;
- the consolidated and separate statements of cash flows for the year then ended; and
- the notes to the consolidated and separate financial statements, which include significant accounting policies and other explanatory information.

Basis for opinion

I conducted my audit in accordance with Thai Standards on Auditing (TSAs). My responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the consolidated and separate financial statements section of my report. I am independent of the Group and the Company in accordance with the Code of Ethics for Professional Accountants issued by the Federation of Accounting Professions that are relevant to my audit of the consolidated and separate financial statements, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Key audit matters

Key audit matters are those matters that, in my professional judgement, were of most significance in my audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of my audit of the consolidated and separate financial statements as a whole, and in forming my opinion thereon, and I do not provide a separate opinion on these matters.

Key audit matter

How my audit addressed the key audit matter

The acquisition of investment in an associate

In reference to note 42, acquisition of investment in an associate and business combination, in September 2021, the Group acquired shares of PT Chandra Asri Petrochemical Tbk (CAP), a registered company in the Republic of Indonesia operating petrochemicals. The Group has 15% shareholding interest of the total registered shares. The investment was classified as an investment in an associate, based on the definition in TAS 28 - Investment in associates and joint ventures. Under the share purchase agreements, the Group will acquire an additional 0.38% shareholding interest in CAP with contingent considerations not exceeding either Baht 129 million or Baht 8,928 million depending on whether the conditions on the approval for the final investment decision of a petrochemical plant construction project by a subsidiary of CAP within five years from the date of acquisition of an investment are met. As at 31 December 2021, the contingent consideration was presented as other non-current liabilities in the consolidated statement of financial position.

The Group paid for the share purchase consideration and estimated a contingent consideration totalling of Baht 29,911 million. Management engaged an external valuer to appraise the fair value of net identifiable assets acquired and the purchase price over assets acquired as disclosed in Note 42. The following amount was presented as part of an investment in an associate. As at the acquisition date, the total purchase considerations represented 8% of the total consolidated assets.

I carried out the following audit procedures to assess the management's classification and measurement of the fair value of the net identifiable assets arising from an acquisition of investment in an associate.

- Read the purchase and sale agreements to understand the key terms and conditions, and confirmed my understanding of the transaction with management.
- Assessed the accounting of management's consideration to determine this acquisition as an investment in an associate.
- Assessed the appropriateness of the identifiable assets acquired and liabilities assumed as at the acquisition date, and evaluated management's procedures in determining the fair values of the net identifiable assets acquired.
- Discussed and understood the detail of the share purchase agreements with management, including the conditions for acquiring the additional shares, to understand management's assumptions in measuring the contingent consideration, and assessed management's judgements of the probability of the approval for the final investment decision on the acquisition date.
- Evaluated the competency, qualifications and experience of management's experts.
- Tested the mathematical calculation of fair value of the net identifiable assets and the purchase price over net assets acquired; and challenged management on significant assumptions applied in the estimation of projected cash flows by comparing those assumptions to the underlying agreements and external sources. The assumptions included the forecasted sales price of the petrochemical products, the refinery capacity, the estimated continuity of the trade period with customers and operating expenditures.

Key audit matter	How my audit addressed the key audit matter
<p>I focused on:</p> <ul style="list-style-type: none"> • the investment classification, • the estimate of fair values of the net identifiable assets acquired and the estimate of the contingent consideration because it is significant to the consolidated financial statements, • it involved management's judgements in determining the investment classification, and • the identification of the contingent consideration involved assumptions and probable future events when assessing the fair value. 	<ul style="list-style-type: none"> • Assessed whether the discount rate applied by management was within the acceptable range and was comparable with the data independently obtained from public information of companies within the same industry. <p>Based on audit procedures performed, I determined that the acquisition of investment is an investment in an associate in accordance with the definition set out in TAS 28. The assumptions used in identifying the fair values of the net identifiable asset were reasonable.</p>

Other information

The directors are responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and my auditor's report thereon.

My opinion on the consolidated and separate financial statements does not cover the other information and I do not express any form of assurance conclusion thereon.

In connection with my audit of the consolidated and separate financial statements, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or my knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact. I have nothing to report in this regard.

Responsibilities of the directors for the consolidated and separate financial statements

The directors are responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with TFRS, and for such internal control as the directors determine is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, the directors are responsible for assessing the Group's and the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Group and the Company or to cease operations, or has no realistic alternative but to do so.

The audit committee assists the directors in discharging their responsibilities for overseeing the Group's and the Company's financial reporting process.

Auditor's responsibilities for the audit of the consolidated and separate financial statements

My objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with TSAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with TSAs, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- Identify and assess the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group's and the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the directors.
- Conclude on the appropriateness of the directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's and the Company's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Group and the Company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the consolidated and separate financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. I am responsible for the direction, supervision and performance of the group audit. I remain solely responsible for my audit opinion.

I communicate with the audit committee regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

I also provide the audit committee with a statement that I have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on my independence, and where applicable, related safeguards.

From the matters communicated with the audit committee, I determine those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matter. I describe the matter in my auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, I determine that a matter should not be communicated in my report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

PricewaterhouseCoopers ABAS Ltd.



Boonrueng Lerdwiseswit

Certified Public Accountant (Thailand) No. 6552

Bangkok

15 February 2022

Statement of financial position

Thai Oil Public Company Limited

As at 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	31 December 2021	31 December 2020	31 December 2021	Restated 31 December 2020
Assets					
Current assets					
Cash and cash equivalents	10	29,695,935,321	53,243,895,741	24,599,931,465	47,642,862,760
Deposits at financial institutions					
used as collaterals	11	327,968,281	326,938,826	-	-
Short-term investments		51,556	18,110,217,480	-	18,110,166,076
Trade accounts receivable, net	12	23,414,850,685	12,702,208,871	25,047,923,258	13,198,971,517
Other receivables	13	1,009,491,750	1,081,741,409	928,013,922	1,025,119,789
Current portion of finance lease receivables, net		-	8,284,039	222,637,177	10,644,507
Current portion of long-term loans to related parties	39	-	-	-	12,081,334,798
Receivables from oil fuel fund		3,567,664,636	1,989,938,617	3,567,664,636	1,989,938,617
Short-term loans to related parties	39	-	-	781,803,050	275,586,651
Inventories, net	14	39,576,036,655	22,461,135,960	33,622,752,432	19,200,868,464
Derivative assets	7	413,598,280	250,554,259	413,399,940	250,554,259
Prepaid corporate income tax		428,666,380	248,459,621	233,406,328	99,381,102
Value added tax receivables		2,500,040,431	1,042,696,176	1,833,775,015	738,934,005
Assets held-for-sale and discontinued operations	15	304,589,030	2,763,089,715	277,182,000	807,801,520
Total current assets		101,238,893,005	114,229,160,714	91,528,489,223	115,432,164,065

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of financial position

Thai Oil Public Company Limited

As at 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	31 December 2021	31 December 2020	31 December 2021	Restated 31 December 2020
Assets (Continued)					
Non-current assets					
Financial assets measured at					
fair value through profit or loss	7	619,200,840	461,321,776	372,501,493	347,329,900
Financial assets measured at					
fair value through other					
comprehensive income	7	1,255,971,793	76,592,780	1,500,000	1,500,000
Investments in subsidiaries	16	-	-	41,013,554,907	14,044,809,019
Investments in joint ventures					
and associates	17	55,411,915,142	24,520,580,319	23,271,764,392	23,178,647,261
Finance lease receivables, net		-	-	828,238,887	1,019,875,281
Investment properties, net	18	102,520,270	102,520,270	1,123,781,182	1,141,368,248
Property, plant and equipment, net	19	178,399,498,296	145,225,038,756	146,632,727,741	112,664,861,071
Right-of-use assets, net	20	17,131,350,066	14,729,188,952	16,065,742,985	13,610,067,633
Goodwill	21	849,795,946	764,161,599	-	-
Derivative assets	7	1,254,892,201	-	1,254,892,201	-
Intangible assets, net	22	2,456,877,420	2,478,791,194	892,874,401	829,000,319
Deferred tax assets	23	2,584,675,894	2,677,601,668	2,409,557,219	2,377,714,930
Other non-current assets		838,528,579	922,701,841	761,910,329	793,645,778
Total non-current assets		260,905,226,447	191,958,499,155	234,629,045,737	170,008,819,440
Total assets		362,144,119,452	306,187,659,869	326,157,534,960	285,440,983,505

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of financial position

Thai Oil Public Company Limited

As at 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	31 December 2021	31 December 2020	31 December 2021	Restated 31 December 2020
Liabilities and equity					
Current liabilities					
Short-term loans from					
financial institutions	24	928,947,304	713,474,109	-	-
Short-term loans from related parties	39	-	-	2,135,480,112	57,323,391
Trade accounts payable	25	23,000,501,061	9,516,855,447	25,344,499,645	10,781,489,537
Other payables	26	6,560,729,686	5,748,645,394	5,785,111,154	5,329,311,443
Current portion of long-term loans					
from financial institutions, net	27	1,212,855,150	952,972,268	-	-
Current portion of long-term loans					
from related parties, net	39	-	3,998,847,362	-	15,380,182,160
Derivatives liabilities	7	2,064,077	109,100,485	67,571,714	129,726,164
Current portion of debentures, net	28	3,000,000,000	3,000,000,000	3,000,000,000	3,000,000,000
Current portion of lease liabilities, net	29	1,247,313,785	839,326,101	1,187,076,878	792,530,123
Excise duty payables		1,797,643,153	1,726,582,934	1,796,626,561	1,725,755,597
Income tax payables		725,784,520	438,810,195	-	8,267,181
Liabilities related to assets					
held-for-sale and discontinued operations	15	289,424	1,575,603,381	-	-
Total current liabilities		38,476,128,160	28,620,217,676	39,316,366,064	37,204,585,596

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of financial position

Thai Oil Public Company Limited

As at 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	31 December 2021	31 December 2020	31 December 2021	Restated 31 December 2020
Liabilities and equity (Continued)					
Non-current liabilities					
Long-term loans from					
financial institutions, net	27	30,475,749,816	12,120,966,580	19,536,214,656	-
Long-term loans from a third party	27	279,437,500	279,437,500	-	-
Long-term loans from					
related parties, net	39	14,000,000,000	-	119,857,716,617	95,134,535,133
Debentures, net	28	132,867,676,896	123,836,786,719	27,429,992,835	29,104,199,013
Derivatives liabilities	7	373,219,542	1,831,711,497	56,622,726	1,297,404,288
Lease liabilities, net	29	14,135,399,334	11,271,706,839	14,036,471,958	11,143,999,005
Deferred tax liabilities	23	170,100,535	134,763,328	-	-
Employee benefit obligations	30	4,798,968,156	4,700,968,166	3,873,671,834	3,897,859,382
Other non-current liabilities		3,473,359,364	3,272,669,869	3,823,185,053	3,687,141,929
Total non-current liabilities		200,573,911,143	157,449,010,498	188,613,875,679	144,265,138,750
Total liabilities		239,050,039,303	186,069,228,174	227,930,241,743	181,469,724,346

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of financial position

Thai Oil Public Company Limited

As at 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	31 December 2021	31 December 2020	31 December 2021	Restated 31 December 2020
Liabilities and equity (Continued)					
Equity					
Share capital					
Authorised share capital					
- 2,040,027,873 ordinary shares					
at par value of Baht 10 each					
		20,400,278,730	20,400,278,730	20,400,278,730	20,400,278,730
Issued and paid-up share capital					
- 2,040,027,873 ordinary shares					
at paid-up of Baht 10 each					
		20,400,278,730	20,400,278,730	20,400,278,730	20,400,278,730
Share premium on ordinary shares					
		2,456,261,491	2,456,261,491	2,456,261,491	2,456,261,491
Other deficits	40	(6,665,433,461)	(2,117,542,948)	(17,970,817,850)	-
Other surplus held-for-sale	15	-	100,556,041	-	-
Retained earnings					
Appropriated					
- Legal reserve					
		2,040,027,873	2,040,027,873	2,040,027,873	2,040,027,873
- Other reserves					
		244,500,000	244,500,000	244,500,000	244,500,000
Unappropriated					
		103,544,202,130	93,645,317,073	93,194,531,581	71,193,998,608
Other components of equity					
		(1,151,622,764)	(534,595,620)	(2,137,488,608)	(202,083,422)
Other components of equity					
held-for-sale and					
discontinued operations					
	15	12,530,179	(5,838,725)	-	-
Equity attributable to the owners					
of the parent					
		120,880,744,178	116,228,963,915	98,227,293,217	96,132,983,280
Business restructuring under					
common control interests					
	41	-	-	-	7,838,275,879
Non-controlling interests					
	31	2,213,335,971	3,889,467,780	-	-
Total equity					
		123,094,080,149	120,118,431,695	98,227,293,217	103,971,259,159
Total liabilities and equity					
		362,144,119,452	306,187,659,869	326,157,534,960	285,440,983,505

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of income

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

	Notes	Consolidated financial statement		Separate financial statement	
		2021	2020 (Re-presented)	2021	2020 (Restated)
Revenue from sales and services	9	335,827,481,182	242,839,964,812	348,720,943,680	249,242,735,476
Subsidy from oil fuel fund		9,668,979,625	5,073,199,938	9,668,979,625	5,073,199,938
Total revenue		345,496,460,807	247,913,164,750	358,389,923,305	254,315,935,414
Cost of sales of goods and services		(319,555,257,876)	(255,300,038,168)	(344,128,578,079)	(268,300,377,489)
Gross profit (loss)		25,941,202,931	(7,386,873,418)	14,261,345,226	(13,984,442,075)
Dividend income		7,213,318	14,426,635	22,190,408,620	3,716,946,935
Loss from financial instruments		(2,405,585,837)	(179,069,833)	(2,730,635,807)	(398,276,840)
Net foreign exchange (loss) gain		(4,595,089,896)	1,784,371,673	(4,872,883,594)	1,692,401,376
Gain on disposal of investment in associate		-	5,801,433,508	-	8,964,512,221
Other income	32	1,128,523,168	1,100,238,496	2,197,621,047	2,890,281,975
Selling expenses		(769,732,834)	(538,453,745)	(52,930,608)	(39,983,021)
Administrative expenses		(2,286,579,017)	(2,111,100,505)	(2,655,039,510)	(2,405,358,751)
Share of profit of joint ventures and associates, net	17	1,674,639,524	2,491,670,211	-	1,560,188,671
Profit before finance costs and income tax expense		18,694,591,357	976,643,022	28,337,885,374	1,996,270,491
Finance costs		(3,594,681,061)	(4,292,004,926)	(3,213,152,344)	(4,223,294,672)
Profit (loss) before income tax expense		15,099,910,296	(3,315,361,904)	25,124,733,030	(2,227,024,181)
Income tax benefit (expense)	34	(2,033,501,898)	646,760,727	(472,298,698)	1,376,058,131

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of income

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

	Notes	Consolidated financial statement		Separate financial statement	
		2021	2020 (Re-presented)	2021	2020 (Restated)
Profit (loss) for the period from					
continuing operations, net of tax		13,066,408,398	(2,668,601,177)	24,652,434,332	(850,966,050)
Loss for the period from					
discontinued operations,					
net of tax	15	(63,326,717)	(213,575,352)	-	-
Net profit (loss) for the year		13,003,081,681	(2,882,176,529)	24,652,434,332	(850,966,050)
Profit (loss) attributable to:					
Owners of the parent		12,578,025,758	(3,301,407,395)	24,652,434,332	(1,488,014,107)
- continuing operations		12,641,352,475	(3,087,832,043)	24,652,434,332	(1,488,014,107)
- discontinued operations		(63,326,717)	(213,575,352)	-	-
Business restructuring under					
common control interests	41	-	-	-	637,048,057
Non-controlling interests	31	425,055,923	419,230,866	-	-
Net profit (loss) for the year		13,003,081,681	(2,882,176,529)	24,652,434,332	(850,966,050)
Basic earnings (loss) per share					
from continuing operations	36	6.20	(1.51)	12.08	(0.73)
Basic earnings (loss) per share	36	6.17	(1.62)	12.08	(0.73)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of comprehensive income

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

	Notes	Consolidated financial statement		Separate financial statement	
		2021	2020 (Re-presented)	2021	2020 (Restated)
Net profit (loss) for the year		13,003,081,681	(2,882,176,529)	24,652,434,332	(850,966,050)
Other comprehensive income (expense)					
Items that will be reclassified subsequently to profit or loss					
Cash flow hedges, net of tax	7	(1,266,739,476)	(654,238,634)	(1,440,907,790)	(557,330,168)
Cost of hedging, net of tax	7	(494,497,396)	355,246,746	(494,497,396)	355,246,746
Exchange differences on translation of financial statements		717,216,507	150,206,336	-	-
Share of other comprehensive income (expense) of an associate accounted for using the equity method, net of tax	17	40,258,528	(5,742,643)	-	11,194,290
Total items that will be reclassified subsequently to profit or loss		(1,003,761,837)	(154,528,195)	(1,935,405,186)	(190,889,132)
Items that will not be reclassified subsequently to profit or loss					
Changes in fair value of financial assets at fair value through other comprehensive income, net of tax		(60,986,103)	-	-	-
Gain (loss) from remeasurements of post-employment benefit obligations, net of tax		-	(39,764,087)	-	29,078,698
Share of other comprehensive income (expense) of an associate accounted for using the equity method, net of tax	17	434,238,683	(43,274,598)	-	(31,305,270)
Total items that will not be reclassified subsequently to profit or loss		373,252,580	(83,038,685)	-	(2,226,572)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of comprehensive income

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

	Notes	Consolidated financial statement		Separate financial statement	
		2021	2020 (Re-presented)	2021	2020 (Restated)
Other comprehensive expense					
for the year from continuing					
operations, net of tax		(630,509,257)	(237,566,880)	(1,935,405,186)	(193,115,704)
Other comprehensive income					
for the year from discontinued					
operations, net of tax		23,746,716	12,204,820	-	-
Total comprehensive income					
(expense) for the year		12,396,319,140	(3,107,538,589)	22,717,029,146	(1,044,081,754)
Total comprehensive income					
(expense) attributable to:					
Owners of the parent		11,973,528,793	(3,519,383,408)	22,717,029,146	(1,661,018,831)
- continuing operations		12,013,108,794	(3,318,012,876)	22,717,029,146	(1,661,018,831)
- discontinued operations		(39,580,001)	(201,370,532)	-	-
Business restructuring under					
common control interests	41	-	-	-	616,937,077
Non-controlling interests	31	422,790,347	411,844,819	-	-
Total comprehensive income					
(expense) for the year		12,396,319,140	(3,107,538,589)	22,717,029,146	(1,044,081,754)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of changes in equity

Thai Oil Public Company Limited
For the year ended 31 December 2021

(Baht)

Consolidated financial statement

	Equity attributable to the owners of the parent																			
	Notes	Issued and paid-up share capital	Share premium	Other surpluses (deficits)					Other components of equity											
				Surplus (deficit) from business restructuring under common control	Deficit from the change in the ownership interests in subsidiaries	Deficit from the change in the net assets in an associate	Other surpluses held-for-sale	Appropriated - legal reserves	Appropriated - other reserve	Unappropriated	Changes in fair value of available-for-sale investments	Changes in unrealised gain (loss) on equity investments	Translation of financial statements	Cash flow hedges	Cost of hedging	Share of other comprehensive income (expense) of an associate	Other comprehensive expense held-for-sale	Total owners of the parent	Non-controlling interests	Total equity
Opening balance as at 1 January 2020																				
Impact from the first time adoption of new financial reporting standards																				
Opening balance as at 1 January 2020 - restated																				
	Dividend																			
	Disposal of investment in associate																			
	Discontinued operations																			
	Total comprehensive income (expense) for the year																			
	Net profit (loss) for the year																			
	Other comprehensive income (expense) for the year																			
Closing balance as at 31 December 2020																				
Opening balance as at 1 January 2021																				
37	Dividend																			
	Deficit from the change in the net assets in an associate																			
	Business restructuring under common control																			
40	Liquidation of a subsidiary																			
	Disposal of investment																			
	Changes of interest in an investment in a subsidiary																			
	Non-controlling interest arising from business combination																			
15	Discontinued operations																			
	Total comprehensive income (expense) for the year																			
	Net profit for the year																			
	Other comprehensive income (expense) for the year																			
Closing balance as at 31 December 2021																				

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of changes in equity

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Bant)

Separate financial statement

	Equity attributable to the owners												
	Notes	Issued and paid-up share capital	Share premium	Other surpluses (deficits)		Retained earnings		Other components of equity					
				Deficit from business restructuring under common control	Appropriated -legal reserve	Appropriated -other reserves	Unappropriated	Changes in fair value of available-for-sale investments	Cash flow hedges	Cost of hedging	Total owners	Business restructuring under common control interests	Total equity
Opening balance as at													
1 January 2020		20,400,278,730	2,456,261,491	-	2,040,027,873	244,500,000	73,513,426,297	66,036,253	-	-	98,720,530,644	-	98,720,530,644
Impact from the first time adoption of new financial reporting standards		-	-	-	-	-	159,508,103	(66,036,253)	-	-	93,471,850	(361,781,129)	(268,309,279)
Business restructuring under common control		-	-	-	-	-	-	-	-	-	-	7,897,277,931	7,897,277,931
Opening balance as at													
1 January 2020 - restated		20,400,278,730	2,456,261,491	-	2,040,027,873	244,500,000	73,672,934,400	-	-	-	98,814,002,494	7,535,496,802	106,349,499,296
Dividend		-	-	-	-	-	(1,020,000,383)	-	-	-	(1,020,000,383)	(314,156,000)	(1,334,156,383)
Total comprehensive income for the year		-	-	-	-	-	(1,488,014,107)	-	-	-	(1,488,014,107)	637,048,057	(850,966,050)
Net profit (loss) for the year		-	-	-	-	-	-	-	-	-	-	-	-
Other comprehensive income (expense) for the year		-	-	-	-	-	29,078,698	-	(557,330,168)	355,246,746	(173,004,724)	(20,110,980)	(193,115,704)
Closing balance as at													
31 December 2020		20,400,278,730	2,456,261,491	-	2,040,027,873	244,500,000	71,193,998,608	-	(557,330,168)	355,246,746	96,132,983,280	7,838,275,879	103,971,259,159
Opening balance as at													
1 January 2021		20,400,278,730	2,456,261,491	-	2,040,027,873	244,500,000	71,193,998,608	-	(557,330,168)	355,246,746	96,132,983,280	7,838,275,879	103,971,259,159
Dividend	37	-	-	-	-	-	(2,651,901,359)	-	-	-	(2,651,901,359)	-	(2,651,901,359)
Business restructuring under common control	40	-	-	(17,970,817,850)	-	-	-	-	-	-	(17,970,817,850)	(7,838,275,879)	(25,809,093,729)
Total comprehensive income for the year		-	-	-	-	-	24,652,434,332	-	-	-	24,652,434,332	-	24,652,434,332
Net profit for the year		-	-	-	-	-	-	-	-	-	-	-	-
Other comprehensive expense for the year		-	-	-	-	-	-	-	(1,440,907,790)	(494,497,396)	(1,935,405,186)	-	(1,935,405,186)
Closing balance as at													
31 December 2021		20,400,278,730	2,456,261,491	(17,970,817,850)	2,040,027,873	244,500,000	93,194,531,581	-	(1,998,237,958)	(139,250,650)	96,227,293,217	-	98,227,293,217

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of cash flows

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	2021	2020 (Re-presented)	2021	2020 (Restated)
Cash flows from operating activities					
Net profit (loss) for the year from continuing operations					
		13,066,408,398	(2,668,601,177)	24,652,434,332	(850,966,050)
Adjustments to reconcile profit (loss) to cash:					
Allowance for decline in value of inventories adjusted to net realisable value					
	14	237,277,804	215,410,093	90,276,186	309,839,354
Depreciation and amortisation	33	7,424,341,843	7,554,003,386	4,773,394,182	4,884,291,796
(Reversal of) expected credit loss	12	(2,277,291)	2,255,615	-	-
Finance costs		3,594,681,061	4,292,004,926	3,213,152,344	4,223,294,672
Net unrealised (gain) loss on foreign exchange					
		5,055,569,464	(2,233,574,484)	5,230,027,375	(2,279,368,561)
Share of profit of joint ventures and associates, net					
	17	(1,674,639,524)	(2,491,670,211)	-	(1,560,188,670)
Gain from investment reclassification	17	(503,791,641)	(153,773,021)	-	(153,773,021)
Dividends income		(7,213,318)	(14,426,635)	(23,091,657,555)	(3,716,946,935)
Loss (Gain) on lease termination		5,675,511	(1,088,207)	6,002,702	(1,088,207)
Gain on debt modification		-	(1,877,328)	-	-
Loss on disposal of investment in a subsidiary					
	16	-	-	901,248,935	-
Impairment loss on investment in a subsidiary					
	16	-	-	-	162,198,463
(Gain) loss from changes in fair value of financial assets					
		(48,618,078)	9,012,028	(25,171,593)	35,215,417
(Gain) loss from changes in fair value of derivatives					
		(6,455,955)	(4,173,183)	38,624,343	3,639,089
Gain on disposal of assets and liabilities held-for-sale					
	15	(40,877,815)	-	(52,685,540)	-
Gain on disposal of investment in an associate					
	17	(101,618,571)	(5,801,433,508)	-	(8,964,512,221)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of cash flows

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

Notes	Consolidated financial statement		Separate financial statement	
	2021	2020 (Re-presented)	2021	2020 (Restated)
Adjustments to reconcile profit (loss) to cash: (Continued)				
Loss on hedging of forecasted revenue transaction	43,890,341	-	43,890,341	-
(Gain) loss on disposal of property, plant and equipment	(28,593)	5,177	(9,345)	7,804
Loss on write-off of property, plant and equipment	6,431,045	182,373,854	-	1,866,055
Amortisation of advance receipts for land lease and others	(13,215,882)	(12,611,706)	(65,455,108)	(87,804,365)
Income tax expense (benefit)	2,033,501,898	(646,760,727)	472,298,698	(1,376,058,131)
	29,069,040,697	(1,774,925,108)	16,186,370,297	(9,370,353,511)
Changes in operating assets and liabilities				
Trade accounts receivable	(10,694,311,822)	9,705,195,521	(11,324,353,977)	10,695,916,268
Other receivables	84,568,509	437,099,733	65,344,961	28,446,279
Receivables from oil fuel fund	(1,577,726,018)	(317,435,379)	(1,577,726,018)	(317,435,379)
Inventories	(17,339,761,082)	7,588,665,994	(14,511,975,802)	7,206,415,982
Value added tax receivables	(1,457,344,255)	(291,127,560)	(1,114,883,547)	(480,524,686)
Other non-current assets	37,015,136	(44,477,832)	(17,476,966)	(117,729,491)
Trade accounts payable	13,455,848,210	(15,445,224,039)	14,356,303,397	(16,434,147,559)
Other payables	439,819,783	896,828,487	312,463,481	953,823,165
Excise duty payables	71,060,219	308,856,158	70,870,964	308,028,820
Other non-current liabilities	108,146,002	1,683,570,395	68,575,604	1,939,671,764
Cash generated from (used in) in operating activities	12,196,355,379	2,747,026,370	2,513,512,394	(5,587,888,348)
Income tax received (paid)	(1,331,181,574)	26,465,251	(151,716,735)	514,797,412
Cash used in operating activities of discontinued operations	15 (361,406,316)	(338,743,812)	-	-
Net cash generated from (used in) operating activities	10,503,767,489	2,434,747,809	2,361,795,659	(5,073,090,936)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of cash flows

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	2021	2020 (Re-presented)	2021	2020 (Restated)
Cash flows from investing activities					
Dividends received		1,109,675,114	1,280,574,513	23,091,657,555	4,478,839,972
Payments for deposits at a financial institution used as collateral		(1,029,455)	(1,448,718)	-	-
Proceeds from (repayment of) short-term investments, net		19,161,775,517	(17,221,437,470)	19,161,775,670	(17,221,437,089)
Payments for financial assets measured at fair value through other comprehensive income		(80,199,544)	(78,233,381)	-	(6,243,378)
Proceeds from disposal of financial assets measured at fair value through other comprehensive income		-	-	-	48,084,458
Payments for financial assets measured at fair value through profit or loss		(91,328,879)	(53,077,056)	-	-
Payments for short-term loans to related parties	39	-	-	(31,469,078,950)	(655,885,646)
Proceeds from short-term loans to related parties	39	-	-	30,975,502,900	3,592,474,296
Payments for long-term loans to related parties	39	-	-	-	(700,000,000)
Proceeds from long-term loans to related parties	39	-	-	11,381,334,798	400,000,000
Proceeds from long-term loans to savings co-operative of employees		46,375,224	42,888,126	46,212,885	39,024,641
Payments for long-term loans to savings co-operative of employees		(8,760,642)	(6,888,358)	(8,760,642)	(6,888,358)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of cash flows

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	2021	2020 (Re-presented)	2021	2020 (Restated)
Cash flows from investing activities (Continued)					
Proceeds from disposal of property, plant and equipment		28,596	17,178	9,346	14,000
Payments for property, plant and equipment		(35,146,067,716)	(48,376,681,065)	(33,672,966,839)	(47,579,302,599)
Payments for intangible assets		(247,885,058)	(272,945,916)	(158,151,548)	(268,055,625)
Payments for right-of-use assets		(41,578,889)	(40,215,372)	(41,578,889)	(40,215,372)
Payments for acquisition of investment in subsidiaries		(6,001,777)	-	(30,221,427,888)	-
Proceeds from disposal of investment in a subsidiary		-	-	2,294,251,065	-
Payment for capital increase in a subsidiary		-	-	(220,000,000)	-
Payments for acquisition of investment in an associate		(29,807,361,200)	-	-	-
Proceed from disposal of investment in an associate	17	234,856,800	16,756,624,084	-	16,756,624,084
Payments for acquisition of investment in a joint venture	17	(1,632,000)	-	-	-
Proceeds for disposal of investment in a joint venture		-	272,524,500	-	-
Proceeds from business restructuring		1,560,487,060	-	1,560,487,060	-
Payment for entire business transfer under common control	40	-	-	(25,904,440,827)	-
Cash generated from (used in) investing activities of discontinued operations	15	(17,964,599)	208,045,790	-	-
Net cash used in investing activities		(43,336,611,448)	(47,490,253,145)	(33,185,174,304)	(41,162,966,616)

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of cash flows

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

		Consolidated financial statement		Separate financial statement	
	Notes	2021	2020 (Re-presented)	2021	2020 (Restated)
Cash flows from financing activities					
Finance costs paid		(6,929,326,395)	(6,262,022,479)	(6,868,172,511)	(6,536,122,397)
Dividends paid to the shareholders of the parent	37	(2,651,901,359)	(1,020,000,383)	(2,651,901,359)	(1,334,158,383)
Dividends paid to non-controlling interests		(5,971,992,374)	(379,427,933)	-	-
Redemption of capital paid to non-controlling interests		(806,203,712)	-	-	-
Proceeds from short-term loans from financial institutions	24	6,034,470,777	6,208,981,946	-	-
Repayment of short-term loans from financial institutions	24	(5,821,204,586)	(6,731,025,454)	-	-
Proceeds from short-term loans from related parties	39	-	-	2,078,156,721	-
Repayment of short-term loans from related parties	39	-	-	-	(2,410,103,140)
Proceeds from long-term loans from financial institutions	27	19,754,222,664	66,562,397	19,709,000,000	-
Repayment of long-term loans from financial institutions	27	(1,013,784,179)	(763,086,373)	-	-
Proceeds from long-term loans from related parties	39	14,000,000,000	-	14,000,000,000	31,139,872,196
Repayment of long-term loans from related parties	39	(3,998,847,362)	-	(15,380,182,160)	-
Proceeds from long-term loans from third parties	27	-	60,000,000	-	-
Proceeds from debenture	28	-	31,120,138,337	-	-
Payment for debentures and loans financing fee	28	(203,799,680)	(123,277,229)	(191,676,849)	(130,754,831)
Redemption of debenture	28	(3,000,000,000)	-	(3,000,000,000)	-
Repayment of principal of lease		(1,050,670,607)	(1,159,447,984)	(999,966,175)	(1,152,071,041)
Cash used in financing activities of discontinued operations	15	(95,515,640)	(441,921,008)	-	-
Net cash generated from financing activities		8,245,447,547	20,575,473,837	6,695,257,667	19,576,662,404

The accompanying notes are an integral part of these consolidated and separate financial statements.

Statement of cash flows

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Baht)

	Notes	Consolidated financial statement		Separate financial statement	
		2021	2020 (Re-presented)	2021	2020 (Restated)
Net decrease in cash and cash equivalents		(24,587,396,412)	(24,480,031,499)	(24,128,120,978)	(26,659,395,148)
Cash and cash equivalents at the beginning of the year		53,243,895,741	74,854,227,157	47,642,862,760	71,466,021,277
Effect of exchange rate changes		1,039,435,992	2,869,700,083	1,085,189,683	2,836,236,631
Cash and cash equivalents at the end of the year	10	29,695,935,321	53,243,895,741	24,599,931,465	47,642,862,760
Cash and cash equivalents are as follows:					
- Cash on hand		721,630	809,135	230,000	210,000
- Deposits at financial institutions maturities within three months		29,695,213,691	53,243,086,606	24,599,701,465	47,642,652,760
		29,695,935,321	53,243,895,741	24,599,931,465	47,642,862,760
Supplementary informations related to cash flow					
Payables on purchase of property, plant and equipment		2,210,974,176	2,024,254,747	1,706,996,709	1,997,721,524
Payables on purchase of intangible assets		167,265,347	324,176,404	-	-
Non-cash changes in right-of-use assets		4,000,653,888	629,378,889	3,958,651,510	457,859,567
Contingent consideration from acquisition of investment in an associate	42	129,726,137	-	-	-

The accompanying notes are an integral part of these consolidated and separate financial statements.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

1 General information

Thai Oil Public Company Limited (the Company) is a public limited company which is incorporated and domiciled in Thailand and is listed on the Stock Exchange of Thailand. The address of the Company's registered offices and refinery plant as follows:

Head office	555/1 Energy Complex Building A, 11 th Floor, Vibhavadi Rangsit Road, Kwang Chatuchak, Khet Chatuchak, Bangkok 10900, Thailand
Sriracha office and refinery plant	42/1 Moo 1, Sukhumvit Road Km. 124, Tambol Tungsukla, Amphur Sriracha, Chonburi 20230, Thailand

For reporting purposes, the Company and its subsidiaries are referred to as the Group.

The principal business operations of the Group is oil refinery and distributions, petrochemicals, lube base oil and other businesses in domestic and overseas.

These Group consolidated financial statements were authorised for issue by the board of directors on 15 February 2022.

2 Significant events during the current year

Coronavirus Disease 2019 outbreak

Crude oil prices rose in the forth quarter of 2021 compared to the same period last year and the third quarter of 2021 from the global energy crisis where natural gas prices have risen to the highest level in years, causing many power producers and industrial plants to change their fuel consumption from natural gas to more oil. Many countries eased their lockdown measures, which resulted in businesses resume their productions. However, during the end of 2021, the mutation of the COVID-19 virus to the Omicron variant caused the price of crude oil in world's market fell after the number of infected people around the world has increased rapidly. However, many countries around the world have provided vaccination against COVID-19 to their citizen in high level, therefore, many countries do not adopt strict lockdown measures in order to present the economic disruption and this had a minimum impact to the oil demand. Due to these factors coupled with the positive trend on the COVID-19 pandemic and overall economic recovers, the average crude oil price in 2021 has increased considerably compared to 2020.

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The Group has focus on the COVID-19 pandemic in planning and responding to demand and supply in this situation to minimise the impact to the Group. Currently, the Group still has sufficient cash, working capital and liquidity to continue operating the business.

Acquisition of share in PT Chandra Asri Petrochemical Tbk

According to the Board of Director's Extra Meeting no. 2/2021 on 21 May 2021 and no. 4/2021 on 23 July 2021, the Board of Director approved the resolution to invest in PT Chandra Asri Petrochemical Tbk (CAP), a petrochemical producer in the Republic of Indonesia, through an investment in PT TOP Investment Indonesia (TII), a newly established subsidiary company in the Republic of Indonesia, at the interest of up to 15.38% of CAP's issued and paid-up share capital. The Group was paid up the share subscription for the 15% share in amount of US Dollar 913 million or equivalent to Baht 29,799 million in September 2021 and classified investment as an investment in an associate. The detail of total consideration and fair value of net assets acquired is described in Note 42.

3 Basis of preparation

The consolidated and separate financial statements have been prepared in accordance with Thai Financial Reporting Standards (TFRS) and the financial reporting requirements issued under the Securities and Exchange Act.

The consolidated and separate financial statements have been prepared under the historical cost convention except as disclosed in the accounting policies below.

The preparation of financial statements in conformity with TFRS requires management to use certain critical accounting estimates and to exercise its judgement in applying the Group's accounting policies. The areas involving a higher degree of judgement or complexity, or areas that are more likely to be materially adjusted due to changes in estimates and assumptions are disclosed in Note 8.

An English version of the consolidated and separate financial statements have been prepared from the statutory financial statements that are in the Thai language. In the event of a conflict or a difference in interpretation between the two languages, the Thai language statutory financial statements shall prevail.

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4 Amended financial reporting standards and changes in accounting policies

4.1 Amended financial reporting standards that are effective for accounting period beginning on or after 1 January 2021 those have the material impacts to the Group

a) **Revised Conceptual Framework for Financial Reporting** added the following key principals and guidance.

- Measurement basis, including factors in considering difference measurement basis
- Presentation and disclosure, including classification of income and expenses in other comprehensive income
- Definition of a reporting entity, which can be a single entity or a compose of several entities and do not necessarily be a legal entity, and
- Derecognition of assets and liabilities

The amendment also includes the revision to the definition and the basis in grouping of an asset and liability in the financial statements. In addition, it clarifies the objectivity of the management and procuring the economic resources of the Group, conservatism principle and uncertainty of measurement basis in the financial reporting.

b) **Amendment to TFRS 3, Business combinations** amended the definition of a business which requires an acquisition to include an input and a substantive process that together contribute to the ability to significantly create outputs. The definition of the term 'outputs' is amended to focus on goods and services provided to customers and to exclude the reference to the ability to reduce cost from the definition.

c) **Amendment to TFRS 9, Financial instruments and TFRS 7, Financial instruments: disclosures** amended to provide a relief from applying specific hedge accounting requirements to the uncertainty arising from interest rate benchmark reform such as Interbank offer rates - IBORs. The amendment also requires the disclosure of hedging relationships directly affected by the uncertainty.

d) **Amendment to TAS 1, Presentation of financial statements and TAS 8, Accounting policies, changes in accounting estimates and errors** amended the definition of materiality and make it consistant on both the Thai Financial Reporting Standards and the Conceptual Framework for Financial Reporting. It also clarified when information is material and incorporates some of the guidance in TAS 1 about immaterial information.

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4.2 New and amended financial reporting standards that are effective for accounting period beginning or after 1 January 2022

The Group has not early adopted the following standard.

Interest rate benchmark (IBOR) reform - phase 2, amendments to TFRS 9, TFRS 7, TFRS 16 and TFRS 4, and accounting guidance, financial instruments and disclosures for insurance business provide measurement on relief issues that might affect financial reporting during the reform, including the effects of changes to contractual cash flows or hedging relationship arising from the replacement of one benchmark with an alternative benchmark.

Key relief measures of the phase 2 amendments are as follows.

- When changing the basis for determining contractual cash flows for financial assets and financial liabilities (including lease liabilities), changes that are necessary as a direct result of the IBOR reform and which are considered economically equivalent, will not result in an immediate gain or loss in the statement of income. TFRS 16 has also been amended to require lessees to use a similar practical expedient when accounting for lease modifications that change the basis for determining future lease payments as a result of the IBOR reform.
- The relief also applies to hedge accounting on most of hedge relationships that are directly affected by the IBOR reform to continue. However, the Group still required to recognise additional ineffectiveness of hedge transactions.

TFRS 7 requires additional disclosure about:

- the nature and extent of risks arising from the IBOR reform to which the entity is exposed to
- how the entity manages those risks, and
- the entity's progress in transitioning from the IBOR to alternative benchmark rates and how the Group is managing this transition.

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5 Accounting policies

5.1 Principles of consolidation and equity accounting

a) Subsidiaries

Subsidiaries are all entities over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Subsidiaries are consolidated from the date on which control is transferred to the Group until the date that control ceases.

In the separate financial statements, investments in subsidiaries are accounted for using cost method less impairment charge.

b) Associates

Associates are all entities over which the Group has significant influence but does not have control or joint control. Investments in associates are accounted for using the equity method of accounting, in consolidated financial statements.

In the separate financial statements, investments in associates are accounted for using cost method.

c) Joint arrangements

Investments in joint arrangements are classified as either joint operations or joint ventures depending on the contractual rights and obligations of each investor, rather than the legal structure of the joint arrangements.

Joint ventures

A joint venture is a joint arrangement whereby the Group has rights to the net assets of the arrangement. Interests in joint ventures are accounted for using the equity method.

In the separate financial statements, investments in joint ventures are accounted for using cost method.

d) Equity method

The investment is initially recognised at cost which is consideration paid and directly attributable costs.

The Group's subsequently recognises shares of its associates and joint ventures' profits or losses and other comprehensive income in the profit or loss and other comprehensive income. The subsequent cumulative movements are adjusted against the carrying amount of the investment.

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When the Group's share of losses in associates and joint ventures equals or exceeds its interest in the associates and joint ventures, the Group does not recognise further losses, unless it has incurred obligations or made payments on behalf of the associates and joint ventures.

e) Changes in ownership interests

The Group treats transactions with non-controlling interests that do not result in a loss of control as transactions with equity owners of the Group. A difference between the amount of the adjustment to noncontrolling interests to reflect their relative interest in the subsidiary and any consideration paid or received is recognised within equity.

If the ownership interest in associates and joint ventures is reduced but significant influence and joint control is retained, only a proportionate share of the amounts previously recognised in other comprehensive income is reclassified to profit or loss where appropriate. Profit or loss from reduce of the ownership interest in associates and joint ventures is recognise in profit or loss.

When the Group losses control, joint control or significant influence over investments, any retained interest in the investment is remeasured to its fair value, with the change in carrying amount recognised in profit or loss. The fair value becomes the initial carrying amount of the retained interest which is reclassified to investment in an associate, or a joint venture or a financial asset accordingly.

f) Intercompany transactions on consolidation

Intra-group transactions, balances and unrealised gains on transactions are eliminated. Unrealised gains on transactions between the Group and its associates and joint ventures are eliminated to the extent of the Group's interest in the associates and joint ventures. Unrealised losses are also eliminated in the same manner unless the transaction provides evidence of an impairment of the asset transferred.

5.2 Business combination

The Group applies the acquisition method to account for business combinations with an exception on business combination under common control. The consideration transferred for the acquisition of a subsidiary comprises.

- fair value of the assets transferred,
- liabilities incurred to the former owners of the acquiree
- equity interests issued by the Group

Identifiable assets and liabilities acquired and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date.

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On an acquisition-by-acquisition basis, the Group initially recognises any non-controlling interest in the acquiree either at fair value or at the non-controlling interest's proportionate share of the acquiree's net assets.

The excess of the consideration transferred, the amount of any non-controlling interest recognised and the acquisition-date fair value of any previous equity interest in the acquiree (for business combination achieved in stages) over the fair value of the identifiable net assets acquired is recorded as goodwill. In the case of a bargain purchase, the difference is recognised directly in profit or loss.

Acquisition-related cost

Acquisition-related cost are recognised as expenses in consolidated financial statements.

Step-up acquisition

If the business combination is achieved in stages, the acquisition date carrying value of the acquirer's previously held equity interest in the acquiree is re-measured to fair value at the acquisition date; any gains or losses arising from such re-measured are recognised in profit or loss.

Changes in fair value of contingent consideration paid/received

Subsequent changes to the fair value of the contingent consideration that is an asset or liability is recognised in profit or loss. Contingent consideration that is classified as equity is not re-measured.

Business combination under common control

The Group accounts for business combination under common control by measuring acquired assets and liabilities of the acquiree at their carrying values presented in the highest level of the consolidation. The Group retrospectively adjusted the business combination under common control transactions as if the combination had occurred on the later of the beginning of the preceding comparative period and the date the acquiree has become under common control.

Consideration of business combination under common control are the aggregated amount of fair value of assets transferred, liabilities incurred and equity instruments issued by the acquirer at the date of which the exchange in control occurs.

The difference between consideration of business combination under common control and the acquirer's interests in the carrying value of the acquiree is presented as "surplus arising from business combination under common control" in equity and is derecognised when the investment is disposed of by transferred to retained earnings.

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5.3 Foreign currency translation

a) Functional and presentation currency

The financial statements are presented in Thai Baht, which is the Group's and the Company's functional and presentation currency.

b) Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions.

Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the profit or loss.

When the group recognises gains and losses on a non-monetary item that recognised in other comprehensive income, all of gains and losses on foreign exchange components will also be recognised in other comprehensive income. On the other hand, if gains and losses on a non-monetary item is recognised in profit and loss, all gains and losses on foreign exchange components will be recognised in profit and loss.

c) Group companies

The operational results and financial position of the Group's entities (none of which has the currency of a hyper-inflationary economy) that have a different functional currency from the Group's presentation currency are translated into the presentation currency as follows.

- Assets and liabilities are translated at the closing rate at the date of respective statement of financial position
- Income and expenses in statement of profit or loss and statement of comprehensive income are translated at average exchange rates and
- All resulting exchange differences are recognised in other comprehensive income.

5.4 Cash and cash equivalents

In the statements of cash flows, cash and cash equivalents includes cash on hand, deposits held at call, short-term highly liquid investments with maturities of three months or less from acquisition date.

In the statements of financial position, bank overdrafts are shown in current liabilities.

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5.5 Trade accounts receivable

Trade receivables are amounts due from customers for goods sold or services performed in the ordinary course of business. They are generally due for settlement within 7-120 days and therefore are all classified as current.

Trade receivables are recognised initially at the amount of consideration that is unconditional unless they contain significant financing components, they are recognised at fair value. The Group holds the trade receivables with the objective to collect the contractual cash flows and therefore measures them subsequently at amortised cost.

The impairment of trade receivables are disclosed in Note 5.7(f).

5.6 Inventories

Inventories are stated at the lower of cost and net realisable value.

Cost of inventories is determined by the weighted average method. Cost of raw materials comprise all purchase cost and costs directly attributable to the acquisition of the inventory less all attributable discounts. The cost of finished goods and work in progress comprises raw materials, direct labour, other direct costs and directly attributable costs to bring the inventories to their present location and condition.

5.7 Financial asset

a) Classification

The Group classifies its debt instrument financial assets in the following measurement categories depending on i) business model for managing the asset and ii) the cash flow characteristics of the asset whether they represent solely payments of principal and interest (SPPI).

- those to be measured subsequently at fair value (either through other comprehensive income or through profit or loss); and
- those to be measured at amortised cost.

The Group reclassifies debt investments when and only when its business model for managing those assets changes.

For investments in equity instruments, the Group has an irrevocable election at the time of the initial recognition to account for the equity investment at fair value through profit or loss (FVPL) or at fair value through other comprehensive income (FVOCI) except those that are held for trading, they are measured at FVPL.

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b) Recognition and derecognition

Regular way purchases, acquires or sales of financial assets are recognised on trade-date, the date on which the Group commits to purchase or sell the asset. Financial assets are derecognised when the rights to receive cash flows from the financial assets have expired or have been transferred and the Group has transferred substantially all the risks and rewards of ownership.

c) Measurement

At initial recognition, the Group measures a financial asset at its fair value plus, transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at FVPL are expensed in profit or loss.

Financial assets with embedded derivatives are considered in their entirety when determining whether the cash flows are SPPI.

d) Debt instruments

Subsequent measurement of debt instruments depends on the Group's business model for managing the asset and the cash flow characteristics of the financial assets. There are three measurement categories into which the Group classifies its debt instruments:

- **Amortised cost:** Financial assets that are held for collection of contractual cash flows where those cash flows represent SPPI are measured at amortised cost. Interest income from these financial assets is included in other income using the effective interest rate method. Any gain or loss arising on derecognition is recognised directly in profit or loss and presented in net gain (loss) from financial instruments. Foreign exchange gains and losses are presented in net foreign exchange gain (loss). Impairment losses are presented as a separate line item in the statement of profit or loss.
- **FVOCI:** Financial assets that are held for i) collection of contractual cash flows, where the assets' cash flows represent solely payments of principal and interest are measured at FVOCI and ii) for selling the financial assets. Movements in the carrying amount are taken through other comprehensive income (OCI), except 1) for the recognition of impairment gains or losses, 2) interest income using the effective interest method, and 3) foreign exchange gains and losses which are recognised in profit or loss. When the financial assets is derecognised, the cumulative gain or loss previously recognised in OCI is reclassified from equity to profit or loss and recognised in net gain (loss) from financial instruments. Interest income is included in other income. Impairment expenses are presented separately in the statement of income.

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- FVPL: Financial assets that do not meet the criteria for amortised cost or FVOCI are measured at FVPL. A gain or loss on a debt investment that is subsequently measured at FVPL is recognised in profit or loss and presented net within net gain (loss) from financial instruments in the period in which it arises.

e) Equity instruments

The Group measures all equity investments at fair value. Where the Group has elected to present fair value gains or losses on equity instruments in OCI, there is no subsequent reclassification of fair value gains or losses to profit or loss following the derecognition of the investment. Dividends from such investments continue to be recognised in profit or loss as dividend income when the right to receive payments is established.

Changes in the fair value of financial assets at FVPL are recognised in net gain (loss) from financial instruments in the statement of profit or loss.

Impairment losses or reversal of impairment losses on equity investments are reported together with changes in fair value.

f) Impairment

The Group applies the TFRS 9 using simplified approach in measuring the impairment of trade receivables, contract assets and lease receivables, which applies lifetime expected credit loss, from initial recognition, for all trade receivables, contract assets and lease receivables.

To measure the expected credit losses, trade receivables and contract assets have been grouped based on shared credit risk characteristics and the days past due. The contract assets relate to unbilled work in progress and have substantially the same risk characteristics as the trade receivables for the same types of contracts. The Group has therefore concluded that the expected loss rates for trade receivables are a reasonable approximation of the loss rates for the contract assets. The expected credit loss rates are based on payment profiles, historical credit losses as well as forward-looking information and factors that may affect the ability of the customers to settle the outstanding balances.

For other financial assets carried at amortised cost and FVOCI, the Group applies TFRS 9 using general approach in measuring the impairment of those financial assets. Under the general approach, the 12-month or the lifetime expected credit loss is applied depending on whether there has been a significant increase in credit risk and recognise loss from impairment since the initial recognition of those financial assets.

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The credit risk assessment is performed at the end of each reporting period whether there is any significant increase in credit risk profile from the initial recognition by comparing i) expected risk of default as of the reporting date and ii) estimated risk of default on the date of initial recognition.

The Group assesses expected credit loss by considering the forward-looking information and past experiences. The expected credit loss is a probability-weighted estimate of credit losses (probability-weighted present value of estimated cash shortfall). The cash shortfall is the difference between all contractual cash flows that are due to the Group and all cash flows expected to receive, discounted at the original effective interest rate.

When measuring expected credit losses, the Group reflects the following:

- probability-weighted estimated uncollectible amounts
- time value of money
- supportable and reasonable information as of the reporting date about past experience, current conditions and forecasts of future situations.

Impairment and reversal of impairment losses are recognised in profit or loss as a separate line item and included in administrative expenses.

5.8 (Group of) non-current assets held-for-sale and discontinued operations

Non-current assets (or disposal groups) are classified as assets held-for-sale when their carrying amount will be recovered principally through a sale transaction and a sale is considered highly probable. They are measured at the lower of the carrying amount and fair value less costs to sell.

An impairment loss is recognised for write-down of the asset (or disposal group) to fair value less costs to sell. A gain is recognised for any subsequent increases in fair value less costs to sell of an asset (or disposal group), but not in excess of any cumulative impairment loss previously recognised.

Non-current assets (including those that are part of a disposal group) are not depreciated or amortised.

A discontinued operations is a component of the Group that has been disposed of or is classified as held-for-sale and that represents a separate major line of business or geographical area of operations, is part of a single co-ordinated plan to dispose of such a line of business or area of operations, or is a subsidiary acquired exclusively with a view to resale. The results of discontinued operations are presented separately in the statement of profit or loss.

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5.9 Investment property

Investment property, which is land, is held for long-term rental yields or for capital appreciation and is not occupied by the Group.

Investment property is measured initially at cost, including directly attributable costs and borrowing costs.

Subsequent expenditure is capitalised to the asset's carrying amount only when it is probable that future economic benefits associated with the expenditure will flow to the Group.

After initial recognition, investment property is carried at cost less any accumulated impairment losses. Land is not depreciated.

5.10 Property, plant and equipment

Property, plant and equipment are stated at historical cost less accumulated depreciation and impairment losses. Historical cost includes expenditure that is directly attributable to the acquisition of the items.

Subsequent costs are included in the asset's carrying amount, only when it is probable that future economic benefits associated with the item will flow to the Group. The carrying amount of the replaced part is derecognised.

All other repairs and maintenance are charged to profit or loss when incurred.

Land is not depreciated. Depreciation on other assets is calculated using the straight-line method to allocate their cost to their residual values over their estimated useful lives, as follows:

	Years
Buildings	10 - 30
Leasehold improvements	5 - 20
Refinery plant and equipment	20 - 35
Lube base oil refinery plants and equipment	16 - 30
Petrochemical plants	10 - 30
Power plants	20 - 25
Machinery, equipment and plant equipment	3 - 20
Oil and liquid chemical tankers and crew boats	10 - 25
Furniture, fixtures, office equipment and others	5 - 10
Vehicles	5

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The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period.

Gains or losses on disposals are determined by comparing the proceeds with the carrying amount and are recognised in other gains or losses.

5.11 Goodwill

Goodwill is tested for impairment annually, or more frequently if events or changes in circumstances indicate that it might be impaired. It is carried at cost less accumulated impairment losses.

For the purpose of impairment testing, goodwill is allocated to cash-generating units or groups of cash-generating units that are expected to benefit from the business combination in which the goodwill arose. The units or groups of units are identified at the lowest level at which goodwill is monitored for internal management purposes, being the operating segments.

5.12 Intangible assets

License fee, computer software and patent that are acquired by the Group, which have finite useful lives, are stated at cost less accumulated amortisation and accumulated impairment losses (if any). Amortisation is calculated using the straight-line method to allocate their cost to their residual values over their estimated useful lives as follows:

	Years
License fee	10 - 25
Computer software	5 - 10
Patent	10

Cost associated with maintaining computer software are recognised as expense in the period in which they are incurred.

5.13 Impairment of assets

Assets that have an indefinite useful life are tested annually for impairment, or more frequently if events or changes in circumstances indicate that it might be impaired. Assets that are subject to amortisation are reviewed for impairment whenever there is an indication of impairment. An impairment loss is recognised for the amount by which the carrying amount of the assets exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs of disposal and value in use.

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Where the reasons for previously recognised impairments are no longer exist, the impairment losses on the assets concerned other than goodwill is reversed.

5.14 Leases

Leases - where the Group is the lessee

Leases are recognised as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the Group. Each lease payment is allocated between the liability and finance cost. The finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis or utilisation rate.

For contracts which contain both lease and non-lease components, the Group allocates the considerations in the contract to the lease and non-lease components based on their relative stand-alone prices. However, for leases of real estate for which the group is a lessee, it has elected not to separate lease and non-lease components and instead accounts for these as a single lease component.

Assets and liabilities arising from a lease are initially measured at present value. Lease liabilities include the net present value of the following lease payments:

- fixed payments (including in-substance fixed payments), less any lease incentives receivable,
- variable lease payment that are based on an index or a rate,
- amounts expected to be payable by the lessee under residual value guarantees,
- the exercise price of a purchase option if the lessee is reasonably certain to exercise that option, and
- payments of penalties for terminating the lease, if the lease term reflects the lessee exercising that option.

Lease payments under the extension options period are also included in the measurement of the liability, if the Company is reasonably certain in exercise its extension options.

The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be determined, the lessee's incremental borrowing rate is used, being the rate that the lessee would have to pay to borrow the funds necessary to obtain an asset of similar value in a similar economic environment with similar terms and conditions, is used.

For contracts which have variable lease payments that depend on an index or rate, those payments are not included in the lease liability until they take effect. When adjustments to lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

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Right-of-use assets are measured at cost. It comprises the following:

- the amount of the initial measurement of lease liability,
- any lease payments made at or before the commencement date less any lease incentives received,
- any initial direct costs, and
- restoration costs.

Payments associated with short-term leases and leases of low-value assets are recognised on a straight-line basis as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT-equipment and small items of office furniture.

Leases - where the Group is the lessor

When assets are leased out under a finance lease, the present value of the lease payments is recognised as a receivable. The difference between the gross receivable and the present value of the receivable is recognised as unearned finance income. Lease income is recognised over the term of the lease which reflects a constant periodic rate of return. Initial direct costs are included in initial measurement of the finance lease receivable and reduce the amount of income recognised over the lease term.

Rental income under operating leases (net of any incentives given to lessees) is recognised on a straight-line basis over the lease term. Initial direct costs incurred in obtaining an operating lease are added to the carrying amount of the underlying asset and recognised as expense over the lease term on the same basis as lease income. The respective leased assets are included in the statement of financial position based on their nature.

The investment properties of the Group are leased to tenants under operating leases with rentals payable monthly. There are no variable lease payments that depend on an index or rate.

5.15 Financial liabilities

a) Classification

Financial instruments issued by the Group are classified as either financial liabilities or equity securities by considering contractual obligations as follow:

- Where the Group has an unconditional contractual obligation to deliver cash or another financial asset to another entity, it is considered a financial liability unless there is a predetermined or a possibility that settlement for a fixed amount of cash in exchange of a fixed number of the Group's own equity instruments.

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- Where the Group has no contractual obligation or has an unconditional right to avoid delivering cash or another financial asset in settlement of the obligation, it is considered an equity instrument.

Borrowings are classified as current liabilities unless the Group has an unconditional right to defer settlement of the liability for at least 12 months after the reporting date.

b) Measurement

Financial liabilities are initially recognised at fair value and are subsequently measured at amortised cost.

c) Derecognition and modification

Financial liabilities are derecognised when the obligation specified in the contract is discharged, cancelled, or expired.

Where the terms of a financial liability are renegotiated or modified, the Group assesses whether the renegotiation or modification will result in the derecognition of that financial liability. Where the modification results in an extinguishment, the new financial liability is recognised based on fair value of its obligation. The remaining carrying amount of financial liability is derecognised. The difference is recognised as other gains (losses) in profit or loss.

Where the modification does not result in the derecognition of the financial liability, the carrying amount of the financial liability is recalculated as the present value of the renegotiated or modified contractual cash flows discounted at its original effective interest rate. The difference is recognised in other gains (losses) in profit or loss.

5.16 Borrowing costs

General and specific borrowing costs directly attributable to the acquisition, construction or production of qualifying assets (assets that require a substantial period of time to get assets to be ready for its intended use or sale) are added to the cost of those assets less investment income earned from those specific borrowings. The capitalisation of borrowing costs is ceased when substantially all the activities necessary to prepare the qualifying asset for its intended use or sale are complete.

Other borrowing costs are expensed in the period in which they are incurred.

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5.17 Current and deferred income taxes

The tax expense for the period comprises current and deferred tax. Tax is recognised in profit or loss, except to the extent that it relates to items recognised in other comprehensive income or directly in equity.

Current tax

The current income tax is calculated on the basis of the tax laws enacted or substantially enacted at the end of the reporting period. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. The Company recognises provisions where appropriate on the basis of amounts expected to be paid to the tax authorities.

Deferred income tax

Deferred income tax is recognised on temporary differences arising from differences between the tax base of assets and liabilities and their carrying amounts in the financial statements. However, deferred income tax is not recognised for temporary differences arise from:

- initial recognition of an asset or liability in a transaction other than a business combination that affects neither accounting nor taxable profit or loss is not recognised
- investments in subsidiaries, associates and joint arrangements where the timing of the reversal of the temporary difference is controlled by the Group and it is probable that the temporary difference will not reverse in the foreseeable future.

Deferred income tax is measured using tax rates of the period in which temporary difference is expected to be reversed, based on tax rates and laws that have been enacted or substantially enacted by the end of the reporting period.

Deferred tax assets are recognised only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilised.

Deferred tax assets and liabilities are offset when there is a legally enforceable right to offset current tax assets and liabilities and when the deferred tax balances relate to the same tax authority. Current tax assets and tax liabilities are offset where the entity has a legally enforceable right to offset and intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously.

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5.18 Employee benefits

a) Short-term employee benefits

Liabilities for short-term employee benefits such as wages, salaries, paid annual leave and paid sick leave, profit-sharing and bonuses, and medical care that are expected to be settled wholly within 12 months after the end of the period are recognised in respect of employees' service up to the end of the reporting period. They are measured at the amount expected to be paid.

b) Defined contribution plan

The Group pays fixed contributions to a separate fund. The Group has no further payment obligations once the contributions have been paid. The contributions are recognised as employee benefit expense when they are due.

c) Defined benefit plans

Amount of retirement benefits is defined by the agreed benefits the employees will receive after the completion of employment. It usually depends on factors such as age, years of service and an employee's latest compensation at retirement.

The defined benefit obligation is calculated by an independent actuary using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using market yield of government bonds that matches the terms and currency of the expected cash outflows.

Remeasurement gains and losses are recognised directly to other comprehensive income in the period in which they arise. They are included in retained earnings in the statements of changes in equity.

Past-service costs are recognised immediately in profit or loss.

d) Other long-term benefits

The Group's net obligation in respect of long-term employee benefits is the amount of future benefit that employees have earned in return for their service in the current and prior periods.

These obligations are measured similar to defined benefit plans except remeasurement gains and losses that are charged to profit or loss.

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e) Termination benefits

The Group recognises termination benefits at the earlier of (a) when the Group can no longer withdraw the offer of those benefits; and (b) when the entity recognises costs for the related restructuring. Benefits due more than 12 months are discounted to their present value.

5.19 Provisions

Provisions are recognised when the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount has been reliably estimated.

Provisions are measured at the present value of the expenditures expected to be required to settle the obligation. The increase in the provision due to passage of time is recognised as finance costs.

5.20 Government grants

Grants from the government are recognised at their fair value where there is a reasonable assurance that the grant will be received and the Group will comply with attached conditions.

Government grants relating to income are deferred and recognised in profit or loss as subsidy over the period necessary to match them with the costs they are intended to compensate.

Subsidy from oil fuel fund are calculated based on the conditions and rates announced by the Energy Policy and Planning committees.

The Group separately presents government grants from revenue from sales.

5.21 Share capital

Ordinary shares with discretionary dividends are classified as equity.

Incremental costs directly attributable to the issue of new shares are shown in equity as a deduction, net of tax, from the proceeds.

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5.22 Revenue recognition

Revenue includes all revenues from ordinary business activities. All ancillary income in connection with the delivery of goods and rendering of services in the course of the Group's ordinary activities are also presented as revenue.

Revenue are recorded net of value added tax. They are recognised in accordance with the provision of goods or services, provided that collectibility of the consideration is probable.

Multiple element arrangements involving delivery or provision of multiple products or services are separated into individual distinct performance obligations. Total transaction price of the bundled contract is allocated to each performance obligation based on their relative standalone selling prices or estimated standalone selling prices. Each performance obligation is recognised as revenue on fulfillment of the obligation to the customer.

a) Sales of goods

Revenue from contracts with customers that is derived in connection with oil refinery, lube base oil refinery, aromatics and LAB, solvent and ethanol business is recognised when the Group satisfies a performance obligation by transferring the petroleum products, petrochemical products and other products to customers via vessel, truck, or pipeline. A transfer of goods generally occurs at the same time when legal ownerships are transferred to customers and customers have physical goods in their possession. In that case, the Group satisfies a performance obligation at a point in time.

Electricity and steam sales are recognised on delivery of electricity and steam and customers' acceptance, and measured based on actual electricity and steam delivered and the price as set out in the electricity and steam purchase agreements.

b) Revenue from service

Revenue from services is mainly derived from marine transportation services and is recognised when service is performed. The Group satisfies a performance obligation over time.

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5.23 Dividend distribution

Dividend distributed to the Company's shareholders is recognised as a liability when interim dividends are approved by the Board of Directors, and when the annual dividends are approved by the shareholders.

5.24 Derivatives and hedging activities

a) Embedded derivative and derivatives that do not qualify for hedge accounting

Embedded derivative that is separately accounted for and derivatives that do not qualify for hedge accounting is initially recognised at fair value. Changes in the fair value are included in net gain (loss) from financial instruments.

Fair value of derivatives is classified as a current or non-current following its remaining maturity.

b) Hedge accounting

Derivatives are initially recognised at fair value on the date a derivative contract is entered into and are subsequently remeasured to their fair value at the end of each reporting period. The Group designates certain derivatives as either:

- hedges of the fair value of i) recognised assets or liabilities or ii) unrecognised firm commitments (fair value hedges)
- hedges of a particular risk associated with the cash flows of i) recognised assets and liabilities and ii) highly probable forecast transactions (cash flow hedges); or
- hedges of a net investment in a foreign operation (net investment hedges).

At inception of the hedge relationship, the Group documents i) the economic relationship between hedging instruments and hedged items including whether changes in the cash flows of the hedging instruments are expected to offset changes in the cash flows of hedged items and ii) its risk management objective and strategy for undertaking its hedge transactions.

The full fair value of a hedging derivative is classified as a current or non-current asset or liability following the maturity of related hedged item.

The fair values of derivative financial instruments designated in hedge relationships are disclosed in note 7. Movements in the hedging reserve in shareholders' equity are shown in note 6.

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Hedge effectiveness

Hedge effectiveness is determined at the inception of the hedge relationship, and through periodic prospective effectiveness assessments, to ensure that an economic relationship exists between the hedged item and hedging instrument.

For hedges of foreign currency purchases, the Group enters into hedge relationships where the critical terms of the hedging instrument match exactly with the terms of the hedged item. The Group therefore performs a qualitative assessment of effectiveness. If changes in circumstances affect the terms of the hedged item such that the critical terms no longer match exactly with the critical terms of the hedging instrument, the Group uses the hypothetical derivative method to assess effectiveness.

In hedges of foreign currency purchases, ineffectiveness may arise if the timing of the forecast transaction changes from what was originally estimated, or if there are changes in the credit risk of the derivative counterparty.

The Group enters into interest rate swaps that have significant similar critical terms as the hedged item, such as reference rate, reset dates, payment dates, maturities and notional amount. The Group does not hedge 100% of its loans, therefore the hedged item is identified as a proportion of the outstanding loans up to the notional amount of the swaps. Due to the critical terms match of the hedge items and the hedged instrument throughout the year, such hedged transactions are concluded to have economic relationship.

Hedge ineffectiveness for interest rate swaps is assessed using the same principles as for hedges of foreign currency purchases. It may occur due to:

- the credit value/debit value adjustment on the interest rate swaps which is not matched by the loan, and
- differences in critical terms between the interest rate swaps and loans.

Cash flow hedges that qualify for hedge accounting

The effective portion of changes in the fair value of derivatives that are designated and qualified as cash flow hedges is recognised in the cash flow hedge reserve within equity. The gain or loss relating to the ineffective portion is recognised immediately in profit or loss within net gain (loss) from financial instruments.

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When cross currency swap contracts are used to hedge forecast transactions, the Group does not designate the cross currency basis spread as the hedging instrument. The changes in fair value of hedging instrument relating to the effective portion are recognised in the cash flow hedge reserve in other comprehensive income within equity. The Group will recognise the change in the fair value of cross currency basis spread that is not related to the hedging instrument in the cost of hedging reserve in other comprehensive income within equity.

The Group uses forward contracts to hedge future transactions by designating only the change in fair value of the forward contracts related to the spot component of forward contracts as the hedging instrument. Gains or losses relating to the effective portion of the change in the spot component of the forward contracts are recognised within other comprehensive income in the cash flow hedges reserve within equity. The change in the forward element of the contract that relates to the hedged item ('aligned forward element') is recognised within other comprehensive income in the costs of hedging reserve within equity.

Amounts accumulated in equity are reclassified in the periods when the hedged item affects profit or loss, as follows:

- where the hedged item subsequently results in the recognition of a non-financial asset (such as inventory), both the deferred hedging gains and losses and the deferred forward points are included within the initial cost of the asset. The deferred amounts are ultimately recognised in profit or loss when the hedged item affects profit or loss (for example through cost of sales when products are sold)
- the gain or loss relating to the effective portion of the interest rate swaps hedging variable rates borrowings is recognised in profit or loss within finance costs at the same time as the interest expense on the hedged borrowings.

When a hedging instrument expires, is sold or terminated, or when a hedge no longer meets the criteria for hedge accounting, any cumulative deferred gain or loss and deferred costs of hedging in equity at that time remains in equity until the forecast transaction occurs. When the forecast transaction is no longer expected to occur, the cumulative gain or loss and deferred costs of hedging that were reported in equity are immediately reclassified to profit or loss.

The Group recognises changes in the fair value of any derivative instrument that does not qualify for hedge accounting immediately in profit or loss, which includes in net gain (loss) from financial instruments.

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5.25 Financial guarantee contracts

Financial guarantee contracts are recognised as a financial liability at the time the guarantee is issued. The liability is initially measured at fair value and subsequently at the higher of:

- the amount determined in accordance with the expected credit loss model under TFRS 9; and
- the amount initially recognised less the cumulative amount of income recognised in accordance with the principles of TFRS 15.

The fair value of financial guarantees is determined based on the present value of the difference in cash flows between a) the contractual payments required under the debt instrument; and b) the payments that would be required without the guarantee, or the estimated amount that would be payable to a third party for assuming the obligations.

Where guarantees in relation to loans or other payables of associates are provided for no compensation, the fair values are accounted for as contributions and recognised as part of the cost of the investment.

6 Financial risk management

6.1 Financial risk factors

The Group is exposed to a variety of financial risks, which are market risk (including foreign exchange risk and interest rate risk and price risk), credit risk and liquidity risk. The Group's overall risk management programme focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the Group's financial performance. The Group uses derivative financial instruments to hedge certain exposures.

Risk management is integral to the whole business of the Group. The Group has a control system in place to create an acceptable balance between the cost of risks and the cost to manage the risks. The management continually monitors the Group's risk management process to ensure that an appropriate balance between risk and control is achieved.

Where all relevant criteria are met, hedge accounting is applied to remove the accounting mismatch between the hedging instrument and the hedged item. This will effectively result in recognising interest expense at a fixed interest rate for the hedged floating rate loans and financial liabilities at the fixed foreign currency rate for the hedged liabilities.

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Hedging reserve

The Group and the Company's hedging reserves comprise of the followings:

(Million Baht)

	Consolidated financial statements					
	Cash flow hedge reserve					Total hedge reserves
	Cross currency swaps	Cost of hedging reserve	Forward foreign exchange contracts	Interest rate swaps	Hedge on foreign currency proceeds	
Opening balance 1 January 2021	(540)	355	(17)	(428)	-	(630)
Add: Change in fair value of hedging instrument recognised in OCI	549	-	(4)	219	(2,358)	(1,594)
Add: Costs of hedging deferred and recognised in OCI	-	(618)	-	-	-	(618)
Less: Deferred tax	(110)	124	1	(44)	480	451
Closing balance 31 December 2021	(101)	(139)	(20)	(253)	(1,878)	(2,391)
Opening balance 1 January 2020						
- as restated	-	-	-	(331)	-	(331)
Add: Change in fair value of hedging instrument recognised in OCI	(675)	-	(21)	(204)	-	(900)
Add: Costs of hedging deferred and recognised in OCI	-	444	-	-	-	444
Less: Deferred tax	135	(89)	4	107	-	157
Closing balance 31 December 2020	(540)	355	(17)	(428)	-	(630)

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(Million Baht)

	Separate financial statements				
	Cash flow hedge reserve				Total hedge reserves
	Cross currency swaps	Cost of hedging reserve	Forward foreign exchange contracts	Hedge on foreign currency proceeds	
Opening balance 1 January 2021	(540)	355	(17)	-	(202)
<u>Add:</u> Change in fair value of hedging instrument recognised in OCI	549	-	(4)	(2,358)	(1,813)
<u>Add:</u> Costs of hedging deferred and recognised in OCI	-	(618)	-	-	(618)
<u>Less:</u> Deferred tax	(110)	124	1	480	495
Closing balance 31 December 2021	(101)	(139)	(20)	(1,878)	(2,138)
Opening balance 1 January 2020					
- as restated	-	-	-	-	-
<u>Add:</u> Change in fair value of hedging instrument recognised in OCI	(675)	-	(21)	-	(696)
<u>Add:</u> Costs of hedging deferred and recognised in OCI	-	444	-	-	444
<u>Less:</u> Deferred tax	135	(89)	4	-	50
Closing balance 31 December 2020	(540)	355	(17)	-	(202)

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6.1.1 Market risk

a) Foreign exchange risk

The Group is exposed to foreign exchange risk from future commercial transactions, net monetary assets and liabilities that are denominated in a currency that is not the entity's functional currency.

The Group uses forward foreign exchange contracts, cross currency swaps in a consistent manner and hedge on foreign currency proceeds to hedge and anticipated foreign exchange commitments and manage their foreign exchange risk arising from future commercial transactions. The Group are required to manage their foreign exchange risk against their functional currency. Foreign currency borrowings are swapped into the entity's functional currency using cross-currency swaps except where the foreign currency borrowings are repaid with cash flows generated in the same foreign currency. The purpose of these hedges is to mitigate the impact of movements in foreign exchange rates on assets and liabilities and the profit and loss account of the Group.

The Group hedges the foreign currency proceeds by hedging the fluctuations arisen from the foreign exchange rate occurring from the certain revenue in US Dollar with the long term loans which has the same currency as revenue occurred. Under the Group's policy, the critical terms of the forwards and options must align with the hedged items.

The Group uses a combination of forward foreign exchange contracts and cross currency swaps to hedge its exposure to foreign currency risk. Under the Group's policy, the critical terms of the forwards and options must align with the hedged items.

The Group only designates the spot component of forward foreign exchange contracts in hedge relationships. The spot component is determined with reference to relevant spot market exchange rates. The differential between the contracted forward rate and the spot market exchange rate is defined as the forward points and include currency basis spread fees. It is discounted based on time period of the contract where material.

The changes in the forward element of the forward foreign exchange contracts and foreign currency basis spreads that relate to hedged items are deferred in the costs of hedging reserve.

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As at 31 December 2021 and 2020, the Group and the Company were exposed to foreign currency risk in respect of financial assets and liabilities denominated in the following currencies:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
US Dollars				
Cash and cash equivalents	17,198	14,866	15,819	14,612
Short-term investments	-	18,110	-	18,110
Trade accounts receivable	3,427	1,051	2,074	169
Other receivables	250	528	184	522
Derivative assets	413	251	413	251
Financial assets at fair value through profit or loss	247	114	-	114
Financial assets at fair value through other comprehensive income	168	75	-	75
Trade accounts payable	(21,761)	(8,270)	(20,246)	(7,800)
Other payables	(454)	(2,424)	(1,148)	(1,679)
Loans and debentures	(118,368)	(106,477)	(118,788)	(107,239)
Derivative Liabilities	(68)	(130)	(68)	(130)
	(118,948)	(82,306)	(121,760)	(82,995)
Other currencies				
Cash and cash equivalents	1,196	1,885	1,058	1,820
Trade accounts receivable	684	457	-	-
Other receivables	13	24	-	-
Trade accounts payable	(260)	(90)	-	-
Other payables	(445)	(94)	(413)	(68)
Loans	(275)	(282)	-	-
	913	1,900	645	1,752

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(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Gross exposure in the statement of financial position	(118,035)	(80,406)	(121,115)	(81,243)
Forward foreign exchange contracts	5,276	5,276	5,276	5,276
Cross currency swaps	19,797	17,950	19,797	17,950
Net exposure	(92,962)	(57,180)	(96,042)	(58,017)

Effects of hedge accounting on the financial position and performance

The effects of the foreign currency-related hedging instruments on the Group and the Company's financial position and performance are as follows:

(Million Baht)

	Consolidated and Separate financial statements	
	2021	2020
Forward foreign exchange contracts		
Carrying amount (liability) (Million Baht)	394	172
Notional amount (Million US Dollars)	170	170
Maturity date	January 2023	January 2023
Hedge ratio	1 : 1	1 : 1
Weighted average hedged rate for outstanding hedging instruments (including forward points)	31.04	31.04

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(Million Baht)

	Consolidated and Separate financial statements	
	2021	2020
Cross currency swaps contracts		
Carrying amount (liability) (Million Baht)	860	1,125
Notional amount (Million US Dollars)	623	563
Maturity date	March 2030 to October 2035	March 2030 to October 2035
Hedge ratio	1 : 1	1 : 1
Weighted average hedged rate for outstanding hedging instruments (including forward points)	31.79	31.90

In term of the hedge on foreign currency proceed with the loans denominated in foreign currency, as at 31 December 2021, the Company's fully drawdown loans amounted to Baht 52,429 million were used in the hedging activities. The loans notional amount was US Dollar 1,716 million with maturity from November 2028 to November 2048. The Company's exchange rate for hedge instrument was Baht 32.193 per one US Dollar.

Sensitivity

As shown in the table above, the Group is primarily exposed to changes in Baht and US Dollar exchange rates. The sensitivity of profit or loss to changes in the exchange rates arises mainly from financial assets and financial liabilities denominated in US Dollar and the impact on other components of equity arises from foreign forward exchange contracts and cross currency swap designated as cash flow hedges.

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(Million Baht)

	Consolidated financial statements			
	Impact to net profit		Impact to other components of equity	
	2021	2020	2021	2020
Baht to US Dollar exchange rate				
- increase 10% *	(1,323)	(5,872)	9,327	2,117
Baht to US Dollar exchange rate				
- decrease 10% *	1,323	5,872	(9,327)	(2,107)

* Holding all other variables constant

(Million Baht)

	Separate financial statements			
	Impact to net profit		Impact to other components of equity	
	2021	2020	2021	2020
Baht to US Dollar exchange rate				
- increase 10% *	(1,156)	(5,919)	6,820	2,117
Baht to US Dollar exchange rate				
- decrease 10% *	1,156	5,919	(6,820)	(2,107)

* Holding all other variables constant

b) Cash flow and fair value interest rate risk

The Group's main interest rate risk arises from long-term borrowings with variable rates, which expose the Group to cash flow interest rate risk. Generally, the Group enters into long-term borrowings at floating rates and swaps them into fixed rates that are lower than those available if the Group borrowed at fixed rates directly. During 2020 and 2021, the Group's borrowings at variable rate were mainly denominated in Baht and US dollars.

The borrowings are carried at amortised cost. The borrowings rate is based on market interest rates which detailed in note 27. Therefore, the Group is exposed to the risk of future changes in market interest rates.

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The exposure of long-term loans interest rate changes at the end of the reporting period are as follows:

	Consolidated financial statements			
	2021		2020	
	Million Baht	% of total	Million Baht	% of total
Variable rate borrowings	45,693	25	13,071	9

As at 31 December 2021, the percentage of total loans shows the proportion of long-term loans that are currently at variable rates in relation to the total amount of long-term loans 45,968 million (2020: Baht 17,352 million). An analysis by maturities is provided in note 6.1.3.

The Company has low interest rate risk since the Company's borrowings are at a fixed interests rate. The sensitivity impact to the increase or decrease in interest expenses from borrowings, as a result of changes in interest rates is immaterial on separate financial statements.

Instruments used by the Group

The Group entered into interest rate swaps covering approximately 12% (2020: 44%) of the variable loan principal outstanding. The fixed interest rates of the swaps range between 4.21% and 4.42% (2020: 4.21% and 4.42%), and the variable rates of the loans are 2.15 % (2020: 2.09%) at the end of the reporting period.

The swap contracts require settlement of net interest receivable or payable every 90 days. The settlement dates coincide with the dates on which interest is payable on the underlying debt.

The Group applies hedge accounting for certain interest rate swaps.

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Effect of hedge accounting on the financial position and performance

The effects of the interest rate-related hedging instruments on the Group's financial position and performance are as follows:

(Million Baht)

	Consolidated financial statements	
	2021	2020
Interest rate swaps contracts		
Carrying amount (liabilities)	(315)	535
Notional amount	5,523	5,779
Maturity date	March 2028	March 2028
Hedge ratio	1 : 1	1 : 1
Weighted average strike rate for outstanding hedging instruments for the year	4.34%	4.34%

Sensitivity

Profit or loss is sensitive to higher or lower interest expenses from borrowings as a result of changes in interest rates. Other components of equity changes as a result of an increase or decrease in the fair value of the cash flow hedges of borrowings.

(Million Baht)

	Consolidated financial statements			
	Impact to net profit		Impact to other components of equity	
	2021	2020	2021	2020
Interest rate - increase 1% *	(324)	(60)	221	302
Interest rate - decrease 1% *	324	60	(221)	(302)

* Holding all other variables constant

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c) Price risk of petroleum products

The Group's and the Company's exposure to price risk arises from time to time by volatility and cyclical movement in the market prices for crude oil, petroleum, and petrochemical products. The Group manages this risk by using derivative financial instruments, for example, oil price crack spread swap and time spread swap as appropriated.

Sensitivity

The table below summarises the impact of increases or decreases of the index on net profit for the year.

(Million Baht)	
	Consolidated and separate financial statement
	Impact to net profit
	2021
Price increases by 1 % *	(18,236)
Price decreases by 1 % *	18,236

* Holding all other variables constant

6.1.2 Credit risk

The Group's credit risk arises from cash and cash equivalents, contractual cash flows of debt investments carried at FVPL, derivative financial instruments as well as credit exposures to customers, including outstanding receivables.

a) Risk management

The Group manages its credit risk by categorising into level of risks. For banks and financial institutions, the Group only transacts with those that are rated at least within investment grade accredited by a reliable independence credit rating agency.

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For transaction with other customers, the Group will consider the credit rating accredited by a reliable independence credit rating agency. If the credit rating is not available, the Group assesses the creditability of the customer by considering its financial position, past experience and other factors. Individual credit limits are set based on these assessments and in accordance with credit limits set by the Board of Director. The compliance with credit limits by customers is regularly monitored by line management.

The Group has no significant credit risk with any single counterparty or group of counterparties since the Group maintains business with large customers in petroleum and power industries and requires first class collateral for the rest.

The Group's investments in debt instruments are considered to be low risk investments. The Group regularly monitors the credit ratings of the investments for credit deterioration.

b) Security

For some trade receivables the Group may obtain security in the form of guarantees or letters of credit which can be called upon if the counterparty is in default under the terms of the agreement.

c) Impairment of financial assets

The Group considers that impairment of financial assets does not have significant financial impact.

Other financial assets measured at amortised cost

Other financial assets measured at amortised cost include short-term investment which the Group considered that short-term investment's credit risk is low.

Debt investments

Debt investments are measured at amortised cost include other receivables and loans to related parties.

All of the debt investments at amortised cost and FVOCI are considered to have low credit risk, and the loss allowance recognised during the year was therefore limited to 12 months expected losses. Management consider 'low credit risk' for listed bonds to be an investment grade credit rating with at least one major rating agency. Other instruments are considered to have low credit risk when they have a low risk of default and the issuer has a strong capacity to meet its contractual cash flow obligations in the near term.

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Financial asset measured at fair value through profit or loss

The Group is also exposed to credit risk in relation to debt investments that are measured at fair value through profit or loss. The maximum exposure at the end of the reporting period is the carrying amount of these investments of Baht 619 million (2020: Baht 461 million).

6.1.3 Liquidity risk

Prudent liquidity risk management is to maintaining sufficient cash and the availability of funding through an adequate amount of committed credit facilities to meet obligations when due and to close out market positions. At the end of the reporting period the Group held deposits at call of Baht 29,696 million (2020: Baht 53,244 million) that are expected to readily generate cash inflows for managing liquidity risk.

Due to the dynamic nature of the underlying businesses, the Group Treasury maintains flexibility in funding by maintaining availability under committed credit lines.

Management regularly monitors i) rolling forecasts of the Group's liquidity reserve (comprising the undrawn borrowing facilities); and ii) cash and cash equivalents. In addition, the Group's liquidity management policy involves projecting cash flows in major currencies and considering the level of liquid assets and monitoring balance sheet liquidity ratios and maintaining appropriate financing plans.

a) Financing arrangements

The Group has undrawn credit facilities as at 31 December as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Floating rate				
Expiring within one year				
- Short-term committed bank credit facility	5,841	4,240	3,700	3,700
- Short-term uncommitted bank credit facility	5,144	4,208	3,844	3,708
Expiring beyond one year				
- Long term Loan Facility	11,500	15,000	11,500	15,000
	22,485	23,448	19,044	22,408

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b) Maturity of financial liabilities

The tables below analyse the Group's financial liabilities into relevant maturity based on their contractual maturities for:

- (a) all non-derivative financial liabilities; and
- (b) net and gross settled derivative financial instruments for which the contractual maturities are essential for an understanding of the timing of the cash flows.

The tables below present the maturity of financial liabilities classified by their contractual maturities. The amounts disclosed are the contractual undiscounted cash flows. Balances due within 12 months equals their carrying balances as the impact of discounting is not significant. For interest rate swaps and cross currency swap, the cash flows have been estimated using forward interest rates applicable at the end of the reporting period.

(Million Baht)

	Consolidate financial statements				
Maturity of financial liabilities as at 31 December 2020	Within 1 year	1-5 years	Over 5 years	Total	Carrying amount of (Assets)/ Liabilities
Non-derivatives					
Short-term loan from financial institutions	929	-	-	929	929
Trade and other payables	27,556	-	-	27,556	27,556
Accrued interest	7,805	20,293	72,675	100,773	1,255
Lease liabilities	1,405	4,156	19,127	24,688	15,383
Long-term loans from financial institutions	1,223	23,516	7,197	31,936	31,689
Long-term loans from related and other parties	-	14,000	279	14,279	14,279
Debentures	3,000	23,747	109,962	136,709	135,868
Other financial liabilities	290	142	138	570	570
Total non-derivative	42,208	85,854	209,378	337,440	227,529

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(Million Baht)

Maturity of financial liabilities as at 31 December 2021	Consolidate financial statements				Carrying amount of (Assets)/ Liabilities
	Within 1 year	1-5 years	Over 5 years	Total	
Derivative					
Forward foreign exchange contracts - trading	2	-	-	2	2
Oil price crack spread swap and time spread swap - trading (assets)	(413)	-	-	(413)	(413)
Oil price crack spread swap and time spread swap - trading (Liabilities)	1	-	-	1	1
Forward foreign exchange contracts					
– cash flow hedge					
(Cash inflows)	-	(5,711)	-	(5,711)	(394)
Cash outflows	-	5,276	-	5,276	-
Interest rate swaps					
– cash flow hedge					
(Cash inflows)	(849)	(2,362)	(198)	(3,409)	-
Cash outflows	884	2,549	293	3,726	373
Cross currency swaps					
– cash flow hedge					
(Cash inflows)	(830)	(3,324)	(27,689)	(31,843)	(860)
Cash outflows	752	3,010	25,943	29,705	-
Total derivatives	(453)	(562)	(1,651)	(2,666)	(1,291)
Total	41,755	85,292	207,727	334,774	226,238

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Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Consolidate financial statements				
Maturity of financial liabilities as at 31 December 2020	Within 1 year	1-5 years	Over 5 years	Total	Carrying amount of (Assets)/ Liabilities
Non-derivative					
Short-term loan from financial institutions	713	-	-	713	713
Trade and other payables	13,530	-	-	13,530	13,530
Accrued interest	6,786	19,101	69,620	95,507	1,221
Lease liabilities	1,315	2,913	17,158	21,386	12,111
Long-term loans from financial institutions	964	4,557	7,638	13,159	13,074
Long-term loans from related and other parties	3,999	-	279	4,278	4,278
Debentures	3,000	25,055	100,694	128,749	126,837
Other financial liabilities	285	2,320	14	2,619	2,619
Total non-derivative	30,592	53,946	195,403	279,941	174,383
Derivative					
Forward foreign exchange contracts - trading	109	-	-	109	109
Oil price crack spread swap and time spread swap - trading	(251)	-	-	(251)	(251)
Forward foreign exchange contracts					
– cash flow hedge					
(Cash inflows)	-	(5,135)	-	(5,135)	-
Cash outflows	-	5,276	-	5,276	172
Interest rate swaps					
– cash flow hedge					
(Cash inflows)	(119)	(418)	(190)	(727)	-
Cash outflows	248	868	395	1,511	535
Cross currency swaps					
– cash flow hedge					
(Cash inflows)	(595)	(2,381)	(20,906)	(23,882)	-
Cash outflows	600	2,404	21,898	24,902	1,125
Total derivatives	(8)	614	1,197	1,803	1,690
Total	30,584	54,560	196,600	281,744	176,073

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Thai Oil Public Company Limited

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(Million Baht)

	Separate financial statements				
Maturity of financial liabilities as at 31 December 2021	Within 1 year	1-5 years	Over 5 years	Total	Carrying amount of (Assets)/ Liabilities
Non-derivative					
Short-term loans from related parties	2,135	-	-	2,135	2,135
Trade and other payables	29,326	-	-	29,326	29,326
Accrued interest	8,116	21,428	79,597	109,141	1,337
Lease liabilities	1,339	4,099	19,080	24,518	15,224
Long-term loans from financial institution	-	19,709	-	19,709	19,536
Long-term loans from related party	-	23,528	96,672	120,200	119,858
Debentures	3,000	14,269	13,292	30,561	30,430
Other financial liabilities	115	43,237	96,951	140,303	140,303
Total non-derivative	44,031	126,270	305,592	475,893	358,149
Derivative					
Oil price crack spread swap and time spread swap - trading (assets)	(413)	-	-	(413)	(413)
Oil price crack spread swap and time spread swap - trading (liabilities)	68	-	-	68	68
Forward foreign exchange contracts					
– cash flow hedge					
(Cash inflows)	-	(5,711)	-	(5,711)	(394)
Cash outflows	-	5,276	-	5,276	-
Interest rate swaps					
– cash flow hedge					
(Cash inflows)	(732)	(1,958)	(93)	(2,783)	-
Cash outflows	648	1,733	83	2,464	57
Cross currency swaps					
– cash flow hedge					
(Cash inflows)	(830)	(3,324)	(27,689)	(31,843)	(860)
Cash outflows	752	3,010	25,943	29,705	-
Total derivatives	(507)	(974)	(1,756)	(3,237)	(1,542)
Total	43,524	125,296	303,836	472,656	356,607

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Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Separate financial statements				
Maturity of financial liabilities as at 31 December 2020	Within 1 year	1-5 years	Over 5 years	Total	Carrying amount of (Assets)/ Liabilities
Non-derivative					
Short-term loans from related parties	57	-	-	57	57
Trade and other payables	14,561	-	-	14,561	14,561
Accrued interest	7,009	19,980	76,130	103,119	1,293
Lease liabilities	1,262	2,830	17,098	21,190	11,937
Long-term loans from related party	-	8,567	86,928	95,495	95,135
Debentures	3,000	16,536	12,708	32,244	32,104
Other financial liabilities	48	2,962	27	3,037	3,037
Total non-derivative	25,937	50,875	192,891	269,703	158,124
Derivative					
Forward foreign exchange contract forwards - trading	109	-	-	109	109
Oil price crack spread swap and time spread swap - trading (assets)	(251)	-	-	(251)	(251)
Oil price crack spread swap and time spread swap - trading (liabilities)	21	-	-	21	21
Forward foreign exchange contracts – cash flow hedge (Cash inflows)	-	(5,135)	-	(5,135)	-
Cash outflows	-	5,276	-	5,276	172
Cross currency swaps – cash flow hedge (Cash inflows)	(595)	(2,381)	(20,906)	(23,882)	-
Cash outflows	600	2,404	21,898	24,902	1,125
Total derivatives	(116)	164	992	1,040	1,176
Total	25,821	51,039	193,883	270,743	159,300

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

6.2 Capital management

6.2.1 Risk management

The objectives when managing capital are to:

- safeguard the ability to continue as a going concern, to provide returns for shareholders and benefits for other stakeholders, and
- maintain an optimal capital structure to reduce the cost of capital.

Consistent with others in the industry, the Group monitors capital based on gearing ratio which is determined by dividing net debt with equity.

During the year 2021, the Group's strategy, which remains unchanged, was to maintain a gearing ratio within 1.0 time and a Baa3 credit rating for Moody's and BBB credit rating for S&P's. However, the Group is still under recapitalisation plan in order to increase the strength of capital structure and to maintain an investment grade credit rating. As at 31 December, the gearing ratios of the Group are as follows:

(Million Baht)

	Consolidated financial statements	
	2021	2020
Net debt (including lease liabilities)	168,123	85,332
Equity (including non-controlling interests)	123,094	120,118
Net debt to equity ratio	1.4 times	0.7 times

Loan covenants

Under the terms of the major borrowing facilities, the Group and the Company are required to comply with certain criteria and condition; for example, maintaining shareholders' portion, maintaining debt to equity ratio at the level as specified in the contract and providing financial supports based on ownership percentage. As at 31 December 2021, the Group and the Company has complied with certain criteria and condition as specified in the contract.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

7 Fair Value

The following table presents fair value of financial assets and liabilities recognised or disclosed by their fair value hierarchy excluding those with the carrying amount approximates fair values.

(Million Baht)

	Consolidated financial statements				
	Carrying amount	Fair value			Total
		Level 1	Level 2	Level 3	
As at 31 December 2021					
Assets					
Financial assets at fair value through profit or loss					
Debt investment	619	373	-	246	619
Financial assets at fair value through other comprehensive income					
Equity investment	1,256	1,087	-	169	1,256
Derivative					
Current					
Oil price crack spread swap and time spread swap	414	-	414	-	414
Non - current					
Derivative used for hedge accounting					
Forward foreign exchange contracts	394	-	394	-	394
Cross currency swap	860	-	860	-	860
Total assets	3,543	1,460	1,668	415	3,543

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Consolidated financial statements				
		Fair value			
	Carrying amount	Level 1	Level 2	Level 3	Total
As at 31 December 2021					
Liabilities					
Derivative					
Current					
Forward foreign exchange contract	2	-	2	-	2
Non-current					
Derivative used for hedge accounting					
Interest rate swap	373	-	373	-	373
Financial liabilities not measured at fair value					
Contingent considerations from investment acquisitions	130	-	-	130	130
Debentures	135,868	-	136,481	-	136,481
Total liabilities	136,373	-	136,856	130	136,986
As at 31 December 2020					
Assets					
Financial assets at fair value through profit or loss					
Debt investment	461	347	-	114	461
Financial assets at fair value through other comprehensive income					
Equity investment	77	-	-	77	77
Derivative					
Current					
Oil price crack spread swap and time spread swap	251	-	251	-	251
Total assets	789	347	251	191	789

Notes to the consolidated and separate financial statements ➤

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Consolidated financial statements				
	Carrying amount	Fair value			Total
		Level 1	Level 2	Level 3	
As at 31 December 2020					
Liabilities					
Derivative					
Current					
Forward foreign exchange contracts	109	-	109	-	109
Non-current					
Derivatives used for hedge accounting					
Cross currency swap	1,125	-	1,125	-	1,125
Interest rate swap	535	-	535	-	535
Forward foreign exchange contracts	172	-	172	-	172
Financial liabilities not measured at fair value					
Long-term loans	3,999	-	4,003	-	4,003
Debentures	126,837	-	138,417	-	138,417
Total liabilities	132,777	-	144,361	-	144,361

Notes to the consolidated and separate financial statements

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For the year ended 31 December 2021

(Million Baht)

	Separate financial statements				
		Fair value			
	Carrying amount	Level 1	Level 2	Level 3	Total
As at 31 December 2021					
Assets					
Financial assets at fair value through profit or loss					
Debt investment	373	373	-	-	373
Financial assets at fair value through other comprehensive income					
Equity securities	2	-	-	2	2
Derivative					
Current					
Oil price crack spread swap and time spread swap	413	-	413	-	413
Non-current					
Derivative used for hedge accounting					
Forward foreign exchange contracts	394	-	394	-	394
Cross currency swap	860	-	860	-	860
Total assets	2,042	373	1,667	2	2,042
Liabilities					
Derivative					
Current					
Oil price crack spread swap and time spread swap	68	-	68	-	68
Non-current					
Interest rate swap	57	-	57	-	57
Financial liabilities not measured at fair value					
Long-term loans from related parties	119,858	-	118,473	-	118,473
Debentures	30,430	-	32,400	-	32,400
Total liabilities	150,413	-	150,998	-	150,998

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Separate financial statements				
		Fair value			
	Carrying				
	amount	Level 1	Level 2	Level 3	Total
As at 31 December 2020					
Assets					
Financial assets at fair value through profit or loss					
Debt investment	347	347	-	-	347
Financial assets at fair value through other comprehensive income					
Equity securities	2	-	-	2	2
Derivative					
Current					
Oil price crack spread swap and time spread swap	251	-	251	-	251
Total assets	600	347	251	2	600
Liabilities					
Derivative					
Current					
Oil price crack spread swap and time spread swap	21	-	21	-	21
Forward foreign exchange contracts	109	-	109	-	109
Non-current					
Derivatives used for hedge accounting					
Cross currency swap	1,125	-	1,125	-	1,125
Forward foreign exchange contracts	172	-	172	-	172
Financial liabilities not measured at fair value					
Long-term loans	95,135	-	103,417	-	103,417
Debentures	32,104	-	35,377	-	35,377
Total liabilities	128,666	-	140,221	-	140,221

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Fair values are categorised into hierarchy based on inputs used as follows:

- Level 1: The fair value of financial instruments is based on the closing price by reference to the Stock Exchange of Thailand.
- Level 2: The fair value of financial instruments is determined using significant observable inputs and, as little as possible, entity-specific estimates.
- Level 3: The fair value of financial instruments is not based on observable market data.

Fair value measurement of financial assets and liabilities is in accordance with accounting policy disclosed in Note 5.7 and Note 5.15.

The Group did not have any transfers between levels during the year.

Valuation techniques used in measuring level 2 fair values

Type	Valuation technique
Interest rate swap	Future cash flow projection discounted by the market yield which based on Bloomberg at the reporting date.
Foreign foreign exchange contracts	Future cash flow projection discounted by the market yield which based on commercial bank report for short-term transactions and future cash flow projection discounted by the market yield which based on Bloomberg at the reporting date for long-term transactions.
Cross currency swap	Future cash flow projection discounted by the market yield which based on Bloomberg at the reporting date.
Oil price crack spread swap and time spread swap	Market comparison technique: The fair values are based on broker quotes. Similar contracts that are traded in an active market and the quotes reflect the actual transactions in similar financial instruments.
Debt investment measure at fair value through profit or loss	Thai Bond Market Association Government Bond Yield Curve as of the reporting date.
Debentures and Long-term loans	Market comparison technique: The valuation model is based on ask prices or lastest price of comparable market securities.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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Valuation techniques used in measuring level 3 fair values

Changes in level 3 financial instruments for the period ended 31 December 2021 is as follows:

(Milion Baht)

	Consolidated financial statements			Total
	Debt investment	Equity investment	Contingent considerations from investment acquisition	
Ending balance as at 1 January 2021	114	77	-	191
Additions	93	84	130	307
Gain recognised in profit or loss	23	1	-	24
Exchange differences	16	7	-	23
Ending balance as at 31 December 2021	246	169	130	545

The Group considers the significant unobservable inputs used in level 3 fair value measurements and concludes that fair value approximates carrying amount. For the fair value measurement of contingent consideration from the investment acquisitions, the Group considers by using future cash flow projection discounted with cost of debt and the assumptions of relating probabilities of conditions in the share purchase agreements.

The Group did not have any transfers between levels during the period.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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The following table shows financial assets and liabilities measured at amortised cost with the carrying amount approximates fair value. The carrying amount of long-term loans from financial institutions, long-term loans from a third party, and long-term loans from a related party approximates their fair value, since their interest rates are close to market rate.

Consolidated financial statements	Separate financial statements
Financial assets	Financial assets
– Cash and cash equivalents	– Cash and cash equivalents
– Deposits at a financial institutions used as collaterals	– Short-term investments
– Short-term investments	– Trade accounts receivable, net
– Trade accounts receivable, net	– Other receivables
– Other receivables	– Finance lease receivables, net
– Finance lease receivables, net	– Short-term loan to related parties
– Other non-current assets	– Current portion of long-term loans to related parties, net
	– Other non-current assets
Financial liabilities	Financial liabilities
– Short-term loans from financial institutions	– Short-term loans from related parties
– Trade accounts payable	– Trade accounts payable
– Other payables	– Other payables
– Long-term loans from financial institutions, net	– Long-term loans from financial institutions, net
– Long-term loans from a third party	– Long-term loans from related parties, net
– Long-term loans from a related party, net	– Lease liabilities, net
– Lease liabilities, net	– Other non-current liabilities
– Other non-current liabilities	

8 Critical accounting estimates and judgements

Estimates and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

During the year ended 31 December 2021, the Group makes estimates and assumptions concerning the future. The result of accounting estimates will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are outlined below.

Notes to the consolidated and separate financial statements

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Estimated impairment of goodwill

The Group performs an impairment test of goodwill annually. The recoverable amounts of cash-generating units have been determined based on value-in-use calculations. The value-in-use calculation requires the management to estimate the future cash flows expected to arise from the cash-generating unit in order to calculate present value. Significant estimates and assumptions used are gross margin and discount rate which reflect risk of the particular cash-generating unit (Note 21). Determination of the assumptions is necessary for the goodwill impairment testing.

9 Segment information

Segment information is presented in respect of the Group's business segments. The primary format, business segments, is based on the Group's management and the internal reporting structure provided to the chief operating decision maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as President and Chief Executive Officer who make strategic decisions.

Segment results, assets and liabilities include items directly attributable to a segment as well as those that can be allocated on a reasonable basis.

Reportable segments

The Group comprises the following main business segments:

Segment 1:	Oil refinery
Segment 2:	Lube base oil refinery
Segment 3:	Aromatics and LAB
Segment 4:	Power generation
Segment 5:	Marine transportation services (Discontinued operations)
Segment 6:	Solvent
Segment 7:	Ethanol
Segment 8:	Olefins
Segment 9:	Others

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Assets, revenue, and profit (loss) from operation of the business in consolidated financial statements for the year ended 31 December 2021 and 2020 are as follows:

	For the year ended 31 December 2021										(Million Baht)
	Oil refinery	Lube base oil refinery	Aromatics and LAB	Power generation	Marine transportation services	Solvent	Ethanol	Olefins	Others	Elimination*	Total
Revenue from sales and services											
– External	274,350	18,826	24,461	4,059	126	13,236	895	-	-	(126)	335,827
– Inter-segment	74,371	5,006	36,086	3,514	84	78	693	-	6,330	(126,162)	-
Subsidy from oil fuel fund	9,669	-	-	-	-	-	-	-	-	-	9,669
Cost of sales and services	(344,129)	(19,106)	(57,459)	(6,240)	(146)	(11,697)	(1,413)	-	(6,075)	126,710	(319,555)
Gross profit (loss)	14,261	4,726	3,088	1,333	64	1,617	175	-	255	422	25,941
Dividend income	22,190	-	-	-	-	-	-	-	-	(22,183)	7
Net gain (loss) from financial instruments	(2,731)	-	303	-	-	(1)	-	-	23	-	(2,406)
Net foreign exchange gain (loss)	(4,873)	47	117	8	10	112	-	-	(6)	(10)	(4,595)
Other income	2,198	66	264	14,663	12	28	611	1	2	(16,716)	1,129
Selling expenses	(53)	(96)	(187)	-	-	(545)	(18)	-	-	129	(770)
Administrative expenses	(2,654)	(72)	(114)	(27)	(40)	(294)	(114)	(1)	(52)	1,082	(2,286)
Share of profit (loss) of joint ventures and associates, net	-	-	-	1,522	-	-	46	(90)	197	-	1,675
Profit (loss) before finance costs and income tax expense	28,338	4,671	3,471	17,499	46	917	700	(90)	419	(37,276)	18,695

* Adjustments include elimination transaction and classification of assets held-for-sale.

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Thai Oil Public Company Limited
For the year ended 31 December 2021

	For the year ended 31 December 2021										(Million Baht)
	Oil refinery	Lube base oil refinery	Aromatics and LAB	Power generation	Marine transportation services	Solvent	Ethanol	Olefins	Others	Elimination*	Total
Finance costs	(3,214)	(59)	(159)	(338)	(27)	(74)	(17)	-	-	293	(3,595)
Profit (loss) before income tax expense	25,124	4,612	3,312	17,161	19	843	683	(90)	419	(36,983)	15,100
Income tax benefit (expense)	(472)	(933)	(419)	(5)	(1)	(121)	(76)	-	(8)	1	(2,034)
Net profit (loss) for the year	24,652	3,679	2,893	17,156	18	722	607	(90)	411	(36,982)	13,066
Profit (loss) attributable to:											
– Owners of the parent - continuing operations	24,652	3,679	2,586	17,125	18	663	579	(90)	411	(36,982)	12,641
– Non-controlling interests	-	-	307	31	-	59	28	-	-	-	425
Net profit (loss) for the year from continuing operations	24,652	3,679	2,893	17,156	18	722	607	(90)	411	(36,982)	13,066
Recognition of revenue											
– Point in time	348,542	23,832	60,547	6,509	-	13,314	1,588	-	6,330	(125,858)	334,804
– Over time	179	-	-	1,064	210	-	-	-	-	(430)	1,023
Total revenue	348,721	23,832	60,547	7,573	210	13,314	1,588	-	6,330	(126,288)	335,827

* Adjustments include elimination transaction and classification of assets held-for-sale.

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	For the year ended 31 December 2020 (Re-presented)										(Million Baht)
	Oil refinery**	Lube base oil refinery	Aromatics and LAB	Power generation**	Marine transportation services	Solvent	Ethanol	Others	Adjustment*	Total	
Revenue from sales and services											
– External	206,069	11,110	12,857	3,760	418	8,137	907	-	(418)	242,840	
– Inter-segment	43,174	2,928	23,819	2,895	240	51	724	5,792	(79,623)	-	
Subsidy from oil fuel fund	5,073	-	-	-	-	-	-	-	-	5,073	
Cost of sales and services	(268,300)	(12,763)	(34,547)	(5,438)	(573)	(7,123)	(1,442)	(5,475)	80,361	(255,300)	
Gross profit (loss)	(13,984)	1,275	2,129	1,217	85	1,065	189	317	320	(7,387)	
Dividend income	3,717	-	-	-	-	-	-	-	(3,703)	14	
Net gain (loss) from financial instruments	(398)	-	193	-	-	-	-	26	-	(179)	
Net foreign exchange gain (loss)	1,692	10	75	2	-	14	1	(9)	-	1,785	
Gain from disposal of investment in an associate	8,965	-	-	-	-	-	-	-	(3,164)	5,801	
Other income	2,890	80	185	18	21	23	3	1	(2,121)	1,100	
Selling expenses	(40)	(97)	(160)	-	-	(403)	(21)	-	183	(538)	
Administrative expenses	(2,406)	(74)	(305)	(26)	(114)	(259)	(84)	(36)	1,193	(2,111)	
Share of profit (loss) of joint ventures and associates, net	-	-	-	2,189	82	-	19	284	(82)	2,492	
Profit (loss) before finance costs and income tax expense	436	1,194	2,117	3,400	74	440	107	583	(7,374)	977	

* Adjustments include elimination transaction and classification of assets held-for-sale.

** Retrospective adjustments in 2020 for comparative purposes.

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	For the year ended 31 December 2020 (Re-presented)										(Million Baht)
	Oil refinery**	Lube base oil refinery	Aromatics and LAB	Power generation**	Marine transportation services	Solvent	Ethanol	Others	Adjustment*	Total	
Finance costs	(4,223)	(58)	(207)	(322)	(91)	(75)	(21)	-	705	(4,292)	
Profit (loss) before income tax expense	(3,787)	1,136	1,910	3,078	(17)	365	86	583	(6,669)	(3,315)	
Income tax benefit (expense)	1,376	(228)	(400)	(4)	(3)	(52)	2	(22)	(23)	646	
Net profit (loss) for the year	(2,411)	908	1,510	3,074	(20)	313	88	561	(6,692)	(2,669)	
Profit (loss) attributable to:											
– Owners of the parent - continuing operations	(3,048)	908	1,535	3,074	(20)	310	45	561	(6,453)	(3,088)	
– Business restructuring under common control interests	637	-	-	-	-	-	-	-	(637)	-	
– Non-controlling interests	-	-	(25)	-	-	3	43	-	398	419	
Net profit (loss) for the year from continuing operations	(2,411)	908	1,510	3,074	(20)	313	88	561	(6,692)	(2,669)	
Recognition of revenue											
– Point in time	249,051	14,038	36,676	5,640	-	8,188	1,631	5,792	(79,176)	241,840	
– Over time	192	-	-	1,015	658	-	-	-	(865)	1,000	
Total revenue	249,243	14,038	36,676	6,655	658	8,188	1,631	5,792	(80,041)	242,840	

* Adjustments include elimination transaction and classification of assets held-for-sale.

** Retrospective adjustments in 2020 for comparative purposes.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	For the year ended 31 December 2021										
	Marine										
	Oil refinery	Lube base oil refinery	Aromatics and LAB	Power generation	Power transportation services	Solvent	Ethanol	Olefins	Others	Adjustment*	Total
Trade accounts receivable, net	25,048	1,410	5,990	1,137	48	2,135	109	-	948	(13,410)	23,415
Inventories, net	33,623	2,658	1,727	110	11	1,240	244	-	-	(37)	39,576
Other current assets	32,444	1,850	2,835	1,816	641	1,500	85	20	1,054	(4,188)	38,057
Derivative assets	1,668	-	67	-	-	-	-	-	-	(67)	1,668
Investments in subsidiaries	41,014	-	-	-	-	-	-	-	-	(41,014)	-
Investments in joint ventures	-	-	-	-	188	-	1	-	-	(188)	1
Investments in associates	-	-	-	22,279	6	-	-	30,536	993	1,597	55,411
Long-term loans to a related party	-	-	-	-	-	-	-	-	105,291	(105,291)	-
Property, plant and equipment, net	146,633	1,745	15,100	10,437	2,382	1,983	1,315	-	-	(1,196)	178,399
Right-of-use assets, net	16,066	1,112	921	217	14	342	5	-	-	(1,546)	17,131
Other non-current assets	6,390	655	1,552	93	4	1,357	1,100	-	1,264	(3,929)	8,486
Total assets	302,886	9,430	28,192	36,089	3,294	8,557	2,859	30,556	109,550	(169,269)	362,144
Trade accounts payable	25,344	2,056	6,387	581	38	1,110	17	-	823	(13,355)	23,001
Short-term loans	2,135	-	-	-	95	1,444	270	-	284	(3,299)	929
Current portion of long-term loans from financial institutions, net	-	-	596	394	165	164	59	-	-	(165)	1,213
Current portion of debenture, net	3,000	-	-	-	-	-	-	-	-	-	3,000
Other current liabilities	8,769	620	491	526	34	257	66	1	106	(537)	10,333
Derivative liabilities	124	-	-	317	-	1	-	-	-	(67)	375
Long-term loans, net	139,394	-	3,868	6,883	1,823	433	35	-	-	(107,681)	44,755
Debentures, net	27,430	-	-	-	-	-	-	-	105,438	-	132,868
Lease liabilities, net	14,036	1,219	963	185	8	298	2	-	-	(2,576)	14,135
Other non-current liabilities	7,698	148	257	40	14	189	86	111	844	(946)	8,441
Total liabilities	227,930	4,043	12,562	8,926	2,177	3,896	535	112	107,495	(128,626)	239,050

* Adjustments include elimination transaction and classification of assets held-for-sale.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

For the year ended 31 December 2020 (Re-presented)										
	Oil refinery**	Lube base oil refinery	Aromatics and LAB	Power generation**	Marine transportation services	Solvent	Ethanol	Others	Adjustment*	Total
Trade accounts receivable, net	13,199	869	2,892	801	53	1,497	110	816	(7,535)	12,702
Inventories, net	19,201	1,137	1,068	104	10	721	257	-	(37)	22,461
Other current assets	82,782	1,945	1,106	1,726	440	877	118	12,273	(22,452)	78,815
Derivative assets	251	-	21	-	-	-	-	-	(21)	251
Investments in subsidiaries	14,045	-	-	-	-	-	-	-	(14,045)	-
Investments in joint ventures	-	-	-	-	188	-	-	-	(188)	-
Investments in associates	-	-	-	22,185	6	-	826	993	511	24,521
Long-term loans to a related party	-	-	-	-	-	-	-	94,616	(94,616)	-
Property, plant and equipment, net	112,665	1,386	16,631	9,495	2,364	2,092	1,346	-	(754)	145,225
Right-of-use assets, net	13,610	1,150	954	207	14	373	4	1	(1,584)	14,729
Other non-current assets	6,582	648	1,656	178	2	1,267	11	944	(3,804)	7,484
Total assets	262,335	7,135	24,328	34,696	3,077	6,827	2,672	109,643	(144,525)	306,188
Trade accounts payable	10,781	1,011	3,224	367	31	840	16	740	(7,493)	9,517
Short-term loans	57	-	30	-	165	594	368	255	(756)	713
Current portion of long-term loans from financial institutions, net	-	-	406	332	150	160	55	-	(150)	953
Current portion of debenture, net	3,000	-	-	-	-	-	-	-	-	3,000
Other current liabilities	23,236	269	534	64	762	197	51	11,457	(22,242)	14,328
Derivative liabilities	1,427	-	-	534	-	-	-	-	(20)	1,941
Long-term loans, net	95,135	-	4,464	7,277	1,145	610	50	-	(96,281)	12,400
Debentures, net	29,104	-	-	-	-	-	-	94,733	-	123,837
Lease liabilities, net	11,144	1,188	935	173	8	328	1	-	(2,505)	11,272
Other non-current liabilities	7,658	147	198	40	22	156	21	731	(865)	8,108
Total liabilities	181,542	2,615	9,791	8,787	2,283	2,885	562	107,916	(130,312)	186,069

* Adjustments include elimination transaction and classification of assets held-for-sale.

** Retrospective adjustments in 2020 for comparative purposes.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Major customer

Revenue from two customers represents Baht 179,642 million (2020: revenue from two customers represented Baht 210,369 million) of the Group's revenue from sales and service.

Geographical segments

In presenting geographical information by segments, segment revenue is based on the geographical location of customers and segment assets are based on the geographical location of the assets.

Geographical information

(Million Baht)

	Revenue		Non-current assets	
	For the year ended 31 December		As at 31 December	
	2021	2020	2021	2020
Thailand	283,654	230,071	228,756	190,495
Other countries	61,842	17,842	32,149	1,464
Total	345,496	247,913	260,905	191,959

10 Cash and cash equivalents

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Cash on hand	1	1	-	-
Deposits held at bank				
– savings and current accounts	24,390	41,411	19,295	35,810
– fixed deposit accounts less than 3 months	5,305	11,832	5,305	11,833
Total	29,696	53,244	24,600	47,643

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

As at 31 December 2021, the interest rates on deposits in saving accounts are 0.01% - 0.75% per annum (2020: 0.01% - 0.80% per annum).

As at 31 December 2021, the interest rates on deposits in fixed accounts less than 3 months are 0.13% - 0.60% per annum (2020: 0.60% per annum) and these deposits have an average maturity of 19 days (2020: 73 days).

As at 31 December 2021, the Group's deposit at financial institutions of Baht 1,722 million were used to pledge as collateral for credit facilities (2020: Baht 1,664 million). However, the Group's deposit at financial institutions which pledged as collateral for credit facilities can be withdrawn if it meets the objectives and conditions of loan agreements to support the normal working capital and business operations of the Group (Note 27).

11 Deposit at a financial institutions used as collateral

As at 31 December 2021, deposits at a financial institution used as short-term collateral represented deposits of a subsidiary amounting to Baht 328 million (2020: Baht 327 million), which was used as collateral for credit facilities with a financial institution as described in Note 27. The amount is restricted for long-term loans and interest repayment that will be due in the next period.

12 Trade accounts receivable, net

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Related parties (Note 39)	9,875	6,568	17,445	10,148
Other parties	13,540	6,136	7,603	3,051
Total	23,415	12,704	25,048	13,199
Less Expected credit loss allowance	-	(2)	-	-
Trade accounts receivable, net	23,415	12,702	25,048	13,199

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Fair values of trade receivables

The carrying amount is considered approximate to their fair value due to the nature of trade accounts receivable is current assets.

Aging analyses for trade accounts receivable are as follows:

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Related parties				
Within credit terms	9,875	6,568	17,445	10,148
<u>Less</u> Expected credit loss allowance	-	-	-	-
Net	9,875	6,568	17,445	10,148
Other parties				
Within credit terms	13,409	6,098	7,603	3,050
Overdue:				
– Less than 3 months	131	36	-	1
– Over than 3 months but less than 1 year	-	2	-	-
	13,540	6,136	7,603	3,051
<u>Less</u> Expected credit loss allowance	-	(2)	-	-
Net	13,540	6,134	7,603	3,051
Total	23,415	12,702	25,048	13,199

The normal credit term granted by the Group ranges from 7 days to 120 days.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

13 Other receivables

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Prepaid expenses	597	379	303	207
Other accounts receivable	399	690	612	805
Current portion of long-term loans				
to savings co-operative of employees	13	13	13	13
Total	1,009	1,082	928	1,025

Fair values of other receivables

The carrying amount is considered approximate to their fair value due to the nature of other receivable is current assets.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

14 Inventories, net

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Crude oil and feedstock	14,983	8,683	13,295	8,105
Materials, spare parts and supplies	1,709	1,606	1,204	1,165
Finished and semi-finished oil products	9,963	6,638	6,308	4,589
Goods in transit				
Crude oil	12,700	5,649	12,700	5,649
Materials, spare parts and supplies	213	4	206	4
Finished and semi-finished oil products	252	198	-	-
<u>Less</u> Allowance for decline in value of inventories adjusted to net realised value				
– Crude oil and feedstock	-	(311)	-	(311)
– Finished and semi-finished oil products	(244)	(6)	(90)	-
Inventories, net	39,576	22,461	33,623	19,201

As at 31 December 2021, the inventories as stated above included a legal reserve amounting to Baht 7,850 million (2020: Baht 4,642 million).

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Inventories recognised as expenses in cost of sale of goods for the year ended 31 December 2021 and 2020 are as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
– Cost of sale of goods	229,532	166,175	270,129	185,468
– (Reversal of) write-down to net realised value	238	215	90	310
Net	229,770	166,390	270,219	185,778

15 Assets and liabilities held-for-sale and discontinued operations

On 25 November 2020, the Company's Board of Directors approved the restructuring of the Company's marine transport business unit. The Company would dispose all of its directly held ordinary shares in Thailoil Marine Co., Ltd (TM) to another company. The Share Purchase Agreement was signed on 24 December 2020. The associated assets and liabilities were consequently presented as held-for-sale in the 2020 financial statements.

The Company completely disposed all of its ordinary shares in TM on 30 April 2021 and effective on 1 May 2021 onward.

On 19 November 2021, the Company passed a resolution to dissolve TOMI. The dissolution of TOMI is expected to be completed within August 2022. The Group reclassified the related assets and liabilities to assets discontinued operations.

Since this business unit was reclassified as discontinued operations, the Group presented the post-tax loss of discontinued operations separately from the continuing operations in the consolidated statement of income. The comprehensive income (expense) presented separately from the continuing operations in the consolidated statement of comprehensive income. In the consolidated statement of cash flow, the net cash flows of discontinued operations presented separately from continuing operations. The Group re-presented the results of discontinued operations for the nine-month period ended 31 December 2020 to be comparable with the nine-month period ended 31 December 2021.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Financial performance and cash flow information

The performance and cash flows from discontinued operations for the period ended 31 December are as follows:

(Million Baht)

	Consolidated financial statement	
	2021	2020
Revenue from sales and services	126	418
Cost of sales of goods and services	(145)	(559)
Gross loss	(19)	(141)
Net gain from foreign exchange	10	-
Other income	6	15
Administrative expenses	(40)	(99)
Share of profit of joint ventures and associates, net	-	82
Loss before finance costs and income tax expense from discontinued operations	(43)	(143)
Finance costs	(19)	(67)
Loss before income tax expense from discontinued operations	(62)	(210)
Income tax	(1)	(3)
Net loss from discontinued operations	(63)	(213)
Items that will be reclassified subsequently to profit or loss		
Exchange differences on translation of financial statements	24	2
Items that will not be reclassified subsequently to profit or loss		
Gain from remeasurements of post-employment benefit obligations, net of tax	-	10
Other comprehensive income for the period from discontinued operations, net of tax	24	12
Comprehensive expense from discontinued operations	(39)	(201)
Cash flows used in operating activities	(361)	(339)
Cash flows used in investing activities	(18)	208
Cash flows used in financing activities	(96)	(442)
Total cash flows	(475)	(573)

Notes to the consolidated and separate financial statements ➤

Thai Oil Public Company Limited

For the year ended 31 December 2021

Details of disposal

(Million Baht)

	Consolidated financial information	Separate financial information
Cash received	860	860
Net carrying amount of assets/investment in a subsidiary	813	808
Gain from disposal before tax and reclassification of exchange differences on translation of financial statements	47	52
Reclassification of exchange differences on translation of financial statements	(6)	-
Gain from disposal before tax	41	52

Carrying amount of assets and liabilities as at 30 April 2021 are as follows:

Million Baht

Cash and cash equivalents	283
Trade accounts receivable	48
Other receivables	40
Inventories	11
Prepaid corporate income tax	14
Investments in joint ventures	188
Investments in associate	6
Plant and equipment, net	2,382
Right-of-use assets, net	14
Deferred tax assets	2
Other non-current assets	1
Total assets	2,989

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

	Million Baht
Short-term loans from financial institutions	95
Trade accounts payable	37
Other payables	27
Current portion of long-term loans from financial institutions, net	165
Current portion of lease liabilities, net	7
Long-term loans from financial institutions, net	1,055
Long-term loans from a third party	68
Long-term loans from a related party	700
Lease liabilities, net	8
Employee benefit obligations	14
Total liabilities	2,176
Total net assets	813

The assets and liabilities which related to the discontinued operation and were reclassified as held-for-sale as at 31 December 2021 and 2020 are as follow.

(Million Baht)

	Consolidated financial statements		Separate financial statements	
As at 31 December	2021	2020	2021	2020
Cash and cash equivalents	305	116	-	-
Trade accounts receivable	-	37	-	-
Other receivables	-	13	-	-
Inventories	-	9	-	-
Prepaid corporate income tax	-	12	-	-
Investments in subsidiaries	-	-	277	808
Investments in joint ventures	-	188	-	-
Investments in associate	-	6	-	-
Plant and equipment, net	-	2,365	-	-
Right-of-use assets, net	-	14	-	-
Deferred tax assets	-	2	-	-
Other non-current assets	-	1	-	-
Assets held-for-sale and discontinue operation	305	2,763	277	808

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Short-term loans from financial institutions	-	165	-	-
Trade accounts payable	-	31	-	-
Other payables	-	49	-	-
Current portion of long-term loans				
from financial institutions, net	-	150	-	-
Current portion of lease liabilities, net	-	7	-	-
Long-term loans from financial institutions, net	-	1,145	-	-
Lease liabilities, net	-	7	-	-
Employee benefit obligations	-	22	-	-
Liabilities related to assets held-for-sale and discontinue operation	-	1,576	-	-
Other surplus	-	101	-	-
Other surplus held-for-sale	-	101	-	-
Other components of equity	13	(6)	-	-
Other components of equity held-for-sale and discontinue operation	13	(6)	-	-

The assets and liabilities of marine transportation business unit were classified as held-for-sale during the year 2020 and was measured at the lower of its carrying amount and fair value less costs to sell at the time of the reclassification. The non-recurring fair value was determined using the market approach and is a level 2 in the fair value hierarchy.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

16 Investments in subsidiaries

16.1 Movements of investments in subsidiaries are as follows:

(Million Baht)

	Separate financial statement	
	2021	2020
At 1 January	14,045	15,015
Increase in investment	30,441	-
Disposal of investment	(3,195)	-
Loss from impairment	-	(162)
Classified as non-current assets held-for-sales and discontinuing operations (Note 15)	(277)	(808)
At 31 December	41,014	14,045

Direct subsidiaries

Thaioil Power Co., Ltd.

On 1 February 2021, the Company carried out an entire business transfer from Thaioil Power Co., Ltd. (TP). Subsequently, TP paid dividends to shareholders and registered for dissolution in February 2021 and entered into the liquidation process. After the completion of the liquidation process, TP will distribute its assets to shareholders in the proportion to their shareholding interests. The Company has an investment of Baht 3,195 million in TP and will receive Baht 2,288 million based on the proportion to its shareholding interests. As a result, the Company recognised the allowance for impairment loss of Baht 907 million. The balance presented net with dividend income in the statement of income since it is a related transaction to the entire business transfer under common control as disclosed in Note 40.

On 17 September 2021, TP completed the liquidation process and distribute its assets to all shareholders. The Company recognised a reversal of allowance for impairment loss of Baht 6 million in the statement of income.

Notes to the consolidated and separate financial statements ➤

Thai Oil Public Company Limited

For the year ended 31 December 2021

Thaioil Marine International Pte. Ltd.

On 25 March 2021, the Company purchased all ordinary shares of Thaioil Marine International Pte. Ltd. (TOMI), an indirect subsidiary of the Company, from Thaioil Marine Co., Ltd. The Company purchased 9 million shares, totalling US Dollar 9 million or equivalent to Baht 277 million. As a result of this ordinary shares purchase transaction, TOMI is a direct subsidiary of the Company.

On 19 November 2021, the Company passed a resolution to dissolve TOMI and classified an investment as non-current asset from discontinued operations as disclosed in Note 15.

Thaioil Marine Co., Ltd.

On 30 April 2021, the Company disposed all of its ordinary shares in Thaioil Marine Co., Ltd. totalling Baht 860 million and classified the investment as non-current assets held-for-sales. As a result of reclassification, the Company recognised Baht 162 million for loss from impairment and presented as part of the administrative expenses. The Group and the Company recognised profit from disposal of Baht 41 million and Baht 52 million, respectively.

PT TOP Investment Indonesia

The Company's Board of Directors approved the establishment of PT TOP Investment Indonesia (TII), a newly subsidiary in the Republic of Indonesia, in order to invest in PT Chandra Asri Petrochemical Tbk (CAP). TII is established on 12 July 2021 and held by the Company for 99.99% and by Thai Oil Treasury Center Co., Ltd. for 0.01% of shares. TII has a registered capital totalling US Dollar 914.2 million or equivalent to Baht 29,944.3 million. TII received the capital payments during August 2021.

Thaioil Treasury Center Co., Ltd (TTC)

In August 2021, TTC which is a Company's direct shareholder in the proportion of 100% of the total registered capital, has called up the capital increase in the total amount of Baht 220 million. The Company paid for the shares in August 2021.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Indirect subsidiaries

Chaibadan Community Power Plant 1 Co., Ltd. and Chaibadan Community Power Plant 2 Co., Ltd.

On 15 February 2021, Sapthip Co., Ltd., an indirect subsidiary of the Company, invested in Chaibadan Community Power Plant 1 Co., Ltd. (CCPP1) and Chaibadan Community Power Plant 2 Co., Ltd. (CCPP2) by acquiring 99.99% of its total registered capital. CCPP1 and CCPP2 have 640,000 registered ordinary shares in each entity with a par value of Baht 10 each. In February 2021, Sapthip Co., Ltd. paid for 25% of the total shares, equivalent to Baht 1.6 million.

On 16 April 2021, Sapthip Co., Ltd., disposed ordinary shares of CCPP1 and CCPP2 totalling 313,600 shares in each entity, which equivalents to 49% of issued and paid-up share capital to Combined Heat and Power Producing Company Limited, a subsidiary of Global Power Synergy Public Company Limited. As a result, the percentage of shareholding of Sapthip Co., Ltd. in CCPP1 and CCPP2 decreased from 99.99% to 50.99% and the Group changed the classification of investments in CCPP1 and CCPP2 from investment in subsidiaries to investment in joint ventures.

JSKEM Private Limited

On 1 July 2021, TOP Solvent Company Limited (TS), an indirect subsidiary of the Company, purchased the shares in JSKEM Private Limited (JSKEM) from the existing shareholders of JSKEM for 60% shareholding interests in an amount of US Dollar 0.69 million or equivalent to Baht 22.26 million.

TOP Ventures Thailand Co., Ltd (TVTH)

In September 2021, TTC a direct shareholder holding 99.99 percent of the total registered capital of TVTH. TVTH has called for additional shares in the total amount of Baht 10.5 million. TTC has fully paid for the shares in October 2021.

TOP Ventures Hong Kong Limited (TVHK)

September 2021, TTC a direct shareholder holding 99.99 percent of the total registered capital of TVHK. TVHK has called for additional shares in the amount of US Dollar 4.5 million or equivalent to Baht 151.4 million. TTC has fully paid for the shares in October 2021.

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Thai Oil Public Company Limited

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16.2 The details of subsidiaries are as follows:

Separate financial statements										
	Country of incorporation	Nature of the business	Percentage of direct shareholding		Paid-up capital		Cost method		Dividend income for the year	
			2021 %	2020 %	2021 Million Baht	2020 Million Baht	2021 Million Baht	2020 Million Baht	2021 Million Baht	2020 Million Baht
Thai Paraxylene Co., Ltd. and its subsidiary	Thailand	Paraxylene manufacturing and distribution	99.99	99.99	2,572	2,572	2,161	2,161	1,801	514
- Subsidiary LABIX Co., Ltd.	Thailand	Linear Alkyl Benzene manufacturing and distribution	75.00	75.00	4,655	4,655	-	-	-	-
Thai Lube Base Public Company Limited	Thailand	Lube base oil refining and distribution	99.99	99.99	1,758	1,758	1,979	1,979	2,813	1,406
Thaioil Marine Co., Ltd. and its subsidiaries	Thailand	Providing marine transportation services for petroleum and liquid chemical products	-	99.99	-	970	-	(1)	-	-
- Subsidiaries TOP Maritime Service Co., Ltd.	Thailand	Providing marine Transportation services for crew and utilities in the Gulf of Thailand	-	99.99	-	520	-	-	-	-
Thaioil Marine International Pte. Ltd.	Republic of Singapore	Investment in marine transportation for crude oil and petroleum product business	100.00	100.00	277	274	(2)	-	-	-
Thaioil Energy Services Co., Ltd.	Thailand	Providing human Resource management	99.99	99.99	40	40	40	40	26	27

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Separate financial statements										
	Country of incorporation	Nature of the business	Percentage of direct shareholding		Paid-up capital		Cost method		Dividend income for the year	
			2021	2020	2021	2020	2021	2020	2021	2020
			%	%	Million Baht	Million Baht	Million Baht	Million Baht	Million Baht	Million Baht
Thaioil Solvent Co., Ltd. and its subsidiaries	Thailand	Investment in solvent and chemical business	99.99	99.99	1,250	1,250	1,250	1,250	100	80
- Subsidiaries										
TOP Solvent Co., Ltd. and its subsidiaries	Thailand	Distribution of solvent and chemical products	99.99	99.99	1,200	1,200	-	-	-	-
Sak Chaisidhi Co., Ltd.	Thailand	Solvent and chemical products manufacturing	80.52	80.52	190	190	-	-	-	-
TOP Solvent (Vietnam) LLC	Socialist Republic of Vietnam	Distribution of solvent and chemical products	100.00	100.00	634	634	-	-	-	-
PT Tirta Surya Raya	Republic of Indonesia	Distribution of solvent and chemical products	77.71	67.00	50	50	-	-	-	-
JSKEM Private Limited and its subsidiary	Republic of Singapore	Distribution of solvent and chemical products	60.00	-	22	-	-	-	-	-
TSCHEM India Private Limited	Republic of India	Distribution of solvent and chemical products	99.99	-	-(3)	-	-	-	-	-
Thaioil Ethanol Co., Ltd. and its subsidiaries	Thailand	Investment in ethanol businesses and alternative energy products	99.99	99.99	1,450	1,450	1,450	1,450	290	-
- Subsidiaries										
Sapthip Co., Ltd. and its subsidiaries	Thailand	Ethanol products manufacturing and distribution	50.00	50.00	800	800	-	-	-	-
Sapthip Green Energy Co., Ltd.	Thailand	Biogas power generation and distribution	99.99	99.99	25	25	-	-	-	-

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Thai Oil Public Company Limited

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Separate financial statements										
	Country of incorporation	Nature of the business	Percentage of direct shareholding		Paid-up capital		Cost method		Dividend income for the year	
			2021 %	2020 %	2021 Million Baht	2020 Million Baht	2021 Million Baht	2020 Million Baht	2021 Million Baht	2020 Million Baht
Thaioil Power Co., Ltd.	Thailand	Power and stream generation and distribution	-	73.99	-	2,810	-	3,195	16,881	894
TOP SPP Co., Ltd.	Thailand	Power and stream generation and distribution	99.99	99.99	3,500	3,500	3,500	3,500	-	963
Thaioil Treasury Center Co., Ltd. and its subsidiaries	Thailand	Treasury center for the Group's business	99.99	99.99	690	470	690	470	150	210
- Subsidiaries										
TOP Ventures Company Limited	Thailand	Investment in venture capital and/or start-up business	99.99	99.99	19	9	-	-	-	-
TOP Ventures Hong Kong Limited and its subsidiaries	Hong Kong Special Administrative Region	Investment in venture capital and/or start-up business	100.00	100.00	480	329	-	-	-	-
TOP Ventures America LLC.	United States of America	Investment in venture capital and/or start-up business	100.00	100.00	326	326	-	-	-	-
PT TOP Investment Indonesia	Republic of Indonesia	Investment in Olefins petrochemical business	100.00	-	29,944	-	29,944	-	-	-
Total investment in subsidiaries					41,014	14,045	22,061	4,094		

- (1) During the year 2020, the Company classified investment in subsidiary as assets held-for-sale. (Note 15)
- (2) During the year 2021, the Company classified investment in subsidiary as assets discontinued operation. (Note 15)
- (3) The balance is below Baht 1 million.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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16.3 Summarised financial information on subsidiaries with material non-controlling interests

Set out below are the summarised financial information for each subsidiary that has non-controlling interests and are material to the Group. The amounts disclosed for each subsidiary are before inter-company eliminations.

See note 31 for transactions with non-controlling interests.

Summarised statement of financial position

As at 31 December	Thaioil Power Co., Ltd.		LABIX Co., Ltd.		Other individually immaterial subsidiaries			Total
	2021	2020	2021	2020	2021	2020	2020	
Non-controlling interest percentage	-	26.01	25.00	25.00				
Current assets	-	623	3,248	855				
Non-current assets	-	22,962	9,938	10,482				
Current liabilities	-	(15,674)	(2,681)	(1,498)				
Non-current liabilities	-	(72)	(5,086)	(5,648)				
Net assets	-	7,839	5,419	4,191				
Carrying amount of non-controlling interests	-	2,039	1,355	1,048	858	802	2,213	3,889

(Million Baht)

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Thai Oil Public Company Limited

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Summarised statement of comprehensive income

	(Million Baht)					
	Thaioil Power Co., Ltd.		LABIX Co., Ltd.		Other individually immaterial subsidiaries	
	2021	2020	2021	2020	2021	2020
For the year ended 31 December						
Revenue from sales and services	325	4,132	16,744	10,584		
Profit (loss)	118	1,531	1,228	(99)		
Other comprehensive income (expense)	-	(20)	-	-		
Total comprehensive income (expense)	118	1,511	1,228	(99)		
Profit (loss) allocated to non-controlling interests	31	398	307	(25)	87	46
Other comprehensive income (expense) allocated to non-controlling interests	31	393	307	(25)	89	44
Summarised statement of cash flows						
Cash flows from operating activities	-	704	1,148	761		
Cash flows from investing activities	-	764	(15)	(253)		
Cash flows from financing activities	-	(1,749)	(549)	(594)		
Net increase (decrease) in cash and cash equivalents	-	(281)	584	(86)		
Cash and cash equivalents at the beginning of the year	-	424	65	151		
Exchange losses on cash and cash equivalents	-	-	3	-		
Cash and cash equivalents at the end of the year	-	143	652	65		
Dividends paid to non-controlling interests	-	314	-	-		

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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17 Investments in joint ventures and associates

17.1 Movements of investments in joint ventures and associates are as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
At 1 January	24,521	33,059	23,179	29,621
Impact from the first time adoption of new financial reporting standards	-	(516)	-	(362)
Increase in investment	29,920	-	-	-
Disposal of investment in associates	(133)	(9,784)	-	(7,792)
Share of profit of joint ventures and associates, net	1,675	2,573	-	1,560
Dividend income	(1,103)	(1,505)	-	(761)
Exchange differences on translation	719	4	-	-
Share of other comprehensive expense of associates, net of tax	476	(49)	-	(20)
Loss from the change in the ownership the net assets in an associate	(2)	-	-	-
Investment increase from entire business transfer	-	-	93	-
Classified as assets held-for-sale (Note 15)	-	(194)	-	-
Investment reclassification	(661)	933	-	933
At 31 December	55,412	24,521	23,272	23,179

Notes to the consolidated and separate financial statements ➤

Thai Oil Public Company Limited

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Direct associate

Global Power Synergy Public Company Limited (GPSC)

The Company carried out an entire business transfer from TP. The transferred transaction includes an investment in Global Power Synergy Public Company Limited which is an associate of the Group. After the transfer, the Company directly held the same shareholding interests of 20.78%. The carrying amount on the transfer date was Baht 22,279 million as disclosed in Note 40.

Indirect associate

PT Chandra Asri Petrochemical Tbk

The Group acquired 15.38% of the total shares of PT Chandra Asri Petrochemical Tbk (CAP) through TII, a newly established subsidiary in an amount of US Dollar 916.6 million or equivalent to Baht 29,911 million and if include the direct acquisition cost of investment, the total acquisition of investment were Baht 29,920 million. The first transaction that acquired 15% was completed during September 2021 and the Group will acquire additional shares in the proportion of 0.38% of CAP's total shares capital with the condition of payment due within 5 years from the date of acquisition of the first transaction. The additional investment value to be paid up depends on the approval of investment in the development and construction petrochemical plants by a subsidiary of CAP.

Indirect joint ventures

Chaibadan Community Power Plant 1 Co., Ltd. and Chaibadan Community Power Plant 2 Co., Ltd.

The Group changed its classification of investment in CCPP1 and CCPP2 which was previously classified as investment in subsidiaries to be investment in joint venture. The change was from the disposal of ordinary shares as disclosed in Note 16.1. The carrying amount on that date was Baht 1.6 million.

Ubon Bio Ethanol Public Company Limited.

On 27 September 2021, Ubon Bio Ethanol Public Company Limited (UBE), entered into the Initial Public Offering (IPO) of its ordinary shares. Thaioil Ethanol Company Limited (TET), a subsidiary of the Group partially disposed shares of UBE totalling Baht 234.8 million, and consequently decreased its percentage of shareholding of TET from 21.28% to 12.39%. The Group reclassification its investments in UBE from investment in an associate to financial assets measured at fair value through other comprehensive income. The Group recognised gain from disposed totalling Baht 101.6 milion and gain from changes reclassification of an investment totalling Baht 503.8 million in the statement of income.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

17.2 Investments in joint ventures

The details of joint ventures are as follows:

Consolidated financial statements										
	Country of incorporation	Nature of business	Ownership interest held by the Group		Cost method		Equity method		Dividend income	
			2021	2020	2021	2020	2021	2020	2021	2020
			%	%	Million Baht	Million Baht	Million Baht	Million Baht	Million Baht	Million Baht
TOP-NTL Pte. Ltd.	Republic of Singapore	Providing service as a trustee manager	-	50.00	-	(1)	-	(2)	-	-
TOP-NTL Shipping Trust	Republic of Singapore	Investment in marine transportation for crude oil and petroleum product business	-	50.00	-	24	-	(2)	-	-
TOP Nautical Star Co., Ltd.	Thailand	Providing marine transportation services for crude oil, feedstock and petroleum product and storage	-	35.00	-	53	-	(2)	-	26
TOP-NYK MarineOne Pte. Ltd.	Republic of Singapore	Providing marine transportation for crude oil and petroleum product business	-	-	-	-	-	-	-	213
Chaibadan Community Power Plant 1 Co., Ltd.	Thailand	Power generation and distribution	50.99	-	1	-	1	-	-	-
Chaibadan Community Power Plant 2 Co., Ltd.	Thailand	Power generation and distribution	50.99	-	1	-	1	-	-	-
Total investments in joint ventures					2	77	2	-	-	239

All joint ventures above are private companies and do not have a quoted market price available for their shares. There are no contingent liabilities relating to the Group's interest in these joint ventures.

⁽¹⁾ The balance is below Baht 1 million.

⁽²⁾ During 2020, the Group classified these investments in joint ventures as assets held-for-sale (Note 15).

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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17.3 Investments in associates

The details of associates are as follows:

Consolidated financial statements										
	Country of incorporation	Nature of business	Ownership interest held by the Group		Cost method		Equity method		Dividend income	
			2021	2020	2021	2020	2021	2020	2021	2020
			%	%	Million Baht	Million Baht	Million Baht	Million Baht	Million Baht	Million Baht
PTT Digital Solutions Co., Ltd.	Thailand	Provide information technology and computer service activities	20.00	20.00	30	30	585	507	26	19
PTT Energy Solutions Co., Ltd.	Thailand	Provide technical and operational services	20.00	20.00	30	30	37	45	-	-
Global Power Synergy Public Company Limited	Thailand	Power, steam and water generation and distribution for industries	20.78	20.78	22,279	18,034	23,314	22,185	879	1,088
Ubon Bio Ethanol Public Company Limited	Thailand	Ethanol products manufacturing and distribution	⁽²⁾	21.28	⁽²⁾	769	⁽²⁾	827	79	2
T. I. M. Ship Management Co., Ltd.	Thailand	Provide ship management services	-	33.33	-	1	-	⁽¹⁾	-	-
Thai Petroleum Pipeline Co., Ltd.	Thailand	Oil transportation through the pipeline	9.19	9.19	933	933	940	957	119	157
PT Chandra Asri Petrochemical Tbk	Republic of Indonesia	Chemical products manufacturing and distribution	15.00	-	29,920	-	30,536	-	-	-
Total investments in associates					53,192	19,797	55,412	24,521	1,103	1,266

⁽¹⁾ During 2020, the Group classified this investment in an associate as asset held-for-sale (Note 15).

⁽²⁾ During 2021, the Group classified this investment in an associate as financial asset measured at fair value through other comprehensive income (Note 7).

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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Separate financial statements									
	Country of incorporation	Nature of business	Ownership interest held by the Company		Cost method			Dividend income	
			2021	2020	2021	2020	2020	2021	2020
			%	%	Million Baht	(Restated) Million Baht	Million Baht	Million Baht	(Restated) Million Baht
PTT Digital Solutions Co., Ltd.	Thailand	Provide information technology and computer service activities	20.00	20.00	30	30	26	19	
PTT Energy Solutions Co., Ltd.	Thailand	Provide technical and operational services	20.00	20.00	30	30	-	-	
Global Power Synergy Public Company Limited	Thailand	Power, steam and water generation and distribution for industries	20.78	20.78	22,279	22,186	879	1,088	
Thai Petroleum Pipeline Co., Ltd.	Thailand	Oil transportation through the pipeline	9.19	9.19	933	933	119	157	
Total investments in associates					23,272	23,179	1,024	1,264	

As at 31 December 2021, the fair value of the Group and the Company's interests in Global Power Synergy Public Company Limited (GPSC) listed in the Stock Exchange of Thailand was Baht 52,014 million (2020: Baht 43,223 million); and the fair value of the Group and the Company in PT Chandra Asri Petrochemical Tbk listed in the Stock Exchange of the Republic of Indonesia was Indonesian Rupiah 23,764 billion or equivalent to Baht 55,771 million.

Other associates are private companies and do not have a quoted market price available for their shares. There are no contingent liabilities relating to the Group's interest in these associates.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

17.4 Summarised financial information for associate

Set out below are the summarised financial information for the associates that are material to the Group. The information disclosed reflects the amounting presented in the financial statements of the relevant associates (not only the Group's shares of those amounts). They have been amended to reflect adjustments made using the equity method, including fair value adjustments and modifications for differences in accounting policy.

Summarised statement of financial position

(Million Baht)

	Global Power Synergy Public Company Limited		PT Chandra Asri Petrochemical Tbk	
As at 31 December	2021	2020	2021	2020
Current assets	45,490	40,739	98,789	-
Non-current assets	224,889	215,916	67,979	-
Current liabilities	(23,036)	(21,923)	(31,017)	-
Non-current liabilities	(129,595)	(122,865)	(38,132)	-
Net assets	117,748	111,867	97,619	-
Attributable to non-controlling interests	9,413	8,970	138	-
Attributable to investee's shareholders	108,335	102,897	97,481	-

Summarised statement of comprehensive income

(Million Baht)

	Global Power Synergy Public Company Limited		PT Chandra Asri Petrochemical Tbk	
For the year ended 31 December	2021	2020	2021	2020
Revenue	74,874	69,578	7,598	-
Net profit	7,840	8,490	(8)	-
Other comprehensive expense	2,591	(152)	40	-
Total comprehensive income	10,431	8,338	32	-
Attributable to non-controlling interests	758	927	2	-
Attributable to investee's shareholders	9,673	7,411	30	-

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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Reconciliation of summarised financial information

Reconciliation of the summarised financial information presented to the carrying amount of its interest in associate.

(Million Baht)

	Global Power Synergy Public Company Limited		PT Chandra Asri Petrochemical Tbk	
	2021	2020	2021	2020
Group's interest in net assets of investee				
at 1 January	22,186	31,159	-	-
Loss from adoption TFRS 9 and TFRS 16	-	(516)	-	-
Addition of investment	-	-	29,920	-
Share disposals	-	(9,512)	-	-
Total comprehensive income attributable				
to the Group	2,009	2,143	616	-
Dividends received	(879)	(1,088)	-	-
Deficit from the change in the net assets				
of an associate	(2)	-	-	-
Group's interest in the net assets of				
associates at the year ended	23,314	22,186	30,536	-
Carrying amount of interest in associates				
at 31 December	23,314	22,186	30,536	-

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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17.5 Individually immaterial joint ventures and associates

In addition to the interests in associates disclosed above, the Group also has interests in a number of individually immaterial joint ventures and associates that are accounted for using the equity method.

(Million Baht)

	Individually immaterial joint ventures and associates	
	2021	2020
Aggregate carrying amount of individually immaterial joint ventures	2	-
Aggregate amounts of the Group's share of		
Profit from continuing activities	-(1)	74
Other comprehensive income (expense)	-	3
Total comprehensive income (expense)	-(1)	77
Profit from discontinued operations	-	4
Other comprehensive expense	-	(1)
Total comprehensive income (expense)	-	3
Aggregate carrying amount of individually immaterial associates	1,562	2,335
Aggregate amounts of the Group's share of		
Profit from continuing activities	197	303
Other comprehensive expense	-	(3)
Total comprehensive income	197	300
Profit from discontinued operations	-	3
Other comprehensive expense	-	-
Total comprehensive income	-	3

(1) The balance is below Baht 1 million

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

18 Investment property, net

Investment property of the Group is land and land improvement.

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 1 January				
Cost	103	103	1,141	1,141
<u>Less</u> Provision for impairment	-	-	-	-
Net book amount	103	103	1,141	1,141
For the year ended 31 December				
Opening net book amount	103	103	1,141	1,141
Transfer from property, plant and equipment, net (Note 19)	-	-	(17)	-
Reversal of provision for impairment	-	-	-	-
Closing net book amount	103	103	1,124	1,141
As at 31 December				
Cost	103	103	1,124	1,141
<u>Less</u> Provision for impairment	-	-	-	-
Net book amount	103	103	1,124	1,141
Fair value	458	458	2,626	2,682

Fair value Measurement

The fair value of investment property was determined by external, independent property valuers, having appropriate recognised professional qualifications and experiences in valuing the property. The independent valuers provide the fair value of the Group's investment property portfolio on a regular basis.

The fair value measurement for all investment property has been categorised as a level 3 fair value based on the inputs to the valuation technique used.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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The following table shows the valuation technique used in measuring the fair value of investment property, as well as the significant unobservable inputs used.

Valuation technique	Significant unobservable inputs	Inter-relationship between key unobservable inputs and fair value measurement
<p>- <u>Discounted cash flows</u>;</p> <p>The valuation model considers the present value of net cash flows to be generated from the property, taking into account expected rental growth rate. The expected net cash flows are discounted using risk-adjusted discount rates. Among other factors, the discount rate estimation considers the quality of its location (prime vs secondary), tenant credit quality and lease terms.</p>	<ul style="list-style-type: none"> Contractually agreed lease income over the remaining period. The risk-adjusted discount rates (6%-7%) 	<p>The estimated fair value increase (decrease) if:</p> <ul style="list-style-type: none"> Expected market rental growth were higher (lower); The risk-adjusted discount rate were lower (higher).
<p>- <u>Market approach</u></p>	<p>The adjusted quoted price and the actual selling price of comparable investment properties</p>	<p>The estimated fair value increase (decrease) if land price were higher (lower).</p>

Amounts recognised in profit and loss that are related to investment property are as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Rental income	8	8	43	43

Notes to the consolidated and separate financial statements



Thai Oil Public Company Limited

For the year ended 31 December 2021

19 Property, plant and equipment, net

(Million Baht)

Consolidated financial statements

	Land Buildings	Leasehold improvements	Refinery plant and equipment	Petro-chemical plants	Power plants	Machinery, equipment and plant	Oil and liquid chemical tankers and crew boats	Furniture, fixtures, office equipment and others	Vehicles	Construction in progress	Total
At 1 January 2020											
Cost	7,044	3,523	212	104,280	35,958	17,653	6,972	3,416	1,012	14	217,782
Less Accumulated depreciation	-	(1,440)	(32)	(78,840)	(18,452)	(6,710)	(4,018)	(911)	(791)	(11)	(111,205)
Less Provision for impairment	-	-	-	-	-	-	-	(18)	-	-	(18)
Net book amount	7,044	2,083	180	25,440	17,506	10,943	2,954	2,487	221	3	106,559
For the year ended 31 December 2020											
Opening net book amount	7,044	2,083	180	25,440	17,506	10,943	2,954	2,487	221	3	106,559
Exchange differences	-	-	-	-	-	-	(1)	-	-	-	(1)
Additions during the year	295	8	-	800	220	43	82	7	13	1	47,032
Transfer in (out)	-	1,202	-	5,492	145	1	220	(3)	21	-	(7,078)
Write off, net	-	(1)	-	(1)	(174)	-	(1)	-	-	-	(182)
Depreciation charged during the year	-	(185)	(8)	(2,722)	(1,572)	(785)	(342)	(143)	(60)	(1)	(5,818)
Assets classified as held-for-sale, net	-	(6)	-	-	-	-	-	(2,348)	(7)	-	(2,365)
Closing net book amount	7,339	3,101	172	29,009	16,125	10,202	2,912	-	188	3	145,225
At 31 December 2020											
Cost	7,339	4,709	212	110,570	36,052	17,697	7,259	-	1,010	14	261,036
Less Accumulated depreciation	-	(1,608)	(40)	(81,561)	(19,927)	(7,495)	(4,347)	-	(822)	(11)	(115,811)
Less Provision for impairment	-	-	-	-	-	-	-	-	-	-	-
Net book amount	7,339	3,101	172	29,009	16,125	10,202	2,912	-	188	3	145,225

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

	Consolidated financial statements								(Million Baht)
	Land	Buildings	Leasehold improvements	Refinery plant and equipment	Petro-chemical plants	Power plants	Machinery, equipment and plant	Furniture, fixtures, office equipment and others	
For the year ended 31 December 2021									
Opening net book amount	7,339	3,101	172	29,009	16,125	10,202	2,912	188	145,225
Exchange differences	-	9	-	-	-	-	41	-	50
Additions during the year	8	-	-	62	6	-	29	9	38,861
Transfer in (out)	-	359	-	5,797	82	5	46	51	-
Write off, net	-	-	-	-	(4)	-	(2)	-	(6)
Transfer to inventory	-	-	-	-	-	-	-	-	(13)
Decommissioning	-	-	-	-	-	-	(2)	-	(2)
Depreciation charged during the year	-	(253)	(7)	(3,033)	(1,507)	(530)	(326)	(58)	(5,716)
Closing net book amount	7,347	3,216	165	31,835	14,702	9,677	2,698	190	178,399
At 31 December 2021									
Cost	7,347	5,079	212	116,429	36,122	17,702	7,386	1,068	299,927
Less Accumulated depreciation	-	(1,863)	(47)	(84,594)	(21,420)	(8,025)	(4,688)	(878)	(121,528)
Net book amount	7,347	3,216	165	31,835	14,702	9,677	2,698	190	178,399

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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(Million Baht)

Separate financial statements

(Restated)

	Land	Buildings	Refinery plant and equipment	Power plants	Machinery, equipment and plant	Furniture, fixtures, office equipment and others	Vehicles	Construction in progress	Total
At 1 January 2020									
Cost	4,629	2,197	96,063	5,780	1,474	605	1	37,516	148,265
Less Accumulated depreciation	-	(719)	(71,738)	(4,788)	(1,190)	(465)	(1)	-	(78,901)
Net book amount	4,629	1,478	24,325	992	284	140	-	37,516	69,364
For the year ended 31 December 2020									
Opening net book amount	4,629	1,478	24,325	992	284	140	-	37,516	69,364
Additions during the year	295	7	697	4	13	7	-	45,435	46,458
Transfer in (out)	-	1,206	5,432	-	78	16	-	(6,732)	-
Write off, net	-	(1)	(1)	-	-	-	-	-	(2)
Depreciation charged during the year	-	(129)	(2,641)	(263)	(74)	(48)	-	-	(3,155)
Closing net book amount	4,924	2,561	27,812	733	301	115	-	76,219	112,665
At 31 December 2020									
Cost	4,924	3,402	102,192	5,784	1,565	628	1	76,219	194,715
Less Accumulated depreciation	-	(841)	(74,380)	(5,051)	(1,264)	(513)	(1)	-	(82,050)
Net book amount	4,924	2,561	27,812	733	301	115	-	76,219	112,665

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Thai Oil Public Company Limited

For the year ended 31 December 2021

Separate financial statements								(Million Baht)	
	Land	Buildings	Refinery plant and equipment	Power plants	Machinery, equipment and plant equipment	Furniture, fixtures, office equipment and others	Vehicles	Construction in progress	Total
For the year ended 31 December 2021									
Opening net book amount	4,924	2,561	27,812	733	301	115	-	76,219	112,665
Additions during the year	-	-	62	-	6	5	-	37,157	37,230
Transfer in (out)	-	338	5,780	-	4	48	-	(6,170)	-
Transfer from investment property (Note 18)	17	-	-	-	-	-	-	-	17
Adjustment from entire business transfer	-	-	-	(22)	(2)	-	-	-	(24)
Depreciation charged during the year	-	(197)	(2,708)	(243)	(58)	(49)	-	-	(3,255)
Closing net book amount	4,941	2,702	30,946	468	251	119	-	107,206	146,633
At 31 December 2021									
Cost	4,941	3,740	108,034	5,784	1,575	681	1	107,206	231,962
Less: Accumulated depreciation	-	(1,038)	(77,088)	(5,316)	(1,324)	(562)	(1)	-	(85,329)
Net book amount	4,941	2,702	30,946	468	251	119	-	107,206	146,633

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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The gross amounts of the Group's and the Company's fully depreciated plant and equipment that were still in use as at 31 December 2021, were Baht 56,901 million (2020: Baht 56,582 million) and Baht 47,651 million (2020: Baht 46,767 million), respectively.

As at 31 December 2021, certain subsidiaries mortgaged their land, building, petrochemical plant and machines as collateral for credit facilities as described in note 27. The net book value of land, building, petrochemical plant, and machines amounted to Baht 16,769 million (2020: Baht 19,242 million).

For the year ended 31 December 2021, borrowing costs of Baht 3,365 million for the Group and Baht 3,797 million for the Company (2020: Baht 1,965 million and Baht 2,277 million, respectively) represented the borrowing to finance the Clean Fuel Project. The Group and the Company applied capitalisation rate at 2.92% to 5.47% and 3.68% to 5.99% per annum, respectively (2020: 3.43% to 5.47% and 3.83% to 5.99% per annum, respectively) for borrowing cost calculation. The borrowing costs were included in 'Additions' during the year.

20 Right-of-use assets

As at 31 December, right-of-use asset balance are as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Land	12,307	12,720	11,315	11,690
Building	43	88	6	25
Equipment	78	36	52	24
Oil tankers	4,627	1,772	4,627	1,772
Vehicles	76	113	66	99
Total	17,131	14,729	16,066	13,610

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Thai Oil Public Company Limited

For the year ended 31 December 2021

For the year ended 31 December, amounts recognised to profit or loss and cash flows relating to leases are as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Depreciation charge of right-of-use assets:				
Land	348	411	314	382
Building	60	36	23	24
Equipment	36	13	24	7
Oil tankers	1,006	1,244	1,006	1,244
Vehicles	45	45	38	36
Total	1,495	1,749	1,405	1,693
Addition to the right-of-use assets during the year	4,042	670	4,000	498
Total cash outflow for leases	1,719	1,721	1,579	1,707
Expense relating to short-term leases	49	11	48	-
Expense relating to leases of low-value assets	13	18	12	18
Income from subleasing right-of-use asset	1	2	54	54

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Thai Oil Public Company Limited

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21 Goodwill

(Million Baht)

	Consolidated financial statement	
	2021	2020
At 1 January		
Cost	764	765
Net book amount	764	765
For the year ended 31 December		
Opening net book amount	764	765
Additions from business combination	20	-
Exchange differences	66	(1)
Closing net book amount	850	764
At 31 December		
Cost	850	764
Net book amount	850	764

Goodwill is allocated to the Group's cash-generating units (CGUs) identified according to business segment which is solvent segment.

Impairment testing for goodwill

The Group tests goodwill impairment on an annual basis, the recoverable amount was based on its value-in-use, determined by discounting future cash flows to be generated in the future from the continuing use of CGU which based on the management approved five-year financial budget. Those cash flows are determined by annual earnings before interest, taxes, depreciation, and amortisation (EBITDA) estimated by management, adjusted by corporate income tax, change in working capital and relevant capital expenditures. The estimate also included a long-term growth rate with reference to gross domestic product (GDP) growth rates for the countries in which the CGUs operates and experiences by management.

Notes to the consolidated and separate financial statements

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The key assumptions used for value-in-use calculations are as follows:

(%)

	Goodwill - Thailand	Goodwill - Vietnam
Gross margin	7.48 - 7.71	5.27 - 6.45
Long-term growth rate	3.00	6.50
Discount rate from weighted average cost of capital (WACC)	8.65	10.14
Average working capital turnover rate	5.33	6.95

The recoverable amount of CGU in which goodwill is allocated is estimated to exceed the carrying amount of the CGU; therefore, the Group did not recognise loss from impairment to the consolidated financial statements of the Group.

22 Intangible assets, net

(Million Baht)

	Consolidated financial statements				
	License fee	Computer software	Patent	Intangible assets under processing	Total
At 1 January 2020					
Cost	3,376	980	1	144	4,501
<u>Less</u> Accumulated amortisation	(1,575)	(539)	-	-	(2,114)
Net book amount	1,801	441	1	144	2,387
For the year ended 31 December 2020					
Opening net book amount	1,801	441	1	144	2,387
Additions during the year	27	24	-	221	272
Transfer in (out)	-	4	-	(4)	-
Amortisation charged during the year	(96)	(84)	-	-	(180)
Closing net book amount	1,732	385	1	361	2,479

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Consolidated financial statements				
	License fee	Computer software	Patent	Intangible assets under processing	Total
At 31 December 2020					
Cost	3,403	1,008	1	361	4,773
<u>Less</u> Accumulated amortisation	(1,671)	(623)	-	-	(2,294)
Net book amount	1,732	385	1	361	2,479
For the year ended 31 December 2021					
Opening net book amount	1,732	385	1	361	2,479
Additions during the year	7	2	-	155	164
Transfer in (out)	9	68	-	(77)	-
Amortisation charged during the year	(99)	(87)	-	-	(186)
Closing net book amount	1,649	368	1	439	2,457
At 31 December 2021					
Cost	3,419	1,078	1	439	4,937
<u>Less</u> Accumulated amortisation	(1,770)	(710)	-	-	(2,480)
Net book amount	1,649	368	1	439	2,457

Notes to the consolidated and separate financial statements ➤

Thai Oil Public Company Limited

For the year ended 31 December 2021

(Million Baht)

	Separate financial statements				
	(Restated)				
	License fee	Computer software	Patent	Intangible assets under processing	Total
At 1 January 2020					
Cost	876	822	1	144	1,843
<u>Less</u> Accumulated amortisation	(810)	(384)	-	-	(1,194)
Net book amount	66	438	1	144	649
For the year ended 31 December 2020					
Opening net book amount	66	438	1	144	649
Additions during the year	27	20	-	220	267
Transfer in (out)	-	4	-	(4)	-
Amortisation charged during the year	(11)	(76)	-	-	(87)
Closing net book amount	82	386	1	360	829
At 31 December 2020					
Cost	903	846	1	360	2,110
<u>Less</u> Accumulated amortisation	(821)	(460)	-	-	(1,281)
Net book amount	82	386	1	360	829
For the year ended 31 December 2021					
Opening net book amount	82	386	1	360	829
Additions during the year	7	-	-	151	158
Transfer in (out)	9	68	-	(77)	-
Amortisation charged during the year	(14)	(80)	-	-	(94)
Closing net book amount	84	374	1	434	893
At 31 December 2021					
Cost	919	914	1	434	2,268
<u>Less</u> Accumulated amortisation	(835)	(540)	-	-	(1,375)
Net book amount	84	374	1	434	893

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

23 Deferred income taxes

The analysis of deferred tax assets and deferred tax liabilities is as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Deferred tax assets	2,585	2,678	2,410	2,378
Deferred tax liabilities	(170)	(135)	-	-
Deferred tax assets, net	2,415	2,543	2,410	2,378

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The movements in deferred tax assets and liabilities during the year is as follows:

Consolidated financial statements										(Million Baht)
	Employee benefit obligation	Impairment losses on assets	Tax losses	Lease liabilities	Cash flow hedges	Borrowing cost	Loss from exchange rate in construction in progress	Others	Total	
Deferred tax assets										
At 1 January 2020	917	-	-	2	57	-	-	26	1,002	
Charged (credited) to profit or loss	20	32	900	151	180	380	188	(9)	1,842	
Charged to other comprehensive income	8	-	-	-	75	-	-	-	83	
Classified as assets held-for-sale	(4)	-	-	-	-	-	-	2	(2)	
Adjustments in respect of prior year	-	-	-	-	-	(26)	-	-	(26)	
At 31 December 2020	941	32	900	153	312	354	188	19	2,899	
At 1 January 2021	941	32	900	153	312	354	188	19	2,899	
Charged (credited) to profit or loss	19	(32)	(824)	97	(312)	(148)	1,728	9	537	
Charged to other comprehensive income	-	-	-	-	-	-	-	15	15	
Reclassification	-	-	-	(2)	-	-	-	(7)	(9)	
At 31 December 2021	960	-	76	248	-	206	1,916	36	3,442	

Notes to the consolidated and separate financial statements

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Consolidated financial statements							(Million Baht)
	Depreciation	Deferred cost of debentures	Borrowing cost	Cash flow hedges	Others	Total	
Deferred tax liabilities							
At 1 January 2020	(180)	(39)	(143)	-	(35)	(397)	
(Charged) credited to profit or loss	(50)	(22)	143	-	(31)	40	
Classified as liabilities related to assets held-for-sale	-	-	-	-	1	1	
At 31 December 2020	(230)	(61)	-	-	(65)	(356)	
At 1 January 2021	(230)	(61)	-	-	(65)	(356)	
Charged to profit or loss	(111)	(9)	-	(217)	(314)	(651)	
Charged to other comprehensive income	-	-	-	(29)	-	(29)	
Reclassification	(3)	-	-	-	12	9	
At 31 December 2021	(344)	(70)	-	(246)	(367)	(1,027)	

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited
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Separate financial statement										(Million Baht)
	Employee benefit obligation	Impairment losses on assets	Tax losses	Lease liabilities	Cash flow hedges	Borrowing cost	Loss from exchange rate in construction in progress	Others	Total	
Deferred tax assets										
At 1 January 2020	900	-	-	2	(22)	-	-	-	880	
Charged to profit or loss	33	32	898	126	178	354	188	4	1,813	
Charged (credited) to other comprehensive income	(8)	-	-	(2)	50	-	-	-	40	
At 31 December 2020 (Restated)	925	32	898	126	206	354	188	4	2,733	
At 1 January 2021	925	32	898	126	206	354	188	4	2,733	
Charged (credited) to profit or loss	15	(32)	(850)	75	(206)	(148)	1,728	7	589	
Reclassification	-	-	-	(2)	-	-	-	-	(2)	
At 31 December 2021	940	-	48	199	-	206	1,916	11	3,320	

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Thai Oil Public Company Limited
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	Separate financial statement					(Million Baht)
	Depreciation	Deferred cost of debentures	Borrowing cost	Cash flow hedges	Others	
Deferred tax liabilities						
At 1 January 2020	(180)	(49)	(169)	-	(22)	(420)
(Charged) credited to profit or loss	(52)	(23)	169	-	(29)	65
At 31 December 2020 (Restated)	(232)	(72)	-	-	(51)	(355)
At 1 January 2021	(232)	(72)	-	-	(51)	(355)
Charged to profit or loss	(36)	(8)	-	(323)	(213)	(580)
Credited to other comprehensive income	-	-	-	14	-	14
Reclassification	-	-	-	-	2	2
Transfer from entire business transfer	9	-	-	-	-	9
At 31 December 2021	(259)	(80)	-	(309)	(262)	(910)

Deferred income tax assets are recognised for tax loss carried forwards only to the extent that realisation of the related tax benefit through the future taxable profits is probable. The Group did not recognise deferred income tax assets of Baht 12 million (2020: Baht 436 million) in respect of losses amounting to Baht 57 million (2020: Baht 2,180 million) that can be carried forward against future taxable income. Losses amounting to Baht 57 million will expire during 2022 to 2026 (2020: Baht 2,180 million will expire during 2021 to 2025).

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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24 Short-term loans from financial institutions

Short-term loans from financial institutions for the Group and the Company are as follows:

(Million Baht)

As at 31 December	Consolidated financial statement	
	2021	2020
Short-term loans from financial institutions		
– Secured	270	363
– Unsecured	659	350
Total short-term loans from financial institutions	929	713

Movements of short-term loans from financial institutions for the Group and the Company are as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statement	
	2021	2020
Opening balance	713	1,576
Cash flows:		
Proceeds from short-term loans	6,035	6,209
Repayments of short-term loans	(5,821)	(6,731)
Other non-cash movements:		
Classified as liabilities related to assets held-for-sale	-	(344)
Exchange differences	2	3
Closing balance	929	713

As at 31 December 2021, short-term loans from financial institutions represented promissory notes of the subsidiaries which denominated in Thai Baht amounting to Baht 670 million, Vietnamese Dong 177,037 million (equivalent to Baht 259 million), and bore interest at rates of 2.05% to 3.05% per annum (2020: subsidiaries' short-term loans denominated in Thai Baht amounting to Baht 665 million, Vietnamese Dong 31,124 million (equivalent to Baht 40 million) and Indonesian Rupiah 8,447 million (equivalent to Baht 18 million), and bore interest at rates of 1.7% to 10% per annum).

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These short-term loans of subsidiaries are secured and jointed collateral with the long-term loans under the terms and condition in the Credit Facilities Agreement as detailed in note 27.

25 Trade accounts payable

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Related parties (Note 39)	14,164	5,470	17,159	7,165
Other parties	8,837	4,047	8,185	3,616
Total	23,001	9,517	25,344	10,781

26 Other payables

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Other payables	4,555	4,013	3,981	3,808
Accrued interest	1,255	1,221	1,338	1,295
Accrued operating expenses	290	285	115	51
Oil Fuel Fund payable	52	20	52	20
Others	409	210	299	155
Total	6,561	5,749	5,785	5,329

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Thai Oil Public Company Limited

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27 Long-term loans from financial institutions and a third party

Long-term loans from financial institutions and a third party are as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Current portion of long-term loans from financial institutions, net				
– Secured	1,139	766	-	-
– Unsecured	74	187	-	-
Long-term loans from financial institutions, net				
– Secured	10,474	11,481	-	-
– Unsecured	20,002	640	19,536	-
Long-term loans from a third party				
– Unsecured	279	279	-	-
Total long-term loans	31,968	13,353	19,536	-

Movements of long-term loans from financial institutions and a third party are as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
For the year ended 31 December				
Opening balance	13,353	15,440	-	-
<u>Cash flows:</u>				
Proceeds from long-term loans	19,550	126	19,517	-
Repayments of long-term loans	(1,014)	(763)	-	-
<u>Other non-cash movements:</u>				
Amortisation of deferred financing fee	43	10	19	-
Classified as liabilities related to assets held-for-sale	-	(1,459)	-	-
Exchange differences	36	(1)	-	-
Closing balance	31,968	13,353	19,536	-

The weighted average effective interest rate of the long-term loans of the Group were 1.90% per annum (2020: 2.92% per annum).

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The detail of long-term loans of the Group are as follows:

		Outstanding balance as at 31 December						
		2021		2020				
		Original Currency (Million)	Equivalent to Million Baht	Original Currency (Million)	Equivalent to Million Baht			
No.	Currency in agreement					Interest rate per annum (%)	Principal repayment term	Interest payment period
1	Baht	321	321	487	487	FDR (6M) plus a certain margin	Semi-Annual	Semi-Annual
2	Baht	30	30	47	47	FDR (6M) plus a certain margin	Semi-Annual	Semi-Annual
3	Baht	7,277	7,277	7,609	7,609	THBFIX (3M) plus a certain margin	Semi-Annual	Quarterly
4	Baht	4,185	4,185	4,591	4,591	THBFIX (3M) plus a certain margin	Semi-Annual	Monthly
5	Baht	279	279	279	279	THBFIX (3M) plus a certain margin	A specified in the agreement	A specified in the agreement
6	Vietnamese Dong	187,978	276	216,857	282	Fixed rate	Semi-Annual	Semi-Annual
7	Baht	19	19	27	27	MLR minus a certain margin	Semi-Annual	Semi-Annual
8	Baht	12	12	27	27	MLR minus a certain margin	Semi-Annual	Semi-Annual
9	Baht	33	33	4	4	MLR minus a certain margin	Semi-Annual	Semi-Annual
10	Baht	1,494	1,494	-	-	BIBOR plus a certain margin	Terminage agreement	Quarterly
11	Baht	5,089	5,089	-	-	3MBIBOR plus a certain margin	Terminage agreement	Quarterly
12	Baht	9,563	9,563	-	-	MLR plus a certain margin	Terminage agreement	Quarterly
13	Baht	1,908	1,908	-	-	MLR plus a certain margin	Quarterly	Quarterly
14	Baht	1,482	1,482	-	-	6MBIBOR plus a certain margin	Semi-Annual	Quarterly
Total			31,968		13,353			

The Group's long-term loans are secured by collateral of land, building, petrochemical plants, machinery and deposits at financial institutions (Note 10, Note 11 and Note 19) in accordance with the Credit Facilities Agreement.

The Group is required to comply with certain criteria and conditions; for example, maintaining shareholders' portion, maintaining debt to equity ratio at the level as specified in the contract and providing financial supports based on ownership percentage.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

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28 Debentures, net

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Debentures, net	136,710	127,648	30,561	32,244
Less Discount on debenture	(842)	(811)	(131)	(140)
	135,868	126,837	30,430	32,104
Less Current portion of debentures, net	(3,000)	(3,000)	(3,000)	(3,000)
Debentures, net	132,868	123,837	27,430	29,104

Movements of debentures of the Group and the Company are as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
For the year ended 31 December				
Opening balance	126,837	97,184	32,104	32,129
Cash flows:				
Additions	-	31,120	-	-
Repayments	(3,000)	-	(3,000)	-
Financing fee	-	(123)	-	-
Other non-cash movements:				
Interest of discount on debenture	44	52	9	23
Exchange differences	11,987	(1,396)	1,317	(48)
Closing balance	135,868	126,837	30,430	32,104

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Debentures issued by the Company and a subsidiary are unsecured and unsubordinated. The debentures issued by a subsidiary are fully guaranteed by the Company. Detail are as follows:

Consolidated financial statements							
Issuance date	Maturity date	Years	Currency	2021 (Million)	2020 (Million)	Interest rate (% p.a.)	Interest payment term
30 April 2010	30 April 2022	12	Baht	3,000	3,000	4.80	Semi-annual basis
23 March 2012	23 March 2027	15	Baht	7,500	7,500	5.05	Semi-annual basis
23 January 2013	23 January 2023	10	US Dollars	216.4	216.4	3.625	Semi-annual basis
23 January 2013	23 January 2043	30	US Dollars	172.4	172.4	4.875	Semi-annual basis
12 March 2014	12 March 2024	10	Baht	7,000	7,000	4.84	Semi-annual basis
10 April 2018	23 January 2023	10	US Dollars	283.6	283.6	3.625	Semi-annual basis
10 April 2018	23 January 2043	30	US Dollars	327.6	327.6	4.875	Semi-annual basis
20 November 2018	20 November 2028	10	US Dollars	400	400	4.625	Semi-annual basis
20 November 2018	20 November 2048	30	US Dollars	600	600	5.375	Semi-annual basis
17 October 2019	17 October 2049	30	US Dollars	565	565	3.50	Semi-annual basis
18 June 2020	18 June 2030	10	US Dollars	400	400	2.50	Semi-annual basis
18 June 2020	18 June 2050	30	US Dollars	600	600	3.75	Semi-annual basis

Separate financial statements							
Issuance date	Maturity date	Years	Currency	2021 (Million)	2020 (Million)	Interest rate (% p.a.)	Interest payment term
30 April 2010	30 April 2022	12	Baht	3,000	3,000	4.80	Semi-annual basis
23 March 2012	23 March 2027	15	Baht	7,500	7,500	5.05	Semi-annual basis
23 January 2013	23 January 2023	10	US Dollars	216.4	216.4	3.625	Semi-annual basis
23 January 2013	23 January 2043	30	US Dollars	172.4	172.4	4.875	Semi-annual basis
12 March 2014	12 March 2024	10	Baht	7,000	7,000	4.84	Semi-annual basis

The Company and a subsidiary are required to comply with certain criteria and conditions; for example, maintaining shareholders' portion at the level as specified in the contract.

Notes to the consolidated and separate financial statements

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29 Lease liabilities, net

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Within 1 year	1,405	1,315	1,339	1,261
Over than 1 year but less than 5 years	4,156	2,913	4,099	2,831
Over than 5 years	19,127	17,158	19,080	17,098
<u>Less</u> Future interest paid of lease liabilities	(9,306)	(9,275)	(9,295)	(9,253)
Present value of lease liabilities, net	15,382	12,111	15,223	11,937

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Lease liabilities, net	15,382	12,111	15,223	11,937
<u>Less</u> Current portion of lease liabilities, net	(1,247)	(839)	(1,187)	(793)
	14,135	11,272	14,036	11,144

Notes to the consolidated and separate financial statements

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30 Employee benefit obligations

The movement in the defined benefit obligation over the year is as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
At 1 January	4,701	4,586	3,898	3,955
Current service cost	344	342	208	241
Past service cost	-	7	-	-
Actuarial losses (gain)	-	71	-	(28)
Benefit payment	(242)	(283)	(232)	(270)
Classified as liabilities related to assets held-for-sale	-	(22)	-	-
Currency translation difference	(4)	-	-	-
At 31 December	4,799	4,701	3,874	3,898

Actuarial (gains)/losses recognised in other comprehensive income arising from:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Experience	-	(33)	-	(75)
Demographic assumptions	-	31	-	21
Financial assumptions	-	38	-	18
Total	-	36	-	(36)

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The principal actuarial assumptions used were as follows:

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Discount rate	1.5%	1.5%	1.5%	1.5%
Salary increases rate	5.0%-10.0%	5.0%-10.0%	5.0%-10.0%	5.0%-10.0%
Employee turnover	0.0%-4.0%	0.0%-4.0%	0.0%-4.0%	0.0%-4.0%

Assumptions regarding future mortality have been based on published statistics and mortality tables.

Sensitivity analysis for each significant assumption used is as follows:

	Consolidated financial statements					
	Impact on defined benefit obligation					
	Change in assumption		Increase in assumption		Decrease in assumption	
	2021	2020	2021	2020	2021	2020
	%	%	Million Baht	Million Baht	Million Baht	Million Baht
Discount rate	1	1	(429)	(420)	508	496
Salary growth rate	1	1	526	522	(458)	(454)

	Separate financial statements					
	Impact on defined benefit obligation					
	Change in assumption		Increase in assumption		Decrease in assumption	
	2021	2020	2021	2020	2021	2020
	%	%	Million Baht	Million Baht	Million Baht	Million Baht
Discount rate	1	1	(302)	(306)	349	353
Salary growth rate	1	1	419	424	(370)	(374)

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The above sensitivity analysis are based on a change in an assumption while all other assumptions remain constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions the same method which is the present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period has been applied when calculating the pension liability recognised within the consolidated statement of financial position. The methods and types of assumptions used in preparing the sensitivity analysis did not change when compared to the previous period.

The weighted average employee benefit obligations of the Group is 10 years (2020: 10 years).

Expected maturity analysis of undiscounted retirement benefits are as follows:

(Million Baht)

	Consolidated financial statements				
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years	Total
At 31 December 2021					
Retirement benefits	220	257	1,159	1,108	2,744
At 31 December 2020					
Retirement benefits	247	222	981	1,555	3,005

(Million Baht)

	Separate financial statements				
	Less than 1 year	Between 1-2 years	Between 2-5 years	Over 5 years	Total
At 31 December 2021					
Retirement benefits	212	238	1,129	846	2,425
At 31 December 2020					
Retirement benefits	236	212	932	1,282	2,662

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31 Non-controlling interests

Movement of non-controlling interests are as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statement	
	2021	2020
Opening balance	3,889	3,951
Impact from the first time adoption of new financial reporting standards	-	(94)
Addition from business combination	13	-
Dividend payment from subsidiaries	(5,972)	(380)
Business restructuring under common control	4,671	-
Liquidation of a subsidiary	(806)	-
Deficit from the changes in net assets in an associate	(5)	-
Share of total comprehensive income from subsidiaries	423	412
Closing balance	2,213	3,889

32 Other income

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020 (Re-presented)	2021	2020 (Restated)
Interest income	199	683	261	1,066
Gain from investment reclassification	504	-	-	-
Service income and others	426	417	1,937	1,824
Total	1,129	1,100	2,198	2,890

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33 Expenses by nature

The statement of income includes an analysis of expenses by function. Significant expenses by nature are detailed as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Changes in finished goods and work in progress	(2,794)	1,701	(1,625)	1,600
Purchase and raw materials used	241,426	167,329	271,901	184,464
Natural gas used	9,536	8,420	3,699	3,514
Employee benefit expenses	3,911	3,530	2,076	1,919
Depreciation and amortisation	7,424	7,554	4,773	4,884
Excise tax	54,170	59,889	54,124	59,855
Oil fuel fund contribution/ Energy conservation fund contribution	3,417	4,371	3,417	4,371

34 Income tax expense

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020 (Re-presented)	2021	2020 (Restated)
Current tax:				
Current tax on profits for the year	1,951	825	481	93
Adjustments in respect of prior year	(32)	409	-(⁽¹⁾)	409
Total current tax	1,919	1,234	481	502

⁽¹⁾ The balance is below Baht 1 million.

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(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020 (Re-presented)	2021	2020 (Restated)
Deferred tax:				
Changes from temporary differences (Note 23)	114	(1,881)	(9)	(1,878)
Income tax (benefit) expense	2,033	(647)	472	(1,376)
Income tax expense attributable to:				
Profit from continuing operation	2,032	(650)	472	(1,376)
Profit from discontinuing operation	1	3	-	-

The tax on the Group's profit before income tax expense differs from the theoretical amount that would arise using the basic tax rate of the home country of the Company are as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020 (Re-presented)	2021	2020 (Restated)
Profit (loss) before income tax expense	15,100	(3,315)	25,125	(2,227)
Tax calculated at a tax rate of	20	20	20	20
The result of the accounting profit multiplied by the income tax rate	3,020	(663)	5,025	(445)
Tax effect of:				
Income not subject to tax	(1,031)	(488)	(4,621)	(1,392)
Expenses not deductible for tax purpose	132	98	68	52
Tax losses for which no deferred income tax asset was recognised	(56)	(3)	-	-
Adjustment in respect of prior year	(32)	409	-(⁽¹⁾)	409
Income tax (benefit) expense	2,033	(647)	472	(1,376)

⁽¹⁾ The balance is below Baht 1 million.

The weighted average applicable tax rate of the Group and Company were 13.47% and 1.88%, respectively (2020: 19.95% and 49.59%, respectively).

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Revenues, profit before finance costs, and income tax expense from operation in foreign countries of the Group for the year ended 31 December 2021 are as follow:

(Million Baht)

	Revenues ⁽¹⁾	Profit before finance costs and income tax expense	Income tax expense
Thailand	334,375	18,468	2,003
Vietnam	3,955	167	23
Indonesia	987	30	6
Singapore	291	8	1
Hong Kong ⁽²⁾	-	(1)	-
America ⁽²⁾	23	23	-
Total	339,631	18,695	2,033

Notes:

⁽¹⁾ Revenues subject to tax consist of revenue from sale of services, subsidy from oil fuel fund, dividend income, net derivative gain on hedging, net foreign exchange gain, and other income.

⁽²⁾ No income tax expense due to unutilised tax losses brought forward from the previous year.

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35 Promotional privileges

Certain local subsidiaries have been granted privileges by the Board of Investment relating to power and steam generation, petrochemical product production and chemical product production. The summary of privileges granted are as follows:

- (a) an exemption from payment of import duty and tax on machinery and equipment as approved by the Board of Investment.
- (b) an exemption from payment of corporate income tax for promoted operations for periods of 7 to 8 years from the dates on which the income is first derived from such operations or 8 years from the date on which the income is received subsequent to when the privileges were granted.
- (c) a 50% reduction in the normal corporate income tax rate on the net profit derived from certain promotional operations for a period of 5 years, commencing from the expiry date in (b) above.

As promoted companies, the subsidiaries must comply with certain conditions and restrictions provided for in the promotional certificates.

Revenues from promoted businesses were as follows:

(Million Baht)

	Consolidated financial statement	
	2021	2020
Revenues from promoted businesses	24,204	19,335

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36 Basic earnings per share

Basic earnings per share is calculated by dividing the net profit attributable to the shareholders of the Company by the weighted average number of ordinary shares issued during the year.

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020 (Re-presented)	2021	2020 (Restated)
Net profit (loss) from continuing operations attributable to the ordinary shareholders of the Company (Million Baht)	12,641	(3,088)	24,652	(1,488)
Weighted average number of ordinary shares outstanding (Million shares)	2,040	2,040	2,040	2,040
Basic earnings (loss) per share from continuing operations (Baht per share)	6.20	(1.51)	12.08	(0.73)
Net loss from discontinued operations attributable to the ordinary shareholders of the Company (Million Baht) (Note 15)	(63)	(214)	-	-
Weighted average number of ordinary shares outstanding (Million shares)	2,040	2,040	2,040	2,040
Basic earnings (loss) per share from discontinued operations (Baht per share)	(0.03)	(0.11)	-	-
Basic earnings (loss) per share (Baht per share)	6.17	(1.62)	12.08	(0.73)

The Group did not have any potential dilutive ordinary shares issued during the year ended 31 December 2021 and 2020, so there is no presentation of diluted earning per share.

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37 Dividends

At the Annual General Meeting of Shareholders of the Company held on 7 April 2021, the shareholders approved the payment of dividends in respect of the operating results of 2020 at Baht 0.70 per share, totalling Baht 1,428 million. The dividends was paid to the shareholders on 26 April 2021.

At the Board of the Director meeting of the Company held on 27 August 2021, the Board of Directors of the Company approved the distribution of interim dividends in respect of the operating results for the first six-month period of 2021 at Baht 0.60 per share, totalling Baht 1,224 million. The interim dividend was paid to the shareholders on 23 September 2021.

38 Commitments and contingencies

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Capital commitments				
Project construction agreements	16,928	34,092	14,662	33,723
Total	16,928	34,092	14,662	33,723
Other commitments				
Letters of guarantee issued by financial institutions	2,181	2,196	1,516	1,599
Crude oil purchase agreements	67,007	33,424	67,007	33,424
Total	69,188	35,620	68,523	35,023

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Investment in Clean Fuel Project

The Company has engaged contractors for construction of Clean Fuel Project (CFP) which has been approved in the Extraordinary General Meeting of Shareholders held on 27 August 2018, with the investment project value of not exceeding US Dollar 4,825 million or equivalent to Baht 160,279 million. The project cost includes the investment of Energy Recovery Unit (ERU). The ERU is an electrical power plant, with the designed generating capacity of 250 megawatts and steam, to supply the production process of the CFP.

Interest Rate Swap Contracts

The Company has entered into interest rate swap contracts with various financial institutions to manage exposure and fluctuations in interest rate on long-term loans in Thai Baht. As at 31 December 2021, the Company had contracts with a notional amount of Baht 14,500 million, to exchange the fixed interest rate with floating interest rate based on THBFIX 6M plus certain fixed margin per annum. The swap contracts are effective from July 2021 to March 2027.

A subsidiary has entered into interest rate swap contracts with various financial institutions to manage exposure and fluctuations in interest rate on long-term loans in Thai Baht. As at 31 December 2021, a subsidiary had notional amount of Baht 5,524 million (2020: Baht 5,779 million), to exchange the floating interest rate based on THBFIX 3M plus certain fixed margin per annum with fixed interest rate. The swap contracts are effective from April 2018 to March 2028.

Cross Currency Swap Contracts

For the year ended 31 December 2021, the Company has entered into cross currency swap contracts with various local financial institutions to hedge foreign exchange and interest rate exposure of long-term debts in US Dollar currency, totalling of US Dollar 623 million (31 December 2020: US Dollar 563 million). A counterparty agrees to pay the interest and the notional amount according to the terms and conditions in the contracts. The swap contracts are effective from March 2020 to October 2035.

Forward Foreign Exchange Contracts

For the year ended 31 December 2021, the Company has entered into forward foreign exchange contracts with various local financial institutions to hedge foreign exchange exposure of long-term debts in US Dollar currency, totalling of US Dollar 170 million (31 December 2020: US Dollar 170 million). A counterparty agrees to make payment according to the terms and conditions in the contracts. The contracts are effective from September 2020 to January 2023.

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Oil Price Crack Spread Swap and Time Spread Swap Contracts

The Group and the Company have oil price crack spread swap and time spread swap contracts with foreign companies and related parties (counterparties). The Company has or the counterparties have commitments to make payments for the differences between the fixed price and floating price of each period.

As at 31 December 2021, the Group had oil volume under the contracts totalling 6 million barrels and 0.024 million metric tons and the Company had oil volume totalling 6 million barrels and 0.048 million metric tons (31 December 2020, the Group had oil volume under the contracts totalling 2 million barrels and 0.03 million metric tons and the Company had oil volume totalling 2 million barrels and 0.05 million metric tons).

39 Related party transaction

The Company is an entity in the PTT Public Company Limited (PTT) group of companies. PTT is incorporated in Thailand and is the major shareholder and the parent of the Company. PTT owned 45.03% of the Company's issued and paid-up share capital as at 31 December 2021 (2020: 45.03%).

Relationships with key management and other related parties were as follows:

Nature of relationships	Country of incorporation	Name of entities
PTT Public Company Limited	Thailand	Parent company
Thai Paraxylene Co., Ltd.	Thailand	Subsidiary and/or common directors
Thai Lube Base Public Company Limited	Thailand	Subsidiary and/or the Company's management as a director
Thaioil Marine Co., Ltd. ⁽¹⁾	Thailand	Subsidiary and/or the Company's management as a director
Thaioil Energy Services Co., Ltd.	Thailand	Subsidiary and/or the Company's management as a director
PT TOP Investment Indonesia	Republic of Indonesia	Subsidiary and/or the Company's management as a director

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Nature of relationships	Country of incorporation	Name of entities
Thaioil Solvent Co., Ltd.	Thailand	Subsidiary and/or the Company's management as a director
TOP Solvent Co., Ltd.	Thailand	Indirect subsidiary and/or common directors management as a director
Sak Chaisidhi Co., Ltd.	Thailand	Indirect subsidiary and/or the Company's management as a director
TOP Solvent (Vietnam) LLC.	Socialist Republic of Vietnam	Indirect subsidiary and/or the Company's management as a director
PT Tirta Surya Raya	Republic of Indonesia	Indirect subsidiary
JSKEM Private Limited	Republic of Indonesia	Indirect subsidiary and/or the Company's management as a director
TSCHEM India Private Limited	Republic of India	Subsidiary of indirect subsidiary
Thaioil Ethanol Co., Ltd.	Thailand	Subsidiary and/or the Company's management as a director
Thaioil Power Co., Ltd. ⁽²⁾	Thailand	Subsidiary and/or common directors
TOP SPP Co., Ltd.	Thailand	Subsidiary and/or the Company's management as a director
Thaioil Treasury Center Co.,Ltd.	Thailand	Subsidiary and/or the Company's management as a director
TOP Ventures Company Limited	Thailand	Indirect subsidiary and/or the Company's management as a director
TOP Ventures Hong Kong Limited	Hong Kong Special Administrative Region	Indirect subsidiary and/or the Company's management as a director
TOP Ventures America LLC.	United States of America	Indirect subsidiary and/or the Company's management as a director
Sapthip Co., Ltd.	Thailand	Indirect subsidiary and/or the Company's management as a director

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Nature of relationships	Country of incorporation	Name of entities
Sapthip Green Energy Co.,Ltd.	Thailand	Indirect subsidiary and/or the Company's management as a director
Thaioil Marine International Pte. Ltd. ⁽⁴⁾	Republic of Singapore	Indirect subsidiary and/or the Company's management as a director
TOP Maritime Service Co., Ltd. ⁽¹⁾	Thailand	Indirect subsidiary and/or the Company's management as a director
LABIX Co., Ltd.	Thailand	Indirect subsidiary and/or common directors
TOP-NTL Pte. Ltd. ⁽¹⁾	Republic of Singapore	Joint venture of subsidiary
TOP-NTL Shipping Trust ⁽¹⁾	Republic of Singapore	Joint venture of subsidiary
TOP Nautical Star Co., Ltd. ⁽¹⁾	Thailand	Joint venture of subsidiary and/or the Company's management as a director
TOP-NYK MarineOne Pte. Ltd. ⁽¹⁾	Republic of Singapore	Joint venture of indirect subsidiary and/or the Company's management as a director
PTT Digital Solutions Co., Ltd.	Thailand	Associate and/or the Company's management as a director
PTT Energy Solutions Co., Ltd.	Thailand	Associate and/or the Company's management as a director
Thai Petroleum Pipeline Co., Ltd.	Thailand	Associate and/or the Company's management as a director
Global Power Synergy Public Company Limited	Thailand	Indirect associate and/or common directors
PT Chandra Asri Petrochemical Tbk	Republic of Indonesia	Indirect associate and/or common directors
Ubon Bio Ethanol Public Company Limited ⁽³⁾	Thailand	Indirect associate and/or the Company's management as a director
T.I.M. Ship Management Co., Ltd. ⁽¹⁾	Thailand	Indirect associate and/or the Company's management as a director
PTT International Trading Pte. Ltd.	Republic of Singapore	Subsidiary of the parent company

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Nature of relationships	Country of incorporation	Name of entities
PTT Oil and Retail Business Public Company Limited	Thailand	Subsidiary of the parent company and/or common directors
PTT Exploration and Production Public Company Limited	Thailand	Subsidiary of the parent company
PTT Treasury Center Co., Ltd.	Thailand	Subsidiary of the parent company
Energy Recovery Unit Co.,Ltd.	Thailand	Indirect subsidiary of the parent company
Energy Complex Co., Ltd.	Thailand	Subsidiary of the parent company
IRPC Public Company Limited	Thailand	Subsidiary of the parent company
PTT Tank Terminal Co., Ltd.	Thailand	Subsidiary of the parent company
PTT Global Chemical Public Company Limited	Thailand	Subsidiary of the parent company
PTT International Trading London Ltd.	England	Subsidiary of the parent company
PTT Phenol Co., Ltd.	Thailand	Indirect subsidiary of the parent company
PTT Exploration and Production International Company Limited	Thailand	Indirect subsidiary of the parent company
PTTEP Energy Development Company Limited	Thailand	Indirect subsidiary of the parent company
Solution Creation Co.,Ltd.	Thailand	Indirect subsidiary of the parent company
Thai Tank Terminal Ltd.	Thailand	Indirect subsidiary of the parent company
Global Green Chemicals Public Company Limited	Thailand	Indirect subsidiary of the parent company
Vencorex (Thailand) Co., Ltd.	Thailand	Indirect subsidiary of the parent company
GC Glycol Co., Ltd.	Thailand	Indirect subsidiary of the parent company
Sarn Palung Social Enterprise Co., Ltd.	Thailand	Related company and/or the Company's management as a director
PTT Oil Myanmar Co.,Ltd.	Republic of the Union of Myanmar	Indirect subsidiary of the parent company

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Nature of relationships	Country of incorporation	Name of entities
PTT MCC Biochem Co., Ltd.	Thailand	Joint venture of subsidiary of the parent company
Brighter PTT Oil and Retail Co., Ltd.	Republic of the Union of Myanmar	Joint venture of subsidiary of the parent company
NPC Safety and Environmental Service Co., Ltd.	Thailand	Indirect subsidiary of the parent company

- ⁽¹⁾ During the year 2020, Thailoil Marine Company Limited has been classified as assets held-for-sale and the Company completely disposed all of its ordinary shares during the year 2021 (Note 15). Thailoil Marine Company Limited holds shares of subsidiaries and other associates such as TOP Maritime Service Co., Ltd, TOP Nautical Star Co., Ltd, TOP-NYK MarineOne Pte. Ltd, T.I.M. Ship Management Co., Ltd, TOP-NTL Shipping Trust, and TOP-NTL Pte. Ltd.
- ⁽²⁾ On 1 February 2021, the Company carried out an entire business transfer from Thailoil Power Company Limited (TP) after that on 25 February 2021, TP has registered as dissolution with Department of Business Development and complete dissolution process on 17 September 2021.
- ⁽³⁾ During 2021, the Group classified this investment in an associate as financial asset measured at fair value through other comprehensive income (Note 7).
- ⁽⁴⁾ On 19 November 2021, the Company passed a resolution to dissolve Thailoil Marine International Pte. Ltd. and expected to complete the dissolution in August 2022.

The pricing policies for particular types of transactions are explained further below:

Transactions	Pricing policies
Revenue from sale and services, lease income, purchase of goods and assets	Market prices or, where no market price exists, at contractually agreed prices
Interest income and expense	Agreed rates as stipulated in the agreements
Dividend income	Right to receive dividends
Other income and expenses	Contractually agreed prices
Directors' remuneration	Amounts approved by the Group's shareholders

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Significant transactions for the year ended 31 December 2021 and 2020 with related parties were as follows:

(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Parent Company				
Revenue from sales and services	5	6	-	-
Purchase of crude oil and feedstock	114,854	74,773	109,023	69,871
Other income	8	15	8	15
Gain from disposal of investment in an associate	-	5,801	-	8,965
Other expenses	83	84	82	83
Purchase of assets	5	6	5	6
Subsidiaries				
Revenue from sales and services	-	-	74,371	43,173
Purchase of crude oil and feedstock	-	-	43,627	29,777
Interest income	-	-	95	402
Dividend income	-	-	22,061	3,200
Land lease income	-	-	45	72
Other income	-	-	1,581	1,429
Interest expense	-	-	1,051	2,027
Capitalised interest expense	-	-	3,688	2,277
Other expenses	-	-	2,690	1,796
Purchase of assets	-	-	187	135
Joint ventures				
Revenue from sales and services	-	1	-	-
Purchase of crude oil and feedstock	238	906	238	906
Other income	-	2	-	1
Interest expense	27	110	27	110

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(Million Baht)

For the year ended 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Associates				
Revenue from sales and services	2,589	1	2,587	-
Purchase of crude oil and feedstock	535	676	507	676
Interest income	-(⁽¹⁾)	2	-(⁽¹⁾)	2
Dividend income	-	-	1,024	1,264
Other income	14	20	14	18
Other expenses	410	457	398	432
Purchase of assets	46	85	44	85
Subsidiaries of the parent company				
Revenue from sale and services	144,421	115,273	132,596	109,707
Purchase of crude oil and feedstock	10,883	6,655	5,956	3,600
Other income	11	17	11	16
Interest expenses	101	115	79	115
Capitalised interest expense	12	-	12	-
Other expenses	152	244	101	189
Purchase of assets	12	-	12	-
Other related parties				
Revenue from sales and services	3	7	-	-
Purchase of crude oil and feedstock	28	14	13	-
Other expenses	1	1	-(⁽¹⁾)	-
Directors' remuneration				
	33	60	24	48

⁽¹⁾ The balance is below Baht 1 million.

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Balances as at 31 December 2021 and 2020 with related parties were as follows:

Trade accounts receivable - related parties

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Subsidiaries	-	-	8,252	4,183
Associate	593	-	593	-
Subsidiaries of the parent company	9,282	6,568	8,600	5,965
	9,875	6,568	17,445	10,148
<u>Less</u> Expected credit loss allowance	-	-	-	-
Trade accounts receivable - related parties, net	9,875	6,568	17,445	10,148

Other receivables - related parties

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Parent company	5	1	5	1
Subsidiaries	-	-	232	158
Associates	30	19	30	19
Total	35	20	267	178

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Finance lease receivables - related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Subsidiaries	-	-	1,051	1,021
Associate	-	6	-	6
Total	-	6	1,051	1,027

Short-term loans to related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Subsidiaries	-	-	782	276
Total	-	-	782	276

Interest rates during the year 2021 and 2020 were based on BIBOR 3M plus certain fixed margin per annum and LIBOR 3M plus certain fixed margin per annum.

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Movements of short-term loans to related parties during the year ended 31 December 2021 and 2020 were as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
At 1 January	-	-	276	3,221
<u>Cash flows:</u>				
Payments for short-term loans	-	-	31,469	656
Proceeds from short-term loans	-	-	(30,975)	(3,592)
<u>Other non-cash movements:</u>				
Exchange losses	-	-	12	(9)
At 31 December	-	-	782	276

Long-term loans to related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Current portion of long-term loans to related parties				
– Subsidiaries	-	-	-	12,081
Long-term loans to related parties				
– Subsidiaries	-	-	-	-
Total	-	-	-	12,081

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Movements of long-term loans to related parties during the year ended 31 December 2021 and 2020 were as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
At 1 January	-	-	12,081	11,781
Cash flows:				
Payments for long-term loans	-	-	-	700
Proceeds from long-term loan	-	-	(12,081)	(400)
At 31 December	-	-	-	12,081

On 12 June 2020, the Company entered into a loan agreement with a subsidiary in an amount of Baht 700 million for financial restructuring. The borrowing bore the interest rate at BIBOR 6M plus certain fixed margin per annum. The agreement is effective for a period of 2 years from the signing date. Subsequently, on 24 December 2020, the Company entered into the Share Purchase Agreement to dispose all ordinary shares directly held in this subsidiary, including all shares of subsidiaries and associates held by this subsidiary. The proceed from repayment of such long term loans balance included in proceeds from business restructuring as described in Note 15.

Right-of-use assets - related parties

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Parent company	7	8	7	8
Subsidiaries	-	-	240	59
Joint venture	-	1,642	-	1,642
Associate	3	-	3	-
A subsidiary of the parent company	-(1)	20	-(1)	20
Total	10	1,670	250	1,729

⁽¹⁾ The balance is below Baht 1 million.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Other non-current assets - related parties

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
Subsidiaries	-	-	63	60
A subsidiary of the parent company	14	14	14	14
Total	14	14	77	74

Trade accounts payable - related parties

(Million Baht)

As at 31 December	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
Parent company	13,525	4,670	12,941	4,296
Subsidiaries	-	-	4,013	2,362
Associate	-	59	-	59
Subsidiaries of the parent company	639	741	205	448
Total	14,164	5,470	17,159	7,165

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Other accounts payable - related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Parent company	-	48	-	48
Subsidiaries	-	-	1,089	873
Associates	96	105	95	105
Subsidiaries of the parent company	20	21	19	18
Total	116	174	1,203	1,044

Lease liabilities - related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Parent company	6	7	6	7
Subsidiaries	-	-	207	215
Associates	3	-	3	-
Joint venture	-	1,802	-	1,802
A subsidiary of the parent company	-(1)	21	-(1)	21
Total	9	1,830	216	2,045

⁽¹⁾ The balance is below Baht 1 million.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Short-term loans from related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Subsidiaries	-	-	2,135	57
Total	-	-	2,135	57

Interest rates during the year 2021 and 2020 were charged based on BIBOR 1M plus certain fixed margin per annum.

Movements of short-term loans from related parties during the year ended 31 December 2021 and 2020 were as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
At 1 January	-	-	57	2,467
Cash flows:				
Proceeds from (payments for) short-term loans	-	-	2,078	(2,410)
At 31 December	-	-	2,135	57

Derivative liabilities - related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020
As at 31 December				
Subsidiaries	-	-	67	21
Total	-	-	67	21

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Long-term loans from related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Current portion of long-term loans from related party				
– A subsidiary	-	-	-	11,381
– A subsidiary of the parent company	-	3,999	-	3,999
Long-term loans from related parties				
– A subsidiary	-	-	105,858	95,135
– A subsidiary of the parent company	14,000	-	14,000	-
Total	14,000	3,999	119,858	110,515

Movements of long-term loans from related parties during the year ended 31 December 2021 and 2020 were as follows:

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
At 1 January	3,999	3,999	110,515	80,746
Cash flows:				
Proceeds from long-term loans	14,000	-	14,000	31,140
Payment for long-term loans	(3,999)	-	(15,380)	-
Payment for loans financing fee	-	-	-	(131)
Other non-cash movements:				
Amortisation of deferred financing fee	-	-	18	15
Exchange (gain)/losses	-	-	10,705	(1,255)
At 31 December	14,000	3,999	119,858	110,515

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

The Company entered into long-term loan agreements with a subsidiary totalling of US Dollar 2,163.11 million. The loans bear a fixed interest rate of 3.93% to 5.96% per annum with maturity dates in 2023 to 2049.

On 19 June 2020, the Company entered into long-term loan agreement with a subsidiary totalling of US Dollar 998.24 million. The loans bear fixed interest rates of 2.89% to 4.17% per annum with maturity dates between 2030 to 2050.

On May 21, 2021, the Company passed a resolution to enter into a credit agreement with a related party for a period of not more than 18 months, with a market rate of not more than 2.5% per annum, in an amount not exceeding US Dollar 670 million, or approximately Baht 22,154 million, to support the Company's investment through a newly established subsidiary in the Republic of Indonesia.

Other non-current liabilities from related parties

(Million Baht)

	Consolidated financial statements		Separate financial statements	
	2021	2020	2021	2020 (Restated)
As at 31 December				
Subsidiaries	-	-	924	836
Associate	7	10	7	10
A subsidiary of the parent company	2,192	2,192	2,192	2,192
Total	2,199	2,202	3,123	3,038

Significant agreements with related parties

During the year ended 31 December 2021, the Group had the following significant agreements with related parties.

Asset Sale and Purchase Agreement for the Energy Recovery Unit (ERU)

The Company has entered into the Asset Sale and Purchase Agreement for the ERU with a related company to support energy and utilities for Clean Fuel Project (CFP) whereby the purchase price is specified in the agreement. The Company will transfer ownership in the ERU to the purchaser upon satisfaction of all the conditions precedent set out in the agreement (Closing Date). Such conditions precedent include the Company's countersigning of the Provisional Acceptance Certificate (PAC) to the contractor which is expected to occur in 2023 and purchaser and seller receive all necessary certification from relevant authorities.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Fuel and Utilities Supply Agreement

The Company has entered into the Fuel and Utilities Supply Agreement with a related company to supply pitch, other fuels and utilities used in the operation of the ERU. The term of the agreement is 25 years from the Closing Date and the parties may agree to extend the term for another 5 years.

Power Purchase Agreement

The Company has entered into the Power Purchase Agreement with a related company to purchase electricity, steam and other by-products generated by the ERU. The term of the agreement is 25 years from the Closing Date and the parties may agree to extend the term for another 5 years.

Operation and Maintenance Services Agreement

The Company has entered into the Operation and Maintenance Services Agreement with a related company to provide the services of operation and maintenance of the ERU. The term of the agreement is 25 years from the Closing Date and the parties may agree to extend the term for another 5 years.

The Restructuring of Shareholding in Power Business and the Entire Business Transfer Agreement

The Company has entered into the Restructuring of Shareholding in Power Business by way of disposal of shares directly held by the Company in an associate to the parent company, representing approximately 8.91% of all paid-up shares of the associate at approximately amounting to Baht 16,882 million. The share disposal transaction was completed in December 2020. In this connection of the restructuring plan, the Company has entered into an entire business transfer agreement with a subsidiary at the total price of approximately Baht 26,773 million whereby the Company agrees to accept the transfer of all assets, liabilities, rights, duties and obligations of a subsidiary existing on the day prior to the date of the entire business transfer, include contracts and licenses related to and used in the business operations of a subsidiary to enable the Company to continue the business operations. After the entire business transfer of a subsidiary to the Company, a subsidiary will pay dividend, cease its business operations, undergo dissolution and enter into the liquidation process within the same fiscal year in which the entire business transfer was occurred. After deduction of expenses, fees or any other money in connection with or arising from the completion of dissolution and liquidation, a subsidiary shall distribute its assets to the Company and parent company as a subsidiary's shareholders in proportion to their respective shareholding.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Master Agreement for Business Collaboration

The Company has entered into Master Agreement for Business Collaboration with a parent company in order to assign rules, conditions and guidelines for credit term extension of crude and condensate from 30 days to not exceeding 90 days. Term of the contract is 1 years which will be expired in 31 December 2022.

Feedstock Supply Agreement

The Company has entered into Feedstock Supply Agreement with a parent company. A parent company will supply crude and condensate for the Company's refinery production including hire a vessels to deliver crude. Term of the contracts is 3 years which will be expired in 31 December 2024.

P1 Collaboration Agreement

The Company and subsidiaries have entered into P1 Collaboration Agreement to assign a collaboration guideline between PTT group, the Company and one of the Company's subsidiaries for supplying crude and condensate, petroleum product and petrochemical product, hire vessel, and derivatives related to an export and import of crude and condensate petroleum products and petrochemical products, including managing time charter vessel of the Company. These services will be managed by a related party in order to get a maximum benefit among PTT Group. The term of the contracts is 3 years which will be expired on 31 December 2024.

40 Entire business transfer under common control

On 1 February 2021, the Company carried out an entire business transfer from TP, a subsidiary of the Company. As a result, the Company accepted a transfer of assets, liabilities, right and obligation and all of the commitments of TP before the entire business transfer date including the contracts and licenses to continue operation. This transaction is considered a business combination under common control according to the guidelines for transactions in respect of business combination under common control announced by the Federation of Accounting Professions. On the transfer date, a difference between a cost of business combination under common control and the Company's proportion of carrying amount of TP was directly recognised in equity of the separate financial information totalling Baht 17,971 million. The adjusted non-controlling interests related to the entire business transfer are re-presented as a deficit from business restructuring under common control in the consolidated financial information totalling Baht 4,671 million.

An entire business transfer includes assets and liabilities of TP as of 31 January 2021. This entire business transfer was completed and effective on 1 February 2021 onward.

Notes to the consolidated and separate financial statements >

Thai Oil Public Company Limited

For the year ended 31 December 2021

Details of entire business transfer

	Million Baht
Cash received	25,904
Net carrying amount of assets	7,933
The difference between cash received and net carrying amount of assets	17,971

Carrying amount of assets and liabilities as at 31 January 2021 are as follows;

	Million Baht
Cash and cash equivalents	216
Trade and other receivables	398
Trade and other receivables	61
Investment in an associate	22,279
Property and equipment, net	744
Deferred charges	5
Other non-current assets	— ⁽¹⁾
Total assets	23,703
Trade and other payables	295
Value added tax payables	14
Income tax payables	18
Long-term loans from related parties	15,380
Deferred tax liabilities	63
Total liabilities	15,770
Total net assets	7,933

⁽¹⁾ The balance is below Baht 1 million.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

41 Restatements

From the result of an entire business transfer under common control as disclosed in Note 40, the Company restated prior year financial statements for comparison purpose in order to comply with the guidelines for transactions in respect of business combination under common control announced by the Federation of Accounting Professions.

The effects of a transaction to the statement of financial position as at 31 December 2020 are as follows;

(Million Baht)

	Separate financial information		
	Previously presented	Adjustment	Restated
Assets			
Cash and cash equivalents	47,500	143	47,643
Trade accounts receivable, net	13,001	198	13,199
Other receivables	1,040	(15)	1,025
Inventories	19,140	61	19,201
Investment in associates	993	22,186	23,179
Property, plant and equipment, net	111,897	768	112,665
Right-of-use assets, net	13,610	-(⁽¹⁾)	13,610
Intangible assets, net	829	-(⁽¹⁾)	829
Deferred tax assets	2,450	(72)	2,378
Liabilities			
Trade accounts payable	10,731	50	10,781
Other payables	5,335	(6)	5,329
Current portion of long-term loans from related parties, net	-	15,380	15,380
Income tax payables	-	8	8
Other non-current liabilities	3,690	(3)	3,687
Equity			
Business restructuring under common control interests	-	7,838	7,838

⁽¹⁾ The balance is below Baht 1 million.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

The effects to the separate statement of income and separate statement of cash flow for the year ended 31 December 2020 are as follows;

(Million Baht)

For the year ended 31 December 2020	Separate financial information		
	Previously presented	Adjustment	Restated
Revenue from sales and services	247,302	1,941	249,243
Cost of sales of goods and services	267,162	1,138	268,300
Dividend income	4,611	(894)	3,717
Net foreign exchange loss	1,692	-(1)	1,692
Other income	3,194	(304)	2,890
Administrative expenses	2,401	4	2,405
Share of profit of joint ventures and associate, net	-	1,560	1,560
Finance cost	3,788	435	4,223
Income tax benefit	1,464	(88)	1,376
Share of other comprehensive income of an associate accounted for using the equity method, net of tax	-	(20)	(20)
Cash flow from operating activities	(5,781)	708	(5,073)
Cash flow from investing activities	(41,029)	(134)	(41,163)
Cash flow from financing activities	20,431	(854)	19,577

⁽¹⁾ The balance is below Baht 1 million.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

42 Acquisition of investment in an associate and business combination

Acquisition of investment in an associate

In September 2021, PT TOP Investment Indonesia (TII), a subsidiary of the Group, entered into the share acquisition of PT Chandra Asri Petrochemical Tbk (CAP), a registered company in the Republic of Indonesia with the total consideration of US Dollar 913.3 million or equivalent to Baht 29,798.4 million. The Group has 15% of shareholding interest in CAP. The investment is classified as investment in an associate. The Group paid share capital and estimated the contingent consideration for future investments of US Dollar 916.6 million or equivalent to Baht 29,910.6 million.

Furthermore, the Group will acquire an additional 0.38% of shareholding interest in CAP with the contingent considerations not exceeding of US Dollar 3.9 million (Baht 129 million) or not exceeding US Dollar 270 million (Baht 8,928 million) which will depend on the condition of the approval for the final investment decision on the petrochemical plant construction project by PT Chandra Asri Perkasa (CAP2), a subsidiary of CAP within 5 years from the date of investment acquisition.

Details of consideration paid and net identifiable assets at the portion of the Group before the direct acquisition cost as at 31 December 2021 are as follow:

	Million Baht
Portion of estimated fair value of net assets acquired	16,085
Purchase price over net assets acquired (presented in investment in an associate)	13,826
Purchase considerations	29,911

Purchase considerations are as follows;

– Consideration at acquisition date	29,799
– Contingent consideration	112

As at 31 December 2021, the Group is in the process of determining fair value of the acquired net assets and reviewing purchase price allocation (PPA). Therefore, the purchase price over net assets' carrying value may be subject to further adjustments depending on the determination of fair value and the result of the PPA, which is expected to be finalised within 12 months from the acquisition date.

Notes to the consolidated and separate financial statements

Thai Oil Public Company Limited

For the year ended 31 December 2021

Business combination

On 1 July 2021, Thailoil Solvent Company Limited (TS) acquired shares of JSKEM Private Limited (JSKEM), which operates the business of distributing solvents and chemicals in Singapore and India from existing shareholders of JSKEM representing 60% of shareholding interest. The Company fully paid for the shares and estimate additional cost of investment totaling US Dollar 1.2 million or equivalent to Baht 38.9 million. From business combination, the Group recognised the goodwill of Baht 19.9 million.

According to the Share Purchase Agreement, there may be an additional contingent consideration in an amount not exceeding US Dollar 0.52 million or equivalent to Baht 17 million, if total sales of JSKEM significantly meets the condition in an agreement.

The following table summarises the consideration paid for JSKEM, and the estimated fair value of the assets acquired and liabilities assumed recognised on 1 July 2021, as follows;

	Million Baht
Cash	22
Contingent consideration	17
Total purchase consideration	39

Recognised estimated fair value of identifiable assets acquired and liabilities assumed are as follows:

	Million Baht
Cash and cash equivalents	16
Trade accounts receivable	15
Other receivables	3
Trade accounts payable	(1)
Other liabilities	(1)
Estimated fair value of identifiable net assets	32
<u>Less</u> Non-controlling interest	(13)
Total estimated fair value of identifiable net assets acquired	19
Goodwill	20
Purchase consideration	39

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Thai Oil Public Company Limited

For the year ended 31 December 2021

The Group is in the process of determining fair value of the acquired net assets which is expected to be finalised within 12 months from the acquisition date.

The revenue and net profit in the consolidated statement of income for the year ended 31 December 2021 are included revenue and net profit of JSKEM of Baht 288 million and Baht 3 million since 1 July 2021, respectively.

43 Event after the reporting period

Dividend declaration

At the meeting of the Board of Directors of the Company held on 15 February 2022, the Company's Board of Directors approved the submission for approval at the annual general meeting of the shareholders of the Company the appropriation of 2021 annual dividends at Baht 2.60 per share, totalling Baht 5,304 million. After a deduction of the interim dividends of Baht 0.60 per share which were paid to the Company's shareholders in September 2021, the remaining dividends of Baht 2.00 per share, totalling Baht 4,080 million, are scheduled for payment on 25 April 2022. This dividend is subject to the approval of the Company's shareholders at the annual general meeting to be held on 7 April 2022.

Auditors' Fees for 2021

1. Audit Fee

The Company, subsidiaries and the Member Companies of Thai Oil Group-Registered Provident Fund paid for the audit fees to the auditors' company for the latest account period amounting to Baht 8,242,418 (Eight million two hundred forty-two thousands four hundred and eighteen baht)

2. Non-Audit Fee

The Company and Subsidiaries also paid for other services, including verification of compliance with the BOI Investment Promotion Certificate to the auditor's company for the latest account period amounting to Baht 290,000 (two hundred and ninety thousand baht)



Professionalism

Ownership and
Commitment

Social
Responsibility

Integrity

Teamwork and
Collaboration

Initiative

Vision Focus

Excellence
Striving

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