



## **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 organization, 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; due regard for conscientious



consumption of natural resources; 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 2023, as highlighted below.

## **1. Business goals**

**1.1 Refining and Oil Trading Business Group:** To raise the refinery's safety and environmental 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 133 KBD through the 3E Project (Efficiency, Energy, and Environment Improvement Project); to contract a consultant to run the Rocket Project to improve refining operation in production (Hydrocarbon Units), energy, utilities, and auxiliary units, maintenance and reliability, planning and logistics, and crude and product trading; to arrange for flexible crude mix; and to venture into related businesses, including a plan to increase its oil trading volume through BCP Trading Pte. Ltd. (BCPT), founded in Singapore, to over 300 KBD within five years.

**1.2 Marketing Business Group:** To uphold the No.2 market share while increasing its market share to over 20% through a new service station format under the concept of Greenovative Experience concept that aims to address modern Thai's lifestyle by which everyone takes part in environmental care in sustainable manner; to better satisfy customers through an



upgrade service standard in a bid to raise the NET Promoter Score; to develop the food store, 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 in parallel with extending its presence overseas to increase opportunities in the global market.

**1.3 Green Power Business:** To develop power generation from renewable energy through BCPG Plc. from both domestic and international installations using the 4i strategy below:

- **Improvement** – to develop projects with emphasis on efficient asset management and increase of asset value.
- **Investment** – to invest in businesses or to take on new investments with potential returns as expected.
- **Innovation** – to be the leader in commercial application of innovation and technology in the power generation business using Digital Energy Management.
- **Intelligence** – to run a customer-oriented business where capable personnel with specialized skills join forces to grow the business in a sustainable way.

**1.4 Bio-based Products Business Unit:** To keep growing the biofuel business with products like biodiesel and ethanol while aiming to establish a Bio Complex to expand its bio-based



business by making high-value bio-based products that will open up greater business opportunities; to encourage R&D on commercial development of energy crops, such as sugarcane, tapioca, oil palm, and algae; to take part in augmenting both volumes and values to agricultural products to help farmers; to use R&D for quality improvement of bio-based products; and to pursue opportunities for investment in bio-based products through fund mobilization on stock exchanges.

**1.5 Natural Resources Business:** To develop the petroleum exploration and production business and emerging resource businesses, including lithium mining.

- **Petroleum exploration and production** – Through the establishment of BCPR Pte.Ltd. in Singapore, Bangchak invested in petroleum deposits operated by OKEA AS in Norway. Bangchak aim to expand investment further in petroleum deposits with future potential.
- **New resources** – BCP Innovation Pte.Ltd. was established in Singapore to engage in overseas businesses involving innovation. Currently, it is 15.8% owned by Lithium Americas Corporation, a lithium mining company that is developing the Cauchari Project in Argentina. The project, in its first phase, is expected to have a capacity of 25,000 tons per year in 2020.



**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 as guided by the corporate vision; to implement the Transformation Program that is in line with the corporate value of “I AM BCP”, to forge corporate sustainability under DJSI (Dow Jones Sustainability Indices) in economic, environmental, and social aspects with good governance to win investors’ confidence in Bangchak’s ability to create sustainable good returns, with a goal to be DJSI Member (Emerging Market) by 2022; to take part in the assessment process of Thailand Quality Award (TQA) to raise competitiveness to achieve sustainable outcome, which resulted in Bangchak being one of the 13 companies winning the Thailand Quality Class (TQC) Award this year; and to build on emerging businesses for sustainability, including innovative businesses, incubators and startups through Bangchak Initiative and Innovation Center (BiiC) and the four companies set up in 2018, namely BCV Biobase Co., Ltd., BCV Energy Co., Ltd., BCV Innovation Co., Ltd, and BCV Partnership Co., Ltd, to particularly engage in innovative Green Energy businesses, such as power storage business and bio-based business.

**1.7 Being open, transparent, and auditable:** To conduct an open, transparently, and auditable business 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 a sustainable business that benefits the environment and society through CSR after-process activities and creation of shared values between business, society, and the environment through CSR/CSV in-process activities; to expand CSR/CSV into a social enterprise (SE) to create jobs, generate income and promote cooperation in the stewardship of habitat surroundings through, for example, establishment of Bai Mai Pan Sook Foundation, giving support to agricultural produce to achieve higher quality and high value, distributing agricultural produce through Oam Suk Social Enterprise Co., Ltd, using SPAR supermarkets as outlets, which include promotion of sugarcane plantation for the production of sugarcane juice for sale in SPAR and purchasing agricultural produce for use as a main material for production of BBGI's bio-based products.



## Business Strategies

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

1. **Security (S1)** with emphasis on upstream energy sources: Realizing that our core business is to enhance national energy security, Bangchak drew up a joint strategy for the refining business, the marketing business, the bio-based business and natural resources business together to procure, produce, and sell oil products and biofuels to satisfy the needs of both the business sector and the public, which move in line with the overall energy demand. Even though use of electric vehicles tend to be increasing, these groups of businesses still needed in response to the country's thirst for energy and are still growing.
2. **Stability (S2)**: Bangchak focuses on investment in steady-income businesses with low exposure to external risk, both in Thailand and abroad, including the green power business (BCPG), which can generate stable income while diversifying risks through management of supply chains in various businesses as preparedness for handling volatility.
3. **Sustainability (S3)**: This involves an attempt to develop businesses that relate to or that can sustainably build on the existing core business as a preparation for technological change in the future, based on innovation with socio-environmental value. BiiC was therefore set up to make investment in innovative energy businesses, such as lithium battery production to support EV cars



and expansion of bio-based products—from initial focus only on biofuels to production of higher-value products. The Company, moreover, has adopted green initiatives and implemented them in the business process, known as “In-process Greenovation”, such as promotion of the use of biocups and change of coffee-cup lid design to avoid using straws at Inthanin Coffee Shop.

In 2018, four venture capital companies were established, namely BCV Biobase Co., Ltd., BCV Energy Co., Ltd., BCV Innovation Co., Ltd, and BCV Partnership Co., Ltd., to take charge of venture capital business and to invest in domestic startups, whose operations are in line with the 10 businesses being promoted by the government.

The business and investment to achieve sustainability are framed by the 4Green (4G) strategy.

## **4GREEN Strategy**

### **1. Green Business**

Green Business focuses on investment in businesses that yields sustainable value, which not only increases revenue from new investments but also benefits the environment through the implementation of various Green Initiatives, expanding on existing biofuel business, which includes Bio-Based Chemical, Bio-Based Material, and Value Added Bio-Product. Additionally, the Company places great importance to Green Energy Business and Energy Management through Bangchak Initiative and Innovation Center (BiiC) which results in the establishment of Startups that are able to expand on the Company's existing portfolio in the future such as low velocity consumer-scale wind turbines and the production of health sugars from starch-based plants. This includes high-value bio-





based products, expanded from the existing biofuels business, and implementation of green initiatives.

## **2. Green Production**

Green Production focuses on efficient use of resources, particularly water and energy. Carbon and Water Footprint management has been carried out, taking into account possible impacts from climate change under the Paris Agreement made in COP21, which aims to limit the global temperature rise to no more than two degrees Celsius, and severity of possible water shortage in the region. Bangchak values the environment, energy, and waste management according to ISO 14001 / ISO 50001 standards. We also raised the standard of occupational health and safety management currently practiced under the OHSAS 18001 standard to using the Process Safety Management (PSM) system. Preparation for raising the OHSAS 18001 standard to ISO 45001 standard was started in 2018 to achieve higher health and safety standards in the workplace.

## **3. Greenovative Experience**

This strategy aims to create green experience and green innovation, dubbed as “Bangchak Greenovative Experience”, in response to Thai’s modern lifestyle, in which everybody has a share in environmental care in a sustainable manner. Greenovative Experience includes:

- **Greenovative Product** – Bangchak emphasizes development of products that not only meet customers’ demand but are also environmentally friendly. We sell oil products of Euro 5 standard (higher standard than that of the



Department of Energy Business) such as Gasohol E20 and Hi Premium Diesel S (premium diesel). This year Bangchak introduced B20 diesel for trucks in particular. Regarding the non-oil business, environmental care is also stressed, evident in the use of bio-cups and the campaign to turn away from straws at Inthanin coffee shops, and the campaign against plastic bags at SPAR, among others.

- **Greenovative Service Station** – A new format of service station has been developed with highlights on the 4Rs process (Renewable, Recycle, Reuse, and Reduce). The strategy features installation of solar rooftop, electricity bidding using Blockchain technology (a Green Community Management System, Gems) at Bangchak Srinakarin station, EV chargers, reuse of rainwater and wastewater for watering trees, use of energy-saving equipment, increase of green areas, installation of assorted equipment, such as toilets for the elderly and the disabled and installation of automatic tire inflators in a bid to become “The Most Admired Brand”. We also developed our SPAR convenience stores under the “Fresh & Easy Food Market” concept, offering freshly cooked food for health. Part of the strategy is development of community products from SMEs for sale in both domestic and overseas markets under the SPAR Awards project.
- **Greenovative Mind** – Bangchak has embraced technology and IT systems to develop our customer database



and to enhance our services to ensure speed and efficiency. Point of Sale Automation has been installed at service stations, while applications have been developed to facilitate various groups of customers. For business operators, Bangchak developed Application BCP Link, an Auto Ordering System (AOS), and for general customers, a mobile application has been developed with more privileges offered for BCP GreenMiles cardmembers.

- **Greenovative Communities** – This strategy aims to share experience with customers regarding social and environmental care and cultural preservation. This includes turning some oversupplied agricultural produce into giveaways to customers and giving encouragement for the sale of environment-friendly products.

#### 4. **Green Society**

Green Society is another major strategy that Bangchak continuously deploys with the Thai society to preserve the environment and improve the quality of life, particularly with SMEs and local farmers to sustainably generate higher income and to promote the concept of community-responsible production and consumption in line with SDGs (Sustainable Development Goals) 11 and 12 under various programs as follows:

- **CSR in Process** – Bangchak joins agricultural co-op stations in running several promotional campaigns and in upgrading community stations into standard ones by providing coaching for co-ops executives. Bangchak also helps release



some agricultural produce during price downturns or oversupply, using Bangchak stations as another distribution channel.

- **CSR after Process** – Bangchak continues to support society and local communities with a focus on eight areas: education, safety, sports, quality of life, the environment, relationship, public benefit, and the economy.
- **CSR as Process** – Bangchak established Bai Mai Punsook Foundation with a mission to improve youth education, protect the environment, and raise living standards for Thais. The foundation establishment expands Bangchak's CSR commitment into areas that do not directly relate to our core business capabilities.
- **Expansion of the green society** - Bangchak sees a crucial need to engage suppliers to mutually drive for joint success. A Supplier Code of Conduct (SCOC) was developed to implement joint operating procedures to support mutual benefit and business growth in a sustainable way.
- **Social Enterprise (SE)** – Bangchak gives support to farmers in running an agricultural business on rice and organic plants. Oam Suk Social Enterprise Co., Ltd. was established to work on agricultural produce processing, marketing, and product distribution as well as R&D. This is what Bangchak has continuously worked with the Buddhist Economic Foundation, headed by revered monk Phra Maha Vutthichai Vajiramedhi. Under the cooperation, “Noble Wealth by



Inthanin Project™ was launched last year to provide skill development in the coffee business in Chiang Rai, to support sugarcane plantation to make fresh sugarcane juice for sale in SPAR shops, and to run a community development project at the Kaen Makrut area in Uthai Thani.

## **1.2 Transition and milestone development**

### **2018**

#### **Refinery and Oil Trading Business Group**

- **Peak Monthly Capacity of 123 KBD: An All-Time High**

In March, the Refinery Business has achieved an average monthly output of 123 KBD since the commissioning of the hydrocracking unit. This resulted from a high gross refining margin, in line with an increase in the finished-product sales volume of the Marketing Business.

- **Bangchak Refinery's Annual Maintenance Shutdown**

Bangchak Refinery successfully completed its 45-day major turnaround under its annual refinery maintenance plan from April 30 to June 13. This resulted in an average output rate of 118.82 KBD in the third quarter of 2018, accounting for 99% of the total capacity, the highest average quarterly capacity of Bangchak Refinery.

#### **Marketing Business Group**

- **Franchising Inthanin Coffee Shop in Cambodia and Laos**

In January, Bangchak Retail Company Limited signed a contract granting master franchise rights of Inthanin Coffee Shop in Kingdom



of Cambodia and Lao People's Democratic Republic to RCG Retail Co., Ltd. (Cambodia). The first Inthanin Coffee Shop was started in Siem Reap and later expanded the flagship store in the middle of Phnom Penh in April and Peng Hout in October.

- **Launching a New Membership Card "Bangchak Green Miles" and Developing Bangchak Mobile Application**

In September, Bangchak launched a new membership card, "Bangchak Green Miles", to enable customers to accumulate points for all purchases of oil products and services in the Bangchak Group. In addition, a Bangchak mobile application was developed and now available for members' more convenience and swift service.

- **Launching the First Digital Overhead Service Station in Thailand**

In September, Bangchak introduced the first digital overhead dispenser service station in Thailand, located on Sukhumvit 62 Street in Bangkok, for customers' convenience without having to worry about the fuel tank cap position.

### **Green Power Business**

- **Commercial Operation of Gotemba Solar Power Plant (Gotemba) in Shizuoka Prefecture, Japan**

Gotemba Solar Power Plant (Gotemba) in Shizuoka Prefecture, Japan, with a 4.0 MW capacity (4.4 MW installed capacity) and a 20-year contract, was connected to a grid and began selling electricity into the commercial system (COD) on April 16, 2018 to Tokyo Electric Power Company Holding Inc., at the feed-in-tariff rate of Yen 32 per kWh.



- **Acquiring Common Shares of Lomligor Co., Ltd.**

In June, BCPG Plc. acquired common shares of Lomligor Co., Ltd., to invest in a 9.0 MW (10.0 Mw installed capacity) wind power project situated in Amphoe Pak Phanang, Nakhon Si Thammarat. Project revenues are composed of base cost and an adder of Baht 3.50 per unit sold to the Provincial Electricity Authority (PEA) under a 25-year contract, with a total share investment and construction costs of Baht 825 million. Commercial operation of the project is expected to commence in Q2/2019.

- **Launching Commercial Operations of Two Solar Power Projects with the War Veterans Organization of Thailand**

In July, BCPG started two commercial operations of governmental solar projects with the War Veterans Organization of Thailand. The first is located at Amphoe Phra Phutthabat, Saraburi, with a contractual capacity of 5 MW, and the second is at Amphoe Tha Muang, Kanchanaburi, with a contractual production capacity of 3.94 MW, for 8.94 MW over 25 years. The fixed feed-in-tariff is Baht 4.12 per unit.

- **Commercialization of Nikaho and Nagi Assets**

In September, BCPG sold Nikaho and Nagi assets with a total capacity of 27.6 MW to an infrastructure fund in Japan. The sale provided a profit valued at Baht 795 million, subject to corporate income tax of Baht 136 million, resulting in a net corporate income after tax of Baht 658 million.



## **Natural Resources and Business Development Business**

### **○ In June, establishment of BCPR Co., Ltd., for Petroleum Development and Production in Norway**

Bangchak established a new subsidiary company in Thailand, namely BCPR Co., Ltd., which in turn established a subsidiary company in Singapore, namely BCPR Pte. Ltd., to jointly invest with Seacrest Capital Group in the petroleum development and production at the Draugen and Gjøa Fields through the acquisition of OKEA AS, a company established under Norwegian law. The acquisition is up to 939 million Norwegian kroner. After the completion of the capital increase, BCPR Pte. Ltd. will hold about 49.33% of OKEA AS's total registered capital.

### **○ Selling Shares in Nido Production (Galoc) Pty. Ltd. with Tamarind Galoc Pte. Ltd. in July**

Bangchak entered into an agreement to sell shares of Nido Production (Galoc) Pty. Ltd., an indirect subsidiary of the group that holds Galoc oil field at 55.8% and Tamarind Galoc Pte. Ltd., worth about \$22.7 million (Baht 731 million). This sale applied only to Galoc; resources in the exploration and development of others in the Philippines were still held by another Bangchak other subsidiary.

## **Bangchak Initiative and Innovation Center (BiiC)**





- **Launching the Green Community Energy Management System (GEMS)**

Bangchak implemented the Green Community Energy Management System (GEMS) prototype at its Srinakarin Road station in Bangkok as a pilot project to bid for electricity at the lowest possible cost with the Blockchain technology in the Smart Isolated Microgrid system for the station's buildings and shops.

- **Establishment of 4 New Subsidiaries in Thailand to Invest in Start-up Businesses**

Bangchak established four new subsidiaries in Thailand, namely BCV Bio Based Co., Ltd., BCV Energy Co., Ltd., BCV Innovation Co., Ltd. and BCV Partnership Co., Ltd., to invest in new start-up businesses related to innovation. The registered capital for these Bangchak's wholly owned companies is Baht 20 million each.

## **Awards of 2018**

- Recognition at the SET Sustainability Awards 2018 event, hosted by SET:
  - Best Sustainability Award for the second year in a row, in recognition of listed companies that are outstanding in sustainable business conduct, worthy of becoming role models for other listed companies.
  - Recognition among 79 listed companies of THSI (Thailand Sustainability Investment) for the fourth consecutive year for engagement in sustainable business with utmost regard for society and the environment, and for its management processes for



corporate sustainability. The recognition aids investors' decisions by those that stress quality stocks and long-term returns.

- Best Investor Relations Award at the SET Awards 2018, organized by SET and the Money and Banking Magazine.
- ASEAN Corporate Governance Award - TOP50 ASEAN PLCs for the second year running, at the second ASEAN Corporate Governance Awards Ceremony 2018, organized by the Capital Market Supervisory Authorities in Asia (ASEAN Capital Markets Forum - ACMF) with major support from ADB (Asian Development Bank). The award was based on assessment of ASEAN governance by using the ASEAN CG Scorecard (ACGS) as a criterion for evaluating and ranking corporate governance of listed companies in six ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Vietnam and Thailand).
- Bangchak earned recognition with two awards at the Global Good Governance Awards 2018 (3G Awards 2018), organized by Cambridge IF Analytica, London, England, a financial advisory company in the UK:
  - 3G CSR Award 2018 as an organization with excellence in CSR
  - 3G Sustainability of Performance Award 2018 as an organization with excellent sustainability performance, including outstanding corporate governance and sustainability.
- Bangchak won three awards at the 8<sup>th</sup> Asian Excellence Recognition Awards 2018, organized by Corporate Governance Asia (Hong Kong):
  - Best Investor Relations Company Award, given to outstanding companies in investor relations, for the seventh year in a row, based on scores and comments from readers, magazines, investors, analysts, among others.



- Best Environmental Responsibility Award for the fourth consecutive year, based on scores and comments from readers, magazines, investors, analysts, among others.
- Asia's Best CEO (Investor Relations) Awards given to the top executives for the third consecutive year, based on scores and comments from readers, magazines, investors, analysts, among others.
- Bangchak won two awards at The Asset Corporate Awards 2018, organized by The Asset Magazine (Hong Kong):
  - Platinum Award for outstanding corporate governance with social and environmental responsibility, for the fifth year running.
  - Best Investor Relations Team - Highly Commended award, an award for companies that are dedicated to investor relations operation, using a data analysis system to understand investors' needs and services required.
- Bangchak won two International Innovation Awards at the International Innovation Summit 2018, organized by Enterprise Asia:
  - Organization and Culture category for its commitment to creating innovation throughout the organization to become a sustainable regional organization that turns innovations into practice and adds value to products and services.
  - Services and Solutions category in recognition of the Green Community Energy Management System (GEMS) project, which produces green electricity for communities using AI-supported power generation and trading system to help manage energy efficiency and cost-effectiveness, including the installation of energy storage



systems with the largest lithium-ion battery in Thailand as a learning lab for the study of equipment and tools to support energy management in the future.

- Most Sustainable Renewable Energy Company – Thailand for the second year running, at the International Finance Magazine Awards 2018 (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
- The Asia Sustainability Reporting Awards (ASRA) 2018: composed of “Asia’s Best SDG Reporting” (Winner) and “Asia’s Best Stakeholder Reporting” (Highly Commended), organized by CSR Works International in Singapore, Bangchak was distinguished for its sustainability reporting, which is comprehensive and presented in an interesting way.
- Corporate Innovation Award 2018, Energy, at the Plug and Play Summer Summit, in recognition of Bangchak’s commitment to creating new innovations through collaboration with the Startup of Plug and Play Tech Center, an accelerator with an ecosystem, providing a world-class platform for consulting and supporting startup businesses in developing new products and technologies.
- Thailand ICT Excellence Award 2018, Core Process Improvement Project, in recognition of Bangchak’s Smart Plant Maintenance project, designed to improve warehouse management processes and maintenance under the 3E strategy (Efficiency, Energy, Environment) to increase energy efficiency, reduce environmental impacts, and



increase the potential to become a modern refinery. Bangchak accepted this award at Thailand ICT Management Forum & Thailand ICT Excellence Awards 2018, organized by the Thailand Business Management Association (TMA) in conjunction with the Electronic Technology Center, National Computer Software Industrial Zone of Thailand (NECTEC), and College of Innovation Thammasat University (CITU).

- IP Champion Award 2018, Trademark, at the Intellectual Property Fair, organized by the Department of Intellectual Property, Ministry of Commerce, in recognition of outstanding entrepreneurs commanding effective commercial exploitation of intellectual property, creating value for the organization.
- Thailand Corporate Excellence Award 2018 for excellent sustainable development and CSR at the Thailand Corporate Excellence Awards 2018 and SMEs Excellence Awards 2018, organized by TMA in collaboration with Sasin Graduate Institute of Business Administration of Chulalongkorn University.
- Executive of the Year 2018 –Energy, designed to honor outstanding executives for their leadership under the “Million Seeds of Virtue in Gratitude of the Land” Project, organized by the Foundation for Thai Society in collaboration with Thai Award and the Local Development Institute. These awards recognized those who had successfully led organizations and demonstrated visible dedication, creating maximum benefit under the policy on economic, social, political, and national development.



- Sustainability Report Award 2018 – Excellence, for the second year running, and the Best Sustainable Development Goals (SDGs) Reporting 2018 award, designed to honor organizations that value preparation for quality reports under GRI standards, with business integrity and consideration of impacts on stakeholders, society, and the environment. This annual event was organized by the CSR Club of Thai Listed Companies Association, SEC, and Thaipat Institute.
- Building A Good Society Award. Bangchak was recognized among 13 leading organizations as part of the driving force in the implementation of the Pracharath – Civil State for Society policy through a sustainable business development approach to the environment and society, contributing efforts to the promotion of income generation and work of the disabled and the elderly, and various residential and environmental projects. This took place at the Summary Meeting of Cooperation for Thai Social Development, organized by the Ministry of Social Development and Human Security
- Outstanding Taxpayer Award for Fiscal Year 2017 - Property Tax, honoring outstanding taxpayers and outstanding tax collectors who valued the duty to pay accurate, complete taxes by the due date prescribed by law organized. The award was given by Bangkok Metropolitan Administration.
- Suriyadasitorn Award, 2018. Bangchak was a general-category winner among over 200 outstanding calendar contestants for its notebook-type calendar named "Evolving Greenovation", organized by the Public Relations Association of Thailand.



- The Best Contact Center Award 2018 (Best Contact Center, Social Media, Customer Care and The Best Contact Center Admin Support Professional), which recognized Bangchak's customer service officers, at the TCCTA Contact Center Award, organized by the Thai Telephone Service Center Business Association (TCCTA).
- The Best Presenter & Excellent Oral Presentation Award for representative of Bangchak participating in the sharing of knowledge and experience through a topic entitled "The Application of Industrial-Scale Membrane Technologies for Water Recycling in Petroleum Refinery". Proactive environmental management strategies under the guidelines for industrial wastewater treatment were discussed, in which technology was applied to refining processes and the refinery's water reuse to minimize impacts on the environment, organized by Asia Pacific Institute of Science and Engineering (APISE).
- A Carbon Reduction Building Certificate, organized by the Thailand Business Council for Sustainable Development (TBCSD) and the Thai Environment Institute (TEI) Foundation, was presented to Bangchak for the third year running to recognize Bangchak as one of the four organizations that had successfully managed their office buildings through the sustainable environmental management approach. Bangchak implemented energy conservation measures and environmental management through the assessment of efficient usage of resources by measuring greenhouse gas emissions generated from its consumption of water and electricity, and waste disposal.



- ISO 27001:2013 Certificate of Information Security Management System. Bangchak was the first organization in Thailand to receive a Letter of Compliance ISO 27032:2012 Guidelines for Cybersecurity.
- An Energy-Saving Building Plaque of Honor was granted to Bangchak for passing the A level assessment of energy consumption by Bangchak Refinery, along with Buildings 1 and 4. The presentation took place at a seminar clarifying the operational results of the project on the extension of energy consumption labels for business buildings, organized by the Department of Alternative Energy Development and Efficiency together with ACSE Green Consulting Engineering Company Limited.
- Thailand MICE Venue Standard Certificate –2018 was granted to certify Bangchak's beautifully decorated conference room built for multi-purposes, occupying more than 400 square meters, with a modern architectural design. The presentation took place at the MICE Standard Seminar 2018, organized by the Convention and Exhibition Management Office (Public Organization) (TCEB).
- Bangchak achieved an excellent rating of its Corporate Governance Report 2018 for 12 years in a row. This annual assessment was hosted by IOD.
- Bangchak's quality assessment of its AGM, conducted by the Thai Investors Association, showed excellent rating for the 10<sup>th</sup> consecutive year.

## **2017**

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





- Baimai Punsook Foundation founded.
- In March, Peak monthly capacity of 121.6 KBD: an all-time high.
- Electricity generation and steam production commenced from GTG-3 in August.
- In June, began storing crude oil on the Floating Storage Unit (FSU)
- In May “Hi Premium Diesel S” unveiled
- Marketing Business Continues with No. 2 Market Share with Higher Net Promoter Scores.
- In November, launched premium-grade lubricant “FURiO”
- Solar Power Plant Nagi in Okayama, Japan, started commercial operation in March.
- Three solar farms under solar cooperatives program came into contracted commercial operation in March.
- BCPG purchased total interest in CapAsia ASEAN Wind Holdings Cooperatief U.A., with 40% shares of PetroWind Energy Inc.
- BCPG invested in geothermal power plant in Indonesia through acquiring 33% of issued and paid-up shares of Star Energy Group Holdings.
- BCPG and War Veterans Organization of Thailand signed MOU on concession agreement for solar projects in September.
- BCPG joined with Sansiri to develop smart green communities in November.
- BCPG joined with Power Ledger, Australia in December.
- BBP Holdings Limited established in March.
- Amalgamation between BBP Holdings and KSLGI to form BBGI, Thailand's largest biofuel manufacturer and distributor in October.
- More new shares for more investment in LAC Acquired
- MOU signed with AIT on technical cooperation on R&D to enhance environment supporting startup companies.
- Launch of Bangchak Initiative Innovation Center as technology business incubator in September.

## **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 28<sup>th</sup>, 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.

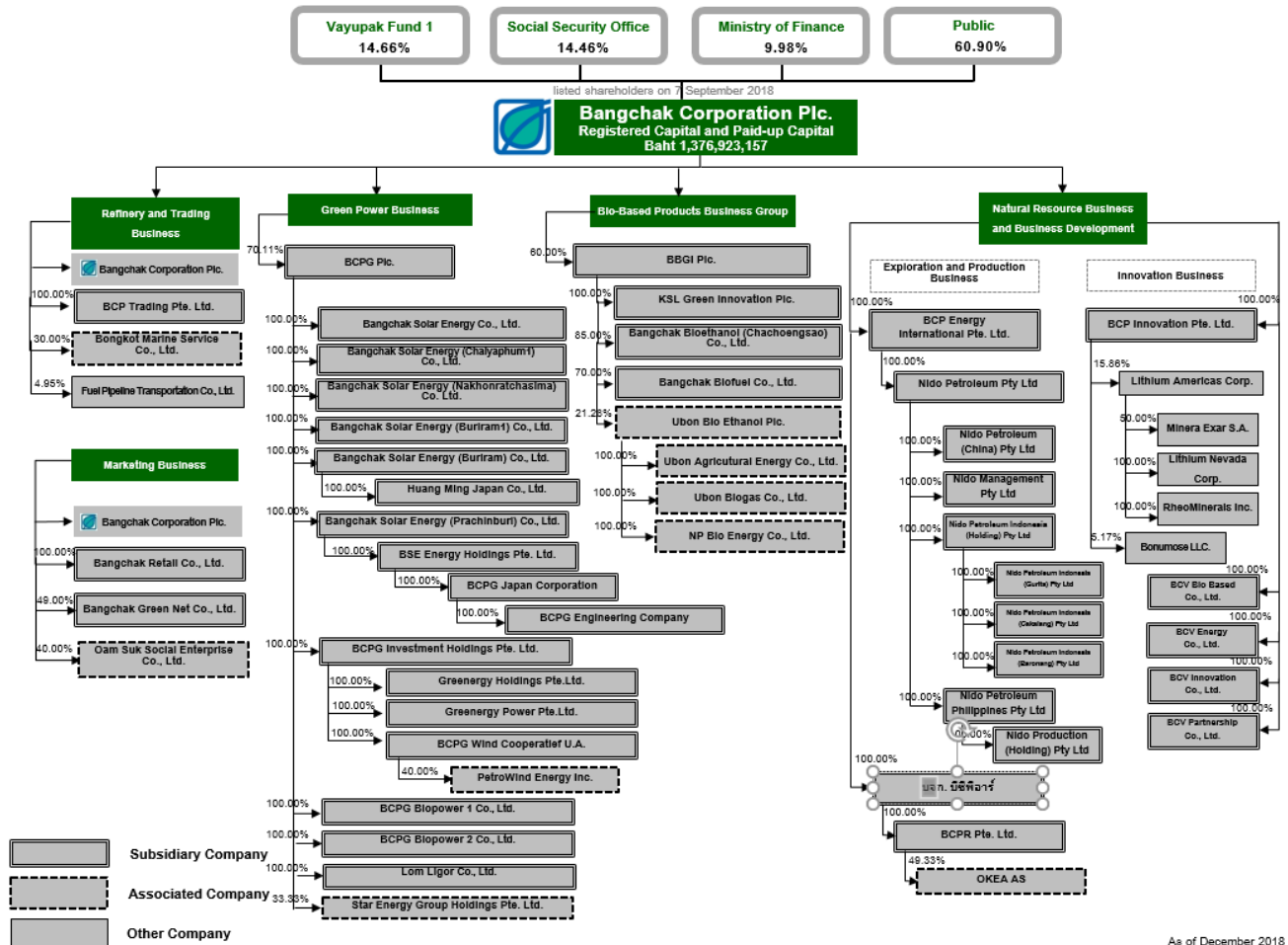


- Bangchak Biofuel Co., Ltd., inaugurating second biofuel plant which came on stream and started commercial ethanol production; hence, total installed capacity was 810,000 liters per day.
- Bangchak arranged for a capital increase in BCP Energy International Pte., Ltd. (BCPE), a subsidiary, to allow 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.



### 1.3 Shareholding Structure

#### Equity Chart of Bangchak Petroleum Plc and Other Companies



As of December 2018

#### Refinery and Oil Trading Business Group

The complex refinery of Bangchak operates with a nameplate capacity of 120,000 barrels per day (120 KBD). The majority of the outputs are gasoline and diesel. The quality of its gasohol and diesel products meets the public sector's Euro 4 standard. Bangchak focuses on energy stability in its 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 its 3E, YES-R and Rocket Projects.



### **BCP Trading Pte. Ltd. (BCPT)**

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

### **Bongkot Marine Service Co., Ltd. (BONGKOT)**

This joint-venture enterprise has a registered capital of Baht 240 million, in which Bangchak holds 30%. It engages in supplying and administration of floating storage units.

### **Fuel Pipeline Transportation 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 from Bangchak Refinery 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 in Bangkok, supplies aviation fuels to Suvarnabhumi International Airport. FPT's oil transmission pipeline system expansion project from Amphoe Bang Pa-in to the north (Lampang) has obtained EIA approval from the Office of Natural Resources and Environmental Policy and Planning as well as the approval to construct an oil transmission pipeline system in the related agencies' areas, covering the whole project construction areas. The project's Pichit and Lampang oil depots are under



construction. It is scheduled to commence commercial operations in early 2019.

### **Marketing Business group**

The Marketing Business Group sells fuels and lubricants to consumers through Bangchak's network of 1,175 service stations nationwide, made up of 555 standard and 620 community service stations, as of December 2018. To provide convenience to customers, the stations offer supplementary (non-oil) businesses under the operation of Bangchak Retail Co., Ltd., which also distributes products to industrial users together with the transport, airlines, vessels, construction, and agriculture 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 800 million in registered capital. BCR engages in the food and drinks business to accommodate continuous growth in the retail business. BCR has been given the Master Franchise of the SPAR supermarket brand of the Netherlands and now has 45 retail outlets under the SPAR brand, over 522 Inthanin and Inthanin Garden premium coffee shops, and other supplementary businesses. This year BCR has signed an agreement giving the right to master franchise and Inthanin coffee shops in Laos and Cambodia to RCG Retail Co., Ltd. (Cambodia).

**Oam Suk Social Enterprise Co., Ltd.**

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

**Green Energy Business**

Bangchak invests in the renewable-power business by holding 70.11% equity in BCPG Public Company Limited (BCPG), a SET-listed company. 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, BCPG engages and invests in the green power business (domestic and overseas). At the end of 2018, BCPG's capacities are as follows:

- 1) Domestic solar power plants with a combined contractual capacity of 138.9 MW (all plants commenced commercial operation)
- 2) Solar farm projects in Japan with a combined contractual capacity of 131.2 MW (14.7 MW commenced commercial operation)
- 3) Wind farm project in the Philippines with an equity capacity of 20 MW (14.4 MW on production)
- 4) Geothermal power project in Indonesia with an equity capacity of 181.5 MW (157.5 MW on production)



- 5) This year BCPG acquired 100% common share in Lomligor Co., Ltd., to invest in a wind farm project for power generation with a contractual capacity of 9 MW. Located in Amphoe Pak Phanang, Nakhon Si Thammarat, the facilities are under construction, with scheduled COD in mid-2019.

### **Bio-based products business**

Well aware of the significance of renewable energy in reducing trade deficits from imported fuels, enhancing national energy security, supporting farmers and conserving the environment, Bangchak advocates the blending of ethanol and biodiesel with gasoline and diesel with diesel to form Gasohol 91 and Gasohol 95, Gasohol E20, and Gasohol E85, together with Hi Diesel. Bangchak invests in bio-based products through shareholding in BBGI Plc. (BBGI).

#### **BBGI Plc. (BBGI)**

BBGI was incorporated through a merger between BBP Holdings Co., Ltd. (BBH), a subsidiary of Bangchak, and KSL GI Co., Ltd. (KSLGI), a subsidiary of Khon Kaen Sugar Industry Plc. with a registered capital of Baht 2.532 billion, in which Bangchak holds 60%. The name was changed from BBGI Co., Ltd., to BBGI Plc. in April this year. The largest biofuel producer and distributor in Thailand, BBGI's total capacity exceeds 1,830,000 liters a day, comprising 900,000 liters a day of ethanol and 930,000 liters a day of biodiesel. The four subsidiaries of BBGI are described below:





### **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 the nameplate capacity raised to 930,000 liters a day. The company is 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 with a capacity of 150,000 liters a day.

### **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: 200,000 liters per day from a plant in Amphoe Bo Phloi, Kanchanaburi, and the other 150,000 liters per day from a plant in Amphoe Nam Phong, Khon Kaen. Moreover, KGI's biogas power plant generates power from the biogas derived from wastewater treatment from the ethanol process.

### **Ubon Bio Ethanol Co., Ltd. (UBE)**

UBE was incorporated with a registered capital of Baht 3.91 billion, in which BBGI holds 21.28%. Located in Amphoe Na Yia, Ubon Ratchathani, it engages in ethanol production using fresh cassava, cassava chips, and molasses as feedstock with a capacity of 400,000 liters a day. 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.

### **Natural resources and business development business**

Bangchak founded BCPR Co., Ltd., in Thailand, BCP Energy International Pte. Ltd., and BCPR Pte. Ltd., in Singapore to engage in energy, petrochemical, and natural resources businesses, and BCP Innovation Pte. Ltd., incorporated 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 USA.

#### **BCP Energy International Pte. Ltd. (BCPE)**

Wholly owned by Bangchak and established in Singapore with a registered capital of US\$112.5 million, BCPE engages in energy, petrochemical, and natural resources businesses overseas and now invests 100% through the common shares of Nido Petroleum Pty. Ltd.

#### **BCP Innovation Pte. Ltd. (BCPI)**

BCPI has a registered capital of US\$41.8 million, wholly owned by Bangchak. Incorporated in Singapore to engage in overseas innovation businesses relating to energy, petrochemical, and natural resources, BCPI now invests 15.86% through common shares in Lithium Americas Corp.

#### **BCPR Co., Ltd. (BCPR)**

BCPR, Bangchak wholly-owned subsidiary, was incorporated in Thailand on July 12, 2018, with a registered capital of Baht 661 million (consisting



of 6.61 million shares at Baht 100 par value per share). It engages in natural resources businesses and has invested in BCPR Pte. Ltd., a company established in Singapore, for joint investment in OKEA AS, which operates petroleum development and production in Norway.

**Nido Petroleum Pty. Ltd. (Nido)**

Nido engages in the petroleum exploration and production business with an investment focus on Southeast Asia. It holds rights in producing oil fields, namely Nido and Matinloc, along with rights in fields under development and exploration, namely West Linapacan, and rights in fields under exploration, namely SC6B, SC14D, SC54A, SC54B, SC58, and SC63, all in the Philippines.

On July 12, 2018, BCPE, Bangchak's subsidiary, signed a share purchase agreement with Tamarind Galoc Pte. Ltd., for its entire 55.8% ownership of the Galoc oil field in the Philippines held by its indirect subsidiary, Nido Production (Galoc) Pty. Ltd., for a total value of US\$20 million (660 million baht).

**Lithium Americas Corp. (LAC)**

LAC, listed on the Toronto Stock Exchange, Canada, has since January 25, 2018, been on New York Stock Exchange, USA. LAC 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 vehicles, energy storage systems, and mobile electronic appliances.

LAC is developing two lithium mines in Argentina and the USA. The Argentina project is under the development of Minera Exar S.A., and



lithium carbonate production is expected in 2020 for a capacity of 25,000 tons per year, whereas the USA lithium mining project is under development by Lithium Nevada Corp. On August 2, 2018, LAC disclosed the outcome of the feasibility study of the project, which indicated the mineral reserves, estimated capital, and the production cost. In addition, an affiliated RheoMinerals Inc. (formerly Hectatone Inc.) has produced organoclay for petroleum exploration and production drilling with a maximum capacity of 10,000 tons per year since 2015.

### **BCPR Pte. Ltd.**

BCPR Pte. Ltd., was incorporated in Singapore on July 12, 2018, with a registered capital of US\$ 18.2 million, wholly owned by Bangchak. BCPR Pte. Ltd., engages in energy, petrochemical, and natural resources businesses overseas and currently invests in OKEA AS, a company incorporated under the laws of Norway and engages in local petroleum development and production.

### **OKEA AS**

OKEA AS, incorporated under the laws of Norway, engages in domestic petroleum development and production. BCPR Pte. Ltd., Bangchak's subsidiary, holds 49.33% of OKEA AS's share. OKEA AS holds the right in Draugen Oil Field and Gjøa Oil Field in Norway and has been the operator of Draugen Field since December 1, 2018.

### **Research and development and innovation business**

To pursue the position of the leading Asian Greenovative group, Bangchak expands its investment in new energy innovation such as lithium, used in the manufacturing of batteries for electrical vehicles (EVs) and in bio-based products to add value to its current biofuel products. This



year Bangchak set up four more venture-capital companies to engage in 10 domestic startup businesses promoted by the government.

**BCV Biobase Co., Ltd.(BCVB)**

BCVB, wholly owned by Bangchak, was incorporated with a registered capital of Baht 20 million to engage in the venture capital business for funding domestic startup companies in bio-product innovation.

**BCV Energy Co., Ltd.(BCVE)**

BCVE, wholly owned by Bangchak, was incorporated with a registered capital of Baht 20 million to engage in the venture capital business for funding domestic startups relating to energy innovation.

**BCV Innovation Co., Ltd.(BCVI)**

BCVI, wholly owned by Bangchak, was incorporated with a registered capital of Baht 20 million to engage in the venture capital business for funding domestic startups relating to innovation.

**BCV Partnership Co., Ltd.(BCVP)**

BCVP, wholly owned by Bangchak, was incorporated with a registered capital of Baht 20 million to engage in the venture capital business for funding domestic startups relating to innovation in collaboration with the public and private sectors.



## **2. Business Description**

Bangchak Corporation Public Company Limited is a Thai energy company that operates in tandem with socio-environmental responsibility. Its core business is petroleum refining to produce high-standard products from domestic and overseas sources. With a current production capacity of 120,000 barrels per day (120 KBD), Bangchak produces and distributes its refined products through more than 1,000 service stations nationwide. It has also expanded its businesses to oil trading, green power, bio-based products, natural resources and business development. Bangchak's ultimate goal 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 Refinery is a modern complex refinery with a nameplate capacity of 120,000 barrels per day. Most of its yields are premium-value gasoline and diesel. Gasohol and diesel from Bangchak Refinery are certified by the government as Euro 4 Standard-compliance. Its refinery is the first in Asia that produced eco-friendly gasohol E20 to meet the Euro



5 Standard with less than 10 parts per million (ppm) of sulfur or five times lower than the Euro 4 standard. Bangchak also focuses on improving energy stability in the production process by using electricity and steam derived from its cogeneration power plant, 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 pipelines, and shipping vessels to enable the continuation of refinery operations. As a result, the average annual refining capacity in 2018 was 115 KBD, excluding the annual shutdown period. The highest monthly average production was recorded in March at 123 KBD.
- Executed better crude oil planning and procurement process to obtain appropriate GRMs. Bangchak effectively utilized the Roll Month agreement to reduce the costs of crude oil. As a result, the average annual refining margin was US\$ 7.10 per barrel.
- Expanded the production and enhanced refining efficiency through such projects as debottlenecking to increase the capacity and improving the processes to increase its flexibility





in keeping with market demand, which resulted in cost-saving on fuels and power supply stability for the refining processes.

- 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. Key trading products are gasoline, crude, fuel oil, and naphtha. Bangchak also expanded its oil trading business to emerging markets such as Brunei and Qatar, while developing new trading products such as MTBE. More revenue was made from logistics management and freight trading. Good relations with partners and favorable market conditions also resulted in higher trading volumes.



## Marketing Business Group

In 2018, some 78% of refined products were sold to customers directly through Bangchak's service stations networks. There are 1,175 Bangchak service stations in Thailand: 555 standard service stations and 620 agriculture cooperative service stations (as of December 2018). Most of the new service stations opened in 2018 are spacious with a modern





look. They accompany supplementary (non-oil) businesses that increase the company's market share and uphold its second place. Bangchak also sells products to users in the industrial sector, transport sector, airlines, shipping, construction and the agricultural sector. In addition to emphasizing the sale of high-performance and eco-friendly gasohol and diesel, Bangchak service stations provide value-added facilities through non-oil businesses and supplementary services, including convenience stores, coffee shops, freshly cooked fast food restaurants, car maintenance centers, and car wash services.

Bangchak is the first oil company in Thailand to introduce the member card. In 2018. It celebrated the 12<sup>th</sup> anniversary of its member card business by introducing the “Bangchak Green Mile” card and point collection for existing card members. Members can collect points from their purchases of all types of oil products as well as other products and services under the Bangchak umbrella. To make point collection fast and convenient, Bangchak Mobile Application was introduced for members to use their points for redemption in the form of e-coupons.

With regard to the convenience store business and coffee shop business operated by BCR Co., Ltd. (BCR) (a subsidiary of Bangchak), there are 45 SPAR, a supermarket chain from the Netherlands under the concept of SPAR Fresh & Easy Food Market. In addition, there are over 523 service stations including leading educational institutes and commercial centers where “Inthanin Coffee Shop” and “Inthanin Garden” coffee shops are located. Bangchak opened 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. In addition, 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 service, which comprise “Furio Care” lube oil changing, “Wash Pro” and “Green Wash” car wash, and “Tyre Care” and “Green Tyre” tire replacement services.

In addition, Bangchak agricultural cooperative service stations, which operated since 1990, has developed continuously to the 29<sup>th</sup> 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 2018, Bangchak developed 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 trends and lifestyle changes of modern Thais. Therefore, its service stations are developed under the Greenovative Experience model that features the 4Rs processes (renewable, recycle, reuse, and reduce). Projects conceived from 4Rs include the installation of a solar rooftop to generate electricity and EV



charging stations for electric vehicles. For the Inthanin coffee shop, Bangchak runs the business under the concept of “every cup of Inthanin must contribute to the world”. Some attempts have been made in this regard, such as the use of Bio Cups, the use of organic coffee beans bought from agricultural communities in the North, and the introduction of specially designed lids to reduce the use of straws. Regarding the convenience store business, it runs such campaigns as less use of plastic bags, selling processed fruits at SPAR shops, and initiating a SPAR Award project to encourage development of community products. It also helps expand SMEs to increase their sales in domestic and overseas markets. The company promotes the use of energy-saving equipment and increase of green areas. In 2018, Bangchak introduced a newly designed station fitted with digital hanging oil-dispensing machines on Sukhumvit 62 Road to offer more convenience for motorists. Meanwhile, the Srinakarin station was installed with Green Community Energy Management System (Gems), an innovation featuring the Blockchain technology to run a pilot project on electricity bidding, applicable for the Smart Isolated Microgrid. Gems will enable buildings and shops located in the premises of the service station to buy and sell electricity at a low cost while obtaining the largest possible volume of electricity.

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 launched a premium grade lubricant under the “FURiO” brand, which 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.

At the end of 2017, Bangchak has completed amalgamation of BBP Holdings Co., Ltd., a subsidiary, with KSLGI Co., Ltd., a subsidiary of Khon Kaen Sugar Industry Public Company Limited, to form BBGI Co., Ltd. The company was listed in April 2018 and became BBGI Public Company Limited, with Bangchak holding a 60% stake. The four associates and subsidiaries under BBGI have a combined capacity of over 1.83 million liters per day, comprising 900,000 liters of ethanol and 930,000 liters of biodiesel per day.

- **Bangchak Biofuel Co., Ltd. (BBF)**, located in Amphoe Bang Pa-in, Ayutthaya, produces palm oil-based biodiesel. BBF's installed capacity of 930,000 liters per day is being expanded to 1 million liters



per day. The capacity expansion is due for completion in 2019. Having raw glycerine as a by-product, BBF is experimenting the production of high-purity glycerine at a pilot production plant for use as a raw material in the production of phase change materials (PCMs). The construction of a plant to produce refined glycerine to add value to existing products with a capacity of 21,120 tons per year is planned for commercial operation in 2020.

- **Bangchak Bioethanol (Chachoengsao) Co., Ltd. (BBE)**, located in Amphoe Phanom Sarakham, Chachoengsao, produces cassava-based ethanol. BBE currently has a total capacity of 150,000 liters per day.
- **KSL Green Innovation Plc. (KGI)** produces and sells molasses-based ethanol with a total capacity of 350,000 liters per day. KGI has two plants, namely 1) Nam Phong Plant – located in Amphoe Nam Phong of Khon Kaen, with a capacity of 150,000 liters per day (45 million liters per year). Currently, KGI is undergoing a plant overhaul to expand the capacity to 49.5 million liters per year, and 2) Bo Phloi Plant – located in Amphoe Bo Phloi of Kanchanaburi, with a capacity of 200,000 liters per day. KGI is running an inspection to receive the expansion in capacity to 300,000 liters per day (99 million liters per year). KGI in 2019 will have a total capacity of 148.50 million liters per year as a result.
- **Ubon Bio Ethanol Plc. (UBE)** - located in Amphoe Na Yia, Ubon Ratchathani, produces ethanol with a capacity of 400,000 liters per



day using either fresh cassava, shredded cassava, or molasses. UBE also produces tapioca starch with a capacity of 700 tons per day. Wastewater from the processes of both ethanol and tapioca starch is reused for power generation.



### **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. By the end of 2018, BCPG commanded a total capacity of 571.1 MW from worldwide operations. Of the total capacity, 380.2 MW is in operation, and 190.9 MW in progress. In Thailand, BPPG has a total capacity of 190.9 MW from solar farms, all of which have become operational. In Japan, BCPG also runs solar projects. However, after having sold the Nagi and Nikaho projects (with a combined capacity of 27.6 MW) to an infrastructure fund in Japan, of which the divestment process was completed on September 28, 2018, BCPG's installed capacity totaled 168.7 MW. Of this, 17.4 MW is in operation, while 151.3 MW is under development. With regard to wind energy, BCPG has an equity capacity of 20 MW, of which 14.4 MW is in operation, and 5.6 MW in progress. A geothermal power plant is also BCPG's interest. It has an



equity capacity of 181.5 MW. So far, 157.5 MW is in operation, and 24 MW is in progress. In 2018, BCPG bought shares in Lom Ligor Co., Ltd., the operator of a 10-MW wind power project. The site, located in Amphoe Pak Phanang, Nakhon Si Thammarat, is currently under development, with commercial operation expected around mid-2019.



### **Natural Resources Business**

Bangchak had established BCPR Co., Ltd., which this latter company set up BCPR Pte. Ltd., a subsidiary in Singapore, to co-invest with the Seacrest Capital Group in Draugen and Gjøa petroleum deposits in Norway through share purchase in OKEA AS, a Norwegian company engaging in the petroleum development business in Norway. The investment was made as a joint partnership in a world-class asset with long-lasting production life. The fields produce light crude, which could be sold in good price, suitable for Bangchak's refining and production processes. The investment is considered part of risk diversification in line with the corporate strategy.

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 Pty Limited, which holds the rights for petroleum production at





Nido and Matinloc fields in the Philippines. The company also owns the rights for the exploration and development of West Linapacan field in the Philippines as well as the rights in blocks SC6B, SC14D, SC54A, SC54B, SC58, and SC63, in the Philippines, which are now in their exploration stage.

On July 12, 2018, BCPE entered into an agreement to sell shares in Nido Production (Galoc) Pty., Ltd., an indirect subsidiary, which owns the rights over the Galoc oil field, to Tamarind Galoc Pte., Ltd.

Bangchak also established BCP Innovation Pte., Ltd. (BCPI) in Singapore to conduct businesses involving international innovation. BCPI acquired common shares in Lithium Americas Corporation, a listed company on the Canadian Stock Exchange and New York Stock Exchange. Its business is lithium mining in Argentina and the United States to produce lithium carbonate and lithium hydroxide, key components for battery production in response to soaring demand for lithium batteries in renewable-energy power plants. The production also supports the stability of transmission systems and the generation of electricity from renewable energy, as well as the use of batteries in electric cars and various portable electronic devices.

### **R&D and Innovation Business**

Bangchak established **Bangchak Initiative and Innovation Center (BiiC)** to create a Green Ecosystem to drive innovation by focusing on green energy and bio-based businesses. Research and development (R&D), together with technological and network management, help encourage business expansion (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.

In 2018, BiiC carried out the Green Community Energy Management System project (GEMS), which involves the generation of green energy at service stations. Electricity produced at a station is bought and sold through the bidding method between buildings and shops on the premises of Bangchak's Srinakarin Road service station in Samut Prakan. It is the first experimental site for this new method of power sale and purchase. The roofs of the station as well as the parking area and SPAR building are installed with solar panels to generate 249 kilowatts of electricity. The system is also fitted with an energy storage system or a 1-MW lithium-ion battery, Thailand's largest battery.

In response to the expansion of startups in Thailand, Bangchak set up four new companies, namely BCV Biobase Co., Ltd., BCV Energy Co., Ltd., BCV Innovation Co., Ltd, and BCV Partnership Co., Ltd., to conduct a venture capital business and invest in startups, focusing on the 10 government-promoted businesses. This will bring about collaboration in innovations between Bangchak and its own subsidiaries as well as other business partners.



## Revenue Structure

	Operated by	% shareholding	2018		2017		2016	
			Revenue (million Baht)	%	Revenue (million Baht)	%	Revenue (million Baht)	%
Revenue from Oil refining and related businesses <sup>1/</sup>								
	Bangchak Corporation Plc.		132,764	68.4	126,862	72.4	108,643	74.5
	Bangchak Green Net Co., Ltd.	49.00	35,530	18.3	32,440	18.5	29,281	20.1
	Bangchak Retail Co., Ltd.	100.00	676	0.3	391	0.2	31	0.1
	BCP Trading Pte. Ltd.	100.00	14,965	7.7	5,130	2.9	315	0.2
	Nido Petroleum Pty. Ltd.	100.00	963	0.5	1,510	0.9	1,503	1.0
Total			184,898	95.2	166,333	94.9	139,773	95.8
Revenue from Power production								
	BCPG Group	70.12	3,320	1.7	3,323	1.9	3,084	2.1
Total			3,320	1.7	3,323	1.9	3,084	2.1
Revenue from Bio-Based Products								
	BBGI Group <sup>2/</sup>	60.00	3,807	2.0	785	0.4	-	-
	Bangchak Biofuel Co., Ltd. <sup>2/</sup>		-	-	1,697	1.0	1,848	1.3
Total			3,807	2.0	2,482	1.4	1,848	1.3
Total revenue from sales and services			192,025	98.9	172,138	98.2	144,705	99.2
Others <sup>3/</sup>	Bangchak and subsidiaries		2,146	1.1	3,069	1.8	1,195	0.8
Total			194,171	100.0	175,207	100.0	145,900	100.0

Remarks: Revenues of Bangchak and its subsidiaries are net values derived from external parties.

- <sup>1/</sup> Revenue from domestic fuel sales in 2018, 2017, and 2016 accounted for 90.5%, 90.3%, and 91.5% respectively.
- <sup>2/</sup> During 2017, the Company divested its investment in Bangchak Biofuel Co., Ltd. to BBP Holding Co., Ltd. which amalgamated with KSLGI Co., Ltd. in October 2017.
- <sup>3/</sup> Other revenues, excluding revenue from sales and services: Revenue from investment, gains from crude purchase contracts, futures of oil products and forward foreign exchange contracts, gains from foreign exchange, share of profit from investment in associates and joint ventures.



## **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.

#### **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, and in 2017, its product was met new standard IATF16949:2016 International Automotive Task Force (IATF) 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 Isomerate

Isomerate 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 constraint 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.

### **2018 Thai Economic Overview**

The Bank of Thailand projected economic growth this year at 4.2%, an increase from 3.9% in 2017 due to the recovery of the export and service sectors, growing domestic consumption and the expected public and private investment expansion from infrastructural development and projects in the EEC under the government's economic stimulation policy. The tourism sector tends to be healthy despite impacts of decreasing Chinese tourists, contributing to higher economic growth than the previous year.

The headline inflation reported by the Bank of Thailand was estimated to stand at 1.1% this year, an increase from 0.7% of the previous year. The increase was driven by the rising oil price during the first nine months. Growth in consumption demand, even at a relatively low level, and negative impacts of economic restructuring, help retard the inflationary pressure. In order to reduce the risk to financial instability, in



December, the Bank of Thailand raised its policy interest rate by 0.25% from 1.50% to 1.75% per year.

Thailand's economic situation in 2019 was expected to be less healthy than the previous year, with a growth rate of 3.5-4.5%. Risk factors include deceleration of global economic growth and finance, and high household debts. However, confidence in the tourism sector by Chinese tourists is the main driver for economic recovery. Export tends to be at a satisfactory level, despite impacts of the US-China trade barriers. Better consumer confidence and public and private investment under the EEC development plan will slow down economic deceleration. The inflation rate in 2019 is expected to be low at the range of 0.7-1.7% and tends to slowly rise from that in 2018 of 1.1%.

Summary of Thai economy and inflation			
Percent/year	2017	2018*	2019*
Economic growth	3.9	4.2	3.5-4.5
Headline inflation	0.7	1.1	0.7-1.7

Note: \*\* Data calculation base on the new National Accounts database posted by NESDB online via [www.nesdb.go.th](http://www.nesdb.go.th)

Source: Office of the National Economic and Social Development Board, as at November 19, 2018.

Nevertheless, other considerations do affect the Thai economic projection. The US-China trade tariffs, geopolitical risks among trade partners, and the uncertain recovery in the tourism sector concerning the Chinese tourist market are the major concerns inhibiting the projected Thai economic growth.





## Domestic oil business

Domestic demand for fuels this year (January – December 2018) grew by 3.09 million liters to 121.27 million liters per day, a 2.61% increase in line with the growing GDP. The growth was driven by state measures on economic stimulation, expansion of the service sector and continued public investment from 2017, leading to economic expansion beyond the original plan, especially in the export and service sectors. Demand for gasoline, gasohol and diesel therefore continued to grow by 3.11% and 1.47% this year. The highest growth was recorded in the consumption of gasohol (3.94%), pushing the share of gasohol among the total fuels to a record high of 96%.

### Domestic demand for refined products

Product	Demand (million liters/day)		
	2018	2017	Growth variation
Regular Gasoline	1.20	1.39	-13.9%
Gasohol	29.96	28.83	+3.9%
Gasoline Group	31.16	30.22	+3.1%
Jet fuel	64.67	63.73	+1.5%
Diesel Group	19.44	18.47	+5.2%
Fuel Oil	6.01	5.76	+4.2%
<b>Total</b>	<b>121.27</b>	<b>118.18</b>	<b>+2.6%</b>

Source: Department of Energy Business

On the supply side, the 2018 total crude run average from the six domestic refineries (Thai Oil, IRPC, PTT Global Chemical, Esso, Star Petroleum (SPRC) and Bangchak) stood at 1,130 KBD, a slight rise of 3.20% from last year. The domestic crude run average in 2019 is expected to be higher, with the additional capacity of IRPC Refinery accompanying the implementation of IRPC's Polypropylene Expansion



Project (PPE) of 150 thousand tons per year (KTA) and Polypropylene Compound and Specialties Project (PPC) of 140 KTA.

#### Average crude run by domestic refineries

Refinery	Crude run (thousand barrels per day, KBD)		
	2018	2017	Growth variation
Thaioil	304	306	-0.49%
IRPC	207	181	+14.62%
Esso	144	140	+3.22%
Star Petroleum (SPRC)	176	166	+6.02%
PTT Global Chemical	196	191	+2.24%
Bangchak	102	111	-7.76%
Total	1,130	1,095	+3.20%

Source: Department of Energy Business Jan-Nov.2018 and Bangchak Corporation Public Company Limited

## Marketing Business

In 2018, the average global oil prices was higher than the previous year with continued high volatility, from rising oil prices in the first three quarters to a drastic drop in the fourth quarter, which made the traders unable to adjust prices in time to cope with the actual costs from rapid rising prices. Moreover, the government has requested cooperation from oil companies to cap their retail diesel prices to ease the burden on consumers, affecting traders' marketing margins, which decreased from the previous year. However, declining oil prices in the fourth quarter made retail prices more competitive. The gross marketing margin for 2019 is expected to be on a par with the 2018 level. However, there are still concerns about uncertainties of the cost of oil in the world market and



internal as well as external factors such as the US-China trade disputes, interest rate hikes, BREXIT and the government policy to cap oil prices.

The total number of service stations continues to rise. About 1,038 new service stations were added this year, making the total number stand at 28,338 at the year-end, roughly 3.4% from the total. Out of these new stations, 594 stations sold E20 gasohol and 166 stations sold E85 gasohol, leading to 4,256 stations serving gasohol E20 and 1,333 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.

Competition in the oil industry in Thailand in 2019 will continue to intensify. The number of service stations, modernized with new forms of services focusing on consumers' convenience, will still increase to meet rising demand. Non-oil businesses and services have been added to provide more alternatives to consumers and improve retail business performance and competitiveness. Moreover, many Thai retail business operators have opted to expand 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	2018 <sup>1/</sup>	2017	2016
PTT	1,879	1,775	1,675
Shell	517	508	498
Esso	608	543	542
<b>Bangchak</b>	<b>1,175</b>	<b>1,114</b>	<b>1,075</b>
Chevron	357	354	368
PTTRM	156	153	150
PTG	1,883	1,696	1,407
Others	21,763	21,157	20,511
<b>Total</b>	<b>28,338</b>	<b>27,300</b>	<b>26,226</b>

Source: Department of Energy Business

Remarks: <sup>1/</sup> number of stations as of December 31, 2018

In 2018, sales volumes by domestic service stations averaged 2,114.7 million liters a month, a 2.7% rise from last year's 2,058.4 million liters per month. Bangchak posted 5.1% more sales through its service stations, which raised its market share through service stations from 15.4% to 15.8%, while maintaining the No. 2 domestic market share through service stations.

### Sales volume of fuels through service stations for 2017-2018

Operator	Average Sales volume (million liters/month)			Market share (%)		
	2018	2017	Δ	2018	2017	Δ
PTT	766.4	749.4	+2.3%	36.2	36.4	-0.2
<b>Bangchak</b>	<b>333.8</b>	<b>317.7</b>	<b>+5.1%</b>	<b>15.8</b>	<b>15.4</b>	<b>+0.4</b>
Esso	269.0	255.7	+5.2%	12.7	12.4	+0.3
Shell	267.5	267.3	+0.1%	12.6	13.0	-0.3
Thai Oil	198.3	195.3	+1.5%	9.4	9.5	-0.1
PTTRM	103.7	104.2	-0.5%	4.9	5.1	-0.2
Caltex	91.2	95.3	-4.3%	4.3	4.6	-0.3
PTG Energy	35.6	33.7	+5.6%	1.7	1.6	+0.0
Susco Group	36.3	36.7	-1.1%	1.7	1.8	-0.1
Others	12.9	3.2	+303.1%	0.6	0.2	+0.4
<b>Total</b>	<b>2,114.7</b>	<b>2,058.4</b>	<b>+2.7%</b>	<b>100</b>	<b>100</b>	

Source: Department of Energy Business and Bangchak Corporation PLC.



The lubricating oil sold by Article 7 traders amounted to roughly 37.3 million liters a month (according to the Department of Energy Business, December 31, 2018), an 3.1% 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.	<b>Company-Owned, Company-Operated stations (COCO):</b> 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.	219	18.6
2.	<b>Company-Owned, Dealer-Operated stations (CODO):</b> Bangchak is the investor and land owner, while the station management is carried out by experienced operators, who rent the stations.	51	4.3
3.	<b>Joint Venture stations (JV):</b> This is a joint investment between Bangchak and operators interested in running the service station business.	49	4.2



Station Format		Number (station)	Share (%)
4.	<b>Dealer-Owned, Dealer-Operated stations (DODO):</b> The operator is the station owner, land owner, and sole investor, as well as a distribution agent.	236	20.1
5.	<b>Co-Operative stations (CO-OP):</b> These stations are invested by the community. In most cases, the community is the land owner and investor.	620	52.8
<b>Total</b>		<b>1,175</b>	<b>100</b>

Remarks: Bangchak Corporation PLC, as of December 31, 2018.

**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	2018		2017		2016	
	Volume	%	Volume	%	Volume	%
1. Outlet & End-User Customers	100.2	74.2	100.5	71.3	96.7	71.7
2. Supply Sales Customers	15.0	11.1	17.3	12.3	19.3	14.3
3. Export Customers	19.9	14.7	23.2	16.5	18.9	14.0
Total	135.1	100.0	141.0	100.0	134.9	100.0

Source: Bangchak Corporation PLC.

### **Sales value of Bangchak's products and services**

Products	2018		2017		2016	
	million baht	%	million baht	%	million baht	%
<u>Domestic Sale</u>						
1. High-speed diesel	89,409	50.7	81,822	50.5	73,090	53.0
2. Fuel oil	2,078	1.2	1,864	1.1	1,678	1.2
3. Gasoline	47,634	27.0	45,428	28.0	39,371	28.6
4. Other products and services	19,319	11.0	16,852	10.4	13,450	9.8
Total domestic sale	158,440	89.8	145,966	90.0	127,589	92.6
<u>Export sale</u>						
1. High-speed diesel	5,105	2.9	2,846	1.8	2,107	1.5
2. Fuel oil	11,376	6.4	11,120	6.9	6,998	5.1
3. Gasoline	521	0.3	674	0.4	545	0.4
4. Other products and services	937	0.5	1,577	1.0	599	0.4
Total export sale	17,939	10.2	16,217	10.0	10,249	7.4
<u>Combined sales value</u>						
1. High-speed diesel	95,514	53.6	84,668	52.2	75,197	54.6
2. Fuel oil	13,454	7.6	12,984	8.0	8,676	6.3
3. Gasoline	48,155	27.3	46,102	28.4	39,916	29.0
4. Other products and services	20,256	11.5	18,429	11.4	14,049	10.2
Total sales value	176,379	100.0	162,183	100.0	137,838	100.0
% increase/decrease	8.75		17.66		-4.58	

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

	2018	2017	2016
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	57.5	56.7	53.4
2. UCO	3.5	2.6	1.2
3. Fuel oil	9.4	14.2	13.1
4. Gasoline	22.5	21.2	19.8
5. Aviation fuel, kerosene	13.5	13.1	11.1
6. LPG	3.3	2.9	2.6
7. Products for internal use and product loss during operation	-0.3	0.7	0.2
Total output volume (B)	109.4	111.3	101.4
% increase of output volume	-1.9	9.8	-10.2
% of capacity utilization (B/A)	96.5	98.2	89.4

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.

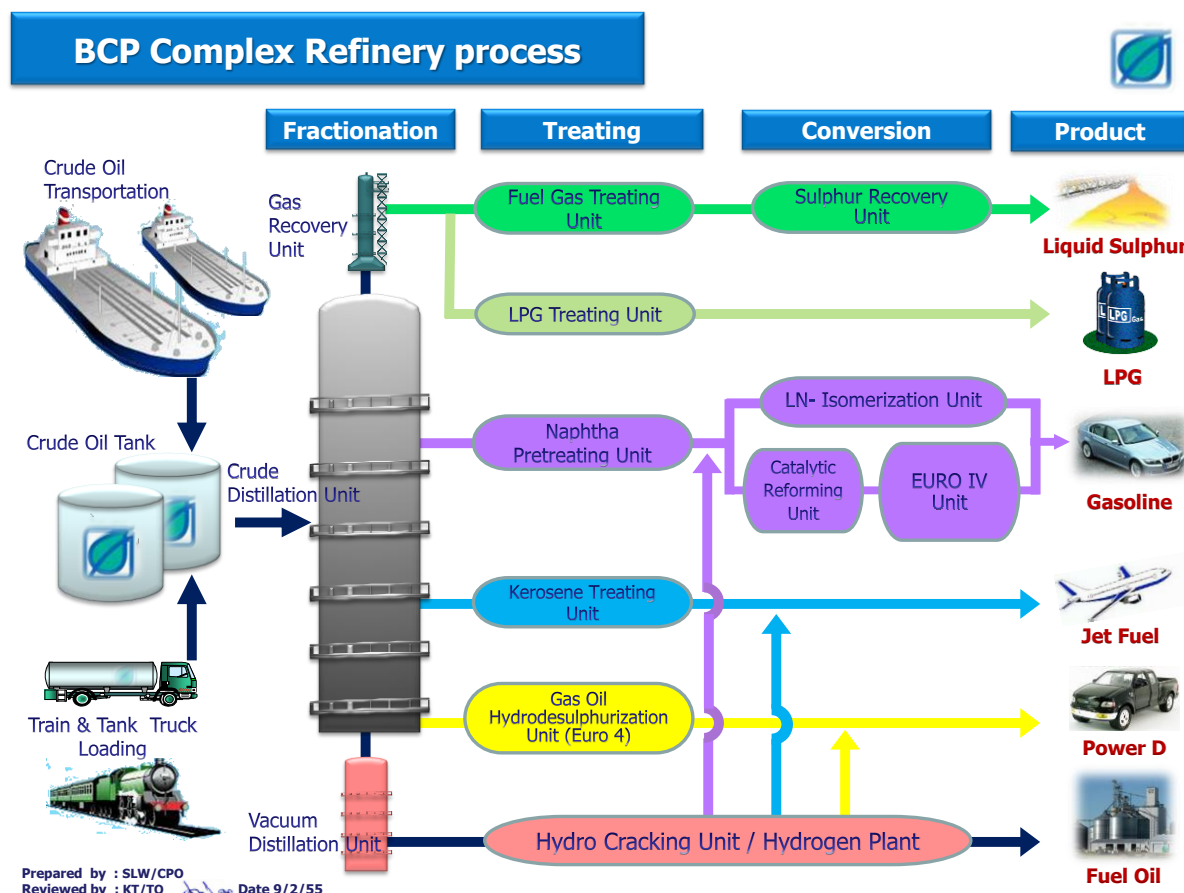
Fuel gas obtained from the process will be refined by removing the sulphur content. Treated fuel oil, diesel after sulphur content removal under the Euro 4 standard, aviation fuel, and cooking gas are kept in storage tanks for sale.



**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					
	2018		2017		2016	
	Volume	%	Volume	%	Volume	%
Sirikit	27,036	20.9	25,657	18.2	26,944	16.5
Tantawan	18,790	14.5	24,543	17.4	29,830	18.3
Erawan	28,302	21.9	30,042	21.3	31,217	19.1
Nasanun/Nasanun East	1,266	1.0	1,660	1.2	2,096	1.3
Jasmine	11,653	9.0	11,855	8.4	12,997	8.0
Manora	6,397	5.0	7,171	5.1	11,029	6.8
Others	35,756	27.7	40,319	28.5	48,967	30.0
<b>Total</b>	<b>129,200</b>	<b>100</b>	<b>141,247</b>	<b>100</b>	<b>163,080</b>	<b>100</b>

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 2018, Bangchak procured indigenous crude oil from many fields in domestics, totaling 9,170 thousand barrels, which mainly from Sirikit (Phet) field, Pattani Field, Benchamas Field, and others.



This year, Bangchak imported crude 26,426 thousand barrels. There are 69.8% Crude from the Far East fields, such as Labuan and Bunga Orchid from Malaysia; Seria Light Export Blend, and Champion from Brunei; Banyu Urib from Indonesia. Also, there are 30.2% 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	2018		2017		2016	
	Million Baht	%	Million Baht	%	Million Baht	%
<u><i>Cost of indigenous feedstock</i></u>						
1. Crude and semi-finished products	34,840	27.9	36,313	34.3	34,332	38.4
2. Finished products	11,931	12.0	8,402	7.9	9,945	11.1
Total	49,771	39.9	44,715	42.2	44,277	49.5
<u><i>Cost of imported feedstock</i></u>						
1. Crude and semi-finished products	65,355	52.4	53,498	50.5	39,553	44.2
2. Finished products	9,711	7.8	7,752	7.3	5,606	6.3
Total	75,066	60.1	61,250	57.8	45,159	50.5
<u><i>Combined costs of indigenous and imported feedstock</i></u>						
1. Crude and semi-finished products	100,195	80.3	89,811	84.8	73,885	82.6
2. Finished products	24,642	19.7	16,154	15.2	15,551	17.4
<b>Total feedstock cost</b>	<b>124,837</b>	<b>100</b>	<b>105,969</b>	<b>100</b>	<b>89,436</b>	<b>100</b>

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 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.

#### **Risk management structure**

The Board, executives, and all units are involved in the management of risks. The Enterprise-wide Risk Management Committee (ERMC), appointed by the Board, assures that Bangchak has an efficient system that can appropriately manage all risks, and promotes the corporate culture of risk management to foster, among all executives and employees, awareness of potential impacts from risks. The Risk Management Subcommittee (RMC), comprising senior executives of business groups, functional groups, and divisions, monitors the performance of enterprise-wide risk management, develops risk management system covering all business groups, and appoints a Price and Finance Risk Management Committee (PRMC) to regularly oversee



and manage risks arising from the volatility of prices and exchange rates. To raise risk management efficiency and keep pace with circumstances, this year Bangchak appointed a subcommittee (Sub PRMC) to report to PRMC on performance, with effect from January 1, 2019.

### **Risk management outcomes**

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, and the growth of relevant technologies and innovations, which include alternative-energy, energy storage-related technologies, the progress of Electric Vehicle (EV) development, biotechnology, public policies, and megatrends. 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, 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, all of which may affect Bangchak's credibility. Key risk indicators (KRIs) have



also been developed for the monitoring process to help Bangchak 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, which will review and decide risk prevention options.
- 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 Plc, a subsidiary that increasingly invests in and operates power-generation and other global renewable-energy businesses.
- Supported the stock exchange entry by 2019 of BBGI Co., Ltd., a biofuel producer and supplier, with a current capacity to produce 900,000 liters of ethanol and 930,000 liters of biodiesel per day, totaling 1,830,000



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 reinforcing 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 sales activities, which are crucial for its business continuity and cost control, Bangchak undertook the following risk management measures:

- Entered into term contracts for crude oil supply from all sources to maintain a stable crude run.
- Procured crude oil with suitable properties for Bangchak's processes while adding value to its business.
- Grouped high-value 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 technologies and innovations**

Technological changes and innovations are external factors threatening the current business. Bangchak has therefore 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 15.84% of Lithium Americas Corporation's shares to expand Bangchak's natural resource and innovative energy-based businesses to accommodate future growth of battery-based alternative energy, notably in EV cars.
- 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 deep awareness of resource values.
- In place is monitoring of intelligence and assessment of system loopholes to quantify the probability of attacks. And in conjunction with the Electronic Transactions Development Agency (Public Organization), Bangchak stayed vigilant for cyber-security. In addition, Bangchak acquired tools for Security for Data Center (East-West Protection) and redesigned infrastructure security (North-South Protection) for smooth business operation.

### **Risks of impacts on communities and society**

Focusing on sustainably cooperating with communities, society, and the environment in its business conduct, Bangchak has relentlessly 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 minimize accident risks.
- Developed a health and safety system after TIS/OHSAS 18001. In March 2018, ISO came up with a new ISO 45001 to improve occupational work hygiene and safety, replacing OHSAS 18001. Migration is to take three years from the enforcement of ISO 45001. This move will propel systematic process development in a broader context, taking into account risks, opportunities, legal requirements, and other factors. A hygiene and safety base is to be placed at the core of the corporation to form efficiency improvement in occupational health and safety. To this end, employees will play roles in both health and safety, lowering losses due to accidents or deteriorated health; contribute to better workplaces; lower costs; and lower lost workdays. Bangchak therefore started getting ready in 2018 as part of the migration to the new standard, with a plan to seek certification by the first half of 2019.
- In place are HAZOP (Hazard and Operability Studies) assessment and PSM (Process Safety Management) for safety management throughout refining processes.
- Installed an online air-quality monitoring system displaying the results on billboards at locations adjoining the refinery to provide the neighboring communities with air quality data and boost confidence among a wider society.



- Executed the enclosed ground flare construction project, due for completion by mid-2019, to ease community impacts of gas emission through the flare tower.
- Organized activities to promote knowledge, understanding, and safety awareness among those in surrounding communities, including schools, temples, and condominiums, by conducting evacuation, first aid, and fire-fighting drills, installing communication systems and community alarms at all strategic locations, and inviting community representatives to observe emergency drills.
- Prevented river oil spills by requiring double-hull vessels for crude oil and refined-product tankers.
- In place are preparedness measures concerning emergency tools and oil slick removal tools and tests of crude oil pumping tools every six months; installations of booms to trap oil slicks during oil pumping; and emergency drills for oil spills, fires on tankers, and floating storage units. This year Bangchak joined in the prevention and water pollutant removal drills on May 23-25, organized by the Marine Department, Royal Thai Navy, Pollution Control Department, and Disaster Prevention and Mitigation.
- Developed and constantly improved safety technology for jetty equipment, systems, 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.



## Global warming risks

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

- Closely monitor potential impacts of climate change, including floods, with effective plans in place to manage low to high levels of impacts and ensure business continuity.
- Significantly improved the refinery's energy efficiency and reduced carbon dioxide emission by employing the electricity and steam produced by its cogeneration power plant, fueled by natural gas instead of fuel oil, while operating a new 12-MW capacity cogeneration power plant.
- Developed green-energy businesses 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 ease global warming.
- Improved energy efficiency in office buildings, evident in its LEED award (platinum level), Commercial Interior 2009, for the Head Office at M Tower; this year Bangchak was also honored with a Thailand Building Energy Efficiency: In Operation, a national award, for its Refinery Office.





## **Water shortage risks**

Water crisis has 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.

- Reused water with the reverse osmosis technology inside the refinery. This year Bangchak lowered its water consumption by 5.51% of the total water demand. Note that this percentage was solely from the reverse osmosis recycling.
- 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. This year Bangchak developed international investment project risk management plans, including investment through subsidiaries by acquiring capital increase shares in OKEA AS (“OKEA”), which undertakes petroleum development and production in Norway, and acquisition of strategic areas to accommodate Bangchak Group’s new investment expansion in the future. Taken into account are key factors and business outlooks that could affect new businesses in the short and long terms so as to minimize investment risks.



To this end, explicit, systematic project risk analysis is essential for each phase of the project:

1. Development phase
2. Construction phase
3. Operation phase (namely operational, finance and tax policy of invested countries, business, and reputation)
4. Natural disaster.

The key is to ensure sustainable success for investment projects without impacts on the surroundings, society, and communities. Project plans must also secure ERMCo's endorsement before the Board's review and approval.

### **3. Business Continuity Management (BCM)**

Bangchak has acquired for six 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 for crises and efficient Business Continuity Plan (BCP) implementation under international standards, while stakeholders can rest assured that Bangchak can handle emergency responses while continuing to deliver its products.

This year Bangchak amended its crisis management plan and BCM plans for the entire corporation, as done every year. Also, it staged a BCM plan and emergency plans under the topic of "emergency at crude oil tanks



located at the refinery and BCM plans” based on a simulation embracing a communication drill between the management and relevant employees. The outcomes played a part in improving procedures and secure additional resources for Bangchak’s improved BCM system and the assurance of uninterrupted businesses in the face of assorted crises.



#### 4. Review of business assets

Asset	Ownership	Book value Baht million <sup>1</sup>	Obligation
Refinery land	Long-term lease	319	None
Other properties	Ownership	2,322	None
Buildings	Ownership	180	None
Machinery & distillation tower equipment	Ownership	20,174	None
Power generators	Ownership	69	None
Sales and office equipment	Ownership	3,635	None
Platinum catalysts <sup>2</sup>	Ownership	239	None
Vehicles	Ownership	127	None
Other assets <sup>3</sup>	Ownership	23	None
Works in progress	Ownership	3,238	None
Total	-	30,326	-

Note:

- 1/ This year Bangchak set aside Baht 67 million in allowance (reversal of) for impairment of land property, machinery, and equipment, consisting of Baht 6 million in property, Baht 35 million in machinery and distillation tower equipment, and Baht 26 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 <sup>๑</sup>
<b><u>Copyrights</u></b>			
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. 30, 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	1	All fuels	Jun. 23, 2025
11. D3 GOLD	2	Synthetic diesel-engine lubricant	Oct. 9, 2023 Jan. 15, 2027
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 TURBO PLUS COMMONRAIL	1	Semi-synthetic diesel-engine lubricant	Oct. 30, 2028
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 <sup>1</sup>
21. POWER D B5	1	High-speed diesel	May 20, 2019
22. BANGCHAK POWER D	1	High-speed diesel	Jul. 10, 2028
23. SUPER POWER D B5 (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
24. SUPER POWER D (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
25. GE NGV	1	Semi-synthetic gasoline-engine lubricant	Dec. 25, 2021
26. GE PLATINUM	1	Synthetic gasoline-engine lubricant	Dec. 25, 2021
27. Bangchak Max Drive	1	Gasoline Fuel Conditioner	Dec. 25, 2026
28. Super HDX	1	Diesel Fuel Conditioner	Jan. 15, 2027
29. FURIO	1	Lubricant	Mar. 2, 2027

### **Service Marks**

Service logo	Number of registered logos	Goods/service under logo	Expiry <sup>1</sup>
<b><u>Copyrights</u></b>			
1. Bangchak leaf	3	Goods sales management	Dec. 20, 2028
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 <sup>1</sup>
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 <sup>®</sup> - Registered in LPDR (Laos)	2	Fuel products	- Mar. 20, 2023
3. Bangchak leaf and BCP LUBRICANTS (Registered in Myanmar <sup>®</sup> )	1	Fuel products	-
4. Bangchak leaf and BANGCHAK (Registered in Myanmar <sup>®</sup> )	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) <sup>®</sup>	1	Miscellaneous goods for consumers' convenience	-
10. GREEN SERVE (Registered in Myanmar) <sup>®</sup>	1	Vehicle maintenance	-
11. Bangchak leaf and BANGCHAK (Registered in Myanmar) <sup>®</sup>	2	Fuel products & Vehicle service station	-
12. Bangchak leaf and BCP (Registered in Myanmar) <sup>®</sup>	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. 20, 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. 24, 2023
16. Bangchak leaf and BCP LUBRICANTS (Registered in Philippines <sup>៩</sup> )	1	Fuel products	Sep. 10, 2025
17. Bangchak leaf and BCP LUBRICANTS (Registered in Kenya)	1	Fuel products	Dec. 10, 2023
18. Bangchak leaf and BCP LUBRICANTS (Registered in OAPI countries <sup>៩</sup> )	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. 3, 2023
21. BAICHAK MART (Registered in LPDR (Laos))	1	Miscellaneous goods for consumers' convenience	Dec. 5, 2024
22. GREEN SERVE (Registered in LPDR (Laos))	1	Vehicle maintenance	Dec. 5, 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. 5, 2024
25. Bangchak leaf and BANGCHAK (Registered in Vietnam)	2	Fuel products, service stations	Sep. 30, 2023 Nov. 19, 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. 5, 2024
28. Bangchak leaf and BCP (Registered in Vietnam)	1	Fuel products, service stations	Sep.30, 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
37. FURIO (Registered in Myanmar®)	1	Fuel products	-

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

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. WASH PRO	1	Vehicle cleaning, maintenance & repair	Appealed Apr. 22, 2016
2. GREEN S REVOLUTION	2	Fuel products, vehicle service station	Appealed Jan. 26, 2018
3. RESPOPLEX	1	Technological service	Filed Aug. 29, 2017
4. FURIO F1	1	Lubricants	Filed Feb. 12, 2018
5. FURIO F2	1	Lubricants	Filed Feb. 12, 2018
6. FURIO F1 DIESEL	1	Lubricants	Filed Feb. 12, 2018
7. FURIO F2 DIESEL	1	Lubricants	Filed Feb. 12, 2018
8. HI PREMIUM DIESEL S	1	Diesel products	Filed Mar. 28, 2018
9. HI PREMIUM DIESEL S	1	Diesel products	Filed Mar. 28, 2018

**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
2. FURIO (Registered in Cambodia)	1	Fuel products	Filed on Apr. 4, 2018
3. FURIO (Registered in LPDR (Laos))	1	Fuel products	Filed on Apr. 2, 2018
4. FURIO (Registered in PRC (China))	1	Fuel products	Filed on Apr. 3, 2018
5. FURIO (Registered in Vietnam)	1	Fuel products	Filed on Apr. 2, 2018
6. FURIO (Registered in the Philippines)	1	Fuel products	Filed on Apr. 4, 2018



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

Bangchak is a party to a lawsuit involving a legal dispute outside the ordinary course of business. While this lawsuit has not yet reached its final judgement, it may render a significant effect over Bangchak's business operation. Details of the case and its status as at December 31, 2018, were as follows:

- A lawsuit was filed against Bangchak as the first defendant with another company as the second defendant for breaching a distributor agreement for lubricants. The plaintiff demanded Baht 45.64 million as the amount of claim in that court case. Another case was later filed against Bangchak by the same plaintiff for breach of contract and damage resulting from its suspension of lubricant distribution, where the amount of claim was set at Baht 688.28 million. On March 23, 2017, both cases were dismissed by judgement of the Civil Court, whose decision was then appealed by the plaintiff. Then on June 6, 2018, the Court of Appeals overturned the judgement of the Civil Court in both cases and ordered that Bangchak pay a total of Baht 1.2 million to the plaintiff, in addition to court costs and lawyer's fees for the litigation in both courts for the plaintiff. Both parties have submitted their application to the Dika Court (Supreme Court) for approval to lodge dika appeals; this is still pending the Dika Court's decision. Bangchak confirms having duly complied with the terms.



## 6. General information and other key information

- Company Name : Bangchak Corporation Public Company Limited
- Head Office : 2098 M Tower Building, 8<sup>th</sup> 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, 2018) 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
 

- Vayupak Fund 1	202 Million shares	14.66%
- Social Security Office	199 Million shares	14.46%
- Ministry of Finance	137 Million shares	9.98%
- Minor Shareholders	839 Million shares	60.90%
Total	<u>1,377 Million shares</u>	<u>100.00%</u>



- Customers
  - The public, via Bangchak service stations and those of Bangchak distributing agents, and car care centers nationwide
  - Industrial sector, including plants and factories
  - Transport and service sectors, including airlines, ocean-going ships, hotels, trucks, and construction
  - Agricultural sector, through Bangchak community service stations
  - Export markets.
- Office and Terminals
  - Head Office\*  
2098 M Tower Building, 8<sup>th</sup> Floor, Sukhumvit Road, Phra Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-8888, Fax 0-2335-8000  
Email: [info@bangchak.co.th](mailto: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. 0-3535-0289, 0-3535-0292  
Fax (Central Region Business Office) 0-3535-0290  
Tel. (Bang Pa-In Terminal) 0-3527-6999
  - Northern Region Business Office  
87/9 Yee-wan Building, 3<sup>rd</sup> 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  
126/70, Moo 6, Bypass Road, Tambon Makham Tia, Amphoe Muang, Surat Thani 84000  
Tel. 0-7722-4792, Fax 0-7722-4793



- 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  
3/26 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, 12<sup>th</sup> Floor, Sukhumvit Rd., Phra Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-8999 Fax. 0-2335-8900  
Email: [info@bcpgroup.com](mailto:info@bcpgroup.com)  
Website: <http://www.bcpgroup.com>
  - BBGI Public Company Limited  
2098 M Tower Building, 5<sup>th</sup> Floor, Sukhumvit Rd., Phra Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-8899 Fax. 0-2335-8800  
Website: <http://www.bbgigroup.com>
  - Bangchak Retail Co., Ltd. (BCR)  
2098 M Tower Building, 17<sup>th</sup> Floor, Sukhumvit Rd., Phra Khanong Tai, Phra Khanong, Bangkok 10260





Tel. 0-2335-8400 Fax. 0-2016-3963

- Bangchak Green Net Co., Ltd. (BGN)  
223/94 Country Complex, Building A, 19<sup>th</sup> Floor, Sanpawut Rd.,  
Bangna, Bangna, Bangkok 10260  
Tel. 0-2367-2699 Fax. 0-2745-7945
- BCPR Co., Ltd.  
2098 M Tower Building, 8<sup>th</sup> Floor, Sukhumvit Rd., Phra  
Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-8654
- BCV Partnership Co., Ltd.  
2098 M Tower Building, 20<sup>th</sup> Floor, Sukhumvit Rd., Phra  
Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-4999 Fax. 0-2335-4572
- BCV Bio Based Co., Ltd.  
2098 M Tower Building, 20<sup>th</sup> Floor, Sukhumvit Rd., Phra  
Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-4999 Fax. 0-2335-4572
- BCV Innovation Co., Ltd.  
2098 M Tower Building, 20<sup>th</sup> Floor, Sukhumvit Rd., Phra  
Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-4999 Fax. 0-2335-4572
- BCV Energy Co., Ltd.  
2098 M Tower Building, 20<sup>th</sup> Floor, Sukhumvit Rd., Phra  
Khanong Tai, Phra Khanong, Bangkok 10260  
Tel. 0-2335-4999 Fax. 0-2335-4572
- BCP Energy International Pte. Ltd. (BCPE)  
8 Marina Boulevard # 05-02, Marina Bay Financial Centre,  
Singapore 018981
- BCP Innovation Pte. Ltd. (BCPI)  
8 Marina Boulevard # 05-02, Marina Bay Financial Centre,  
Singapore 018981



- BCP Trading Pte. Ltd. (BCPT)  
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
- BCPR Pte. Ltd.  
8 Marina Boulevard # 05-02, Marina Bay Financial Centre,  
Singapore 018981

**Others:**

- **Bangchak Initiative Innovation Center (BiiC)**  
2098 M Tower Building, 5<sup>th</sup> Floor, Sukhumvit Rd., Phra Khanong  
Tai, Phra Khanong, Bangkok 10260  
Email: [biic@bangchak.co.th](mailto:biic@bangchak.co.th)
- **Happiness Sharing Foundation**  
2098 M Tower Building, 18<sup>th</sup> Floor, Sukhumvit Rd., Phra Khanong  
Tai, Phra Khanong, Bangkok 10260  
Tel. 0 2335 4608, Fax. 0 2016 3969
- **Oam Suk Social Enterprise Co., Ltd.**  
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Co., Ltd.

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Dindaeng, Dindaeng, Bangkok  
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Fax. 0-2677-2222

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333 Silom Road, Silom,  
Bangrak, Bangkok 10500 Thailand  
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1222 Rama III Road, Bang  
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