



1. Policy and Business Overview

1.1 Vision, Mission, Objectives, Goals, and Business Strategies

Vision

Evolving Greenovation

To be the leading Asian Greenovative group, founded on good corporate governance, through inclusiveness and sustainability

Mission

Bangchak is committed in bringing disruptive and inclusive greenovation to delight our customers, being a trusted partner and value creator for all stakeholders, and promoting sustainable development to society.

We emphasize inclusive and sustainable business, pursue domestic and overseas expansion, embrace good corporate governance principles, and nurture a high-performance, learning culture, and happy workplace.

Objectives and goals

Bangchak is committed to its resolution of being a Thai energy firm that engages in business in parallel with its stewardship of the environment and society, while striving for a balance between value and virtue, and taking part in the quality of life improvement for Thai society.

Bangchak values sustainable growth for the organization; upgrading its management excellence in pursuit of world standards; applying Sufficiency Economy to its businesses (for non-profiteering benefits); nurturing growth and sustainability through the promotion and development of innovation and technology; paying due regard for conscientious consumption of natural resources; preparing to be a holding



company by changing its name to “Bangchak Corporation Public Company Limited”; and managing businesses to achieve its vision of Evolving Greenovation (To be the leading Asian Greenovation Group) together with its business, social, and environmental goals by 2022, as highlighted below.

1. Business goals

1.1 Refining and Oil Trading Business Group: To raise the refinery's safety standards, to maximize its efficiency and stability through the YES-R (Yield Optimization, Energy Efficiency, Safety Excellence, and Reliability Enhancement) Phase 1-3 Project, to grow its capacity to over 130 KBD through the 3E Project (Efficiency, Energy, and Environment), and to venture into related businesses, including oil trading through BCP Trading Pte. Ltd. (BCPT), founded in Singapore. In addition, Bangchak held Bongkot Marine Service Co., Ltd., an associated company, to supply an oil floating storage unit to accommodate Bangchak's expanded refining capacity.

1.2 Marketing Business Group: to continue to maintain the No.2 market share, to evolve a new service station format under the Greenovative Experience concept to accommodate Thai's current lifestyles by which everyone can play a part in sustainable stewardship of the environment. Bangchak also plans to expand service stations in the cluster form with an outstanding image compatible with each locality; to develop the food store, the



convenience store, and novel product businesses to keep pace with consumers' changing behavior; to achieve maximum customers' and business partners' satisfaction; and to pursue The Most Admired Brand.

- 1.3 Green Power Business:** Through BCPG Plc, to execute the renewable power capacity expansion plan to 1,000 MW from both domestic and international installations, and to execute the investment plan for renewable power purchase through the Internet of Energy through the Blockchain technology to pursue demand side management (management for maximum power efficiency).
- 1.4 Bio Based Products Business Unit:** To keep growing the biofuel business with products like biodiesel and ethanol, to set R&D goals to build on biotechnological and form high value-added bio-based innovation, implement the process efficiency improvement project, and implement the refined glycerin project, and to pursue additional bio-based energy investment opportunities through fund mobilization on stock exchanges.
- 1.5 Natural Resources Business:** To develop the petroleum exploration and production business and the new-resource business, including lithium mining.
- 1.6 Organization, management, and innovation:** To grow competitiveness and organizational development capability, aiming at achieving the “employer of choice” distinction, achieving



HR excellence, and encouraging employee collaboration on innovation in business processes, products, or business models under the new corporate vision; to focus on executing the Group Shared Service Strategies to serve affiliates in HR, IT, procurement, and process development; to forge corporate sustainability under DJSI (Dow Jones Sustainability Indices) in economic, environmental, and social aspects with good governance to boost investors' confidence in Bangchak's attaining sustainable good returns; and to build on emerging businesses for sustainability, including innovative businesses and startups (through Bangchak Initiative and Innovation Center, BiiC) with a focus on green energy innovations and bio-based businesses.

- 1.7 Being open, transparent, and auditable:** To conduct business openly, transparently, and auditable whether in disclosure of business data under corporate governance or in compliance with SET's regulations.

2. Socio-environmental goals

- 2.1 Pursuing a low-carbon company to ease impacts on global climate change:** To set a goal of minimum carbon dioxide emission by relentlessly executing a project on efficiency improvement of energy and resource consumption and by growing investment in projects on production of assorted alternative / renewable energy to lower carbon dioxide emission.



2.2 Business conduct in parallel with the environment and society: To establish corporate sustainability by conducting business to benefit the environment and society hand in hand with business growth, through CSR after-process activities and creation of shared values between business, society, and the environment through the CSR/CSV in-process. Bangchak also set a goal to build on CSR/CSV and engage in social enterprise (SE) to create jobs, generate income, and promote cooperation in the stewardship of habitat surroundings including the formation of the Baimai Punsook Foundation, encouragement of farmers' development of produce of higher quality and value for distribution through Oamsuk Social Enterprises Co., Ltd., promotion of agricultural produce export through Bangchak Retail Co., Ltd.'s distribution channels, and purchase of produce for use as feedstock/raw materials for bio-based and innovative products of BBGI, Co., Ltd.

Business Strategies

Bangchak's 3S Strategy is designed to achieve short-term as well as long-term goals as described below:

- 1. Security:** Enhance competitiveness, forge secure returns by strategizing the refinery business and the marketing business together to procure, produce, and sell enough fuels for the needs of the business sector and the public. These are to be achieved by planning procurement and purchase of crude oil from domestic and overseas deposits for attractive refining margins and by growing



investment in energy innovations, including lithium mines, the heart of battery production, to accommodate changes in demand and future energy technology, including mobile electronic devices and electric vehicles.

- 2. Stability:** Create sustainable business value by increasing the proportion of emerging business revenue through investment in green energy and other businesses and building on products for high value-added ones. Also, focus on investment in steady-income businesses with low risk exposure to external factors in Thailand and abroad, including green power energy and bio-based products.
- 3. Sustainability:** Develop businesses for a balance between business value and socio-environmental value by taking sustainable development seriously, including development of “Greenovative Experience” service stations, and by valuing water resources—a vital production process resource—leading to a goal of water consumption reduction and by optimizing water discharge reuse.

This includes work process improvement, development of innovative products and businesses derived from R&D efforts of the Bangchak Initiative and Innovation Center (BiiC) jointly with public and private institutions, as well as investment and startup business incubation. To this end, focus is on innovative green energy businesses and bio-based businesses that benefit society and the environment. In addition, in place is a corporate performance monitoring process through social and environmental KPIs.



1.2 Transition and milestone development

2017

- **Bangchak Petroleum renamed “Bangchak Corporation” and Head Office relocated**

Bangchak Petroleum Plc. changed its name to Bangchak Corporation Public Company Limited, as approved by the 2017 Annual General Meeting of Shareholders on April 5, 2017 and registered by the Department of Business Development, Ministry of Commerce, effective from April 7. The name change was designed to shape up Bangchak's image and make clear its business regime. Its businesses encompass not only the refinery and oil product retailing, but also covers a value chain and supporting businesses which demand a high level of advanced technology and innovation. Bangchak Head Office moved to new address, 2098 M tower Building, 8th floor, Sukhumvit Road, Phra Khanong Tai, Phra Khanong, Bangkok.

- **Baimai Punsook Foundation founded**

Baimai Punsook Foundation was established in May, in order to serve as a tool to drive projects and activities for sustainable community economic development.

Refinery and Oil Trading Business Group

- **Peak monthly capacity of 121.6 KBD: an all-time high**

In March, the refinery business recorded the highest-ever average monthly production rate of 121,600 barrels per day since the commissioning of the Hydrocracking Unit. This resulted from the high gross refining margin, in line with the increase in the finished-product sales volume, and efficient refining planning and management.

- **Electricity generation and steam production commenced from GTG-3**

In August, Bangchak began to operate electricity generation and steam production from GTG-3 plant, fueled by natural gas, with a capacity of 12 MW and a steam capacity of 42 tons per hour. The operation significantly reduced both operational costs by shutting



down boilers and the greenhouse gas (GHG) emissions from the refinery.

- **Began storing crude oil on the Floating Storage Unit (FSU)**

In June, Bangchak began to store crude oil on the Floating Storage Unit in order to grow its reserve oil storage capacity.

Marketing Business Group

- **“Hi Premium Diesel S” unveiled**

In May, Bangchak launched a new premium product called “Hi Premium Diesel S”, a high-level innovation to serve the demand for high-grade diesel.

- **Marketing Business Continues with No. 2 Market Share with Higher NPS**

The Marketing Business successfully raised its market share while maintaining Bangchak's No. 2 domestic ranking. This year Bangchak's average market share amounted to 15.4%, reaching 15.8% in November. Bangchak achieved 77.5% in the Net Promoter Score as a result of service station rebranding for sophistication, complete with various non-oil businesses to meet customers' needs.

- **Launched premium-grade lubricant “FURiO”**

In November, Bangchak developed the “FURiO” premium-grade lubricant that can save on fuels, prevent corrosion, and protects the engine in all modes of operation.

Green Power Business

- **Solar Power Plant Nagi in Okayama, Japan, starts commercial operation**

On March 2, 2017, the Nagi PV solar power plant in Okayama, Japan, with a 10.5-MW capacity (nameplate capacity of 14.4 MW), started COD commercial operation.



- **Three solar farms under solar cooperatives program come into contracted commercial operation**

In March, three ground-based solar farms from agricultural cooperatives programs, with a total capacity of 12 MW, were registered as Thailand's first commercial operation from cooperatives' solar farms. The total 12-MW capacity was from two plants in Phra Nakhon Si Ayutthaya, namely Bang Pa-in Solar Agricultural Cooperatives Project (5 MW), Ayutthaya Solar Agricultural Cooperatives Project (2 MW), and one in Ang Thong, namely Wiset Chaichan Agricultural Cooperatives Project (5 MW).

- **BCPG purchases total interest in CapAsia ASEAN Wind Holdings Cooperatief U.A., with 40% shares of PetroWind Energy Inc.**

In May, in order to expand its business in renewable energy in the region, BCPG wholly acquired CapAsia ASEAN Wind Holdings Cooperatief U.A., of the Netherlands, which held 40% shares in PetroWind Energy Inc., one of the major players in the wind power business in the Philippines. PetroWind owns a commercial 36-MW wind power project and a developing 14-MW project in Nabas, Visayas Island, the Philippines.

- **BCPG invests in geothermal power plant in Indonesia through acquiring 33% of issued and paid-up shares of Star Energy Group Holdings**

BCPG Pcl. entered into a shareholders' agreement with Star Energy Investments Ltd. (SEIL) for the acquisition of 280,000 (33%) issued and paid-up shares in Star Energy Group Holdings Pte. Ltd. (SEGHPL). The acquisition, valued at US \$355.69 million (Baht 11.95643 billion), entitled BCPG to an installed capacity of 181.5 MW of geothermal-based power in Indonesia. The transfer of shares was completed on July 26, 2017.

- **Subsidiary BCPG and War Veterans Organization of Thailand sign MOU on concession agreement for solar projects**

On September 29, 2017, BCPG, a subsidiary of Bangchak, signed a memorandum of understanding on concession agreement with the War Veterans Organization of Thailand for two ground-based solar



farm projects for public agencies and agricultural cooperative programs, with a total capacity of 9 MW.

- **BCPG joining hands with Sansiri to develop smart green communities**

In November, BCPG signed a memorandum of understanding with Sansiri Public Company Limited to develop smart green communities. BCPG planned to install solar energy systems in Sansiri projects whose residents can produce and use electricity from green energy by themselves. Moreover, the produced electricity can be traded internally in the projects by using Blockchain technology. The scope of cooperation also covers other properties, such as industrial plants, hotels, and department stores owned by Sansiri.

- **BCPG joining hands with Power Ledger, Australia**

In December, BCPG entered into a memorandum of understanding with Power Ledger, Australia, to use Blockchain technology as a platform for electricity trading via the internet, the first trade in the Southeast Asian region to do so.

Bio Based Products Business Unit

- **BBP Holdings Limited Established**

In March, a subsidiary BBP Holdings Limited was established with a registered capital of Baht 700 million and is wholly owned by Bangchak, to conduct the bio-based business and serve Bangchak's restructuring.

- **Amalgamation between BBP Holdings and KSLGI to form BBGI, Thailand's largest biofuel manufacturer and distributor**

In October, Bangchak amalgamated its subsidiary called BBP Holdings Co., Ltd., and KSLGI Co., Ltd., a subsidiary of Khon Kaen Sugar Industry Public Company Limited, to form BBGI Co., Ltd., the largest biofuel manufacturer and distributor in Thailand. The amalgamation enhanced BBGI's potential and business advantage, while supporting raw materials and value chain products. Bangchak holds 60% of BBGI's shares.



Natural Resources and Business Development Business

- **More new shares for more investment in LAC Acquired**

In July, BCP Innovation Pte. Ltd. (BCPI), a Bangchak subsidiary, entered into an investment agreement with Lithium Americas Corp. (LAC) for additional investment in LAC. BCPI purchased 50 million additional newly issued shares at CAD (Canadian dollars) 0.85 per share, totaling CAD 42.50 million or Baht 1.09922 billion. BCPI therefore holds 16.1% of the total shares. (Later, some shareholders exercised their rights to transfer options to ordinary shares, making BCPI's shareholding 15.86% of total shares.)

- **MOU signed with AIT on technical cooperation on R&D to enhance environment supporting startup companies**

Bangchak signed an MOU with AIT on technical cooperation on research and development to enhance an environment that supports and accelerates startup companies to the commercial scale quickly with a knowledge base and innovative technology. Under the cooperation, Bangchak Initiative and Innovation Center (BiiC) was established as a technology business incubator, specifically in green energy engineering and technology, energy management, and bio-based technology. In addition, BCP provides master, doctoral, and postdoctoral scholarships and funds for innovative research related to green engineering and technology.

- **Launch of Bangchak Initiative Innovation Center as technology business incubator**

On September 7th, 2017, Bangchak unveiled Bangchak Initiative and Innovation Center (BiiC) to create a green ecosystem that promotes a variety of innovations, emphasizing green energy and bio-based technology, for business expansion (domestic and abroad). The success of the program will support the Thailand 4.0 economy and fulfill Bangchak's aspiration of being the leading Asian Evolving Greenovation Group.

Awards of 2017

- Recognition at the SET Sustainability Awards 2017 event, hosted by the Stock Exchange of Thailand:



- **Best Sustainability Award** for the third year running, in recognition of listed companies that are outstanding in sustainable business conduct, worthy of becoming role models for other listed companies
- **Recognition among 65 listed companies called THSI (Thailand Sustainability Investment)**, also for the third year running, for engagement in sustainable business with utmost regard for society and the environment, and for its management processes for sustainability of the corporation. The recognition aids investors' decisions by those that stress quality stocks and long-term returns.
- **Asia's Best Sustainability Report – Stand-alone Award:** This ultimate award goes to Asian companies whose sustainability reports prove outstanding and show the report preparation process, reporting of performance outcomes and sustainability outcomes in all three aspects (economic, social, and environmental). At the Asia Sustainability Reporting Awards 2017 (ASRA) event, hosted by The British High Commission Singapore and CSRWorks International (Singapore), Bangchak also won acclaim for Asia's Best Materiality Report, Asia's Best Stakeholder Reporting, and Asia's Best Community Reporting.
- Recognition at the 7th Asian Excellence Recognition Awards 2017 event, hosted by Corporate Governance Asia (Hong Kong):
 - **Best Investor Relations Company** for the sixth year running, in recognition of outstanding investor relations work, based on scores and views given by magazine readers, investors, and analysts, among others.
 - **Best Environmental Responsibility** for the third year running, based on scores and views given by magazine readers, investors, and analysts, among others.
 - **Asia's Best CEO (Investor Relations)** for the second consecutive year, in recognition of the top executives of the corporation, based on scores and views given by magazine readers, investors, and analysts, among others.
- Recognition at The Asset Corporate Awards 2017 event, hosted by The Asset (Hong Kong):
 - **Platinum Award** for the fourth year running, in recognition of outstanding companies in corporate governance and socio-environmental responsibility



- **Best CEO Award** in recognition of leaders with vision and the ability to drive their corporations.
- Recognition at The 9th Annual Global CSR Summit & Awards 2017 event and The Global Good Governance Awards 2017 event (Malaysia): **Best CEO Award Platinum, Best Country CSR Excellence Award (Thailand), and Best Community Programme Award Gold**. These accolades went to top executives and corporations committed to excellence in management and responsibility to communities and society. The events were hosted by The Pinnacle Group International
- **Certificate of Leadership in Energy and Environmental Design (LEED), Platinum Level**, ranked No. 1 in Thailand for LEED for Commercial Interior (LEED CI) on the largest area. Bangchak's Head Office won two certificates: one for Bangchak Convention and Meeting Center on 2,193 square meters at the conference rooms on the 8th and 10th floors, and the other for Bangchak@Bangchak Head Office on 10,676 square meters, certified by the US Green Building Control (USGBC).
- **Most Sustainable Energy Company - Thailand** at the International Finance Magazine Awards 2017 (IFM) which recognizes individuals and organizations in international finance who made significant contributions to the industry. Bangchak received recognition for its commitment to renewable energy, exceptional innovation, performance, corporate governance and environmental responsibility, hosted by International Finance Magazine
- Recognition at the Thailand ICT Management Forum & Thailand ICT Excellence Awards 2017 event, hosted by the Ministry of Digital Economy and Society:
 - **Excellence Award (Innovation Project)** for a project on the management of service station forecourts (called Fuel Automation System), with the Point of Sale (POS) system applied with the Attendant RFID Tag and Internet EDC (IP-EDC) technology to also control the management of forecourts and service station attendants
 - **Excellence Award (Business Sustainability Project)** for a project to develop integrated purchase of tapioca (called SMART: Sustainable Management Agriculture Retail Trading System). The



project integrates systems to keep data submission continuous, lower errors, and prevent fraud.

- **Green Industry Level 5: Green Network certificate** for the second consecutive year. Bangchak was among the 23 winners of this Level 5 recognition, the top Green Industry award in recognition of its green operations for sustainable development, its focus on continuous improvement and socio-environmental responsibility, and encouragement of business partners and allies to enter the green industry through its supply chain. Finally, the Department of Industrial Works recognized Bangchak's environmental activities conceived to promote good relations with communities and consumers.
- **Recognition at the Thailand Labour Management Excellence Awards 2017** event, hosted by the Department of Labour Protection and Welfare, Ministry of Labour: Outstanding Model Operator (Safety, Occupational Health, and Work Environment) Award 2017, in recognition of workplaces with international-standard labor management systems.
- **Best Sustainability Report Award 2017 (Excellence)**, organized by CSR Club, Thai Listed Companies Association, SEC, and Thaipat Institute. The award went to companies with the recognition of Bangchak's valuing of quality reporting under the GRI standard, business integrity, and due regard for stakeholders, society, and the environment.
- **Bangchak earned an overall 'Excellent' score** for eleven consecutive years, based on the assessment outcomes of a survey on CG report of listed companies for 2017, organized by IOD.
- **Bangchak scored an 'Excellent' 100% in all AGM criteria** for nine years under the '2017 Annual General Meeting Assessment Project', organized by the Thai Investors Association.
- **Distinction Winner Award 2017 (Silver Trophy, Energy Business)** in recognition of corporate websites' creativity for online communication, hosted by The Academy of Interactive and Visual Arts (AIVA, USA).

2016

- The management of Bangchak had revised its corporate vision, mission, and values to ensure alignment with the new directions of



- the operation and investment, as well as the changing business environment. The new Vision, Mission and Values had been announced since May 2016.
- Annual Maintenance Turnaround were proceeded during February 8 to March 23. It was finished 1 day earlier than planned and enabling the refinery to constantly maintain its high capacity throughout the year.
 - Bangchak set up BCP Trading Pte. Ltd., a wholly owned subsidiary of Bangchak.
 - Established Bongkot Marine Service Co., Ltd., an associated company with Bangchak holding 30% shares and Prima Marine Co., Ltd., holding 70%.
 - Establishing Bangchak Retail Co., Ltd., a subsidiary, which runs a food and drink business, wholly owned by Bangchak.
 - Launching Green S Revolution products in the gasohol group.
 - Establishing Oam Suk Social Enterprise Co., Ltd., an associated company, a joint-venture company with 40% shares held by Bangchak and 60% by the Buddhist Economics Foundation.
 - Launching SPAR, a new form of supermarket in Bangchak service station on Ratchaphruek Road, operated by Bangchak's subsidiary, Bangchak Retail Co., Ltd. (BCR).
 - BCPG Co, Ltd. acquiring SunEdison Japan and Huang Ming Japan
 - On September 28th, 2016, BCPG Plc. listed and starting trading on SET, a total of 590 million shares.
 - Bangchak changed its investment from buying shares to entering a joint venture with Sima Inter Product Co., Ltd., to set up a company whose name was changed from BCP Bioethanol Co., Ltd. to Bangchak Bioethanol (Chachoengsao) Co., Ltd. With a registered



capital of Baht 500 million, the company had Bangchak holding 85% shares.

- Bangchak Biofuel Co., Ltd., inaugurating second biofuel plant which came on stream and started commercial ethanol production; hence, total installed capacity was 810,000 liters per day.
- Bangchak arranged for a capital increase in BCP Energy International Pte., Ltd. (BCPE), a subsidiary, to allow BCPE to increase its common shares in proportion to its shareholding in Nido Petroleum Limited, worth Australian \$25.94 million, for appraisal drilling in the Mid-Galoc area of the producing Galoc oil field of the Philippines.

2015

- Achieved a peak refining capacity of 126.6 KBD in June. Also, reached an average refining capacity of 118.4 KBD in August, a record rate since operating the Hydrocrack Unit.
- Bangchak developed UCO (unconverted oil) for export to SK Oil of South Korea for use as a raw material for lube base oil production. High in quality and clean, UCO contains low sulfur and nitrogen.
- Bangchak acquired a 25-MW cogeneration plant located on the compound of Bangchak Refinery from PTT Plc for a total core-asset value of Baht 1,332 million, adding efficiency to its power & steam generation system to be used for refining processes.
- Bangchak launched Green S, new technology products derived from sophisticated processes and containing outstanding properties due to new additives that synergizes two powers:
 - E20S gasohol features outstanding properties due to the S Purifier and S Modifier, which complete fuel combustion in the engine, thus providing power and environmental protection. With less combustion pollutants because of lower sulfur content (10 ppm), E20S is superior to the Euro 5 standard.
 - Hi Diesel S boosted outstanding properties due to the S Power and S Guard additives, which raises combustion efficiency, thus providing power and clean burning, protecting the engine, reducing corrosion, and responding to driving fully.



- Bangchak issued debentures worth Baht 3,000 million with 12-year and 15-year maturity to mainly expand its renewable-energy business under the strategy of renewable-energy leadership. TRIS Rating, meanwhile, upgraded Bangchak's rating from A-/Stable last year to A/Stable this year.
- PTT Plc sold all its 374,748,571 shares (27.22%) in Bangchak to VAYU1 Fund and the Social Security Office, accounting for 15.25% and 11.97% of Bangchak's paid-up capital.
- Nido Petroleum Ltd. acquired more shares in Galoc Production Co., WLL (GPC), now accounting for 55.88%. Nido Petroleum, Bangchak's subsidiary, acquired more shares in GPC, going from 22.88% to 55.88% and assuming operatorship in the Galoc oil field. This transaction was worth USD 87.4 million (Baht 2,876 million).
- Bangchak's Board of Directors approved its investment in the lithium mining business via shareholding in Western Lithium USA Corporation (a Canada-listed company), which conducts the mining business in the American continent for processing into lithium carbonate, a key raw material for battery production.
- Extraordinary Meeting No. 1/2558 approved a restructuring plan of Bangchak's renewable-energy business by transferring its common shares in subsidiaries in the renewable-energy business group to BCPG, a new company resulting from the restructuring plan for power businesses. The meeting also approved the initial public offering (IPO) of BCPG on SET.
- Bangchak sold all 1,930,500 shares (10.66% of the paid-up capital) of ASEAN Potash Chaiphaphum PCL to S Group AEC (Thailand) Co., Ltd., altogether worth Baht 202 million, since it is not a core business.
- Bangchak has adopted the Thailand Quality Award (TQA) criteria in developing its organizational capability in conjunction with business development to strive for sustainability in human resource development as well as business growth. These guidelines include effective work structural architecture supporting current and future businesses, work process efficiency improvement suitable for all situations, information system and technological modernization, and support of innovations for all employees, aiming to become a knowledge-based organization.



- ☐ With a strong commitment to the continuous development of its workforce, Bangchak has defined a clear policy on job rotation to broaden staff skills in preparation for career path development and for current job requirements and expected knowledge and competency in line with the Company vision and business goals. The Competency Base Management System has been adopted to develop human resources systematically. As for personnel development, the Company set the preparation of a successor pool and systemization of career management plans, and continuous learning through various channels. Moreover, the Company promoted innovation projects in the organization, including employee group activities and cross-functional teams, including the Cascade Project for Innovation, Community of Practice (CoP), and Kaizen activities to promote sharing of knowledge and experiences among them. The ultimate aim of all these activities and projects is to drive Bangchak toward an entity of innovation.
- ☐ To upgrade its assessment standard for personnel abilities and administration system, Bangchak applied for participation in the Best Employer Project for Thailand, which helped it detect aspects for further improvement. The exercise added assessment of other aspects besides employee engagement, namely employer brand, leadership, and high-performance culture. The first year's assessment score for Bangchak was 70 as targeted in 2015. A roadmap was prepared to constantly close the gaps in the future.
- ☐ **Efficiency improvement in work process and preparedness for different scenarios:** To assess, identify, and mitigate risks at all levels impacting business goals, an Enterprise Risk Management (ERM) system was launched. This year the Company introduced Scenario Planning for assessing changing circumstances that are likely to cause risks and have impacts on long-term organization's goals. Scenario planning is regularly presented for the review and monitoring of risk management plans at ERM (Enterprise Risk Management Committee) and PRMC (Price Risk Management Committee) meetings. Bangchak also achieved ISO 22301:2012 certification for Business Continuity Management (BCM).
- ☐ **Information system and technological modernization**
To meet the requirements of instant information and technologies to operate all work processes safely, effectively, and smoothly,

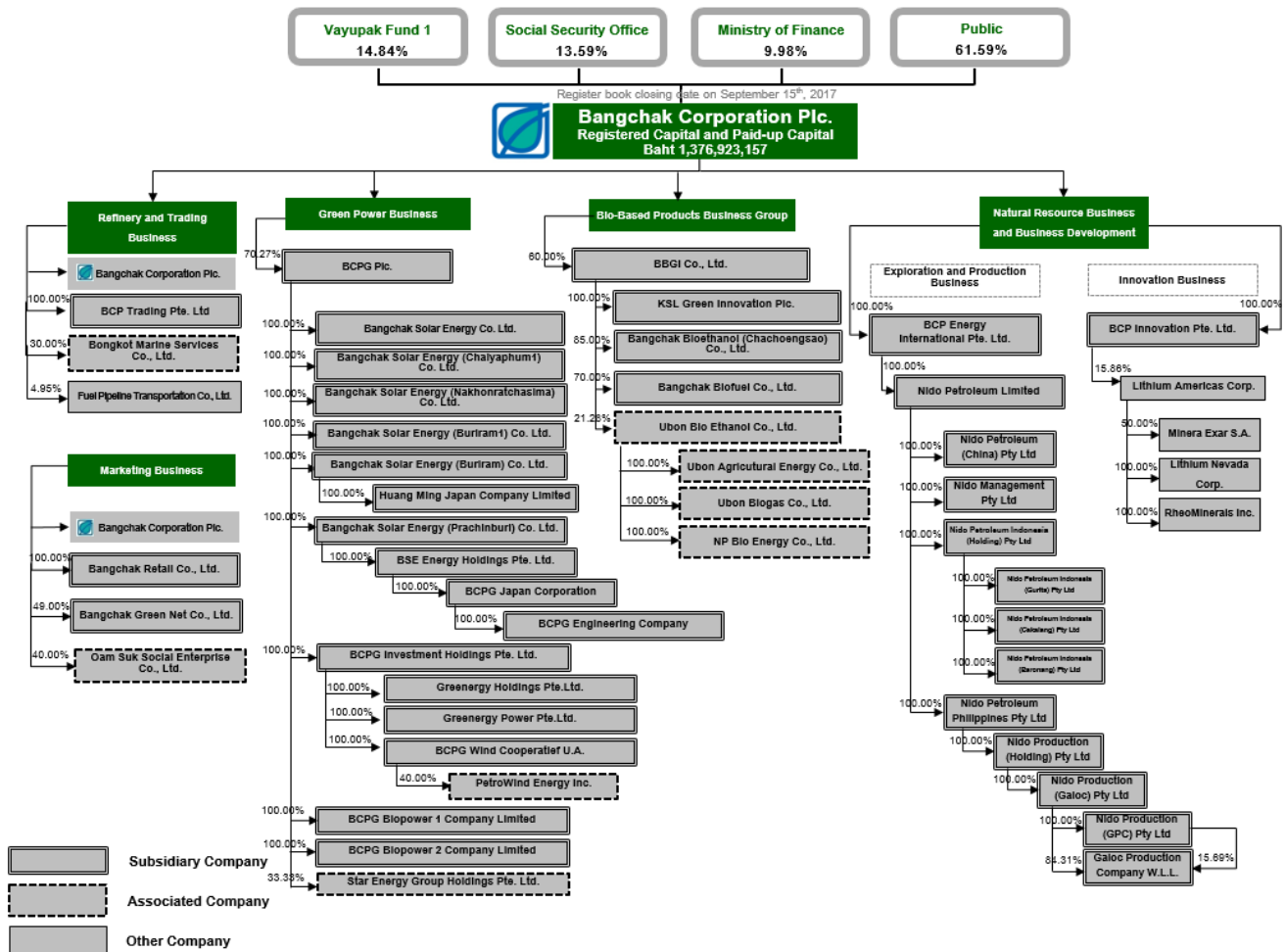


modernization of information system and technology is a prerequisite. Today's common is the perception of fast technological changes, which could manipulate strong impacts—positive and negative ones. Recognizing the value of IT systems, which lead to convenience, safety, and effectiveness, Bangchak has applied its systems of customers' opinion-sharing and data collection, and more service provision through the IT system and mobile applications. Cases in point were customers' complaint and feedback input through the SAP Call Center and the communication and direct inputting of goods and service-related data through the social media. Besides, data can find rapid applications to efficiently meet the highly dynamic needs of consumers. In addition, the Company has internationalized IT systems in support of work within the organization. For instance, it adjusted SAP SRM (Supplier Relationship Management) to link its databases to the SAP ERP system for greater efficiency. The Company also modified the BCP Knowledge Management System to accommodate modern, diverse functions to support knowledge-sharing within the organization. Consequently, knowledge can be linked and extended within the same group of companies and become increasingly efficient. In addition, the Company has internationalized IT systems in support of work within the organization. Moreover, Bangchak has installed an enterprise resource planning system through an enterprise network to provide 24/7 access to all employees under ISO 27001, a reliable system standard for network and data center. An additional system, Digital Control System (DCS), was implemented at distillation unit control rooms to ensure the utmost reliability of refining operations, under ISO/IEC 20000-1:2011 in service management system standard. The Company used SAP Enterprise Resource Planning (ERP) SAP ECC6.0, which is modern and international. Thus, the Company could access all analytical and operational data thoroughly and more efficiently. Furthermore, the Company developed Security and Safety Management system and Budgeting Management system (e-budget), in order to improve work more efficiently. The Company also planned IT Road Map for its subsidiaries.



1.3 Shareholding Structure

Equity Chart of Bangchak Petroleum Plc and Other Companies



Refinery and Oil Trading Business Group

The complex refinery of Bangchak operates with the nameplate capacity of 120,000 barrels per day. The majority of the yields are gasoline and diesel. The quality of its gasohol and diesel products meet the public sector's Euro 4 standard. Bangchak focuses on energy stability in its production processes by using electricity and steam derived from its cogeneration power plant, while replacing fuel oil with cleaner-burning natural gas. It raises the efficiency of its refining processes with the implementation of Efficiency, Energy, and Environment: 3E and Yield, Energy Efficiency, Safety and Reliability Enhancement: YES-R projects.



BCP Trading Pte. Ltd. (BCPT)

Incorporated in Singapore, BCPT engages in commodity trading including crude oil, petroleum products, petrochemicals, other chemical products, and other downstream businesses. The company has a registered capital of US\$1 million and is wholly owned by Bangchak.

Bongkot Marine Services Co., Ltd.

This joint venture enterprise has a registered capital of Baht 240 million, in which Bangchak holds a 30%. It engages in supplying and operating Floating Storage Unit.

Fuel Pipeline Transportation Co., Ltd. (FPT)

With a registered capital of Baht 3.66 billion, in which Bangchak holds 4.95%, FPT operates underground pipeline fuel transport. The multiproduct pipeline is laid parallel to the railway route to Don Muang International Airport Oil Depot via Chong Nonsi Oil Depot and ends at Bangchak's oil depot in Bang Pa-in, Ayutthaya, and at FPT. A pipeline connection with the system of JP-One Asset Co., Ltd., made at the Makkasan area supplies aviation fuels to Suvarnabhumi International Airport. FPT's latest move was to develop an additional fuel pipeline project, expanding its route from Amphoe Bang Pahan, Ayutthaya, to Lampang in the North. Two fuel depots in Phichit and Lampang are envisioned to accommodate this plan. The project is due for completion by 2019.

Marketing Business Group

The Marketing Business Group sells fuel products and lube fuels to consumers through Bangchak's network of 1,114 service stations nationwide, made up of 499 standard type and 615 agricultural cooperative service stations, as of December 2017. To provide convenience to customers, the stations offer supplementary (non-oil) businesses under the operation of Bangchak Retail Co., Ltd. In addition, the Marketing Business group also distributes fuel products to industrial users together with the transport sector, airlines, vessels, construction and agricultural sectors.



Bangchak Green Net Co., Ltd. (BGN)

Incorporated with Baht 1 million in registered capital, in which Bangchak holds 49%, BGN engages in service station administration and sales management of consumer products at Baichak and Lemon Green outlets.

Bangchak Retail Co., Ltd. (BCR)

This wholly-owned subsidiary of Bangchak has Baht 300 million in registered capital. BCR engages in the food and drinks business to accommodate steady growth in the retail business through 33 SPAR Supermarkets, 446 Inthanin Coffee and Inthanin Garden premium coffee shops, and other supplementary businesses.

Oam Suk Social Enterprise Co., Ltd.

With an initial registered capital of Baht 10 million, in which Bangchak holds 40%, Oam Suk engages in the purchase of agricultural produce and organic crops for processing, marketing, distribution, and R&D.

Green Power Business Group

Bangchak invests in the renewable-power business by holding 70.27% equity in BCPG Public Company Limited (BCPG), a listed company on the Stock Exchange of Thailand (SET). Its IPO took place on September 28, 2016. BCPG engages in investments in the power generation business from green energy sources (both domestic and overseas), such as solar, wind, and geothermal power projects.

BCPG Public Company Limited (BCPG)

Incorporated with a registered capital of Baht 10 billion to engage and invest in the domestic and overseas green power business, BCPG engages in the domestic solar farm business, totaling 139 MW in contractual capacity. It also invests in power generation from solar cells in Japan, totaling 150.5 MW in contractual capacity, a wind farm project with a total of 20 MW in equity capacity, and a geothermal power plant with 182 MW in equity capacity.



Bio Based Products Business

BBGI Co., Ltd.

BBGI was incorporated with a registered capital of Baht 2.532 billion. A merger between BBP Holdings Co., Ltd. (BBH, a Bangchak subsidiary) and KSLGI Co., Ltd. (a subsidiary of Khon Kaen Sugar Industry Plc), BBGI enhances the capacity and strengthens the ethanol and biodiesel businesses, while diversifying risks arising from the price volatility of ethanol's main raw materials, namely cassava and molasses. Finally, BBGI is part of the enhanced future growth opportunity. Four subsidiaries make up BBGI: Bangchak Biofuel Co., Ltd., Bangchak Bioethanol (Chachoengsao) Co., Ltd., Ubon Bio Ethanol Co., Ltd., and KSL Green Innovation Plc. Bangchak has 60% equity in BBGI.

Bangchak Biofuel Co., Ltd. (BBF)

Established with Baht 281.5 million in registered capital, in which BBGI holds 70%, BBF engages in the production of biodiesel from crude palm oil, a basic raw material, with a plant located in Bang Pa-in, next to Bangchak's oil depot, in Ayutthaya.

Bangchak Bioethanol (Chachoengsao) Co., Ltd. (BBE)

BBE has a registered capital of Baht 500 million, in which BBGI holds 85%. Located in Amphoe Phanom Sarakham, Chachoengsao, it produces 99.5% ethanol from fresh cassava and cassava chips.

Ubon Bio Ethanol Co., Ltd. (UBE)

UBE was incorporated with a registered capital of Baht 2.74 billion, in which BBGI holds 21.28%, located in Amphoe Na Yia, Ubon Ratchathani. It engages in the ethanol and tapioca flour business based on fresh cassava, cassava chips, and molasses to enhance ethanol security and accommodate growth in gasohol E20 and gasohol E85 sales. UBE's subsidiary also engages in processing cassava into flour and generating power from the biogas derived from wastewater treatment from the flour and ethanol processes.

**KSL Green Innovation Plc. (KGI)**

KGI is wholly owned by BBGI with a registered capital of Baht 610 million. It engages in the production and distribution of ethanol based on molasses derived from the sugar manufacturing process. KGI's two ethanol manufacturers now operate with a total capacity of 350,000 liters per day, located in Amphoe Nam Phong, Khon Kaen, and in Amphoe Bo Phloi, Kanchanaburi. Moreover, the biogas power plant of KGI generates power from the biogas derived from wastewater treatment from the ethanol process.

Natural Resources and Business Development

BCP Energy International Pte. Ltd. was established in Singapore to engage in energy, petrochemical, and natural resources businesses and an innovation business overseas.

BCP Innovation Pte. Ltd. was founded in Singapore to engage in innovation businesses overseas by investing in Lithium Americas Corp., a listed company on the Canadian Securities Exchange, undertaking lithium mining businesses in Argentina and the US. Lithium's demand has soared since it is an essential raw material for batteries for various products.

BCP Energy International Pte. Ltd. (BCPE)

Wholly owned by Bangchak and established in Singapore with a registered capital of US\$111.4 million, BCPE engages in energy, petrochemical, and natural resources business overseas and now invested 100% through the common shares of Nido Petroleum Ltd.

BCP Innovation Pte. Ltd. (BCPI)

BCPI has a registered capital of US\$5.1 million, wholly owned by Bangchak. Incorporated in Singapore to engage in innovation business overseas, BCPI now invests 15.86% through common shares in Lithium Americas Corp.



Nido Petroleum Limited (NIDO)

Nido engages in the petroleum exploration and production business with an investment focus in Southeast Asia. It holds rights in producing oil fields, namely Galoc, Nido, and Matinloc in the Philippines with a current combined output of 3,500 barrels per day, along with rights in the fields under development and exploration, namely West Linapacan, in the Philippines, and rights in fields under exploration, namely SC6B, SC14D, SC54A, SC54B, SC58, and SC63 in the Philippines.

Lithium Americas Corporation (LAC)

Lithium Americas Corp. (LAC) is listed on the Toronto Stock Exchange, Canada, and on the New York Stock Exchange, USA (since January 25, 2018)., and engages in the lithium mining business to produce lithium carbonate and lithium hydroxide, which are essential raw materials for batteries for various products with robust trends, namely electric cars, energy storage systems, and mobile electronic appliances. LAC is developing two lithium mines in Argentina and the US. The Argentina project is under the development of Minera Exar S.A., where lithium carbonate production is expected in 2019 for a capacity of 25,000 tons per year, whereas the US lithium mining project is under development by Lithium Nevada Corp. In addition, an affiliated RheoMinerals Inc. (formerly Hectatone Inc.) has produced organoclay for exploration and production of petroleum with a maximum capacity of 10,000 tons per year since 2015.



2. Business Description

Bangchak Corporation Public Company Limited is a Thai energy company engaging in business alongside social and environmental stewardship. Its core business - petroleum refining - spans procurement of crude oil from domestic and overseas sources and refining it into various standard products. With a current production capacity of 120,000 barrels per day, Bangchak distributes its refined products to over 1,000 retail stations around the country. It has also spread its wings to other businesses, including oil trading, power production from green energy, bio based products, natural resources and innovation business. Bangchak's mission is to enhance national energy security, while investing in new businesses to keep the organization moving forward and ensure sustainability.

Refinery Business (with a refining capacity of 120,000 barrels per day)



Refining and Oil Trading Business Group

Bangchak's refinery is categorized as a modern complex refinery with a maximum capacity of 120,000 barrels per day. Most of its yields are premium-value gasoline and diesel. The quality of gasohol and diesel from Bangchak Refinery are certified as Euro 4 Standard-complaint by the government. Its refinery is the first in Asia that produced eco-friendly



gasohol E20 to meet the Euro 5 standard with a sulfur content of lower than 10 ppm—fivefold reduction from the Euro 4 standard. Bangchak also focuses on improving energy stability in the production process by leveraging electricity and steam derived from its cogeneration power plant, while using more environmentally friendly natural gas in place of fuel oil and enhancing the efficiency of the refining process with the Efficiency, Energy, and Environment: 3E Project and Yield, Energy Efficiency, Safety and Reliability Enhancement: YES-R Project to increase its production capacity. To increase the capacity and process operation to maximize the benefit, the following additional efforts have been made as follows:

- ☐ Improved the efficiency of managing crude oil supply, refining processes, storage, distribution and shipping tankers to enable the continuation of refinery operations. As a result, the average annual refining capacity in 2017 was 111,000 barrels per day. The average daily production was recorded at 121.64 KBD in March.
- ☐ Executed better planning and procurement process of crude oil to obtain appropriate GRMs. Effectively utilized the Roll Month agreement to reduce the costs of crude oil. As a result, the average annual refining margin was US\$ 6.38 per barrel.
- ☐ Started operating the third-generation Combined-Cycle Power Plant (GTG-3) using natural gas as fuel. It is capable of 12 megawatts (MW) of electricity and 42 tons per hour of steam in order to provide stable and continuous production within



the refinery, reduce the cost of electricity and steam, and reduce greenhouse gas (GHG) emissions.

- ☐ Continuously developed the oil trading business through BCP Trading Pte., Ltd. By focusing on the strategy of expanding out-out (overseas oil suppliers for overseas customers) transactions.
- ☐ Began storing crude oil on the Floating Storage Unit (FSU) to grow its reserve oil storage capacity and to maintain consistency of production capacity.



Marketing Business Group

This year, over 76% of refined products were sold to customers directly through Bangchak's service stations and networks. There are 1,114 Bangchak service stations in Thailand: 499 standard service stations and 615 agriculture cooperative service stations (as of December 2017). Most of the new service stations of 2017 are spacious and green stylish. **They come along with supplementary (non-oil) businesses that help increase its market share and maintain Bangchak's second place.** It also sells products to users in the industrial sector, transport



sector, airlines, shipping, construction and the agricultural sector. Bangchak service stations emphasize high-performance renewable, eco-friendly gasohol and diesel. This year, it developed and launched to market the “Hi Premium Diesel S” to meet the needs of customers who need high-quality diesel. This product features engine protection, high combustion efficiency, a longer engine life, and friendliness to the environment. In addition, service stations will be expanded to include more convenience stores, coffee shops, fresh-cooked fast food restaurants, car maintenance centers, and car wash services.

With regard to the convenience store business and coffee shop business operated by BCR Co., Ltd. (BCR) (a subsidiary of Bangchak), there are 33 SPAR, a supermarket chain from the Netherlands under the concept of SPAR Fresh & Easy Food Market. In addition, there are over 446 service stations including leading educational institutes and commercial centers where “Inthanin Coffee Shop” and “Inthanin Garden” coffee shops are located. In 2017, Bangchak opened new concept coffee shop and restaurant, named “Inthanin Bistro”, at Don Muang International Airport, and new coffee shop suitable for agricultural cooperative service stations, called “Ka-Fae-Yok-Lor by Inthanin” which serving dark roast coffee with sweet-creamy under saving prices. Other Bangchak’s convenience stores in service stations are Bai Chak and Lemon Green. Also, there are Big C Mini-s located at 165 large service stations near communities. Other non-oil businesses are also “Lemon Kitchen” fast-food restaurants and car maintenance centers under “Wash Pro”, “Green Serve”, “Green Wash”, and “Green Tyre”.



In addition, Bangchak agricultural cooperative service stations, which operated since 1990, has developed continuously to the 28th year of business alliance with community organization. Bangchak's policy is to develop cooperative service stations sustainable by creating standards of quality and service to meet Bangchak standard service stations. This could draw more members and customers to visit cooperative service stations. In 2016, Bangchak develops supporting projects for cooperative service stations. These projects are, for instance, COOP Coaching Project, or training service station management by standard service station team, or COOP Turn Pro project, which supports potential cooperatives to upgrade stations. Cooperative service stations continuously develop new business to strengthen growth for community organization, better well-being for members, align with the vision of inclusiveness and sustainability.

Bangchak recognizes social trending and lifestyle changes of modern Thais. Therefore, its service stations are developed under a Greenovative Experience model under the renewable, recycle, reuse, and reduce (4Rs) concept. These include installation of a solar roof top to produce electricity, an EV charger station for electric vehicles, an automatic bottle recycling machine for recycling polyester fiber, rain water collection for water reuse for gardening, a healthy coffee shop using biodegradable coffee cups, use of organic coffee grown with wild and non-chemical methods, and use of energy-saving materials and increase of green areas.

In addition to fuel products, Bangchak manufactures and sells special lubricating oil and products like transmission fluids, brake fluids, grease, and others under the "BCP Lubricants" brand, selling them to the



domestic market through the Bangchak service station network, retails, plants, OEM (original equipment manufacturer) market, and international markets. This year, Bangchak developed the “FURiO” premium-grade lubricant that can save on fuels, prevent corrosion, and protects the engine in all modes of operation.



Bio Based Products Business Unit

Aware of the importance of renewable energy to Thailand's energy security and the reduction of trade deficit arising from importing fuels, Bangchak has promoted ethanol and biodiesel by blending them with gasoline and diesel to produce gasohol 91 and gasohol 95, gasohol E20, gasohol E85 and Hi Diesel.

This year Bangchak has completed amalgamation between BBP Holdings Co., Ltd., a subsidiary of Bangchak and KSL GI Co., Ltd., a subsidiary of Khon Kaen Sugar Industry Public Company Limited, to form BBGI Co., Ltd., which is 60% owned by Bangchak, operates the largest biofuel production and distribution business in Thailand. The total production capacity is more than 1,710,000 liters per day, divided into 900,000 liters of ethanol and 810,000 liters of biodiesel per day. Below are four BBGI subsidiaries:

- **Bangchak Biofuel Co., Ltd. (BBF)**, is 70% owned by BBGI. BBF is a key player in the biodiesel business by using palm oil as a



main raw material. The total installed capacity is now 810,000 liters per day. BBF is currently under construction preparation for the prototype plant of high-value bio-based products derived from palm fatty acid distillates for high-quality biodiesel production. At the same time, it has begun investigating a refined glycerin project to grow its product values.

- **Bangchak Bioethanol (Chachoengsao) Co., Ltd. (BBE)**, is 85% owned by BBGI. BBE produces ethanol derived from cassava as a main raw material, with a total ethanol capacity of 150,000 liters per day. It is located in Amphoe Phanom Sarakham, Chachoengsao.
- **Ubon Bio Ethanol Co., Ltd.** is 21.28% owned by BBGI and is located in Amphoe Na Yia, Ubon Ratchathani. The ethanol production capacity is 400,000 liters per day. With raw-material options ranging from fresh cassava, cassava chips, to molasses, UBE can produce 700 tons per day of tapioca flour in addition to power generation from waste water derived from ethanol and dry tapioca flour processes.
- **KSL Green Innovation Pcl. (KGI)**, a wholly-owned subsidiary of BBGI, produces and sells ethanol derived from molasses, total capacity 350,000 liters per day.



Green Power Business

Bangchak has invested in the green power business through the operations of BCPG Pcl., a subsidiary of Bangchak to generate and distribute electricity from new types of renewable energy and clean energy. Last year BCPG had a total capacity of 585 MW both in Thailand and abroad. Of this, 394 MW is in operation, and 191 MW in progress. In Thailand, a total of 190 MW in solar farms, of which 182 MW is in operation, and 9 MW is in progress. In Japan, BCPG has a plan to install 192 MW solar farm, of which 40 MW is in operation, and 152 MW is in progress. With regard to wind energy, BCPG has a plan to install 20 MW (equity), of which 14 MW is in operation, and 6 MW is in progress. A geothermal power plant is also BCPG's interest. It has planned to install 182 MW (equity). So far, 158 MW is in operation, and 24 MW is in progress.



Natural Resources Business

Bangchak has established BCP Energy International Pte. Ltd. (BCPE) in Singapore to operate its international businesses involving energy, petrochemicals, and natural resources. It currently wholly owns



Nido petroleum Limited to focus on petroleum exploration and production primarily in Southeast Asia.

Bangchak established BCP Innovation Pte. Ltd. (BCPI) in Singapore to conduct businesses involving international innovation. In December, BCPI acquired a 15.86% interest in Lithium Americas Corporation, a listed company on the Canadian Stock Exchange. Its business is lithium mining in Argentina and the United States to support the soaring demand for lithium batteries in renewable-energy power plants for the stability of the transmission system and the production of electricity from renewable energy, the use of batteries in electric cars, including various portable electronic devices.

R&D and Innovation Business

Bangchak established **Bangchak Initiative and Innovation Center (BiiC)** to create a Green Ecosystem so that it may drive innovation by focusing on green energy and bio-based business. Research and development, management of technologies, and networking help leverage the expansion of the business (both domestic and abroad) in parallel with incubation of startup businesses under the Thailand 4.0 economy. Its ultimate goal is to join the Evolving Greenovation Group in Asia.



Revenue Structure

In 2017, revenue from sales and service as shown in the financial statements of BCP and subsidiaries totaled Baht 172,138 million, of which Baht 161,030 million was posted by the Company. Revenue from subsidiaries included Baht 32,445 million from Bangchak Green Net Co., Ltd. (with 49% shares), Baht 3,322 million from BCPG Public Company Limited and subsidiaries (with 70% shares), Baht 1,510 million from Nido Petroleum Ltd. (an indirect subsidiary with 100% shares), Baht 420 million from Bangchak Retail Co., Ltd. (with 100% shares), Baht 12,509 million from BCP Trading Pte. Ltd. (with 100% shares), and Baht 8,073 million from BBGI Co., Ltd. and subsidiaries (with 60% shares). Of the total revenue, Baht 47,171 million represented connected transactions, most of which came from sales of refined products through Bangchak Green Net Co., Ltd. The revenue structure of Bangchak and its subsidiaries during 2015-2017, divided by type of products and services, is shown below:

Product/Service	Operated by	2017		2016		2015	
		Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%
Refined products ^{1/}	BCP and subsidiary	167,296	95.3	141,257	96.8	147,797	97.3
Electricity	Subsidiary	4,316	2.5	3,084	2.1	3,010	2.0
Consumer products	Subsidiary	526	0.3	364	0.3	333	0.2
Others ^{2/}	BCP and subsidiary	3,311	1.9	1,195	0.8	733	0.5
Total		175,449	100.0	151,873	100.0	151,873	100.0

Note: 1/ The proportions of earnings from sales of refined products in the domestic in 2017, 2016 and 2015 were 90.3%, 91.5 and 89.1% respectively.

2/ Other revenues (excluding revenue from sales or services) included investment income, gain from crude and product oil price hedging contract, gain from foreign currencies forward contract, gains from foreign exchange and reverse of allowance for loss from impairment assets, share of profit of associates and joint ventures, revenue from sales promotional campaigns, land leases, service station rentals, and equipment rentals.



2.1 Products and Services Bangchak sells four product groups, namely:

1) Fuels: comprising of

1.1 LPG

LPG is a mixture of hydrocarbons, that is, propane and butane, bottled in the form of liquid in high-pressured iron cylinders. LPG is mostly used as cooking gas in households and can also be used in the industrial sector, such as for refrigerator-paint heating, tobacco heating, glass cutting, iron welding, and iron sheet cutting. Besides, it is an optional fuel for modified gasoline-engine vehicles.

1.2 Gasoline

Gasoline is for gasoline-fueled vehicles. The quality of gasoline is classified by its octane number, which indicates resistance to engine knocking. Gasohol offers benefit in many areas, for instance, reduction of air pollution, financial savings for import avoidance of MTBE (Methyl Tertiary Butyl Ether), reduction of impacts from high oil price, and shoring up of crop prices – which draw investment and employment to rural areas.

In August 2016, Bangchak unveiled its newly developed “Green S Revolution” products for new benzene engine, which first in Thailand represented innovation for direct injection gasoline engine (DIG). The new products raise combustion efficiency, enhance engine power, eases combustion pollutants, and preserve the environment.

1.3 Aviation fuels

Intended for commercial jets, Jet fuels must be clean from any contamination. They have extremely low freezing points with specified



gravities and heat values. Jet fuels produce clean combustion with its properties remaining constant throughout the operation.

1.4 High-speed diesel

High-speed diesel is for vehicles with diesel engine, such as cars, trucks, fishing trawlers, passenger boats, and tractors. Bangchak launched “Hi Diesel S” features outstanding properties which complete fuel combustion in the engine, thus providing power and environmental protection.

In May 2017, Bangchak developed and launched “Hi-Premium Diesel S”, premium grade diesel, to meet the needs of customers who need high-quality diesel. This product features engine protection, high combustion efficiency, a longer engine life, and friendliness to the environment with Euro 5 standard.

1.5 Fuel oil

Fuel oil is part of the crude with a high boiling point. It is largely used in the industrial and transport sectors. It also powers marine vessels and power generation. Produced fuel oil is low sulfur with high quality and environment friendly.

2) Lubricants: Lubricants are used to coat engine surfaces to reduce friction so as to slow down the engine’s wear and tear while helping in cooling, power transmitting, and cleaning of soot and metal dirt caused by friction. Bangchak sells three types of lubricant products:

2.1 Auto lubes

Bangchak’s auto lubes under the brand “BCP Lubricants”, comprise the GE Series for gasoline vehicles and the D3 Series for diesel vehicles,



lubricant for two-stroke engines, transmission oil, and brake fluid, and so forth. In 2017, Bangchak developed the “FURiO” premium-grade lubricant that can save on fuels, prevent corrosion, and protects the engine in all modes of operation.

2.2 Industrial lubricants

Lubricants in this category include hydraulic oil, industrial gear oil, heat transfer oil, turbine oil, air compressor oil, and cutting fluid.

2.3 Grease

Grease products comprise of multi-purpose grease, heavy-duty and heat-resistant grease, and grease for food industry.

Bangchak lubricants meet API standards, European standards, and standards set by major car manufacturers. In 2008, Bangchak was awarded ISO 9001:2008 from The United Kingdom Accreditation Service (UKAS) and Thailand's National Accreditation Council (NAC) for its integrated lubricant business (ranging from procurement, product development, and marketing), and ISO/TS 16949:2009 International Automotive Task Force (IATF) for its product development and for being the first in Thailand entrusted for producing lubricants for the automotive industry. In 2016, Bangchak successfully achieved ISO 9001:2015 recertification with additional regard for stakeholders, including suppliers, communities, and consumers, with impacts on its processes for standard quality.



3) Feedstock for refineries and petrochemical plants: comprising

3.1 Straight Run Fuel oil (Long Residue)

This is an intermediate raw material for feeding the refining process with a cracking unit.

3.2 Reformate

Reformate is petrochemical feedstock. It is extracted to produce aromatics or gasoline.

3.3 Isomate

Isomate is feedstock for petroleum refining processes in the production of gasoline.

4) By-product: Sulphur, which is naturally associated with oil, is considered a by-product. Sulphur can be extracted for several direct uses, such as for blending in the production of sulfuric acid, car tires, pesticides, fertilizer, bleaching, sugar, and shampoo, and for production of Sulphur compounds.

2.2 Marketing and Competition

The petroleum products industry business faces tough competition in the regional market because products trading are constrained by advantage over transportation from the refinery. Therefore, refineries are found scattered around the locations where demand exists. Whereas for the crude oil industry, the competition at the global level depends on the quality of crude oil and the field's geographical conditions.

In the refining industry, there are two main types of refinery, namely:

- ☐ **Hydroskimming is Simple Refinery** with distillation processes.

The simple process separates components of crude into light oil



(gasoline), middle distillates (aviation fuel and diesel), and heavy oil (fuel oil), the proportions of which depend on the properties of crude.

- **Conversion Cracking is Complex Refinery** with a cracking unit, a process added to the distillation process. Conversion cracking turns some heavy oil into lighter products of higher value. However, this type of refinery requires some additional investment in the cracker and bears higher operating costs.

In general, yields from a Simple Refinery vary from those from a Complex Refinery, depending on the following factors:

- (1) The desired products, such as gasoline, diesel, and fuel oil
- (2) The type of crude, such as sweet crude, sour crude, light crude, and heavy crude
- (3) Some special specifications of the desired products, such as the sulphur content.

2017 Thai Economic Overview

The Bank of Thailand projected economic growth this year at 3.9%, an increase from 3.2% in 2016. The higher economic growth was better than earlier predicted due to the recovery of the export and service sectors, growing domestic consumption and private investment expansion. Economic stimulation measures implemented by the government drove the national economy to grow beyond the original plan. Certain concerns still exist, however; income concentrated to some sectors and unfairly distributed, rise of household debts, and economic policy uncertainty, as well as trade barriers with the US, are the major economic risks hindering Thai economic growth.



The headline inflation reported by the Bank of Thailand was estimated to stand at 0.7% this year, an increase from 0.2% in the previous year. The increase was driven by the rising oil price, growth in consumption demand even at a relatively low level, and negative impacts of economic restructuring. All these factors helped retard the inflationary pressure.

So, the 2018 GDP forecast is now 3.9%, relatively stable from this year. The main driving force comes from exports, seen in advanced orders placed in all industrial sectors, demand for new products especially for organic and value-added processed agricultural products, and growing tourism industry, following higher consumer confidence and tax incentive measures stimulating more local travel. Domestic consumption is set to gradually grow in response to higher consumer confidence. The economic barriers include price volatility of agricultural products and steadily high household debts. Due to healthy market supply, the 2018 headline inflation is estimated to slightly grow to 1.1% following the higher oil price.

Summary of Thai economy and inflation

Percentage

	2016*	2017	2018
Economic growth	3.2	3.9 (3.8)	3.9 (3.8)
Headline inflation	0.2	0.7 (0.6)	1.1 (1.2)
Core inflation	0.7	0.6 (0.6)	0.8 (0.9)

Note: * actual data
() monetary policy report, September 2017

Source: Office of the National Economic and Social Development Board, Ministry of Commerce, and Bank of Thailand

Nevertheless, other considerations affect the Thai economic projection. Uncertainty on the international trade policy with the US,



geopolitical risks among trade partners, and unexpectedly low domestic consumption resulting from uneven income distribution are the major concerns prohibiting the projected Thai economy growth.

Domestic oil business

The demand for fuels this year in Thailand grew to 118.18 million liters per day, a 2.57% increase from in 2016, in line with the growing GNP. The growth was driven by state measures on economic stimulation, expansion of the service sector and the continued public investment from 2016, leading to economic expansion beyond the original plan, especially the export and service sectors. Demand for gasoline and diesel therefore continued to grow at 3.28% and 2.69% respectively this year. The highest growth was recorded in the consumption of gasohol (3.99%), pushing the share of gasohol among the total fuels to a record high of 95%.

Domestic demand for refined products

Product	Demand (million liters/day)		
	2017	2016	Growth variation
Regular Gasoline	1.39	1.54	-9.50%
Gasohol	28.83	27.72	+3.99%
Gasoline Group	30.22	29.26	+3.28%
Jet fuel	63.73	62.06	+2.69%
Diesel Group	18.47	17.72	+4.25%
Fuel Oil	5.76	6.18	-6.83%
Total	118.18	115.22	+2.57%

Source: Department of Energy Business

On the supply side, the 2017 total crude run average stood at 1,140 KBD, a slight rise by 4.69% from the 2016. All six domestic refineries were fully on production, including Thailoil, IRPC, PTT Global



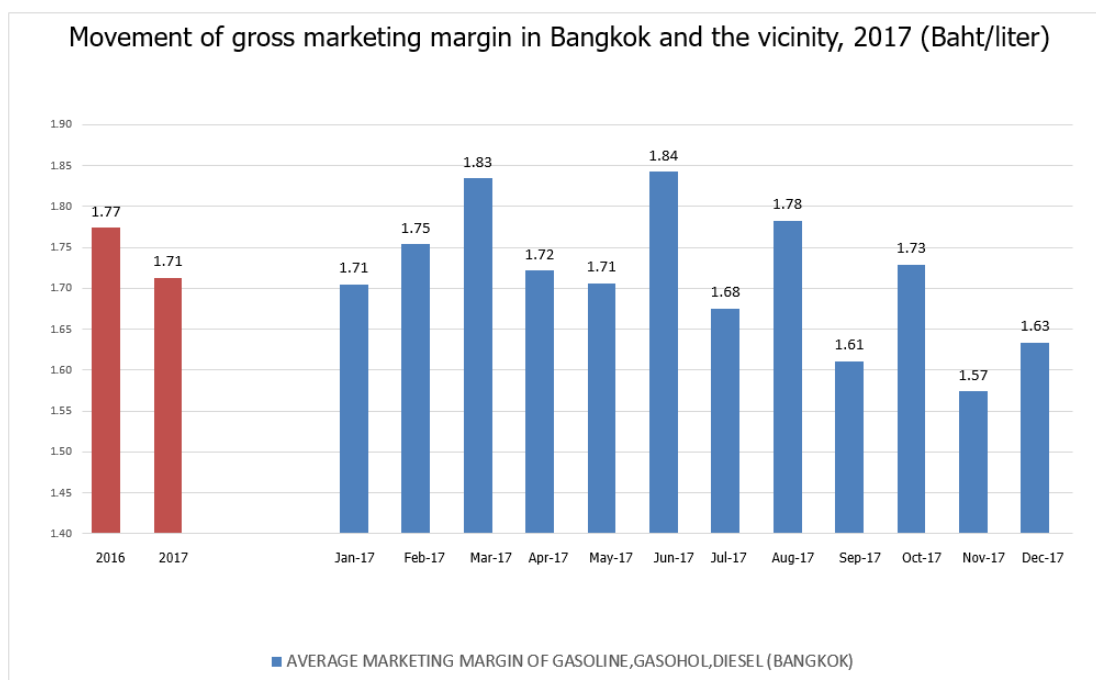
Chemical, Esso, Star Petroleum (SPRC) and Bangchak. The 2018 supply outlook is higher, since most refineries have no plan for turnaround maintenance shutdown.

Average crude run by domestic refineries			
Refinery	Crude run (thousand barrels per day, KBD)		
	2017	2016	Growth variation
Thaioil	351	337	+4.08%
IRPC	181	185	-2.42%
Esso	140	135	+3.62%
SPRC	166	173	-3.93%
PTT Global Chemical	191	157	+21.80%
Bangchak	111	101	+9.90%
Total	1,140	1,088	+4.69%

Source: Department of Energy Business and Bangchak Corporation Public Company Limited

Marketing Business

In the wake of the low-level oil price volatility in 2016, the price picked up at the year-end, driving traders to hike their retail prices to reflect the higher cost within the public policy framework. The 2017 gross marketing margin for Bangkok and its vicinity averaged Baht 1.71 per liter, a mild drop from 2016 of Baht 0.06 per liter. This included the dealer's margin and transport compensation. The gross marketing margin for 2018 is expected to be on a par with the 2017 level, given the fact that the domestic retail prices cannot be adjusted quickly in line with the rapid volatility of the world oil price.



Note: Gross marketing margin is inclusive of dealer's margin

Source: EPPO

The total number of service stations continues to rise. About 1,074 new service stations were added this year, making the total number stand at 27,300 at the year-end. Out of these new stations, 404 stations sold E20 gasohol and 194 stations sold E85 gasohol, leading to 3,707 stations serving gasohol E20 and 1,167 stations serving gasohol E85. Obviously, the higher demand and the number of service stations serving gasohol E20 and E85 were driven by higher number of car sales with E20- and E85-compatible engines.

Because of the higher number of service stations nationwide, retail market competition has intensified. The overall outlook is for these stations to become modernized to better serve consumers. Not only convenience has been focused, but non-oil businesses and services have been added to provide more alternatives to consumers and to improve retail business performance and competitiveness. Moreover, to



accommodate AEDP's (Alternative Energy Development Plan) renewable and alternative energy plans, more and more service stations are providing choices of renewable energy to accommodate demand from modern vehicles. Finally, many Thai retail business operators have opted to expand their businesses to neighboring countries under the AEC (ASEAN Economic Community) scheme, where demand for petroleum products consumption and economic growth are phenomenal.

Number of service stations

Unit: station

Oil trader	2017 ¹	2016	2015
PTT	1,775	1,675	1,578
Shell	508	498	491
Esso	543	542	534
Bangchak	1,114	1,075	1,072
Chevron	354	368	362
PTTRM	153	150	147
PTG	1,696	1,407	1,150
Others	21,157	20,511	20,009
Total	27,300	26,226	25,343

Source: Department of Energy Business

Remarks: ¹/ number of stations as of December 31, 2017

In 2017, sales volumes by domestic service stations averaged 2,058.4 million liters a month, a 3.7% rise from last year's 1,985.9 million liters per month. Bangchak posted 6.2% more sales through its service stations, which raised its market share through service stations from 15.1% to 15.4%, while maintaining the No. 2 domestic market share through service stations.



Sales volume of fuels through service stations for 2016 - 2017

Operator	Average Sales volume (million liters/month)			Market share (%)		
	2017	2016	Δ	2017	2016	Δ
PTT	749.4	734.0	+2.1%	36.4	37.0	-0.6
Bangchak	317.7	299.2	+6.2%	15.4	15.1	+0.4
Esso	255.7	256.6	-0.3%	12.4	12.9	-0.5
Shell	267.3	254.3	+5.1%	13.0	12.8	+0.2
Thai Oil	195.3	162.7	+20.0%	9.5	8.2	+1.3
PTTRM	104.2	111.6	-6.7%	5.1	5.6	-0.6
Caltex	95.3	97.8	-2.6%	4.6	4.9	-0.3
PTG Energy	33.7	30.7	+10.0%	1.6	1.5	+0.1
Susco Group	36.7	36.1	+1.5%	1.8	1.8	-
Others	3.2	2.9	+13.3%	0.2	0.1	-0.0
Total	2,058.4	1,985.9	+3.7%	100	100	

Source: Department of Energy Business and Bangchak Corporation PLC.

The lubricating oil sold by Article 7 traders amounted to roughly 36.2 million liters a month (according to the Department of Energy Business, December 31, 2017), an 4.8% rise. The lubricating oil market appears to continue growing mainly in line with the domestic economy and the public policy.

Product distribution and distribution channels: Bangchak products are distributed through:

1.1) Service stations – This is the usual retail channel, which is, through service stations scattered around the country. Also in this category are community service stations, intended for sale to members. All products are delivered via tanker trucks.



Bangchak's retail stations are operated in five formats, namely:

Station Format		Number (station)	Share (%)
1. Company-Owned, Company-Operated stations (COCO):	Bangchak is the investor and operates the station through Bangchak Green Net Co., Ltd. Bangchak takes control of the policy and business model. COCO stations are mostly large stations located on major roads, and, under Bangchak's direct supervision, serve as prototype stations.	205	18.4
2. Company-Owned, Dealer-Operated stations (CODO):	Bangchak is the investor and land owner, while the station management is carried out by experienced operators, who rent the stations.	51	4.6
3. Joint Venture stations (JV):	This is a joint investment between Bangchak and operators interested in running the service station business.	47	4.2
4. Dealer-Owned, Dealer-Operated stations (DODO):	The operator is the station owner, land owner, and sole investor, as well as a distribution agent.	196	17.6
5. Co-Operative stations (CO-OP):	These stations are invested by the community. In most cases, the community is the land owner and investor.	615	55.2
Total		1,114	100

Remarks: Bangchak Corporation PLC, as of December 31, 2017.

1.2) Industrial sale – This sales channel serves industrial plants and businesses with fuel demand for heating and producing products and services, such as food, textiles, paper, chemical, iron, and metal industries. Customers deal direct with the company, and deliveries are arranged by tanker trucks, except for some factories with their own piers.

1.3) B2B – This channel serves businesses with large purchase volumes like airlines, cargo/passenger, land and marine transport



companies, as well as construction companies. These customers deal direct with the company, and deliveries are carried out by pipeline (for airlines), boat, and tanker truck.

1.4) Sale to other oil companies – This is the sales channel among large and medium-sized oil traders who own oil depots. Purchased products are distributed through customers' own networks to end-customers. Deliveries are normally carried out by pipeline or customers' trucks.

1.5) Sale to refineries and petrochemical plants – This is the sale of refined products in the form of feedstock to petroleum or petrochemical production process, such as Naphtha for the aromatics unit. Deliveries are normally carried out by boat.

1.6) Export sale – Deliveries are normally carried out by marine vessel to overseas oil traders.

Types of customer – Bangchak's customers can be classified by purchasing method:

1) Outlet & End-User Customers – This group of customers are those buying Bangchak brand oil products through stations operated by the company, dealers, agriculture cooperatives or communities. Also in this group are corporate customers like factories, construction companies, airlines, cargo and passenger boats, and government agencies and state enterprises.



2) Supply Sales Customers – These customers are small and large oil traders, such as PTT, who order finished products from Bangchak for further distribution. Deliveries are made direct to customers' sites or outlets in their networks.

3) Export Customers – These customers are overseas oil traders who buy Bangchak oil to feed their production process or distribute internationally, such as Low Sulphur Waxy Residue (LSWR) sold to customers in Singapore, Malaysia, and China to fuel power generators and feed their cracking units for producing higher-value gasoline and diesel for further distribution.

Bangchak's sales volume, categorized by type of customer

Unit: thousand barrels/day

Type	2017		2016		2015	
	Volume	%	Volume	%	Volume	%
1. Outlet & End-User Customers	100.5	71.3	96.7	71.7	90.5	70.6
2. Supply Sales Customers	17.3	12.3	19.3	14.3	16.3	12.7
3. Export Customers	23.2	16.5	18.9	14.0	21.4	16.7
Total	141.0	100.0	134.9	100.0	128.2	100.0

Source: Bangchak Corporation PLC.



Sales value of Bangchak's products and services

Products	2017		2016		2015	
	million baht	%	million baht	%	million baht	%
<u>Domestic Sale</u>						
1. High-speed diesel	81,822	50.5	73,090	53.0	73,857	51.1
2. Fuel oil	1,864	1.1	1,678	1.2	1,814	1.3
3. Gasoline	45,428	28.0	39,371	28.6	41,319	28.6
4. Other products and services	16,852	10.4	13,450	9.8	13,326	9.2
Total domestic sale	145,966	90.0	127,589	92.6	130,318	90.2
<u>Export sale</u>						
1. High-speed diesel	2,846	1.8	2,107	1.5	2,652	1.8
2. Fuel oil	11,120	6.9	6,998	5.1	10,208	7.1
3. Gasoline	674	0.4	545	0.4	838	0.6
4. Other products and services	1,577	1.0	599	0.4	438	0.3
Total export sale	16,217	10.0	10,249	7.4	14,136	9.8
<u>Combined sales value</u>						
1. High-speed diesel	84,668	52.2	75,197	54.6	76,509	53.0
2. Fuel oil	12,984	8.0	8,676	6.3	12,022	8.3
3. Gasoline	46,102	28.4	39,916	29.0	42,157	29.2
4. Other products and services	18,429	11.4	14,049	10.2	13,766	9.5
Total sales value	162,183	100.0	137,838	100.0	144,454	100.0
% increase/decrease	17.66		-4.58		-17.58	

Source: Bangchak Corporation PLC.

2.3 Supplies of products and services

1) Production capacity and production volume

Bangchak's complex refinery, located on 210 Sukhumvit 64, Phra Khanong, Bangkok, boasts a refining capacity of 120,000 barrels per day and performs a 24-hour operation.

Production capacity (measured in 'barrels per day') means the refining system, piping system, and storage system that receive crude for turning into finished products at the maximum volume per day through the quality



improvement system, piping system, blending system, storage system, and product distribution system. Every 18-24 months, Bangchak shuts down the system for maintenance, which normally lasts about 30 days, to keep up or upgrade the system's performance. The shutdown schedule depends on operational and economic circumstances.

Bangchak has, over time, upgraded and expanded its refining unit. Today's operation is considered efficient with high safety standards and environment management, which exceed standards.

Bangchak's refining capacity and refining volume

Unit: thousand barrels/day

	2017	2016	2015
Nameplate capacity			
: thousand barrels per refining day	120	120	120
: thousand barrels per calendar day (A)	113.4	113.4	113.4
Output volume (by product)			
1. Diesel	56.7	53.4	59.2
2. UCO	2.6	1.2	0.8
3. Fuel oil	14.2	13.1	16.1
4. Gasoline	21.2	19.8	22.2
5. Aviation fuel, kerosene	13.1	11.1	11.7
6. LPG	2.9	2.6	2.9
7. Products for internal use and product loss during operation	0.7	0.2	0.1
Total output volume (B)	111.3	101.4	112.9
% increase of output volume	9.8	-10.2	30.5
% of capacity utilization (B/A)	98.2	89.4	99.6

Source: Bangchak Corporation PLC.

- Remarks: 1/ Bangchak runs refining operation with three shifts of staff working eight hours per shift. Maintenance shutdowns are regularly scheduled to keep up or upgrade the refining process.
- 2/ The gasoline output excludes the amount of ethanol in the production of Gasohol.



2) Refining process

□ **Fractional Distillation** – The refining process starts from breaking up crude oil into fractions in the refining unit by heating it at 370 degrees Celsius. Then, 60% - 70% of the crude will vaporize to the top of the refining column, where it finds the lowest temperature. When that vapor cools down, it condenses into a liquid and flow onto layers of trays, depending on their boiling points, as detailed below:

1. The top layer, with the lowest temperature, is LPG.
2. The second layer is Light Virgin Naphtha (LVN).
3. The third layer is Heavy Virgin Naphtha (HVN) (both LVN and HVN will be blended with some additives to produce gasoline).
4. The fourth layer is kerosene and aviation fuel.
5. The fifth layer is diesel.
6. The remaining liquid crude stays at the bottom of the distillation column, where the temperature is the highest. The liquid is known as the “Atmospheric Residue”.

Vaporization and condensation of crude oil from one tray to another is an ongoing steady-state process in a separate pipe placed beside the distillation column. This separate part is known as a ‘straight run’. Yields from the straight run process, including diesel, contain high cetane and ignite easily, thus easing complete combustion and making engines clean. The resulting fuel oil still has some blend of light yields, making it easy to ignite, thus giving complete combustion. While the excess air can be reduced, resulting in lower fuel and maintenance costs in the long run.



- **Treating:** Treating is to make quality improvement to crude and products by removing unwanted contents, such as Sulphur. Treating units include the gas treating unit, naphtha production unit, low-sulphur diesel production unit of Euro 4 standard, and fuel oil treating unit, as well as gasoline production unit of Euro 4 standard.
- **Conversion:** Conversion is the process of changing oil molecule structures to achieve an oil product of higher quality and value. Conversion units include the gasoline production unit (isomerization, reforming) and fuel oil conversion unit.
- **Blending:** Blending is to mix at least two products together or to mix some additives into a product to achieve a product of higher quality.

Fuel oil upgrading unit: Since demand for fuel oil has been falling over time while Bangchak realizes the optimal use of resource, fuel oil produced in the straight run process is treated to achieve cleaner products of higher value, for example, fuel gas, cooking gas (LPG), light naphtha, heavy naphtha, aviation fuel, and diesel.

The above-mentioned treating method starts from moving the fuel oil from the distillation column to the vacuum distillation unit to remove Vacuum Gas Oil. The fuel oil molecules will then be broken up into fractions to produce the desired products. Here, hydrogen from the hydrogen production unit is fed in to help molecule fractioning complete. At the



bottom of the vacuum distillation column, heavy fuel oil will be further treated for sale.

Products derived from molecule fractioning, comprising fuel gas, cooking gas (LPG), light naphtha, heavy naphtha, aviation fuel, and diesel, will be sent to the product separation unit.

Fuel gas obtained from the process will be refined by removing the sulphur content. Treated fuel oil, diesel after sulphur content removal under the Euro 4 standard, aviation fuel, and cooking gas are kept in storage tanks for sale.

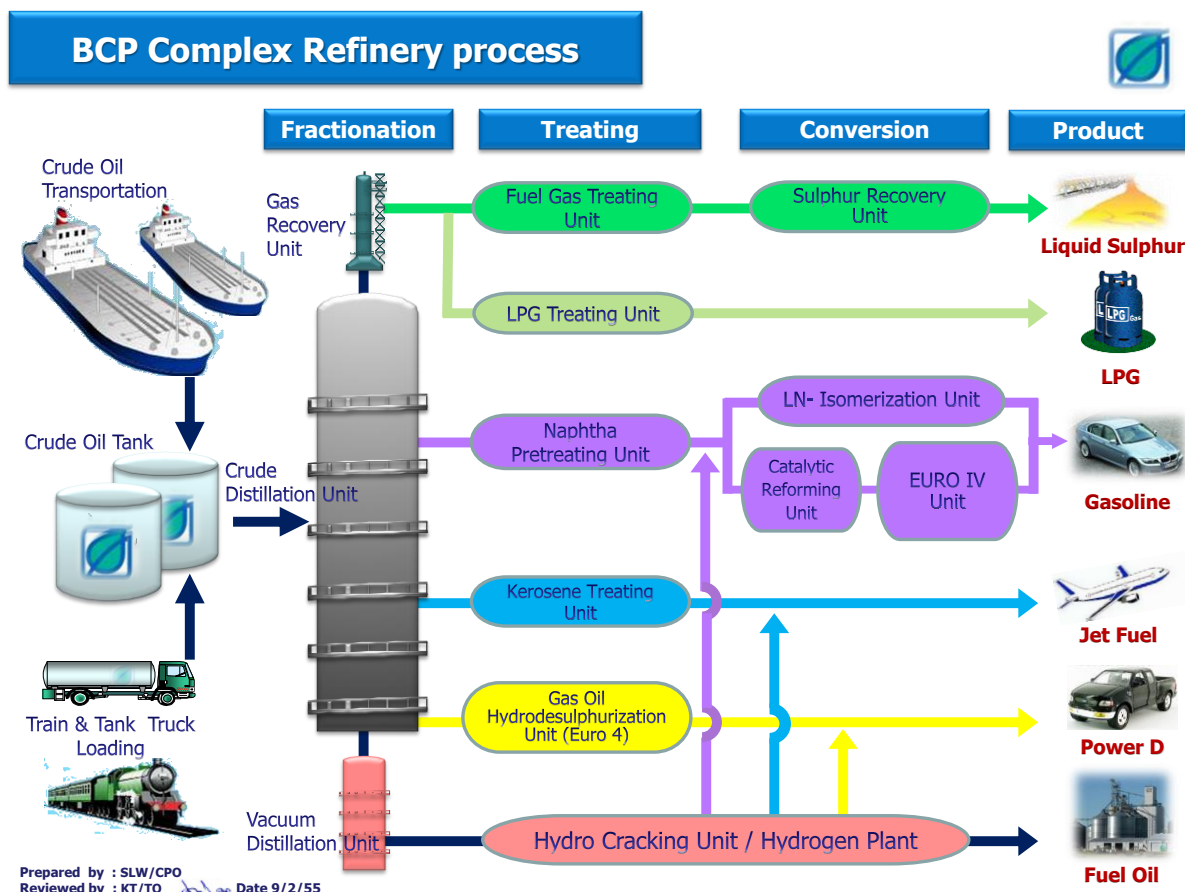
Low-sulphur diesel production unit of Euro 4 standard – This is quality improvement for diesel, using hydrogen in combination with a catalyst under specified pressure. By the Euro 4 standard, sulphur content in diesel will be reduced sevenfold to achieve a highly pure product, which will be kept in storage tanks for sale.

Light naphtha and heavy naphtha will be sent to the naphtha production unit to reduce the sulphur content by tenfold under the Euro 4 standard. The product will then be sent to the gasoline production unit (reforming) to raise the octane number before flowing further to the production unit of Euro 4 standard gasoline.

Production unit of gasoline / gasohol of Euro 4 standard – This is the quality improvement for gasoline by using hydrogen, in combination with a catalyst under specified pressure, to reduce the benzene content under the Euro 4 standard. The product will be highly pure with ten times less



sulphur content and 3.5 times less benzene. The product is kept in the storage tanks for sale.



3) Raw materials and suppliers

The main raw material of the refining business is 'crude oil', natural hydrocarbons created by compression of organic materials, that is, animals and plants, over millions of years under the earth's surface. Thailand holds its own crude sources at various places, such as the along the seams of Phitsanulok and Kamphaeng Phet provinces, in Suphan Buri province, Sukhothai, Fang district in Chiang Mai, and in the Gulf of Thailand. However, the volume of crude oil produced indigenously is not enough to satisfy the demand posed by the seven domestic refineries.



Thus, most of the crude needs to be imported. The major import sources of crude are countries in the Middle East like the UAE, Qatar, Saudi Arabia, Iran, and Dubai, as well as those in Southeast Asia, such as Malaysia, Indonesia, Brunei, the Philippines, and Australia. Crude imports from the Middle East require 15 – 20 days for transport and those from the Far East require 3-7 days. Normally, Bangchak keeps a crude stock of around 30 days in running its refinery.

Indigenous sources of crude oil (unit: thousand barrels/day)

Crude Field	Production Capacity					
	2017		2016		2015	
	Volume	%	Volume	%	Volume	%
Sirikit	25,761	18.2	26,944	16.5	29,095	19.1
Tantawan	25,037	17.7	29,830	18.3	2,247	1.5
Erawan	29,795	21.0	31,217	19.1	26,470	17.4
Nasanun/Nasanun East	1,670	1.2	2,096	1.3	1,440	0.9
Jasmine	11,843	8.4	12,997	8.0	9,175	6.0
Manora	7,054	5.0	11,029	6.8	12,900	8.5
Others	40,439	28.6	48,967	30.0	71,060	46.6
Total	141,599	100	163,080	100	152,387	100

Source: Energy Policy and Planning Office, Ministry of Energy

To achieve its goal on crude procurement security at the lowest cost and desired quality, Bangchak sources crude oil from both indigenous and overseas sources at suitable proportions, taking into consideration refining economics. Also, there are times when Bangchak orders petroleum products for sale, known as physical swaps with other producers.



In 2017, Bangchak procured indigenous crude oil from many fields in domestics, totaling 10,177 thousand barrels, which mainly from Sirikit (Phet) field, Pattani Field, Benchamas Field, and others.

This year, Bangchak imported crude 29,209 thousand barrels. There are 89.7% Crude from the Far East fields, such as Labuan and Bunga Kekwa from Malaysia; Seria Light Export Blend, and Champion from Brunei; Banyu Urib from Indonesia. There are 1.3% Crude from the Middle East Field, which is Masila from Yemen. Also, there are 10.3% Crude from other sources, such as Montara from Australia.

In addition to crude oil, Bangchak procures semi-finished products to make finished products, while some finished products are also procured for sale.

Bangchak's Cost of Feedstock

Crude Type	2017		2016		2015	
	Million Baht	%	Million Baht	%	Million Baht	%
<u><i>Cost of indigenous feedstock</i></u>						
1. Crude and semi-finished products	36,313	34.3	34,332	38.4	41,381	42.1
2. Finished products	8,402	7.9	9,945	11.1	11,387	11.6
Total	44,715	42.2	44,277	49.5	52,768	53.7
<u><i>Cost of imported feedstock</i></u>						
1. Crude and semi-finished products	53,498	50.5	39,553	44.2	45,182	45.9
2. Finished products	7,752	7.3	5,606	6.3	379	0.4
Total	61,250	57.8	45,159	50.5	45,561	46.3
<u><i>Combined costs of indigenous and imported feedstock</i></u>						
1. Crude and semi-finished products	89,811	84.8	73,885	82.6	86,563	88.0
2. Finished products	16,154	15.2	15,551	17.4	11,766	12.0
Total feedstock cost	105,969	100	89,436	100	98,329	100

Source: Bangchak Corporation PLC.



3. Risk Factors

Amid rapid changes in the current business environment, the risk management process is crucial for the formulation of plans to systematically tackle business uncertainties. Besides applying the international COSO ERM and ISO 31000 standards at the operational, business/functional group and divisional levels, Bangchak has integrated these standards into its work processes and the formulation of risk management for every investment project. By structuring its management of risks to cover all business groups, requiring them to observe a standardized risk management system, Bangchak ensures that the company and its affiliates will fully achieve their long-term and short-term goals in line with the sustainable approach for business, environmental, and social development.

This year Bangchak examined internal and external factors threatening its business operations, covering the volatility of oil prices and exchange rates, business competition, economic conditions, public policies, megatrends, data from The Global Risks Report 2017, published by the World Economic Forum, and the growth of relevant technologies and innovations, which include alternative-energy and energy storage-related technologies, and the progress of Electric Vehicle (EV) development.

Bangchak also considered the needs and expectations of its stakeholders in analyzing impacts and future trends for the formulation of its risk management plans and identification of business opportunities.



In enhancing the assessment efficiency of risk factors and their causes, while facilitating the planning of appropriate risk management approaches, Bangchak's risk-related management fall into the following elements: corporate level, investment-project level, and Business Continuity Management: BCM.

1. Corporate risk management

The first step of corporate risk management is to assess key internal and external risk factors, including future trends potentially affecting Bangchak's short-term and long-term goals. Besides covering strategic, operational, and financial risks, the assessment includes risks concerning legal compliance, employees' safety and occupational health, together with operational impacts on the environment, society and communities, which may affect Bangchak's credibility. Key risk indicators (KRIs) have also been developed to be used in the monitoring process to stay vigilant for emerging threats, while data obtained from the process are utilized for the improvement and formulation of additional risk-management plans to mitigate impacts on Bangchak's goals.

To fully achieve its business goals, Bangchak has prepared management plans for the assessed risk factors and impacts as follows:

Risks of volatility in oil and raw-material prices

In managing risks arising from the volatility of oil and raw-material prices, which affect the revenue from its petroleum and other businesses, Bangchak has implemented the following short-term and long-term plans:



- Closely monitored oil-price movements and constantly developed new tools to manage price-related risks and product spreads, with preventive measures identified by PRMC.
- Pursued business profits by procuring raw materials for biofuels from sources at reasonable prices and developed work processes to add value to products.
- Increased the proportion of Bangchak's investment in new businesses that generate steady revenue streams by expanding its investment in green power via BCPG Pcl, a subsidiary that invests in and operates power-generation and other renewable-energy businesses, both domestic and abroad.
- Established BBGI Co., Ltd., a biofuel producer and supplier, with a capacity to produce 900,000 liters of ethanol and 810,000 of biodiesel per day, totaling 1,710,000 liters per day, to strengthen Bangchak's competitiveness and business operation, diversify risks arising from the price volatility of cassava, molasses and crude palm oil, the company's key raw materials, and reinforce Bangchak's steady processing of raw materials into refined products.

Risks relating to the management of raw materials and supply chain

In ensuring an efficient operation within its supply chain and timely delivery of raw materials, machinery, equipment and services for its production and selling activities, which are crucial for its business continuity and cost control, Bangchak undertakes the following risk management measures:



- Entered into term contracts for crude oil supply from foreign and domestic sources to maintain a stable crude run.
- Procured crude oil with suitable properties for Bangchak's processes and generated high gross refining margins while adding value to its business.
- Classified high-value groups of raw-material and merchandise suppliers, including service providers, to conduct risk assessment on their adequacy, including their economic, social and environmental impacts, to ensure Bangchak's business continuity.

Risks arising from energy-related technologies and innovations

Technological changes and innovations are external factors threatening the current business. Bangchak has analyzed and assessed such risks while identifying opportunities offered by technological progress and innovations as follows:

- Increased its investment in lithium mines, with current shareholding of 15.86% of Lithium Americas Corporation's shares to expand Bangchak's natural resource and innovative energy-based businesses while keeping abreast of the future growth of battery-based alternative energy.
- Established Bangchak Initiative and Innovation Center (BiiC) with the cooperation of assorted networks and agencies to create a green ecosystem, promote and drive innovations that support major leaps



of green energy and bio-based products, leading to a dynamic breakthrough of Bangchak's businesses with an awareness of resource values.

Risks of impacts on communities and society

Focusing on sustainably cooperating with communities, society, and the environment in its business conduct, Bangchak has incessantly improved and developed its processes to operate safely without affecting communities and society through the following risk management measures:

- Consistently applied the Safety Integrity Level (SIL), Reliability-Centered Maintenance (RCM) and Risk-Based Inspection (RBI) systems throughout its processes, enabling Bangchak to plan proper maintenance and repair schedules for equipment to mitigate accident risks.
- Developed a safety system after TIS/OHSAS 18001. In place are HAZOP (Hazard and Operability Studies) assessment and PSM for safety management throughout refining processes.
- Installed an online air-quality monitoring system displaying the results on six billboards at locations adjoining the refinery: Sai Jai Thai Foundation on Sanpawuth Road, the Old Railway Road, and Sukhumvit Soi 64 sides of the refinery's front gate, Office of the Permanent Secretary's sports center, and the communities at the front and back of Wat Boonrod Thammaram, with another billboard to be installed in the Bang Krachao area on the opposite bank of



Chao Phraya River. The purpose was to provide neighboring communities with air quality data and boost wider confidence in society.

- Executed the enclosed ground flare construction project, due for completion by 2019, to ease community impacts of gas emission through the flare tower.
- Prevented river oil spills by requiring double-hull vessels for crude oil and refined-product tankers.
- Developed and constantly improved safety technology for jetty equipment, system, and tools in line with the OCIMF (Oil Company International Marine Forum) standards, including modernizing the wharf's firefighting system, devising a plan to develop Quick Release Hook vessel berthing, and installing an additional close-circuited (CC) camera system.
- Organized activities to promote knowledge, understanding, and safety awareness among these in surrounding communities, including schools, temples, and condominiums, by conducting evacuation and fire-fighting drills, installing communication systems and community alarms at all strategic locations, and inviting community representatives to observe emergency drills.

Global warming risks

Besides defining emergency response measures to mitigate potential impacts of global climate change, Bangchak focuses on contributing to the reduction of carbon dioxide emission as follows.



- Closely monitored potential impacts of climate change, including floods, with effective plans in place to manage low to high levels of impact and ensure business continuity.
- Significantly improved the refinery's energy efficiency and reduced carbon dioxide emission by utilizing the electricity and steam produced by its cogeneration power plant, fueled by natural gas instead of fuel oil, while starting the operation of a new 12-MW capacity cogeneration power plant this year.
- Integrated socio- environmental stewardship and energy conservation as part of Bangchak's corporate culture. Bangchak Refinery has won the Green Industry Level 5: Green Network Award, while Bangchak's Head Office building has been certified as LEED Platinum, the highest rating level of LEED certification for its design, which promotes the use of energy- saving and environmental conservation products.
- Developed green- energy businesses to reduce its fossil- fuel consumption and carbon dioxide emission by expanding Bangchak's renewable energy-based power generation business via BCPG Pcl, and biofuel business via BBGI Co., Ltd., a producer and supplier of biodiesel and ethanol.
- Took part in the research and development on "Environmental Management Technologies for Sustainable Development of Refinery Business" , which includes the assessment of organization's carbon footprint in line with ISO 14067 to alleviate global warming.



Water shortage risks

Water crisis will become a worldwide challenge with the world's water resources threatened by climate change, while population growth also poses a higher demand for water. Bangchak is therefore committed to minimizing water usage in its production processes.

- Effectively reduced the volume of its wastewater discharge and water usage by 3.42% this year by assigning its Refinery Water Management Taskforce to identify an approach for optimal water management to maintain process stability and define measures for water consumption reduction, reuse, and recycling with the reverse osmosis technology.
- Initiated water footprint assessment for Bangchak's gate-to-gate water management and identified appropriate measures for the reduction of wastewater discharge and water usage.
- Encouraged its affiliates to reduce water usage in their processes, starting from the reuse and recycling of water by the bio-based product business group. Bangchak has also undertaken a reservoir excavation project for additional water reserve supply on its compound.

2. Investment project risks

Besides alignment with the corporate strategic directions and returns on businesses, consideration of risk management in all investment projects is vital. In ensuring that every project will achieve its goals without affecting communities, society, and the environment, a clear and systematic analysis is required, while its risk management plan must be approved by



ERMC before submission to the Board for approval, taking into account the risk factors of each project stage and target country, including natural disaster threats.

3. Business Continuity Management (BCM)

Bangchak has acquired for five straight years ISO 22301:2012 standard certification covering its Head Office, Bangchak Refinery and Bangchak Oil Distribution Center, Central Region Business Office, and Bang Pa-in Oil Distribution Center. This certification underscores Bangchak's readiness to accommodate crises and implement its Business Continuity Plan (BCP) efficiently under international standards, while stakeholders can rest assured that Bangchak can handle emergency responses while continuing to deliver its products.

This year Bangchak improved its BCP to fully align with the relocation of the company's head office to the M Tower Building on Sukhumvit Road, while establishing and expanding the businesses of its affiliates. A crisis management exercise for marine oil spills under BCP was also undertaken jointly with Bongkot Star, a crude oil tanker owned by Bongkot Marine Services Co., Ltd., a service provider of floating storage units. The simulated scenarios were the transport of crude oil and communication among Bangchak's affiliates during crises. The drill outcomes were then used in amending emergency procedures, securing additional resources to enhance affiliates' BCM efficiency, ensuring their business continuity and sustainability during crises.

**4. Review of business assets**

Asset	Ownership	Book value Baht million ¹	Obligation
Refinery land	Long-term lease	341	None
Other properties	Ownership	2,271	None
Buildings	Ownership	183	None
Machinery & distillation tower equipment	Ownership	20,607	None
Power generators	Ownership	0	None
Sales and office equipment	Ownership	3,136	None
Platinum catalysts ²	Ownership	239	None
Vehicles	Ownership	134	None
Other assets ³	Ownership	24	None
Works in progress	Ownership	1,369	None
Total	-	28,304	-

Note:

- 1/ This year Bangchak set aside Baht 61 million in allowance (reversal of) for impairment of land property, machinery, and equipment, consisting of Baht 12 million in property, Baht 22 million in machinery and distillation tower equipment, and Baht 27 million in sales and office equipment.
- 2/ “Platinum catalysts” : platinum- based catalysts (found in the octane enhancement unit’s reactor), the contents of which are set by their producers.
- 3/ “Other assets”: oil palm plantations in Pathumthani and Nakhon Nayok province.



Trademarks

Trademark	Number of registered trademarks	Goods/services under trademark	Expiry ^①
<u>Copyrights</u>			
1. Bangchak leaf	11	All fuels, cold tissue paper, pure drinking water, plastic polymers, pens, pencils, notebooks, folders, asphalt, activated carbon	Aug. 30, 2019 Oct. 15, 2019 Aug. 20, 2026
2. GRENA ZENITH SJ	1	Lubricant	Nov. 5, 2026
3. ISO GREEN	1	Gasoline	Jun. 10, 2024
4. GE GOLD	7	Synthetic gasoline-engine lubricant	Nov. 20, 2021 Dec. 25, 2021 Feb. 12, 2022 Jan. 13, 2023 Jan. 15, 2027
5. GE PLUS	4	Gasoline-engine lubricant	Nov. 20, 2021 Dec. 25, 2021 Jan. 13, 2023 Jan. 15, 2027
6. GE SILVER	3	Semi-synthetic gasoline-engine lubricant	Dec. 25, 2021 Nov. 4, 2024 Jan. 15, 2027
7. Green Plus	1	Gasoline	Sep. 14, 2024
8. Green Plus 91	1	Gasoline	Sep. 14, 2024
9. Green Plus 95	1	Gasoline	Sep. 14, 2024
10. LOWCOST	2	All fuels	Apr. 28, 2025 Jun. 23, 2025
11. D3 GOLD	1	Synthetic diesel-engine lubricant	Oct. 9, 2023
12. D3 TURBO	1	Diesel-engine lubricant	Jan. 25, 2021
13. D3 EXTRA	1	Diesel-engine lubricant	Jan. 25, 2021
14. D3 PICK UP	1	Diesel-engine lubricant	Jan. 25, 2021
15. D3 COMMONRAIL	1	Diesel-engine lubricant	Oct. 30, 2018
16. D3 COMMONRAIL TURBO	1	Diesel-engine lubricant	Oct. 30, 2018
17. D3 Max	1	Diesel-engine lubricant	May 14, 2027
18. D3 EXTRA PLUS	1	Diesel-engine lubricant	Jan. 15, 2027
19. D3 PICK UP PLUS	1	Diesel-engine lubricant	Jan. 15, 2027
20. D3 TURBO PLUS	1	Diesel-engine lubricant	Jan. 15, 2027



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry ¹
21. D3 GOLD	1	Diesel-engine lubricant	Jan. 15, 2027
22. POWER D B5	1	High-speed diesel	May 20, 2019
23. BANGCHAK POWER D	1	High-speed diesel	Jul. 10, 2018
24. SUPER POWER D B5 (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
25. SUPER POWER D (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
26. GE NGV	1	Semi-synthetic gasoline-engine lubricant	Dec. 25, 2021
27. GE PLATINUM	1	Synthetic gasoline-engine lubricant	Dec. 25, 2021
28. Bangchak Max Drive	1	Gasoline Fuel Conditioner	Dec. 25, 2026
29. Super HDX	1	Diesel Fuel Conditioner	Jan. 15, 2027

Service Marks

Service logo	Number of registered logos	Goods/service under logo	Expiry ¹
<u>Copyrights</u>			
1. Bangchak leaf	3	Goods sales management	Dec. 20, 2018
2. Bangchak colored strips, Bangchak characters, and Bangchak leaf	1	Vehicle service station	Aug. 6, 2023
3. Colored strips and Bangchak leaf	1	Vehicle service station	Aug. 6, 2023
4. Colored strips	1	Vehicle service station	Nov. 3, 2023
5. Bangchak colored strips	1	Vehicle service station	Aug. 6, 2023
6. Hornbill photo	2	Goods sales management	Oct. 10, 2026
7. GRENA CARCARE	1	Vehicle cleaning, maintenance & repair	Feb. 23, 2019
8. Gold food plate (black & white)	1	Sale of goods, foods, and drinks	Sep. 4, 2023
9. Gold food plate (colored)	1	Sale of goods, foods, and drinks	Sep. 4, 2023
10. GREEN AUTO SERVICE	1	Automotive maintenance & repair	Jul. 24, 2025
11. GREEN SERVE	1	Vehicle maintenance	Sep. 1, 2025



Service logo	Number of registered logos	Goods/service under logo	Expiry ¹
12. Green Wash	1	Vehicle cleaning & lubrication	Sep. 1, 2025
13. GREEN WASH AUTOCARE	2	Vehicle cleaning	Jul. 25, 2026
14. GREEN WASH EXPRESS	1	Vehicle cleaning	Jul. 25, 2026
15. GREEN BIKE EXPRESS	1	Motorbike maintenance	Jul. 25, 2026
16. GREEN TYRE EXPRESS	2	Tyre sale & mending	Aug. 15, 2026
17. GREEN WASH THE PREMIUM	1	Vehicle cleaning	May 20, 2019
18. Baichak	1	Food & drink sale	Mar. 15, 2021
19. Baichak Mart	2	Food & fresh coffee business management, Miscellaneous goods for consumers' convenience	Jan. 18, 2022 Apr. 1, 2023
20. Bangchak colored strips, three colors leaf	1	Vehicle service station	Sep. 24, 2023
21. BUBBLY TEA	1	Food & drink sale	Jun. 4, 2024
22. HURRICANE ICE	1	Food & drink sale	Jun. 4, 2024
23. MILK AND BREAD	1	Food & drink sale	Jun. 4, 2024
24. LOW COST	1	Vehicle service station	Apr. 28, 2025



Trademarks and Service Marks advertised abroad

Trademark	Number of registered trademarks	Goods/services under trademark	Expiry
1. Bangchak leaf and Chinese characters (registered in PRC (China))	1	Gasoline, diesel, and lubricants	Dec. 27, 2020
2. Bangchak leaf and BANGCHAK LUBRICANTS - Registered in Myanmar [®] - Registered in LPDR (Laos)	2	Fuel products	- Mar. 20, 2023
3. Bangchak leaf and BCP LUBRICANTS (Registered in Myanmar [®])	1	Fuel products	-
4. Bangchak leaf and BANGCHAK (Registered in Myanmar [®])	2	Fuel products, service stations	-
5. Bangchak leaf and characters (Registered in LPDR (Laos))	2	Fuel products, service stations	Mar. 20, 2023
6. Bangchak leaf and BCP LUBRICANTS (Registered in Vietnam)	1	Fuel products	Jul. 13, 2022
7. Bangchak leaf and BCP LUBRICANTS (Registered in Cambodia)	1	Fuel products	Jul. 5, 2022
8. Bangchak leaf and BCP LUBRICANTS (Registered in Lebanon)	1	Fuel products	Feb. 26, 2029
9. BAICHAK MART (Registered in Myanmar) [®]	1	Miscellaneous goods for consumers' convenience	-
10. GREEN SERVE (Registered in Myanmar) [®]	1	Vehicle maintenance	-
11. Bangchak leaf and BANGCHAK (Registered in Myanmar) [®]	2	Fuel products & Vehicle service station	-
12. Bangchak leaf and BCP (Registered in Myanmar) [®]	2	Fuel products & Vehicle service station	-



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry
13. Bangchak leaf and BANGCHAK (Registered in Cambodia)	2	Fuel products & Vehicle service station	Nov. 19, 2023
14. Bangchak leaf (Registered in PRC (China))	1	Fuel products	Jan. 6, 2021
15. Bangchak leaf and BCP LUBRICANTS (Registered in Jordan)	1	Fuel products	Nov. 23, 2023
16. Bangchak leaf and BCP LUBRICANTS (Registered in Philippines ^๑)	1	Fuel products	Jun. 1, 2025
17. Bangchak leaf and BCP LUBRICANTS (Registered in Kenya)	1	Fuel products	Dec. 9, 2023
18. Bangchak leaf and BCP LUBRICANTS (Registered in OAPI countries ^๑)	1	Fuel products	Dec. 6, 2023
19. BAICHAK MART (Registered in PRC (China))	1	Miscellaneous goods for consumers' convenience	Jan. 27, 2025
20. BAICHAK MART (Registered in Vietnam)	1	Miscellaneous goods for consumers' convenience	Sep. 2, 2023
21. BAICHAK MART (Registered in LPDR (Laos))	1	Miscellaneous goods for consumers' convenience	Dec. 4, 2024
22. GREEN SERVE (Registered in LPDR (Laos))	1	Vehicle maintenance	Dec. 4, 2024
23. Bangchak leaf and BANGCHAK (Registered in PRC (China))	1	Service stations	Jan. 27, 2025
24. Bangchak leaf and BANGCHAK (Registered in LPDR (Laos))	2	Fuel products, service stations	Dec. 4, 2024
25. Bangchak leaf and BANGCHAK (Registered in Vietnam)	2	Fuel products, service stations	Sep. 29, 2023 Nov. 18, 2023



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry
26. Bangchak leaf and BCP (Registered in PRC (China))	2	Fuel products	Jan. 13, 2025 Oct. 20, 2025
27. Bangchak leaf and BCP (Registered in LPDR (Laos))	2	Fuel products, service stations	Dec. 4, 2024
28. Bangchak leaf and BCP (Registered in Vietnam)	1	Fuel products, service stations	Sep.29, 2023
29. Bangchak leaf and Bangchak (Registered in Cambodia)	2	Fuel products, service stations	Oct. 1, 2023
30. Bangchak leaf and BCP (Registered in Cambodia)	2	Fuel products, Service stations	Oct. 1, 2023
31. Bangchak leaf and BCP LUBRICANTS (Registered in LPDR (Laos))	1	Fuel Products	Jan. 17, 2024
32. Bangchak leaf and BANGCHAK (Registered in PRC (China))	1	Fuel products	Jan. 27, 2025
33. BANGCHAK MART (Registered in Cambodia)	1	Miscellaneous goods for consumers' convenience	Sep. 5, 2023
34. GREEN SERVE (Registered in Cambodia)	1	Vehicle maintenance	Sep. 5, 2023
35. Bangchak leaf and BCP LUBRICANTS (Registered in PRC (China))	1	Fuel products	Aug. 13, 2025
36. Bangchak leaf and BCP LUBRICANTS (Registered in Turkmenistan)	1	Fuel products	Jun. 23, 2025

**Trademarks and Service Marks under deliberation in Thailand**

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. GE SYNTECH	1	Semi-synthetic gasoline engine lubricant	Filed Nov. 27, 2014
2. WASH PRO	1	Vehicle cleaning, maintenance & repair	Appealed Apr. 22, 2016
3. GREEN S REVOLUTION	2	Fuel products, vehicle service station	Appealed Jan. 26, 2018
4. COFE TO GO	1	Artificial milk, coffees cocoa, teas, food & beverages	Filed Dec. 9, 2016
5. FURIO	1	Lubricants	Filed Mar. 3, 2017
6. RESPOPLEX	1	Technological service	Filed Aug. 29, 2017

Trademarks and Service Marks under deliberation abroad

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. Bangchak leaf and BCP LUBRICANTS, registered in Iraq	1	Fuel products	Filed on Aug. 3, 2015

Note:

- ❶ Registered trademarks and service logos are in effect 10 years from registration dates and extendable every 10 years
- ❷ In registering trademarks in Myanmar, one must submit declaration(s) of trademark ownership and place advertisement(s) to that effect in local newspapers every 2-3 years
- ❸ In registering trademarks in Philippines, one must submit Declaration of Actual Use within 3 years from filing.
- ❹ OAPI countries: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Ivory Coast, Mali, Mauritania, Niger, Senegal, and Togo



5. Legal disputes

Below are details as of December 31, 2017, about Bangchak's ongoing legal dispute(s) to which the company is a party; which could significantly affect its business; and which did not result from routine business conduct.

- ☐ Bangchak entered a litigation as a lead defendant with another company on grounds of breaching the appointment of lubricating oil product sales agents. The plaintiff originally filed for a financial damage of Baht 45.64 million and later filed another lawsuit on breaching the agreement and demanded an additional damage for being unable to sell the product in dispute. The second filing called for compensation of Baht 688.28 million. On March 23, 2017, the Civil Court made a ruling to dismiss both lawsuits. The plaintiff continued to the Appeals Court, where both lawsuits are being processed. Bangchak reaffirmed its compliance with all terms of the agreement.



6. General information and other key information

- ☐ Company Name : Bangchak Corporation Public Company Limited
- ☐ Head Office : 2098 M Tower Building, 8th Floor
Sukhumvit Rd., Phra Khanong Tai,
Phra Khanong, Bangkok 10260
- ☐ Nature of business : Nature of business: An oil refinery with a nameplate capacity of 120,000 barrels per day and a petroleum business covering retail and wholesale
- ☐ Registration No. : 0107536000269
- ☐ Telephone : 0 2 335 8888
- ☐ Fax : 0 2 335 8000
- ☐ Website : <http://www.bangchak.co.th>
- ☐ Company establishment: November 8, 1984
- ☐ Commercial operation : April 1, 1985
- ☐ Registered capital (as of December 31, 2017) 1,376,923,157 Baht, of which Baht 1,376,923,157 was paid up, dividing into 1,376,923,157 shares, at 1 Baht per share.
- ☐ Shareholders of BCP (as of September 15, 2017)
 - Vayupak Fund 1 204 Million shares 14.84%
 - Social Security Office 187 Million shares 13.59%
 - Ministry of Finance 137 Million shares 9.98%
 - Minor Shareholders 849 Million shares 61.59%
 - Total 1,377 Million shares 100.00%



☐ Customers

- The public, via Bangchak service stations and those of dealers nationwide
- Industrial sector, including industrial plants
- Transport and service sectors, including airliners, ocean-going vessels, hotels, trucks, and construction work
- Agricultural sector, via agricultural cooperative service stations
- Overseas export markets.

☐ Office and Terminals

- Head Office*
2098 M Tower Building, 8th Floor, Sukhumvit Road, Phra Khanong Tai, Phra Khanong, Bangkok 10260
Tel. 0-2335-8888, Fax 0-2335-8000
Email: info@bangchak.co.th
- Bangchak Refinery and Terminal
210 Soi Sukhumvit 64, Phra Khanong Tai, Phra Khanong, Bangkok 10260
Tel. 0-2335-4999 Fax 0-2335-4009
- Central Region Business Office and Bang Pa-In Terminal
99 Moo 9, Tambon Bang Krasan, Amphoe Bang Pa-in, Ayutthaya 13160
Tel. 0-3527-6999, 0-3535-0289, 0-3535-0292
Fax (Central Region Business Office) 0-3535-0290
Fax (Bang Pa-In Terminal) 0-3527-6999
- Northern Region Business Office
87/9 Yee-wan Building, 3rd Floor, Thung Hotel Road, Tambon Wat Ket, Amphoe Muang, Chiang Mai 50000
Tel. 0-5330-0484, Fax 0-5330-0485
- Northeastern Region Business Office
499 Moo 12, Mitraphab Road, Tambon Muang Kao, Amphoe Muang, Khon Kaen 40000
Tel. 0-4326-1751-52, 0-4326-1789, 0-4326-1791, Fax 0-4326-1790
- Southern Region Business Office
Room 402, 4th Floor, P.C. Tower, 91/1 Moo 1, Kanchanawithi Road, Tambon Bang Kung, Amphoe Muang, Surat Thani 84000
Tel. 0-7722-4790-2, Fax 0-7722-4793

* The Company is relocated its head office from 555/1 Energy Complex, 10th Floor, Building A, Vibhavadi Rangsit Rd., Phra Khanong Tai, Phra Khanong, Bangkok 10260, effective on February 22, 2017.



- Samut Sakhon Oil Distribution Center
100/149 Moo 1, Tambon Tha Chin, Amphoe Muang, Samut Sakhon 74000
Tel. 0-3482-0519-20
- Si Racha Oil Distribution Center
115/14 Moo 10, Tambon Thung Sukhla, Amphoe Si Racha, Chon Buri 20230, Tel. 0-3849-3179, Fax 0-3849-3129
- Rayong Oil Distribution Center
1, 3B Road, Tambon Map Ta Phut, Amphoe Muang, Rayong 21150, Tel. 0-3860-9389, Fax 0-3860-9413
- Surat Thani Oil Distribution Center
104/1 Moo 2, Surat-Pak Nam Road, Tambon Bang Kung, Amphoe Muang, Surat Thani 84000
Tel. 0-7727-5056-8
- Song Kla Oil Distribution Center
13/1 Moo 6, Tambon Sa Ting Mor, Amphoe Singha Nakorn, Song Kla 90280
Tel. 0-7433-2782, Fax 0-7433-2783
- Suksawat Lubricant Oil Distribution Center
196 Moo 1, Suksawat Road, Tambon Pak Khlong Bang Pla Kot, Amphoe Phra Samut Chedi, Samut Prakan 10290
Tel. 0-2815-6997-8

□ Subsidiaries

- BCPG Public Company Limited (BCPG)
2098 M Tower Building, 12th Floor, Sukhumvit Rd., Phra Khanong Tai, Phra Khanong, Bangkok 10260
Tel. 0-2335-8999 Fax. 0-2335-8900
Email: info@bcpgroup.com
Website: <http://www.bcpgroup.com>
- Bangchak Green Net Co., Ltd. (BGN)
223/94 Country Complex, Building A, 19th Floor, Sanpawut Rd., Bangna, Bangna, Bangkok 10260
Tel. 0-2367-2699 Fax. 0-2745-7945
- Bangchak Retail Co., Ltd. (BCR)
2098 M Tower Building, 17th Floor, Sukhumvit Rd., Phra



Khanong Tai, Phra Khanong, Bangkok 10260
Tel. 0-2335-4995 Fax. 0-2016-3963

- BBGI Co., Ltd. (BBGI)
2098 M Tower Building, 5th Floor, Sukhumvit Rod., Phra
Khanong Tai, Phra Khanong, Bangkok 10260
Tel. 0-2335-8899 Fax. 0-2335-8800
- Bangchak Biofuel Co., Ltd. (BBF)
28 Moo 9 (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in
District, Ayudtthaya 13160
Tel. 0-3527-6500 Fax. 0-3527-6549
Website: <http://www.bangchakbiofuel.co.th>
- Bangchak Bioethanol (Chachoengsao) Co., Ltd. (BBE)
96/10-11 Moo 7, Tambon Koh Kanoon, Amphoe Panomsarakham,
Chachoengsao 24120
Tel. 0-3809-0670-2 Fax. 0-3809-0673
- Bangchak Solar Energy Co., Ltd. (BSE)
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in
District, Ayudtthaya 13160
Tel. 0-3527-6000 Fax. 0-3527-6014
E-mail: info-sunny@bangchak.co.th
Website: <http://www.bangchak.co.th/sunny.bangchak/>
- Bangchak Solar Energy (Prachinburi) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in
District, Ayudtthaya 13160
Tel. 0-3527-6000 Fax. 0-3527-6014
- Bangchak Solar Energy (Chaiyaphum 1) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in
District, Ayudtthaya 13160
Tel. 0-3527-6000 Fax. 0-3527-6014



- Bangchak Solar Energy (Buriram) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 0-3527-6000 Fax. 0-3527-6014
- Bangchak Solar Energy (Buriram 1) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 0-3527-6000 Fax. 0-3527-6014
- Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 0-3527-6000 Fax. 0-3527-6014
- BCP Energy International Pte. Ltd.
8 Marina Boulevard # 05-02, Marina Bay Financial Centre, Singapore 018981
- BCP Innovation Pte. Ltd.
8 Marina Boulevard # 05-02, Marina Bay Financial Centre, Singapore 018981
- BCP Trading Pte. Ltd.
160 Robinson Road #25-03, Spore Business Federation CTR, Singapore 068914
- Nido Petroleum Limited
Level 46, Tower One – International Towers Sydney, 100 Barangaroo Avenue, Barangaroo NSW 2000, Australia

Others:

- **Bangchak Initiative Innovation Center (Biic)**
2098 M Tower Building, 5th Floor, Sukhumvit Rd., Phra Khanong Tai, Phra Khanong, Bangkok 10260
Email: biic@bangchak.co.th



- **Happiness Sharing Foundation**
2098 M Tower Building, 18th Floor, Sukhumvit Rd., Phra Khanong
Tai, Phra Khanong, Bangkok 10260
Tel.0 2335 4608, Fax.0 2016 3969



□ Information on Reference Persons

Securities Registrar	The Stock Exchange of Thailand 93 Ratchadaphisek Road, Dindaeng, Dindaeng, Bangkok 10400 Thailand Tel. 0-2009-9000 Fax. 0-2009-9991
Auditor	KPMG Phoomchai Audit Limited 48 th - 51 st Floors, Empire Tower 195 South Sathorn Road, Yannawa, Sathorn, Bangkok 10120 Thailand Tel. 0-2677-2000 Fax. 0-2677-2222
Registrar and Debenture Holders Representative	Bangkok Bank Public Company Limited 333 Silom Road, Silom, Bangrak, Bangkok 10500 Thailand Tel. 0-2230-1478 Website: www.bangkokbank.com Bank of Ayudhya Public Company Limited 1222 Rama III Road, Bang Phongphang, Yan Nawa, Bangkok 10120 Thailand Tel. 0-2296-5715 Website: www.krungsri.com
Legal Advisor	Baker & McKenzie Ltd. 25 th Floor, Abdulrahim Place, 990 Rama IV Road, Silom, Bangrak, Bangkok 10500 Thailand Tel. 0-2636-2000 Fax. 0-2636-2111



LS Horizon Limited

14th Floor, GPF Witthayu Tower, A 93/1
Wireless Road, Lumpini, Phatumwan,
Bangkok 10330 Thailand
Tel. 0-2627-3443 Fax. 0-2627-3250

Chandler MHM Law Officers Limited

20 Bubhagit Building, 7th-9th Floor, North
Sathorn Road, Silom, Bangrak,
Bangkok 10500 Thailand
Tel. 0-2266-6485 Fax. 0-2266-6483