



## **1. Policy and Business Overview**

### **1.1 Vision, Objectives, Goals, and Strategies**

This year Bangchak revised its vision, mission, and values as annually practiced to ensure that they are in line with business and investment directions, as well as the changing business environment. The details are as follows:

#### **Vision**

Evolving Greenovation

To be the Leading Asian Greenovation Group, founded on Good Corporate Governance, through Inclusiveness and Sustainability

#### **Mission**

Bangchak commits in bringing Disruptive and Inclusive Greenovation to Delight our customers, being a trusted partner and Value Creator for all Stakeholders, and promoting Sustainable Development to Society.

We emphasize inclusive and Sustainable business, pursue Domestic and Overseas expansion, embrace Good Corporate Governance principles, and nurture a High-performance, Learning culture, and happy Workplace.

#### **Objectives and goals**

Bangchak is determined to be a Thai energy company engaging in business alongside social and environment stewardship. It aims to strike a good balance between worth and value, with contribution to a better quality of life of the Thai people.



Valuing sustainable growth of the corporation, Bangchak strives to raise its management excellence to world standards. His Majesty the late King Bhumibol's philosophy of "Sufficiency Economy" has been embraced in Bangchak's business management. Having learned from this philosophy that doing a profitable business does not mean profiteering, but sustainable growing into the future with innovative development and advance technology. Bangchak appreciates valuable natural resources and will try to meet its vision of becoming "the leading Asian Greenovation Group" and meet goals concerning the business, society, and the environment by 2020. Below are the essences.

## **1. Business goals**

- 1.1 Refining and Trading Business Group:** Elevating the refinery safety standards, increasing operating efficiency, and refining stability to its highest level with expansion into related businesses, such as oil trading
- 1.2 Marketing Business Group:** Maintaining the second largest domestic market share, developing new formats for service stations with outstanding features fitting each location, while offering new amenities, such as restaurants and new forms of convenience stores in response to evolving customer behavior to win customers' satisfaction and pursue "The Most Admired Brand"
- 1.3 Green Power Business:** Investing in power generation from renewable energy to produce 1,000 MW through BCPG Public Company Limited
- 1.4 Bio Based Products Business Unit:** Continuously expanding the bio-based product business, including biodiesel and



ethanol, while aiming for further biotechnological research and development to achieve innovative bio-based products with high value added

**1.5 Natural Resources and Business Development Business:**

Expanding business concerning energy, exploration and production, and natural resources, both inside and outside Thailand, as well as research & development and other innovations.

**1.6 Corporate Management and Sustainability Development:**

Increasing competitiveness and corporate management to develop the company into an excellent employer, forge human resource excellence, relentlessly improve work processes, and promote new mindsets to create innovative products.

**1.7 Being open, transparent, and auditable:** Conducting an open, transparent business which is auditable. This includes disclosure of information about transparent business under good corporate governance principles and SET regulations.

**2. Environmental and social objectives**

**2.1 To become a low-carbon company that minimizes its net carbon dioxide emission and mitigates climate change impacts**

Bangchak sets a goal to become a low-carbon company by continuously improving the refinery's efficiency in energy and resource usages. It also expands investment to the production of alternative/renewable energy, displacing CO<sub>2</sub> emission.



## **2.2 Business development along with social and environmental development**

To ensure corporate sustainability, Bangchak engages in business that takes care of society and the environment along while focusing on business growth, including CSR after-process activities and creation of CSV among the business, society, and the environment through CSV/CSR in-process activities.

Bangchak has, moreover, set an extended goal from CSR/CSV to operate a Social Enterprise (SE) to create jobs and revenue, while encouraging people in such community to exercise environmental stewardship where they live.

### **Business Strategies**

Bangchak has formulated a 3S Strategy to attain its organizational goals, both in the short term and long term, as detailed below:

#### **1. Security: Enhancing national energy security**

Expanding investment to upstream businesses to supply sufficient energy for the business sector and public demand. Seeking new sources of energy, such as through lithium mining.

#### **2. Stability: Developing business for growth and diversifying risks for secure revenue**

Sustainably creating value for the business by increasing the proportion of new-business income. Bangchak invests in green power business and other businesses by focusing on businesses with steady returns and low external risks, both local and overseas, such as green power plants.



### **3. Sustainability: Developing the business pattern that benefits society and the environment**

Keeping business development in balance among business, social and environmental value, Bangchak focuses on sustainable development, such as developing service stations under the concept of “Greenovative Experience”. Moreover, Bangchak pays attention to water, which is a crucial resource in production processes, so it sets target in water usage reduction and waste water reuse to ensure optimal use.

Since the business consumes a large volume of energy, Bangchak has set a goal to become a low-carbon company that minimizes carbon dioxide emission and mitigates climate change impacts.

#### **1.2 Transition and milestone development**

##### **2016**

- **Rolling out new Vision, Mission, and Values**

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.

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

- **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.

- **Establishing BCP Trading Pte. Ltd., a subsidiary**

In May, Bangchak set up BCP Trading Pte. Ltd., a wholly owned subsidiary of Bangchak, in Singapore with a registered capital of US\$1 million. The company was tasked with commodity trading, including crude oil, refined products, chemical and petrochemical



products, as well as related businesses such as oil price hedging, contracting vessels, arranging oil storage places, and oil distribution.

- **Establishing Bongkot Marine Service Co., Ltd., an associated company**

Since May, with Bangchak holding 30% shares and Prima Marine Co., Ltd., holding 70%, the joint venture, Bongkot Marine Service Co., Ltd. has been incorporated with a registered capital of Baht 240 million and has been tasked with the supply of an oil floating storage unit to accommodate Bangchak's expanded refining capacity.

### **Marketing Business Group**

- **Establishing Bangchak Retail Co., Ltd., a subsidiary**

In February, Bangchak set up Bangchak Retail Co., Ltd. (BCR), which runs a food and drink business, including Inthanin Coffee and Lemon Kitchen, as well as retail shops, department stores, large and small supermarkets to increase its versatility in the development of non-oil businesses. BCR has a registered capital of Baht 300 million, wholly owned by Bangchak.

- **Launching Green S Revolution products**

In August, Bangchak launched products in the gasohol group produced with Green S Revolution, an innovative technology for vehicles with Direct Injection Gasoline Engine (DIG) in particular, to enhance engine efficiency.

- **Establishing Oam Suk Social Enterprise Co., Ltd., an associated company**

In September, Bangchak established Oam Suk Social Enterprise Co., Ltd., a joint-venture company with 40% shares held by Bangchak and 60% by the Buddhist Economics Foundation. With a registered capital of Baht 10 million, Oam Suk SE runs a business that purchases agricultural produce and organic crops for processing and marketing, distribution, and research & development.

- **Launching SPAR, a new form of supermarket in Bangchak service station**

In November, Bangchak Retail Co., Ltd. (BCR), BCP's subsidiary, launched the first SPAR – a new form of supermarket in Bangchak service station on Ratchaphruek Road. Using the concept of SPAR Fresh & Easy Food Market, SPAR has unique attractions,



including fresh food. BCR is also ready to support community products by developing and selling them under the SPAR brand.

SPAR International Co., Ltd., a major retail and wholesale company of the Netherlands, awarded a master license to BCR to expand its business in Thailand, Myanmar, Laos, and Cambodia. Expansion of 50-80 branches per year, both in the service station and stand-alone, is planned.

### **Green Power Business**

- **BCPG Co, Ltd. acquiring SunEdison Japan and Huang Ming Japan**

February 2016, BCPG Co, Ltd. (BCPG), a Bangchak subsidiary, took over a solar power plant worth Yen 9,626 million in Japan from the SunEdison Group. Of the total installed capacity of 198 MW (contractual capacity of around 164 MW), the plant already had 13 MW in the commercial stage and 185 MW in the development stage.

At the end of the first quarter 2016, BPCG acquired the entire shares of Huang Ming Japan Co., Ltd., a company in Japan. Then in the second quarter, Huang Ming Japan inked a deal to buy plots of land and licenses required for the development of two solar plant projects with a combined contractual capacity of 30 MW against a total installed capacity of 36 MW.

BCPG has teamed up with Agricultural Cooperatives to run solar farms in Ang Thong and Ayutthaya (totaling 12 MW), 7MW of which went on commercial operation this year. This coming year will produce more 5MW added to its generation and sale.

### **BCPG Plc. listed and starting trading on SET**

BPCG Plc. was listed and started trading on September 28, 2016. A total of 590 million shares, worth Baht 5.9 billion, were sold to BCP shareholders and general investors, as well as institutional investors and benefactors, to increase its capital.





### **Bio Based Products Business Unit**

- **Establishing Bangchak Bioethanol (Chachoengsao) Co., Ltd., a joint venture**

Since April 2016, 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 and started its commercial operation on October 3, 2016.

- **Bangchak Biofuel Co., Ltd., inaugurating second biofuel plant**

The plant came on stream and started commercial ethanol production with an installed capacity of 520,000 liters per day for a total installed capacity of 810,000 liters per day since June 2016.

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

- **Increasing capital in Nido Petroleum Limited**

In December, 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.

### **Awards of 2016**

- SET Sustainability Award for the second consecutive year – in the category of Outstanding Sustainability Awards. The presentation ceremony was held by SET in recognition of listed companies with outstanding sustainable business operations. Awarded companies are honored as role models for other listed companies.
- A top-ten ASEAN listed company with business integrity, according to a survey outcome on business integrity, organized by the ASEAN CSR Network and the National University of Singapore





- Awards won at the '6<sup>th</sup> Asian Excellence Recognition Awards 2016' event, organized by the Corporate Governance Asia magazine (Hong Kong-based):
  - Best Investor Relations Award for five consecutive years, presented to companies with outstanding investor relations and based on votes and surveys among readers, investors, analysts, etc.
  - Asia's Best CFO Award (Investor Relations) and Best Environmental Responsibility for two consecutive years, based on votes and surveys among readers, investors, analysts, etc.
- Platinum Award, organized by The Asset magazine (Hong Kong-based), in recognition of Bangchak's overall outstanding performance (financial, management, corporate governance, social and environmental responsibility, and investor relations), for the three consecutive year.
- Asia Pacific Entrepreneurship Award 2016, Outstanding Category, for corporate leaders' determination and ability to foster constant business growth with corporate governance and socio-environmental responsibility, organized by Enterprise Asia, an independent promoter and developer of Asian business operators
- Asia Responsible Entrepreneurship Award 2016, Health Promotion, for Bangchak's project designed to better the quality of life and health of its refinery's neighboring families, organized by Enterprise Asia, an independent promoter and developer of Asian business operators
- A top-55 listed company on the Thailand Sustainability Investment (THSI) list for the second year in a row, recognized for Bangchak's sustainable business with extensive social and environmental stakeholders and for its management processes for corporate sustainability, which aid investment decisions for quality shares and long-term returns, organized by the Stock Exchange of Thailand (SET)
- Thailand Quality Class (TQC) for the third year in a row, recognized for Bangchak's integrated corporate management system under the Thailand Quality Award criteria and for its display of world-class quality, organized by the Office of Thailand Quality Awards
- CAC membership certificate: This year Bangchak received first recertification since 2013 under the CAC (Collective Action Coalition against Corruption) Project, launched with the cooperation of eight leading organizations, with the Thai Institute of Directors (Thai IOD) as project secretariat



- CG Award 2016 for two consecutive years, for Bangchak's business conduct under corporate governance principles on transparent, credible information disclosure and in upholding integrity, organized by the Thai Chamber of Commerce, Office of the National Counter Corruption Commission, and University of the Thai Chamber of Commerce.
- Certificate for Outstanding Code of Conduct 2016, presented by the Thailand Chamber of Commerce, for Bangchak's business practices under a code of conduct that induces widespread acceptance, credibility, and faith among the public, both in Thailand and overseas business sectors, organized by the Thailand Chamber of Commerce
- Best Sustainability Report Award 2016, organized by CSR Club, Thai Listed Companies Association, SEC, and Thaipat Institute. The award went to companies with the recognition of Bangchak's valuing of quality reporting under the GRI standard, business integrity, and due regard for stakeholders, society, and the environment. Bangchak has won the award for four consecutive years.
- ESG100 Certificate, for the second year in a row, in recognition of the top 100 listed companies widely acclaimed for ESG (Environmental, Social and Governance), which aids investors' decisions along with financial performance, organized by ThaiPat Institute.
- Thailand ICT Excellence Awards 2016 for Knowledge Management Project, in recognition of Bangchak's efforts to enhance its competitive edge, providing a role model for others. The award was organized by the National Electronics and Computer Technology Center (NECTEC), Software Park Thailand, and the College of Innovation, Thammasat University.
- Certificate for Friendly Design 2016 in recognition of Bangchak's advocacy of friendly designs and application of the philosophy for the handicapped, the elderly, and the public in an effort to promote a decent society, organized by Thailand's Foundation for Friendly Designs.
- Bangchak earned an overall 'Excellent' score for ten consecutive years, based on the assessment outcomes of a survey on CG report of listed companies for 2016, organized by the Thai Institute of Directors (Thai IOD).
- Bangchak scored an 'Excellent' 100% in all AGM criteria for eight years under the '2016 Annual General Meeting Assessment Project', organized by the Thai Investors Association.



- Green Industry Level 5: Green Network – the highest level of Green Industry Awards in recognition of Bangchak's environment-friendly operations in support of sustainable development. The award aims to honor businesses with continuous improvement and responsibility for society and the environment while encouraging business partners and allies in its supply chain to join the green industry. Initiated by the Ministry of Industry, the Green Industry Award also promotes cooperation with communities and consumers in organizing environmental activities.
- The Best Contact Center Agent – in recognition of outstanding call-center service that impresses customers, organized by the Thai Contact Center Trade Association (TCCTA)

## **2015**

- Achieved a peak refining capacity of 126.6 KBD in June. Also, reached an average refining capacity of 118.4 KBD in August, a record rate since operating the Hydrocrack Unit.
- Bangchak developed UCO (unconverted oil) for export to SK Oil of South Korea for use as a raw material for lube base oil production. High in quality and clean, UCO contains low sulfur and nitrogen.
- Bangchak acquired a 25-MW cogeneration plant located on the compound of Bangchak Refinery from PTT Plc for a total core-asset value of Baht 1,332 million, adding efficiency to its power & steam generation system to be used for refining processes.
- Bangchak launched Green S, new technology products derived from sophisticated processes and containing outstanding properties due to new additives that synergizes two powers:
  - E20S gasohol features outstanding properties due to the S Purifier and S Modifier, which complete fuel combustion in the engine, thus providing power and environmental protection. With less combustion pollutants because of lower sulfur content (10 ppm), E20S is superior to the Euro 5 standard.
  - Hi Diesel S boasts outstanding properties due to the S Power and S Guard additives, which raises combustion efficiency, thus providing power and clean burning, protecting the engine, reducing corrosion, and responding to driving fully.
- Bangchak issued debentures worth Baht 3,000 million with 12-year and 15-year maturity to mainly expand its renewable-energy business under the strategy of renewable-energy leadership. TRIS Rating,



meanwhile, upgraded Bangchak's rating from A-/Stable last year to A/Stable this year.

- PTT Plc sold all its 374,748,571 shares (27.22%) in Bangchak to VAYU1 Fund and the Social Security Office, accounting for 15.25% and 11.97% of Bangchak's paid-up capital.
- Nido Petroleum Ltd. acquired more shares in Galoc Production Co., WLL (GPC), now accounting for 55.88%. Nido Petroleum, Bangchak's subsidiary, acquired more shares in GPC, going from 22.88% to 55.88% and assuming operatorship in the Galoc oil field. This transaction was worth USD 87.4 million (Baht 2,876 million).
- Bangchak's Board of Directors approved its investment in the lithium mining business via shareholding in Western Lithium USA Corporation (a Canada-listed company), which conducts the mining business in the American continent for processing into lithium carbonate, a key raw material for battery production.
- Extraordinary Meeting No. 1/2558 approved a restructuring plan of Bangchak's renewable-energy business by transferring its common shares in subsidiaries in the renewable-energy business group to BCPG, a new company resulting from the restructuring plan for power businesses. The meeting also approved the initial public offering (IPO) of BCPG on SET.
- Bangchak sold all 1,930,500 shares (10.66% of the paid-up capital) of ASEAN Potash Chaiyaphum PCL to S Group AEC (Thailand) Co., Ltd., altogether worth Baht 202 million, since it is not a core business.
- Bangchak has adopted the Thailand Quality Award (TQA) criteria in developing its organizational capability in conjunction with business development to strive for sustainability in human resource development as well as business growth. These guidelines include effective work structural architecture supporting current and future businesses, work process efficiency improvement suitable for all situations, information system and technological modernization, and support of innovations for all employees, aiming to become a knowledge-based organization.
- With a strong commitment to the continuous development of its workforce, Bangchak has defined a clear policy on job rotation to broaden staff skills in preparation for career path development and for current job requirements and expected knowledge and competency in line with the Company vision and business goals. The Competency Base Management System has been adopted to develop human resources systematically. As for personnel development, the Company set the preparation of a successor pool and systemization of career management plans, and continuous learning through



various channels. Moreover, the Company promoted innovation projects in the organization, including employee group activities and cross-functional teams, including the Cascade Project for Innovation, Community of Practice (CoP), and Kaizen activities to promote sharing of knowledge and experiences among them. The ultimate aim of all these activities and projects is to drive Bangchak toward an entity of innovation.

- To upgrade its assessment standard for personnel abilities and administration system, Bangchak applied for participation in the Best Employer Project for Thailand, which helped it detect aspects for further improvement. The exercise added assessment of other aspects besides employee engagement, namely employer brand, leadership, and high-performance culture. The first year's assessment score for Bangchak was 70 as targeted. A roadmap was prepared to constantly close the gaps in the future.
- **Efficiency improvement in work process and preparedness for different scenarios:** To assess, identify, and mitigate risks at all levels impacting business goals, an Enterprise Risk Management (ERM) system was launched. This year the Company introduced Scenario Planning for assessing changing circumstances that are likely to cause risks and have impacts on long-term organization's goals. Scenario planning is regularly presented for the review and monitoring of risk management plans at ERM (Enterprise Risk Management Committee) and PRMC (Price Risk Management Committee) meetings. Bangchak also achieved ISO 22301:2012 certification for Business Continuity Management (BCM).
- **Information system and technological modernization**  
To meet the requirements of instant information and technologies to operate all work processes safely, effectively, and smoothly, modernization of information system and technology is a prerequisite. Today's common is the perception of fast technological changes, which could manipulate strong impacts—positive and negative ones. Recognizing the value of IT systems, which lead to convenience, safety, and effectiveness, Bangchak has applied its systems of customers' opinion-sharing and data collection, and more service provision through the IT system and mobile applications. Cases in point were customers' complaint and feedback input through the SAP Call Center and the communication and direct inputting of goods and service-related data through the social media. Besides, data can find rapid applications to efficiently meet the highly dynamic needs of consumers. In addition, the Company has internationalized IT systems in support of work within the organization. For instance, it





adjusted SAP SRM (Supplier Relationship Management) to link its databases to the SAP ERP system for greater efficiency. The Company also modified the BCP Knowledge Management System to accommodate modern, diverse functions to support knowledge-sharing within the organization. Consequently, knowledge can be linked and extended within the same group of companies and become increasingly efficient. In addition, the Company has internationalized IT systems in support of work within the organization. Moreover, Bangchak has installed an enterprise resource planning system through an enterprise network to provide 24/7 access to all employees under ISO 27001, a reliable system standard for network and data center. An additional system, Digital Control System (DCS), was implemented at distillation unit control rooms to ensure the utmost reliability of refining operations, under ISO/IEC 20000-1:2011 in service management system standard. The Company used SAP Enterprise Resource Planning (ERP) SAP ECC6.0, which is modern and international. Thus, the Company could access all analytical and operational data thoroughly and more efficiently. Furthermore, the Company developed Security and Safety Management system and Budgeting Management system (e-budget), in order to improve work more efficiently. The Company also planned IT Road Map for its subsidiaries.

## **2014**

- Planned a 46-day major turnaround period including maintenance for CDU and auxiliary units from May 1<sup>st</sup> to June 15<sup>th</sup>, 2014.
- Established Operational Excellence Enhancement, strived for Plant Reliability, and prevented Unplanned Shutdowns through plans encompassing Personnel and Process Safety Excellence, Process Safety Management System. For Efficiency and Reliability Excellence, the Company constantly managed risks through SIL (Safety Integrity Level), RCM (Reliability Centered Maintenance), and RBI (Risk-Based Inspection) for all processes and equipment. As for Environmental Protection Excellence, the Company commissioned experts to upgrade the standards for refinery environmental practices, safety, and work processes, thus garnering recognition worldwide. Besides valuing refinery safety, environment, and process equipment, the Company minimized risks of oil leaks in the transport system by requiring that all crude oil and petroleum product vessels are to be double-hulled.



- Regularly improved refining efficiency by executing the 3E (Efficiency, Energy, and Environment) Project to add value to products by installing a CCR (Continuous Catalytic Regeneration unit) in place of the old one, which will improve consumption of energy and lengthening of turnaround cycles. A construction plan of cogeneration power plants for greater energy stability, and striving to raise its safety level and environmental stewardship.
- Achieved ISO 50001:2011 certification for energy management under the ANAB (American National Accreditation Board), echoing the success in developing and upgrading the standards for energy management systems at Bangchak Refinery and Oil Distribution Centers on a par with world-class refineries.
- Ran knowledge-sharing projects on social and environmental responsibility to grow allies in establishing a Green Society, including business partners, service stations, and the public. In addition, Bangchak continually organized emergency plan training and training on chemicals for communities, schools, and nearby condominiums to strengthen their confidence in safety.
- Expanded and improved its service station network in high-potential areas and constantly improved the settings of service stations. As of year-end 2014, the Company's network commanded 444 standard service stations together with 626 community service stations, for a total of 1,070 Bangchak-brand stations, recognized in "Brand of Choice survey" done by research agency since 2009 as the second top brand for a fifth consecutive year. Bangchak service stations also participated in Ministry of Commerce's project to improve proper sale volume measurement to ensure consumers that oil companies do not shortchange them. Bangchak service stations were duly certified under this project for accurate volumetric measurement, standard quality, good services, and hygienic settings. Compared with service stations of other brands, Bangchak won the highest number of awards for quality and excellence in services.
- "Best Service Station Toilets 2014" by Bangkok Metropolis Administration: The Bangchak Service Station Udomsuk 45 Branch won the unique distinction of being the sole service station chosen for the award, with the clean standard, equipped with amenities and available around the clock. The station's nice-smelling toilets, located in safe and secure areas, can accommodate the handicapped, the elderly, and pregnant women. Bangchak won this award of the Bangkok Metropolitan Administration for the second successive year, in 2013 taking the accolade with the Vibhavadi Rangsit Branch.





- The Company launched “Bangchak Hi-Diesel”, a high-quality new product with better performance due to the Hi Clean additive, which promotes complete combustion, clean engines, and full-strength performance. As a result, consumers save fuels, while the Hi Power additive gives more power to engines.
- Continually promoted and expanded sales of Gasohol E20, and Gasohol E85. The Company raised the number of service stations selling Gasohol E20 by 22, and selling Gasohol E85 by 98. Service stations selling E20 and E85 number were 700 and 200 respectively.
- Executed CRM (Customer Relationship Management) through the Bangchak Gasohol Club Card and Bangchak Diesel Club Card to establish long-term engagement and maintain customer bases. Cardholders accrue points from fuel, food, and service purchases at service stations. In addition, Bangchak developed the “Bangchak Card Connects Thais” for customers of community service stations to expedite their refueling and allow the stations to launch sales promotional activities or customer relationship activities suiting individual locations.
- Promoted and improved the image of service station’s non-oil businesses to generate income and offer complete services serving the need of modern customers. Bangchak joined renowned food & beverage allies like McDonald’s, Black Canyon, and KFC in serving customers at service stations located on main roads. It also expanded and launched Big C Mini convenience stores by 29 branches in 2014, bringing the total to 91. Finally, the Inthanin Coffee outlets, both in and outside Bangchak service stations, grew by 24 during the year to 320 outlets.
- Bangchak lubricants received ISO 9001 (quality management standard) certification and ISO/TS16949 (automotive industry quality management standard) certification, which the latter is the first for a Thai company. Bangchak regularly improves its products. This year the Company issued GE ECO, a lubricant designed for eco-cars and hybrid cars, as well as newer models. To popularize and lead them to greater acceptance of quality, it also staged sales promotional activities for products. A case in point was the “Bangchak Lubricants for Engine Fitting, Fitting You” project, which the Company supported and launched sales booth at Thai Fight boxing matches. Bangchak also constantly focused on lubricant market expansion to the industrial sector and markets in neighboring countries.



- Organized three sales giveaway promotions in support of community goods: seedless velvet tamarind (*dialium cochinchinensis*), roast rice tea/roast rice green tea, and organic brown rice.
- The **biodiesel business**: this year posted an average capacity of 360,000 liters per day, 100% in utilization rate, which met the current biodiesel demand for Bangchak and then more for sale to external business partners to generate income. Bangchak Biofuel Co., Ltd., secured approval from its board of directors to construct a second phase B100 unit with an additional capacity of 450,000 liters per day under an investment outlay of Baht 1.8 billion. An EPC contract was signed in December 2014, with construction underway. Production and commercial sales are expected by the third quarter of 2016.
- The **solar power business**: In 2014, Bangchak fulfilled its 118-MW PPA. Phase 3 of the project, with a 48-MW capacity, consists of 16 MW at Amphoe Kabin Buri, Prachin Buri; 8 MW at Amphoe Dan Khun Thot, Nakhon Ratchasima; 8 MW at Amphoe Prakhon Chai, Buri Ram; 8 MW at Amphoe Nong Ki, Buri Ram, and 8 MW at Tambon Hua Tha-le, Amphoe Bamnet Narong, Chaiyaphum. All projects have been completed and started commercial operation since April 2014.
- **Ethanol business**: Bangchak held common shares in Ubon Bio Ethanol Co., Ltd. This year's output averaged 250,000 liters per day, roughly 76% in utilization rate.
- **Petroleum Exploration and Production business**: In 2014, Bangchak moved into the oversea investment. BCP Energy International Pte. Ltd. (BCP Energy) was set up in Singapore to engage in businesses concerning energy, petrochemical, and natural resources abroad. BCP Energy has acquired 402,951,875 common shares (81.4%) in Nido Petroleum Ltd., which is listed on the Australian securities exchange and engages in oil and gas exploration and production with a focus on Southeast Asian resources. Nido has expanded its investment by signing a share purchase agreement with Otto Energy Ltd. (Otto) to acquire all shares of Galoc Production Company WLL (GPC), a subsidiary of Otto. GPC is a 33% shareholder in the Galoc oil field in the Philippines. If the shareholders' meeting of Otto endorses such transaction, Nido will see its shareholding in the Galoc field rise from 22.88% to 55.88% and assume the operatorship of the field.
- Bangchak has adopted the Thailand Quality Award (TQA) criteria in developing its organizational capability in conjunction with business development to strive for sustainability in human resource development as well as business growth. These guidelines include



effective work structural architecture supporting current and future businesses, work process efficiency improvement suitable for all situations, information system and technological modernization, and support of innovations for all employees, aiming to become a knowledge-based organization.

- Bangchak has strong commitment to the continuous development of its workforce and continuous learning through various channels. Moreover, the Company promoted innovation projects in the organization, including employee group activities and cross-functional teams to promote sharing of knowledge and experiences among them. It also launched innovation projects for summer intern students. The ultimate aim of all these activities and projects is to drive Bangchak toward an entity of innovation.
- To upgrade its assessment standard for personnel caliber and administration system, Bangchak applied for participation in the Best Employer Project for Thailand, which helped it detect aspects for further improvement. The exercise added assessment of other aspects besides employee engagement, namely employer brand, leadership, and high-performance culture. A roadmap was prepared to constantly close the gaps.
- In response to the need for sustainable growth and the need to meet customers' demand more effectively, organizational restructuring was undertaken with the creation of a Business Development and Strategy Group, directly responsible for defining the business strategies and plans coherently with business development plans. Additional work units were integrated at service stations, with a focus on more development of food, snacks, and drinks. More emphasis on work process improvement and innovations was added to materialize physical values in the near future.
- **Efficiency improvement in work process and preparedness for different scenarios**

To assess, identify, and mitigate risks at all levels impacting business goals, an Enterprise Risk Management (ERM) system was launched. This year the Company introduced Scenario Planning for assessing changing circumstances that are likely to produce risks and wield long-term impacts on the organization's goals. Scenario planning is regularly presented for the review and monitoring of risk management plans at ERM (Enterprise Risk Management Committee) and PRMC (Price Risk Management Committee) meetings.

- **Information system and technological modernization**

The Company has internationalized IT systems in support of work within the organization. For instance, it adjusted SAP SRM (Supplier

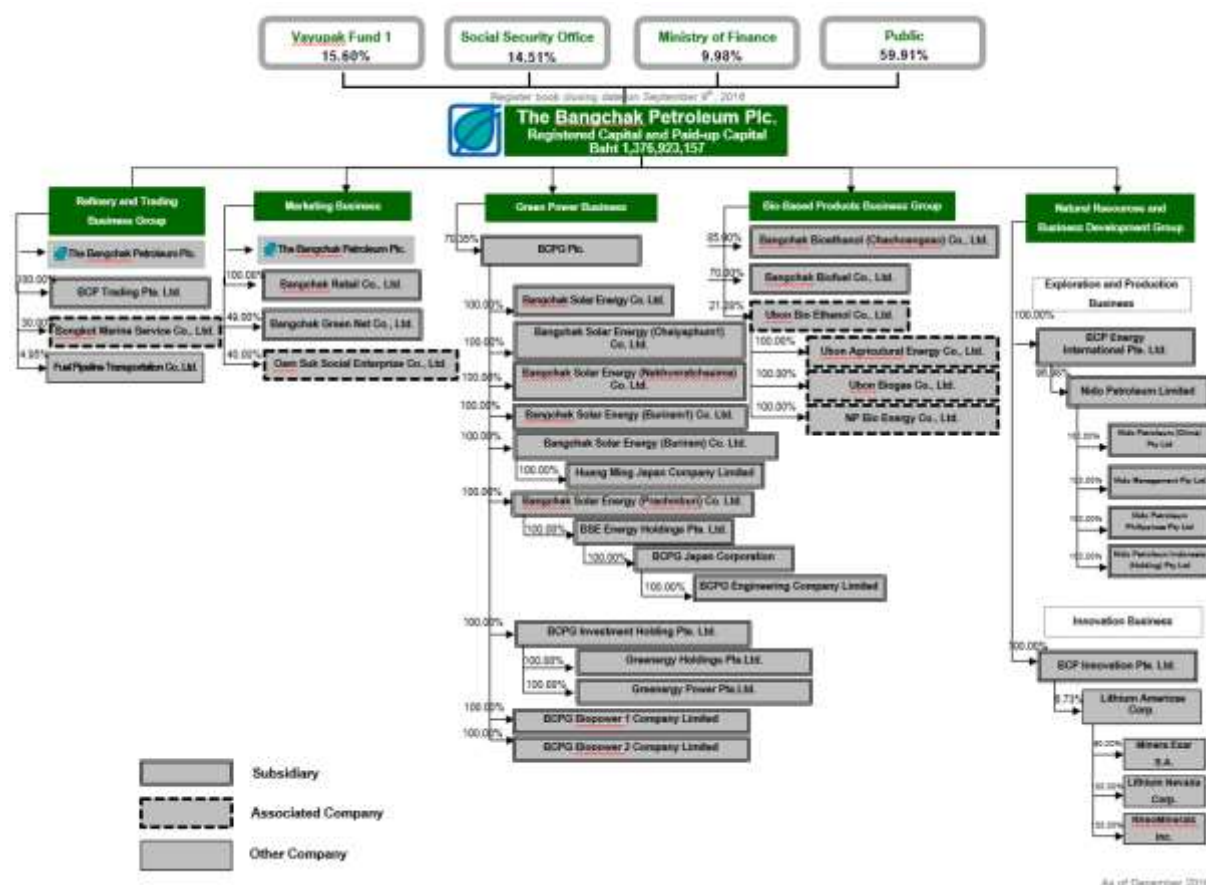


Relationship Management) to link its databases to the SAP ERP system for greater efficiency. Today's common is the perception of fast technological changes, which could manipulate strong impacts—positive and negative ones. Recognizing the value of IT systems, which lead to convenience, safety, and effectiveness, Bangchak has applied its systems of customers' opinion-sharing and data collection, and more service provision through the IT system and mobile applications. Cases in point were customers' complaint and feedback input through the SAP Call Center and the communication and direct inputting of goods and service-related data through the social media. Besides, data can find rapid applications to efficiently meet the highly dynamic needs of consumers.



## 1.3 Shareholding Structure

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



### Refinery and Trading Business Group

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

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

Established in Singapore, BCPT engages in commodity trading, encompassing crude oil, petroleum and petrochemical products,



chemicals, and related businesses. It has an initial registered capital of US\$1 million, wholly owned by Bangchak.

**Bongkot Marine Service Co., Ltd.**

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

**Fuel Pipeline Transportation Co., Ltd. (FPT)**

FPT engages in the business of fuel transport via an underground multiproduct pipeline from Bangchak Refinery, following the railway route to Chong Nonsi Oil Depot, Don Muang International Airport Oil Depot, and finally to Bangchak's Oil Depot at Amphoe Bang Pa-in and to FPT. A pipeline connection was made at the Makkasan area in Bangkok with the system of JP One Asset Co., Ltd., to supply aviation fuels to Suvarnabhumi International Airport. FPT's registered capital is Baht 3.660 billion, and Bangchak's stake here is 4.95%.

**Marketing Business Group**

The Marketing Business Group sells fuel products and lube fuels to consumers through Bangchak's network of 1,075 service stations nationwide, made up of 460 standard type and 615 agricultural cooperative service stations as of year-end 2016. To provide convenience to customers, the stations offer supplementary businesses under the operation of Bangchak Retail Co., Ltd. In addition, the Marketing Business group also distributes fuel products to industrial users together with the transport sector, airlines, vessels, construction sector, and agricultural sector.

**Bangchak Green Net Co., Ltd. (BGN)**

With a registered capital of Baht 1 million, of which Bangchak holds 49.0%, BGN engages in service station administration and manages the sale of other consumer products at Bai Chak and Lemon Green convenient store outlets.

**Bangchak Retail Co., Ltd. (BCR)**

Founded on January 27, 2016, with a registered capital of Baht 300 million, BCR, wholly-owned subsidiary of Bangchak, engages in the food and drink business to accommodate steady growth in the retail business





through the SPAR supermarket brand, Inthanin Coffee, and Inthanin Garden premium coffee shop, and other retail businesses.

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

Oak Suk Social Enterprise's initial registered capital is Baht 10 million, of which Bangchak holds a 40% stake. It engages in the purchase of agricultural product and organic crops for processing, marketing, distribution, and R&D.

### **Green Power Business Group**

Under PPAs with EGAT and PEA, Bangchak engages in the solar power generation business (solar farm) under the name of "Sunny Bangchak". In 2015, Bangchak restructured its clean power business by founding BCPG Co., Ltd., to engage and invest in the clean power business by selling the solar farm business (phase 1) and transferring its common shares in its clean power business to BCPG.

### **BCPG Public Company Limited (BCPG)**

With a registered capital of Baht 10 billion, BCPG Public Company Limited engages in the business and invest in clean power generation, domestic and abroad. This year BCPG acquired solar farm business in Japan and was chosen to participate in ground-based solar farm projects for agricultural cooperatives. The total capacity under BCPG's contracts is 324 MW, out of the installed capacity of about 418 MW. On September 28, 2016, BCPG has been listed on the Stock Exchange of Thailand (SET) with an IPO in a portion of 30% of BCPG's paid-up capital. Bangchak holds 70.35% equity in BCPG.

### **Bangchak Solar Energy Co., Ltd. (BSE)**

Wholly owned by BCPG, BSE has a registered capital of Baht 1.8 billion. It manages phase 2 (32 MW) of the solar farm projects, located in Amphoe Bamnet Narong, Chaiyaphum, and Amphoe Bang Pa-Han, Phra Nakhon Si Ayutthaya, each with a capacity of 16 MW, together with phase 3 (48 MW), operated by five subsidiaries. These are located at Amphoe Kabin Buri, Prachin Buri (16 MW) under the operation of Bangchak Solar Energy (Prachin Buri); Amphoe Dan Khun Thot, Nakhon Ratchasima (8 MW) under the operation of Bangchak Solar Energy (Nakhon Ratchasima) Co., Ltd.; Amphoe Prakhon Chai, Buri Ram (8 MW) under the operation of Bangchak Solar Energy (Buri Ram) Co., Ltd.; Amphoe Nong Ki, Buri Ram (8 MW) under the operation of Bangchak Solar Energy (Buri Ram 1) Co., Ltd.; and Tambon Hua Thale,





Amphoe Bamnet Narong, Chaiyaphum (8 MW) under the operation of Bangchak Solar Energy (Chaiyaphum 1) Co., Ltd.

**BCPG Investment Holdings Pte. Ltd.**

With a registered capital of Singapore \$40,000, BCPG's wholly owned company was founded in Singapore to invest in overseas solar farm businesses. Today in Japan, it boasts a contractual capacity of about 194 MW out of a total installed capacity of about 236 MW, of which 20 MW is already in commercial operation and 174 MW under development and construction. Besides solar power generation, BCPG plans to invest in several other forms of clean-energy power businesses, including biomass, wind farms, and geothermal power plants.

**BCPG Biopower 1 Co., Ltd., and BCPG Biopower 2 Co., Ltd.**

Both companies develop and operate biomass power plants with a registered capital of Baht 60 million and Baht 20 million respectively, wholly owned by BCPG.

**Bio Based Products Business**

Bangchak advocates the blending of ethanol with gasoline and biodiesel with diesel to form Gasohol 91, Gasohol 95, Gasohol E20, and Gasohol E85, together with Hi-Diesel for distribution. Bio Based Products Business consists of the following.

**Bangchak Biofuel Co., Ltd. (BBF)**

BBF has a registered capital of Baht 281.5 million, of which Bangchak holds 70% equity. With crude palm oil as the main raw material, BBF's total biodiesel capacity is now increased to 810,000 liters per day. Located in Amphoe Bang Pa-In, next to Bang Pa-in Oil Depot, Phra Nakhon Sri Ayutthaya, BBF is preparing to construct a prototype plant for high-value bio-based products from palm fatty acids to add value. Also to add value to its products, it has initiated a pure glycerine project.

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

BBE has a registered capital of Baht 500 million, of which Bangchak holds an 85% stake. Located at Amphoe Phanom Sarakham, Chachoengsao, BBE engages in 99.5% ethanol production with a capacity of 150,000 liters/day, based on fresh cassava and cassava chips to accommodate the steady rising demand for ethanol. It is preparing to expand the capacity to 200,000 liters per day.



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

UBE has a registered capital of Baht 2.740 billion, of which Bangchak holds a 21.28% stake. Located at Amphoe Na Yia, Ubon Ratchathani, UBE engages in the ethanol and tapioca flour business with a current capacity of 400,000 liters per day based on fresh cassava, cassava chips, and molasses to enhance ethanol supply security and accommodate Bangchak's sale growth in Gasohol E20 and Gasohol E85. Its subsidiary engages in processing cassava into flour with a capacity of 700 tons per day and operating a biogas power generation plant derived from the treatment of wastewater derived from flour and ethanol processes.

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

Incorporated in Singapore, BCP Energy International Pte. Ltd. (BCPE) runs and invests in international businesses of energy, petrochemicals, and natural resources. BCPE currently holds common shares in Nido Petroleum Limited, listed on the Australian stock exchange. Nido Petroleum engages in petroleum exploration and production (E&P) with an investment focus in Southeast Asia.

In 2015, Bangchak set up BCP Innovation Pte. Ltd. (BCPI) in Singapore to engage in overseas innovation-based business through investment in Lithium Americas Corporation (LAC), listed on Canada's stock exchange. LAC operates a lithium mining business in Argentina and the United States. Commanding soaring demand, lithium serves as a key raw material for batteries.

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

BCPE has a registered capital of US\$111.4 million, wholly owned by Bangchak. BCPE was founded in Singapore to engage and invest in overseas energy, petrochemical, and natural resource businesses. Today, it has invested in 96.98% of Nido Petroleum Ltd.'s common shares.

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

BCPI has a registered capital of US\$5.1 million, wholly owned by Bangchak. Incorporated in Singapore, BCP Innovation Pte. Ltd. (BCPI) runs and invests in overseas innovation businesses. As of December 2016, it invested in 6.7% of the common shares of Lithium Americas Corporation (LAC).

**Nido Petroleum Limited (NIDO)**

Listed on the Australian stock exchange, Nido Petroleum Limited (Nido) engages in the E&P business with an investment focus in Southeast Asia. It holds rights in producing oil fields, namely Galoc, Nido, and Matinloc in the Philippines with a current combined output of 4,500 barrels per day, as well as rights in fields under development and exploration, namely West Linapacan in the Philippines, and rights in fields under exploration, namely SC6B, SC14D, SC54A, SC54B, SC58, and SC63 in that country. It also owns rights in the Gurita Field of Indonesia.

**Lithium Americas Corporation (LAC)**

Registered on the Toronto stock exchange, Canada, LAC (6.7% owned by Bangchak) operates a lithium mine for lithium carbonate and lithium hydroxide, key raw materials for batteries with robust trends for batteries of various products, namely hybrid cars, electric cars, assorted electrical appliances, and batteries for large-scale power plants.

LAC is an M&A product between LAC and Western Lithium USA Corporation (WLC) in 2015, both listed on the Toronto stock exchange. It changed its name to WLC and, in 2016, to LAC. Today LAC is developing two mining projects in Argentina and the United States. The Argentina project is run by an affiliate named Minera Exar S.A., with production set to begin in 2019 at 25,000 tons per year of lithium carbonate. The US project is under development and run by another affiliate named Lithium Nevada Corporation. Finally, WLC's businesses also consist of organoclay for petroleum E&P well drilling under the operation of RheoMinerals Inc. (formerly Hectatone Inc.) since 2015, with maximum capacity of 10,000 tons per year.



## **2. Business Description**

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



### **Refining and Trading Business Group**

Bangchak boasts a modern complex refinery with a nameplate capacity of 120,000 barrels per day. Most of its yields are high-value gasoline and diesel. The quality of gasohol and diesel from Bangchak refinery meet the public sector's Euro 4 standard. Bangchak was the first in Asia to produce Gasohol E20 of the Euro 5 standard. The product is environmentally friendly with a sulfur content of lower than 10 ppm—



fivefold reduction from the Euro 4 standard. Bangchak strives for energy stability in the production process by leveraging electricity and steam derived from its cogeneration power plant, while replacing fuel oil with the cleaner-burning natural gas. Bangchak is now ready to raise the efficiency of its refining processes with the implementation of these projects as follows:

- Efficiency, Energy, and Environment Project: 3E
- Yield, Energy Efficiency, Safety and Reliability Enhancement Project: YES-R.
- Installation and commissioning of Advanced Process Control (APC) at Plant 2 and Plant 4 to raise process efficiency while reducing energy consumption
- Preparedness of processes, oil tanks, oil pipelines, and oil vessels, leading to uninterrupted, efficient refining processes. As a consequence, Bangchak's average capacity this year reached 101,000 barrels per day, higher than the goal of 96,000 barrels per day despite a 45-day planned maintenance turnaround (February 8 – March 23). The turnaround proceeded very efficiently and faster than planned, enabling the refinery to constantly maintain its high throughput.
- Planning on crude procurement for high GRMs. Deployed the "roll month" hedging contract to decrease crude oil costs, with a resulting annual average market GRM of US\$5.99 per barrel
- Recognizing environmental and safety impacts during the maintenance work, Bangchak added measures to prevent



harm to the environment together with safety measures by applying chemical decontamination to all area of the refinery to make it easier to clean equipment and cleaner as well as safer for workers. It upgraded work safety standards and forged a safety culture and awareness among all employees by pioneering the Process Safety Management (PSM) system in the refinery.

- Bangchak set up BCP Trading Pte. Ltd., a wholly owned subsidiary in Singapore, to engage in commodity trading, including crude oil, petroleum, petrochemical and chemical products as well as related businesses such as oil price hedging, contracting vessels, arranging oil storage places, and distribution. It has an initial registered capital of US\$1 million.



### Marketing Business Group

This year, over 76% of refined products were sold through Bangchak's retail network of over 1,075 stations. Of the total number, 460 were standard stations and 615 were agriculture cooperative service stations (as of the end of December 2016). At present, **Bangchak ranks second in market share**, 15.1% which was a bit higher than last year while some major oil companies lost their market shares, in which sales



to customers in the industrial, transport, aviation, marine, construction, and agricultural sectors were included. In retail marketing, Bangchak stations are positioned for selling fuels from renewable energy, namely Gasohol 91, Gasohol 95, Gasohol E20, Gasohol E85, and Hi-diesel. This year Bangchak unveiled its newly developed “Green S Revolution” products in the above-mentioned gasohol group, which represent innovation for direct injection gasoline engine (DIG). The new products raise combustion efficiency, enhance engine power, eases combustion pollutants, and preserve the environment. Also available at service stations to provide customers with the utmost convenience are supplementary businesses to attract more patrons to service stations, including a convenience store, a coffee shop, and fast cooked-to-order dishes, as well as lube oil-changing and car wash services.

Bangchak’s convenient stores sell consumer products at Bai Chak, Lemon Green, Big C Mini stores at service stations with large space and close to communities (some 166 stores), and six SPAR supermarkets from the Netherlands, piloted at Bangchak’s service stations on Ratchaphruek Road in Bangkok since November 2016, under the “SPAR Fresh&Easy Food Market” concept. Also, there are some 402 Inthanin Coffee outlets, 46 premium Inthanin Garden Cafes, and “Lemon Kitchen” fast cooked-to-order dishes located on the compounds of service stations, at leading educational institutes, and now expanding to premium commercial locations. In addition, Bangchak has its lube oil-changing and car wash services made available in the form of Green Series business, comprising Green Serve, Green Wash, and Green Tyre.

In addition, Bangchak agricultural cooperative service stations, which operated since 1990, has developed continuously to the 27<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 2016, Bangchak develops supporting projects for cooperative service stations. These projects are, for instance, COOP Coaching Project, or training service station management by standard service station team, or COOP Turn Pro project, which supports potential cooperatives to upgrade stations. Cooperative service stations continuously develop new business to strengthen growth for community organization, better well being for members, align with the vision of inclusiveness and sustainability.

This year Bangchak further developed service stations under the “Greenovative Experience” format to accommodate new Thai lifestyles with a 4Rs process (Renewable, Recycle, Reuse, and Reduce). Featured are an installed solar rooftop to generate solar power; an EV charger for electric cars; an automatic plastic bottle collector for recycling into polyester fiber; collection of rainfall and used water to water plants; health-conscious coffee shops’ use of biodegradable cups and organic coffee seeds obtained through forest preservation and chemical-free fertilizers; application of energy-saving materials; and addition of green areas.

Apart from 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, outlets, plants, and the OEM (original equipment manufacturer) market. A portion of these were exported.



### Bio Based Products Business Unit

Recognizing that renewable energy is imperative for national energy security through reduced trade deficits arising from oil imports, Bangchak promotes ethanol and biodiesel for blending in gasoline and diesel. Its products in this category include Gasohol 91, Gasohol 95, Gasohol E20, Gasohol E85, and Hi-Diesel.

This year Bangchak modified its vision to “Evolving Greenovation” in pursuit of a leading green innovation group of companies with a goal to conduct R&D to extend renewable energy in pursuit of green innovation. The former renewable-energy business unit was therefore restructured into “Bio Based Product Business”, made up of:

- **Bangchak Biofuel Co., Ltd. (BBF)**, 70% owned by Bangchak, engages in the biodiesel business based primarily on crude palm oil, with a nameplate capacity of 810,000 liters per day, as the second biodiesel Plant has operated this year.
- **Bangchak Bioethanol (Chachoengsao) Co., Ltd. (BBE)**  
Located at Amphoe Phanom Sarakham, Chachoengsao, BBE (85% owned by Bangchak) engages in ethanol production with a capacity of 150,000 liters/day, with commercial production beginning this year. BBE enhances ethanol supply for Bangchak and accommodates the future plan of sales growth in E20 and E85 gasohols.
- **Ubon Bio Ethanol Co., Ltd.** (with 21.28% shareholding), located in Na Yia district, Ubon Ratchathani province,



produces ethanol and cassava flour. Its capacity is 400,000 liters per day of ethanol.



### **Green Power Business**

In 2015, Bangchak's green-power business was restructured with the establishment of BCPG Co., Ltd. (BCPG), to run and invest in the clean power business. To this end, Bangchak sold its common shares in affiliates engaging in green power production, namely Bangchak Solar Energy Co., Ltd. and other five affiliates, to BCPG.

This year BCPG successfully listed on the Stock Exchange of Thailand (SET) with an IPO for up to 30% of its paid-up capital after the IPO to invest more in green power projects in Thailand and elsewhere.

Today, in Thailand BCPG runs solar farms known as Sunny Bangchak with a combined installed capacity of 170 MW, including those run by cooperatives in Ang Thong and Ayutthaya (totaling 12 MW), 7 MW of which went on commercial operation this year. This coming year will produce more 5 MW added to its generation and operation.

BCPG is striving to grow green-energy business overseas by acquiring the business of SunEdison Japan, which owns four operating solar farms in Japan with a combined installed capacity of 13 MW; under construction and development are 185-MW facilities (as of February 2016). The company later completed the construction of the Nikaho Power Plant with an installed capacity of 13 MW and began commercial operation in July. Meanwhile, it acquired a solar farm of Huang Ming



Japan Company Limited in Japan, which is under the developmental stage. As of the year-end, BCPG commanded a total capacity of 26 MW in Japan.



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

Incorporated in Singapore by Bangchak, BCP Energy International Pte. Ltd. (BCPE) engages in international businesses concerning energy, petrochemicals, and natural resources. It currently holds common shares in Nido Petroleum Ltd., listed on the Australian stock exchange. Nido Petroleum conducts petroleum exploration and production with an investment focus in Southeast Asia. This year Bangchak recapitalized BCPE to enable it to add shares in Nido for assessment drilling in the Mid-Galoc area of the Galoc oil field from 81.25% to 96.98%.

Recognizing the robust demand trend for lithium for battery application in renewable power plants for enhanced stability in the power transmission system and generation from renewables, with a rising trend for battery application in electric cars, BCPE engages in innovation-based businesses overseas through investment in Western Lithium USA Corporation, later renamed Lithium Americas Corporation, listed on Canada's stock exchange, and ran lithium mines in Argentina and the United States.

Finally, this year Bangchak founded Bangchak Initiative and Innovation Center (BIIC) to engage in R&D, management of technology and networks, and incubation of startup businesses to drive Bangchak



toward the “Evolving Greenovation” vision, a drive toward Asia’s leading green innovation companies equipped with good corporate governance. Above all, its business is to be run with inclusiveness and sustainability.



## Revenue Structure

In 2016, revenue from sales and service as shown in the financial statements of BCP and subsidiaries totalled Baht 144,705 million, of which Baht 137,064 million was posted by the Company. Revenue from subsidiaries included Baht 29,286 million from Bangchak Green Net Co., Ltd. (with 49% shares), Baht 6,830 million from Bangchak Biofuel Co., Ltd. (with 70% shares), Baht 3,084 million from BCPG Public Company Limited and subsidiaries (with 70.35% shares), Baht 1,503 million from Nido Petroleum Ltd. (an indirect subsidiary with 96.98% shares), Baht 31 million from Bangchak Retail Co., Ltd. (with 100% shares), Baht 263 million from Bangchak Bioethanol (Chachoengsao) (with 85% shares), and Baht 876 million from BCP Trading Pte. Ltd. (with 100% shares). Of the total revenue, Baht 34,232 million represented connected transactions, most of which came from sales of refined products through Bangchak Green Net Co., Ltd. The revenue structure of Bangchak and its subsidiaries during 2014-2016, divided by type of products and services, is shown below:

Product/Service	Operated by	2016		2015		2014	
		Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%
Refined products <sup>1/</sup>	BCP and subsidiary	141,257	96.8	147,797	97.3	177,265	95.6
Electricity	BCP and subsidiary	3,084	2.1	3,010	2.0	2,692	1.4
Consumer products	Subsidiary	364	0.3	333	0.2	361	0.2
Others <sup>2/</sup>	BCP and subsidiary	1,195	0.8	733	0.5	5,157	2.83
<b>Total</b>		<b>145,900</b>	<b>100.0</b>	<b>151,873</b>	<b>100.0</b>	<b>185,475</b>	<b>100.0</b>

Note: 1/ The proportions of earnings from sales of refined products in the domestic in 2016, 2015 and 2014 were 91.5%, 89.1%, and 90.3% respectively.

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



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

### **1) Fuels** : comprising of

#### **1.1 LPG**

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

#### **1.2 Gasoline**

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

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

#### **1.3 Aviation fuels**

Intended for commercial jets, Jet fuels must be clean from any contamination. They have extremely low freezing points with specified gravities and heat values. Jet fuels produce clean combustion with its properties remaining constant throughout the operation.

#### **1.4 High-speed diesel**

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

#### **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.

**2.2 Industrial lubricants**

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

**2.3 Grease**

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

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

**3) Feedstock for refineries and petrochemical plants:** comprising

**3.1 Straight Run Fuel oil (Long Residue)**

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

**3.2 Reformate**

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

**3.3 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 sulphur acid, car tires, pesticides, fertilizer, bleaching, sugar, and shampoo, and for production of sulphur compounds.

## **2.2 Marketing and Competition**

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

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

- **Hydroskimming** is **Simple Refinery** with distillation processes. The simple process separates components of crude into light oil (gasoline), middle distillates (aviation fuel and diesel), and heavy oil (fuel oil), the proportions of which depend on the properties of crude.
- **Conversion Cracking** is **Complex Refinery** with a cracking unit, a process added to the distillation process. Conversion cracking turns some heavy oil into lighter products of higher value. However, this type of refinery requires some additional investment in the cracker and bears higher operating costs.

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

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

## **2016 Thai Economic Overview**

Economic growth rose from 2.8% recorded in 2015 to 3.2% projected for 2016, reported by the Bank of Thailand. The higher growth rate was driven by a push by the government to accelerate the spending of national budget on both routine expenditures and several new economic stimulus measures, such as for tourism, for household spending, and for private



investment under Royal Decree No. 604 for special tax privileges. Other measures implemented during the year were tax reduction for property transfer, leading to more construction work early in 2016, and reduction in personal income taxes, announced in the last quarter. Despite numerous economic measures, several negative factors remained in the Thai economic fundamentals, including sluggish private investment partially stemming from export contraction due to the weaker economy and slower-than-expected economic growth of trading partners, including the US and the EU, and a significant drop in import of raw materials in China resulting from their economic restructuring. Moreover, the Thai household income in 2016 was pressured by the sluggish demand for labor, which in turn depressed consumption in the private sector.

The Bank of Thailand also reported projected inflation of 0.2% for 2016, a rise of 1.1% from the previous year. The inflationary pressure included a rise in the world oil price and commodities and domestic economic growth.

The Thai GDP growth in 2017 is projected to remain at 3.2%, relatively stable from the 2016 level. Major positive factors are mainly domestic, including higher household purchasing power after the maturation of the First-Car scheme, lowering of personal income taxes and the adjustment in the minimum wage, higher private investment, especially in the service industry, and benefits from megaproject infrastructures invested by the government. Export is set to recover mildly following global economic recovery projected by more positive indicators in certain countries, and higher demand for commodities and consumers' products in neighbor countries under explicit economic stimulus measures.



### Summary of Thai economy and inflation

Summary of Thai economy and inflation			
Percentage	2015*	2016	2017
Economic growth	2.6	3.2 (1.3)	3.2 (3.2)
Headline inflation	-0.9	0.2 (0.3)	1.5 (2.0)
Core inflation	1.1	0.7 (0.8)	0.8 (1.0)

\* Actual data

( ) Monetary policy report, September 2016

Source: <https://www.bot.or.th>

The 2017 Thai headline inflation is projected to stay at 1.5%, a slight increase from the previous year due to predicted higher oil prices and the weaker Baht. Under this projection, the Dubai crude price will likely be increasing, and the exchange rate between the Baht and US\$ will average at 35.50.

There are, however, some negative factors behind this economic projection. Export recovery will likely be very limited due to a very slow pace of global economic expansion, driving the slowdown in manufacturing. A significant uncertainty on world oil prices still remains amid speculations of possible failure to effectively control production under the new quota, following some hiccups since Q3/2016. Thailand would have to rely more on domestic economic mechanisms to drive its economic growth in 2017.

### Domestic oil business

In line with the national GDP, domestic demand for refined products rose by 3.15% from 111 million **liters** per day in 2015 to 115 million liters per day in 2016. The increase was driven up by several economic stimulus measure in the service sector, and accelerated spending by state agencies. Even with smaller economic growth as the export sector was under contraction, demand for gasoline and diesel rose by 9.85% and 2.73% respectively, compared to 2015, due to relatively low retail prices. Sales of gasohol products went up by 10.56%, pushing the market share of gasohol up to 95.4% of the total gasoline market.

Another major factor driving up the demand for gasoline and diesel in 2016 was the government's retail price restructuring, under which retail prices

Commented [C1]: ปัดเลขให้ตรงกัน



of gasoline and diesel remained low, reflecting low world oil prices. Prices of LPG and NGV, however, remained high. The demand for jet fuel in 2016 dropped by 6.7% following the slowdown in the global economy.

#### Domestic demand for refined products

Product	Demand (million liters/day)		
	2016	2015	Growth variation
Regular Gasoline	1.34	1.37	-2.19%
Gasohol	27.65	25.01	+10.56%
Gasoline Group	28.99	26.39	+9.85%
Jet fuel	17.93	19.22	-6.71%
Diesel Group	61.71	60.07	+2.73%
Fuel Oil	6.15	5.60	+9.82%
<b>Total</b>	<b>114.78</b>	<b>111.28</b>	<b>+3.15%</b>

Source: Department of Energy Business

Demand for refined products in 2017 is predicted to be stable compared to the 2016 level. This projection is based on trend of growth in the world and Thailand economics, but capped by projected higher oil prices following the lower production quota imposed by major oil-producing countries.

The average domestic supply dropped by 3.89% or 45 KBD from 2015 to 1,088 KBD in 2016. The total crude run was from six main refineries, namely Thai Oil, IRPC, PTT Global Chemical, Esso, SPRC, and Bangchak. The lower supply growth rate was due to major planned annual turnaround of Bangchak and PTT Global Chemical, and the unplanned shutdown of PTT Global Chemical's Olefins Unit#3.

#### Average crude run by domestic refineries

Refinery	Crude Run (thousand barrels per day, KBD)		
	2016	2015	Growth variation
Thai Oil	337	313	7.67%
IRPC	185	189	-2.12%
Esso	135	142	-4.93 %
SPRC	173	182	-4.95%
PTT Global Chemical	157	193	-18.65%
<b>Bangchak</b>	<b>101</b>	<b>113</b>	<b>-10.62%</b>
<b>Total</b>	<b>1,088</b>	<b>1,132</b>	<b>-3.89%</b>

Source: Energy Policy and Planning Office and The Bangchak Petroleum Public Company Limited



### Marketing Business

The number of domestic service stations rose steadily to keep pace with the public policy granting reduced refined-product reserve requirements to in turn cut costs for operators and keep decent marketing margins through the year. As a result, in 2016 the total rose by 569 to 25,602 nationwide. As for the number of service stations selling E20 and E85 gasohol, the year saw 257 and 160 added to the respective tallies to take them to 3,236 and 939, while the market saw growth in the number of gasohol-compatible vehicles, including E20.

#### Number of service stations

Unit: station

Oil trader	2016 <sup>1/</sup>	2015	2014
PTT	1,609	1,578	1,505
Shell	499	491	489
Esso	537	534	511
<b>Bangchak</b>	<b>1,062</b>	<b>1,072</b>	<b>1,070</b>
Chevron	363	362	359
PTTRM	149	147	147
PTG	1,306	1,150	951
Others	20,077	20,009	19,181
<b>Total</b>	<b>25,602</b>	<b>25,343</b>	<b>24,213</b>

Source: Department of Energy Business

Remarks: <sup>1/</sup> number of stations as of September 30, 2016

In 2016, sales volumes by domestic service stations averaged 1,985.9 million liters a month, a 9.3% rise from last year's 1,817.1 million liters month. Bangchak posted 9.9% more sales through its service stations, which raised its market share through service stations from 15% to 15.1%, while maintaining the No. 2 domestic market share through service stations.



### Sales volume of fuels through service stations for 2015 - 2016

Operator	Average Sales volume (million liters/month)			Market share (%)		
	2016	2015	Δ	2016	2015	Δ
PTT	734.0	674.8	8.8%	37.0	37.1	-0.1
<b>Bangchak</b>	<b>299.2</b>	<b>272.3</b>	<b>9.9%</b>	<b>15.1</b>	<b>15.0</b>	<b>+0.1</b>
Esso	256.6	247.0	3.9%	12.9	13.6	-0.7
Shell	254.3	235.6	8.0%	12.8	13.0	-0.2
Thai Oil	162.7	125.3	29.8%	8.2	6.9	+1.3
PTTRM	111.6	108.8	2.6%	5.6	6.0	-0.4
Caltex	97.8	94.7	3.3%	4.9	5.2	-0.3
PTG Energy	30.7	29.1	5.4%	1.5	1.6	-0.1
Susco Group	36.1	27.0	34.0%	1.8	1.5	+0.3
Others	2.9	3.2	-11.0%	0.1	0.2	-0.1
<b>Total</b>	<b>1,985.9</b>	<b>1,817.7</b>	<b>9.3%</b>	<b>100</b>	<b>100</b>	

Source: Department of Energy Business and The Bangchak Petroleum PLC.

The lubricating oil sold by Article 7 traders amounted to roughly 34.5 million liters a month (according to the Department of Energy Business, December 31, 2016), an 11.3% 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.	196	18.23





Station Format		Number (station)	Share (%)
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.	47	4.37
3.	<b>Joint Venture stations (JV):</b> This is a joint investment between Bangchak and operators interested in running the service station business.	56	5.21
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.	161	14.98
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.	615	57.21
<b>Total</b>		<b>1,075</b>	<b>100</b>

Remarks: The Bangchak Petroleum PLC, as of December 31, 2016.

**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) Sale to domestic refineries and petrochemical plants** – Oil refineries and petrochemical plants normally order products from Bangchak for feedstock.

**4) 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	2016		2015		2014	
	Volume	%	Volume	%	Volume	%
1. Outlet & End-User Customers	96.7	71.7	90.5	70.6	82.3	69.5
2. Supply Sales Customers	-	-	-	-	-	-
3. Sale to domestic refineries and petrochemical plants	19.3	14.3	16.3	12.7	16.5	13.9
4. Export Customers	18.9	14.0	21.4	16.7	19.6	16.6
Total	134.9	100.0	128.2	100.0	118.4	100.0

Source: The Bangchak Petroleum PLC.



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

Products	2016		2015		2014	
	million baht	%	million baht	%	million baht	%
<b><u>Domestic Sale</u></b>						
1. High-speed diesel	73,090	53.0	73,857	56.7	81,991	46.8
2. Fuel oil	1,678	1.2	1,814	1.4	3,467	2.0
3. Gasoline	39,371	28.6	41,319	31.7	49,591	28.3
4. Other products and services	13,450	9.8	13,326	10.2	17,240	9.8
<b>Total domestic sale</b>	<b>127,589</b>	<b>92.6</b>	<b>130,318</b>	<b>90.2</b>	<b>152,289</b>	<b>86.9</b>
<b><u>Export sale</u></b>						
1. High-speed diesel	2,107	1.5	2,652	1.8	3,237	1.8
2. Fuel oil	6,998	5.1	10,208	7.1	15,966	9.1
3. Gasoline	545	0.4	838	0.6	2,422	1.4
4. Other products and services	599	0.4	438	0.3	1,345	0.8
<b>Total export sale</b>	<b>10,249</b>	<b>7.4</b>	<b>14,136</b>	<b>9.8</b>	<b>22,970</b>	<b>13.1</b>
<b><u>Combined sales value</u></b>						
1. High-speed diesel	75,197	54.6	76,509	53.0	85,228	48.6
2. Fuel oil	8,676	6.3	12,022	8.3	19,433	11.1
3. Gasoline	39,916	29.0	42,157	29.2	52,013	29.7
4. Other products and services	14,049	10.2	13,766	9.5	18,585	10.6
<b>Total sales value</b>	<b>137,838</b>	<b>100.0</b>	<b>144,454</b>	<b>100.0</b>	<b>175,259</b>	<b>100.0</b>
<b>% increase/decrease</b>	<b>-4.58</b>		<b>-17.58</b>		<b>-4.42</b>	

Source: The Bangchak Petroleum 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

	2016	2015	2014
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	53.4	59.1	42.4
2. Fuel oil	14.2	16.9	14.9
3. Gasoline	19.8	22.2	17.5
4. Aviation fuel, kerosene	11.1	11.7	8.6
5. LPG	2.6	2.8	2.9
6. Products for internal use and product loss during operation	0.2	0.1	0.0
Total output volume (B)	101.4	112.9	86.5
% increase of output volume	-10.2	30.6	-12.9
% of capacity utilization (B/A)	89.4	99.6	76.2

Source: The Bangchak Petroleum 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.

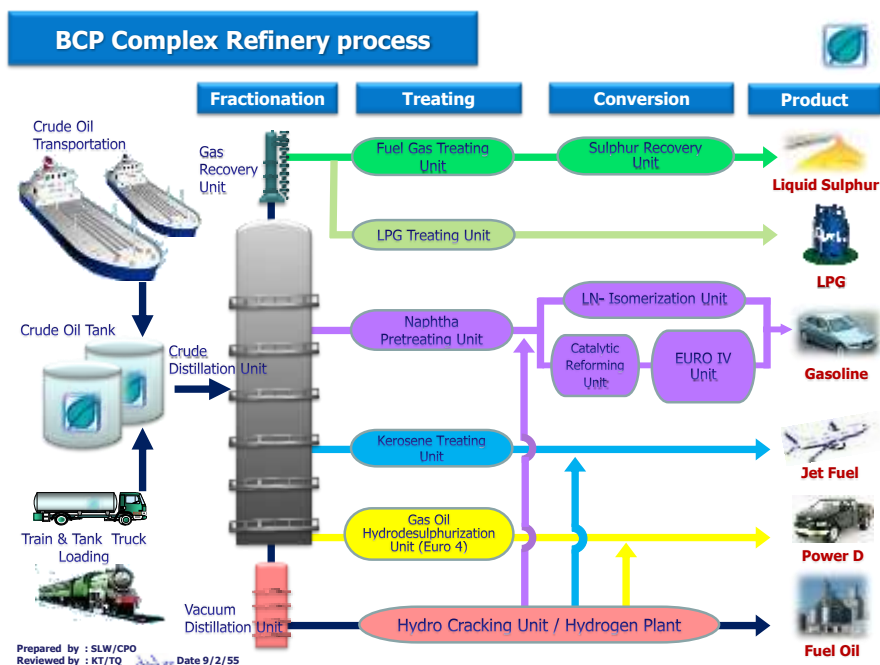


Fuel gas obtained from the process will be refined by removing the sulphur content. Treated fuel oil, diesel after sulphur content removal under the Euro 4 standard, aviation fuel, and cooking gas are kept in storage tanks for sale.

**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					
	2016		2015		2014	
	Volume	%	Volume	%	Volume	%
Sirikit	26,944	16.5	29,095	19.1	27,948	20.2
Tantawan	29,830	18.3	25,871	17.0	27,616	19.9
Erawan	31,217	19.1	26,470	17.4	24,681	17.8
Nasanun/Nasanun East	2,096	1.3	718	0.5	706	0.5
Jasmine	12,997	8.0	12,678	8.3	13,759	9.9
Manora	11,029	6.8	12,900	8.5	1,343	1.0
Others	48,967	30.0	44,655	29.3	42,469	30.7
<b>Total</b>	<b>163,080</b>	<b>100</b>	<b>152,387</b>	<b>100</b>	<b>138,522</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 2016, Bangchak procured indigenous crude oil from many fields, totalling 14,312 thousands barrels, which mainly from Sirikit (Phet) field, Pattani Field, Benchamas Field, and others.

This year, Bangchak imported crude 23,548 thousands barrels. There are 85.2% Crude from the Far East fields, such as Labuan and Bunga Kekwa from Malaysia; Seria Light Export Blend, and Champion from Brunei; Banyu Urih and Pangkah from Indonesia, There are 1.3% Curde from the Middle East Field, which is Macila from Yemen. Also, there are 13.5% 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	2016		2015		2014	
	Million Baht	%	Million Baht	%	Million Baht	%
<u>Cost of indigenous feedstock</u>						
1. Crude and semi-finished products	34,332	38.4	41,381	42.1	64,870	43.2
2. Finished products	9,945	11.1	11,387	11.6	29,602	19.7
Total	44,277	49.5	52,768	53.7	94,472	62.9
<u>Cost of imported feedstock</u>						
1. Crude and semi-finished products	39,553	44.2	45,182	45.9	50,889	33.9
2. Finished products	5,606	6.3	379	0.4	4,892	3.3
Total	45,159	50.5	45,561	46.3	55,781	37.1
<u>Combined costs of indigenous and imported feedstock</u>						
1. Crude and semi-finished products	73,885	82.6	86,563	88.0	115,759	77.0
2. Finished products	15,551	17.4	1,766	12.0	34,494	23.0
<b>Total feedstock cost</b>	<b>89,436</b>	<b>100</b>	<b>98,329</b>	<b>100</b>	<b>150,253</b>	<b>100</b>

Source: The Bangchak Petroleum PLC.



### **3. Risk Factors**

Bangchak has introduced risk management to all units, applying related processes under the international COSO ERM and ISO 31000 standards. It has systematically structured risk management, reporting channels, and monitored its outcomes. Risk management at Bangchak falls into corporate, business group, functional, and divisional levels. In addition, Bangchak has transferred risk management to its affiliates to ensure that their risk management plans embrace all components and business processes to accommodate prevailing circumstances that could impact their businesses.

This year Bangchak conducted risk management by first examining internal and external factors that could affect its businesses. For external factors, it reviewed megatrends and data from The Global Risks Report 2016, 11<sup>th</sup> Edition, published by the World Economic Forum, to come up with risk management plans and identify business opportunities. It found that the risks affecting the core corporate businesses remained Energy Price Shocks, while on the environmental side, Climate Change, Water Crisis, Extreme Weather Events, and Biodiversity Loss and Ecosystem Collapse are increasingly likely.



As a result, Bangchak assessed the risks and impacts of such factors while drawing up plans to forge confidence in corporate goal achievement as follows:

### **1. Economic risks**

To lower risks arising from the highly volatile refining business stemming from the volatile world oil price, Bangchak manages risks to lessen such impacts on short-term and long-term business goals as detailed below:

- Short-term risk management of world oil price volatility

Bangchak monitors oil price situations daily to keep track of trading changes in the world market and presents them to executives and relevant parties, proposing oil price hedging contract engagement as seen appropriate. In charge of monitoring of actions and development of risk management systems, devising policies, and setting goals is the appointed Price Risk Management Committee (PRMC). The bottom line is to minimize business volatility from oil price and foreign exchange that affects business performance.

- Long-term risk management of world oil price volatility

To lower risks facing the oil business subject to the volatile world oil price, Bangchak has expanded its investment into alternative energy and



innovation businesses to grow the proportion of new businesses with steady income streams, which consist of

- Green Power: Bangchak founded BCPG Plc, a subsidiary that grows investment and looks after power generation and other renewable-energy businesses, both domestic and overseas
- Bio Based products: Bangchak expanded its biodiesel capacity to 810,000 liters per day. With a larger nameplate capacity after the second biodiesel unit (520,000 liters per day) came on stream, Bangchak's commercial production and sale went ahead in July 2016. Also founded was Bangchak Bioethanol Co., Ltd., with an ethanol capacity of 150,000 liters per day. Currently, the company has ethanol capacity of 550,000 liters per day.
- Innovation: Bangchak invested in 6.7% of the lithium mining shares operated by Lithium Americas Corp. to accommodate growth in battery-based alternative energy.

## **2. Operating, Social, and Environmental risks**

Bangchak conducts business with primary regard for safety of the environment and society. The management assess risks and their potential impacts on dynamic external and internal surroundings and apply lessons



learned to improve its business processes and devise additional plans. At the same time, they develop and heighten safety standards to ensure

greater confidence in Bangchak's businesses through the following projects:

- Enhance process stability by completing the PMS (Power Management System) in 2016 and constructing a combined-cycle power plant, due for completion in 2017. This would add power stability for the refinery, thus lowering the likelihood of emergency refining suspension.
- Manage risks through continuous SIL (Safety Integrity Level), RCM (Reliability-Centered Maintenance), and RBI (Risk-Based Inspection) to cover both equipment and processes so as to plan equipment repair well ahead of time and properly, as well as reducing accidents.
- Develop a safety system after TIS/OHSAS 18001 standard. In place are HAZOP (Hazard and Operability Studies) assessment and PSM for safety management throughout refining processes.
- Prevent river oil spills by requiring double-hull vessels for crude oil and refined-product tankers.
- Develop and constantly improve safety technology for jetty equipment, system, and tools in line with 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 camera system.

- Execute the enclosed ground flare construction project to ease community impacts of gas venting through the flare tower, due for completion by 2018
- Display online air quality on two additional billboards (Sai Jai Thai Foundation on Sanpawuth Road and in front of the refinery, near Gate 2, Oil Railway Road) to expand exposure to air quality readings and forge wider confidence among communities and society. In total, Bangchak now has six billboards.
- Stage activities for the understanding and awareness of safety for communities around the refinery (schools, temples, and condominiums) through education on evacuation and firefighting, more extensive installation of communication and warning systems for the communities, and invitation for community representatives to observe emergency drills.
- Pay due regard to risks and impacts of global climate change that could affect corporate businesses, namely





- Water shortage risks: A Refinery Water Management Taskforce seeks an approach for optimal water management to maintain process stability, including the issuance of measures for water consumption reduction, reuse, and recycling with the reverse osmosis technology
- Natural-disaster risks: Bangchak constructed earth dams (ridges) around its solar farms while diligently monitoring water levels at dams ahead of time to have its plans ready for roll-out.
- Support the formulation of a risk management plan against fraud and corruption so as to promote transparent business under corporate governance in line with the risk assessment of bribery concerning state officials under the Constitution's complementary act governing corruption prevention and suppression of 1999 (amended No. 3 of 2015).

### **3. New business investment risks**

Besides alignment with the corporate strategic direction and returns on new businesses, consideration of project risk management in new ventures is most vital. Bangchak requires that each new investment must have a risk management plan approved by ERM C before further approval by the Board. To this end, a clear, systematic project analytical process is



mandatory for each project stage or period. Imperative are the following conditions: no impacts on the environment or communities, and consideration of risks for the investment country in question. That way, one can be assured of investment project success as planned.

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

Bangchak has acquired ISO 22301:2012 standard certification covering its former Head Office (10<sup>th</sup> floor, Building A, Energy Complex), Bangchak Refinery and Bangchak Oil Distribution Center, Central Region Business Office, and Bang Pa-in Oil Distribution Center for four straight years now. This certification underscores Bangchak's readiness to accommodate crises efficiently under international standards while stakeholders can rest assured that Bangchak can handle emergency responses while continuing to deliver its products.

Bangchak has compiled global risks and assessed those from assorted threats to conclude that terrorist acts are now looming as threats. Therefore, this year it staged a simulated drill under the Business Continuity Plan (BCP) to handle threats of sabotage at the refinery and Bang Pa-in Oil Distribution Center. The drill outcomes were then used in amending emergency procedures, securing additional resources to add efficiency to its BCM (Business Continuity Management) processes and extending the



system to affiliates. To this end, Bangchak informed affiliates to recognize the value and jointly learn and observe drills so as to achieve an efficient

BCM system. That way, they can be assured that, under assorted crises, they can continue to proceed or resume business promptly, securely, and sustainably the way Bangchak can.

Bangchak annually reviews, develops, and improves its corporate risk management processes to enable itself to respond to changing internal and external circumstances by activating efficient risk management plans. The intent is to lower various corporate risks to manageable levels to in turn ensure business achievement against short-term and long-term objectives and goals in a sustainable way.

**4. Review of business assets**

Asset	Ownership	Book value Baht million <sup>1/</sup>	Obligation
Refinery land	Long-term lease	363	None
Other properties	Ownership	1,320	None
Buildings	Ownership	210	None
Machinery & distillation tower equipment	Ownership	19,509	None
Power generators	Ownership	0	None
Sales and office equipment	Ownership	2,169	None
Platinum catalysts <sup>2/</sup>	Ownership	239	None
Vehicles	Ownership	104	None
Other assets <sup>3/</sup>	Ownership	25	None
Works in progress	Ownership	3,336	None
Total	-	27,275	-

**Note:**

- 1/ This year Bangchak set aside Baht 55 million in allowance (reversal of) for impairment of land property, machinery, and equipment, consisting of Baht 12 million in property, Baht 15 million in machinery and distillation tower equipment, and Baht 28 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>①</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 Dec. 20, 2018
2. GRENA ZENITH SJ	1	Lubricant	Nov. 5, 2026
3. ISO GREEN	1	Gasoline	Jun. 10, 2024
4. GE GOLD	5	Synthetic gasoline-engine lubricant	Jan. 13, 2023 Feb. 12, 2022 Nov. 20, 2021 Dec. 25, 2021
5. GE PLUS	3	Gasoline-engine lubricant	Jan. 13, 2023 Nov. 20, 2021 Dec. 25, 2021
6. GE SILVER	2	Semi-synthetic gasoline-engine lubricant	Nov. 4, 2024 Dec. 25, 2021
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	1	Synthetic diesel-engine lubricant	Oct. 9, 2023
12. D3 TURBO	1	Diesel-engine lubricant	Jan. 25, 2021
13. D3 EXTRA	1	Diesel-engine lubricant	Jan. 25, 2021
14. D3 PICK UP	1	Diesel-engine lubricant	Jan. 25, 2021
15. D3 COMMONRAIL	1	Diesel-engine lubricant	Oct. 30, 2018
16. D3 COMMONRAIL TURBO	1	Diesel-engine lubricant	Oct. 30, 2018
17. POWER D B5	1	High-speed diesel	May 20, 2019
18. BANGCHAK POWER D	1	High-speed diesel	Jul. 10, 2018
19. LEMON GREEN <sup>®</sup>	1	Drinking water	Feb. 23, 2019
20. SUPER POWER D B5 (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
21. SUPER POWER D (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
22. INTANIN COFFEE	2	Drinks, cakes, bread, fruit juices	Sep. 29, 2025



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry <sup>①</sup>
23. INTHANIN GARDEN	5	Key chains, cups, drinks, toasts, sandwiches, cakes, cookies, pies, French bread, fruit juices, sweet drinks	Mar. 29, 2025
24. PREMIO INTHANIN	5	Drinks, biscuits, cups, plates, tokens, water bottles, pens	Feb. 13, 2021
25. INTHANIN PREMIO BY BANGCHAK	3	Water bottles, water containers, cups, plates, food, bowls, pens	Feb.13, 2021
26. INTHANIN PREMIO COFFEE BY BANGCHAK	5	Drinks, biscuits, tokens, shirts, caps, umbrellas, sunshades	Feb.13, 2021
27. GE NGV	1	Semi-synthetic gasoline-engine lubricant	Dec. 25, 2021
28. GE PLATINUM	1	Synthetic gasoline-engine lubricant	Dec. 25, 2021

### **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, 2018
2. Bangchak colored strips, Bangchak characters, and Bangchak leaf	1	Vehicle service station	Aug. 6, 2023
3. Colored strips and Bangchak leaf	1	Vehicle service station	Aug. 6, 2023
4. Colored strips	1	Vehicle service station	Nov. 3, 2023
5. Bangchak colored strips	1	Vehicle service station	Aug. 6, 2023
6. Hornbill photo	1	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.LEMON GREEN <sup>®</sup>	2	Goods sales management	Feb. 23, 2019 Nov. 18, 2023
11. GREEN AUTO SERVICE	1	Automotive maintenance & repair	Jul. 24, 2025
12.GREEN SERVE	1	Vehicle maintenance	Sep. 1, 2025



Service logo	Number of registered logos	Goods/service under logo	Expiry <sup>1</sup>
13.Green Wash	1	Vehicle cleaning & lubrication	Sep. 1, 2025
14.GREEN WASH AUTOCARE	2	Vehicle cleaning	Jul. 25, 2026
15.GREEN WASH EXPRESS	1	Vehicle cleaning	Jul. 25, 2026
16.GREEN BIKE EXPRESS	1	Motorbike maintenance	Jul. 25, 2026
17. GREEN TYRE EXPRESS	2	Tyre sale & mending	Aug. 15, 2026
18. GREEN WASH THE PREMIUM	1	Vehicle cleaning	May 20, 2019
19. INTHANIN PREMIO COFFEE BY BANGCHAK	2	Food & fresh coffee business management	Feb. 13, 2021
20. PREMIO INTHANIN	2	Food & fresh coffee business management	Feb. 13, 2021
21. Baichak	1	Food & drink sale	Mar. 15, 2021
22. Baichak Mart	2	Food & fresh coffee business management, Miscellaneous goods for consumers' convenience	Jan. 18, 2022 Apr. 1, 2023
23. Bangchak colored strips, three colors leaf	1	Vehicle service station	Sep. 24, 2023
24. BUBBLY TEA	1	Food & drink sale	Jun. 4, 2024
25. HURRICANE ICE	1	Food & drink sale	Jun. 4, 2024
26. MILK AND BREAD	1	Food & drink sale	Jun. 4, 2024
27. LOW COST	1	Vehicle service station	Apr. 28, 2025
28. INTHANIN COFFEE	3	Food & fresh coffee business management	Sep. 29, 2025 Oct. 11, 2025
29. INTHANIN GARDEN	1	Food & drink sale	Mar. 29, 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. INTANIN COFFEE (Registered in Myanmar) <sup>®</sup>	1	Food & fresh coffee business management	-
10. BAICHAK MART (Registered in Myanmar) <sup>®</sup>	1	Miscellaneous goods for consumers' convenience	-
11. GREEN SERVE (Registered in Myanmar) <sup>®</sup>	1	Vehicle maintenance	-
12. Bangchak leaf and BANGCHAK (Registered in Myanmar) <sup>®</sup>	2	Fuel products & Vehicle service station	-
13. 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
14. Bangchak leaf and BANGCHAK (Registered in Cambodia)	2	Fuel products & Vehicle service station	Nov. 19, 2020
15. Bangchak leaf (Registered in PRC (China))	1	Fuel products	Jan. 6, 2021
16. Bangchak leaf and BCP LUBRICANTS (Registered in Jordan)	1	Fuel products	Nov. 23, 2023
17. Bangchak leaf and BCP LUBRICANTS (Registered in Philippines <sup>4</sup> )	1	Fuel products	Jun.1, 2025
18. Bangchak leaf and BCP LUBRICANTS (Registered in Kenya)	1	Fuel products	Dec. 9, 2023
19. Bangchak leaf and BCP LUBRICANTS (Registered in OAPI countries <sup>5</sup> )	1	Fuel products	Dec. 6, 2023
20. INTHANIN COFFEE (Registered in PRC (China))	1	Food & fresh coffee business management	Feb. 20, 2025
21. INTHANIN COFFEE (Registered in Vietnam)	1	Food & fresh coffee business management	Sep. 2, 2023
22. INTHANIN COFFEE (Registered in LPDR (Laos))	1	Food & fresh coffee business management	Dec. 4, 2024
23. BAICHAK MART (Registered in PRC (China))	1	Miscellaneous goods for consumers' convenience	Jan. 27, 2025
24. BAICHAK MART (Registered in Vietnam)	1	Miscellaneous goods for consumers' convenience	Sep. 2, 2023
25. BAICHAK MART (Registered in LPDR (Laos))	1	Miscellaneous goods for consumers' convenience	Dec. 4, 2024
26. GREEN SERVE (Registered in LPDR (Laos))	1	Vehicle maintenance	Dec. 4, 2024
27. Bangchak leaf and BANGCHAK (Registered in PRC (China))	1	Service stations	Jan. 27, 2025
28. Bangchak leaf and BANGCHAK (Registered in LPDR (Laos))	2	Fuel products, service stations	Dec. 4, 2024



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry
29. Bangchak leaf and BANGCHAK (Registered in Vietnam)	2	Fuel products, service stations	Sep.29, 2023 Nov. 18, 2023
30. Bangchak leaf and BCP (Registered in PRC (China))	1	Fuel products	Jan. 13, 2025
31. Bangchak leaf and BCP (Registered in LPDR (Laos))	2	Fuel products, service stations	Dec. 4, 2024
32. Bangchak leaf and BCP (Registered in Vietnam)	2	Fuel products, service stations	Sep.29, 2023
33. Bangchak leaf and Bangchak (Registered in Cambodia)	2	Fuel products, service stations	Oct. 1, 2023
34. Bangchak leaf and BCP (Registered in Cambodia)	2	Fuel products, Service stations	Oct. 1, 2023
35. Bangchak leaf and BCP LUBRICANTS (Registered in PRC (China))	1	Fuel products	Jan. 17, 2024
36. Bangchak leaf and BANGCHAK (Registered in PRC (China))	1	Fuel products	Jan. 27, 2025
37. Bangchak leaf and BCP LUBRICANTS (Registered in Malaysia)	1	Fuel products	Jun. 10, 2025
38. INTHANIN COFFEE (Registered in Cambodia)	1	Food & fresh coffee business management	Sep. 5, 2023
39. BANGCHAK MART (Registered in Cambodia)	1	Miscellaneous goods for consumers' convenience	Sep. 5, 2023
40. GREEN SERVE (Registered in Cambodia)	1	Vehicle maintenance	Sep. 5, 2023
41. Bangchak leaf and BCP (Registered in PRC (China))	1	Fuel products, Service stations	Oct. 21, 2023
42. Bangchak leaf and BCP LUBRICANTS (Registered in PRC (China))	1	Fuel products	Aug. 13, 2025
43. INTHANIN (Registered in Myanmar) <sup>®</sup>	1	Food & fresh coffee business management	-
44. INTHANIN GARDEN (Registered in Myanmar) <sup>®</sup>	1	Food & fresh coffee business management	-



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

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. GE SYNTECH	1	Semi-synthetic gasoline engine lubricant	Filed Jun. 17, 2013
2. WASH PRO	1	Vehicle cleaning, maintenance & repair	Appealed Apr. 22, 2016
3. Moo Yang Ta Dang	1	Food & Beverages service	Filed Feb. 16, 2016
4. LE-MON KITCHEN	1	Food & Beverages service	Filed Apr. 22, 2016
5. LE'MON KITCHEN	1	Food & Beverages service	Filed Apr. 22, 2016
6. INTHANIN	4	Souvenirs, Fruit juices, syrup, coffees, teas, cocoa, breads, cakes, cookies, food & beverages	Filed Jul. 13, 2016
7. Hi Diesel S	1	Fuel products	Filed Jul. 13, 2016
8. Gasohol E85 S	1	Fuel products	Filed Jul. 13, 2016
9. Gasohol E20 S	1	Fuel products	Filed Jul. 13, 2016
10. Gasohol 91 S	1	Fuel products	Filed Jul. 13, 2016
11. Gasohol 95 S	1	Fuel products	Filed Jul. 13, 2016
12. SUPER 1	1	Lubricants	Filed Sep. 13, 2016
13. GREEN S REVOLUTION	2	Fuel products, vehicle service station	Filed Sep. 13, 2016
14. COFE' TO GO	1	Artificial milk, coffees, cocoa, teas, food & beverages	Filed Dec. 9, 2016

### **Trademarks and Service Marks under extension process in Thailand**

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. GE GOLD	1	Synthetic gasoline-engine lubricant	Dec. 9, 2016
2. D3 GOLD	1	Synthetic diesel-engine lubricant	Dec. 9, 2016
3. D3 TURBO PLUS	1	Semi-synthetic diesel-engine lubricant	Dec. 9, 2016



Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
4. BANGCHAK MAXDRIVE	1	Gasoline additive	Dec. 9, 2016
5. GE GOLD SM	1	Synthetic gasoline-engine lubricant	Dec. 9, 2016
6. GE PLUS	1	Gasoline-engine lubricant	Dec. 9, 2016
7. GE SILVER	1	Semi-synthetic gasoline-engine lubricant	Dec. 9, 2016
8. SUPER HDX	1	Diesel-engine lubricant	Dec. 9, 2016
9. D3 EXTRA PLUS	1	Diesel-engine lubricant	Dec. 9, 2016
10. D3 PICK UP PLUS	1	Diesel-engine lubricant	Dec. 9, 2016

### **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 - LPDR - Iraq - Turkmenistan	3	Fuel products	Filed on: Nov. 20, 2013 Aug. 3, 2015 Jun. 23, 2015
2. Bangchak leaf and BANGCHAK, registered in PRC (China)	1	Fuel products & service stations	Filed on Sep. 27, 2013
3. GREEN SERVE registered in Vietnam	1	Vehicle maintenance	Filed on Sep. 3, 2013
4. Bangchak leaf and BCP LUBRICANTS registered in Turkmenistan	1	Fuel products	Filed on Jun. 23, 2015
5. Bangchak leaf and BCP LUBRICANTS, registered in Iraq	1	Fuel products	Filed on Aug. 3, 2015

#### **Note:**

- ❶ Registered trademarks and service logos are in effect 10 years from registration dates and extendable every 10 years
- ❷ Belongs to Bangchak Green Net Co., Ltd., a subsidiary
- ❸ 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



- ④ In registering trademarks in Philippines, one must submit Declaration of Actual Use within 3 years from filing.
- ⑤ OAPI countries: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Ivory Coast, Mali, Mauritania, Niger, Senegal, and Togo



## 5. Legal disputes

Below are details as of December 31, 2016, about Bangchak's ongoing legal dispute(s) to which the company is a party; which could significantly affect its business; and which did not result from routine business conduct.

- Bangchak was sued as a joint defendant (defendant No. 5) together with the Ministry of Finance (defendant No. 1) in a tort on the eviction of plaintiff from state property around the Bangchak Refinery pier, rented from the Ministry of Finance. The damages demanded amounted to Baht 1,055 million. On June 3, 2009, the Civil Court read the verdict of the Appeal Court dismissing the case, against which the plaintiff filed an appeal to the Supreme Court, which is considering the case.
- Bangchak was sued as a joint defendant (defendant No. 1) together with a company (defendant No. 2) for violating a contract concerning appointment of a lubricating oil distribution agent. The plaintiff demanded damages of Baht 45.64 million and later added a suit for Bangchak's contract violation, demanding damages for its revocation of lubricating oil distribution rights of Baht 688.28 million. Both cases are under the deliberation of a lower court. In any case, Bangchak maintains its proper compliance with all terms.





## 6. General information and other key information

- Company Name : The Bangchak Petroleum Public Company Limited
- Head Office : 2098 M Tower Building, 8<sup>th</sup> Floor  
Sukhumvit Rd., Bangchak
- 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 : 0-2335-8888
- Fax : 0-2335-8000
- Website : <http://www.bangchak.co.th>
- Company establishment: November 8, 1984
- Commercial operation : April 1, 1985
- Registered capital (as of December 31, 2016) 1,376,923,157 Baht, of which Baht 1,376,923,157 was paid up, dividing into 1,376,923,157 shares, at 1 Baht per share.
- Shareholders of BCP (as of December 31, 2016)
  - Vayupak Fund 1 214 Million shares 15.60%
  - Social Security Office 197 Million shares 14.31%
  - Ministry of Finance 137 Million shares 9.98%
  - Minor Shareholders 829 Million shares 60.11%
  - Total 1,377 Million shares 100.00%
- Customers
  - The public, via Bangchak service stations and those of dealers nationwide
  - Industrial sector, including industrial plants



- Transport and service sectors, including airliners, ocean-going vessels, hotels, trucks, and construction work
- Agricultural sector, via agricultural cooperative service stations
- Overseas export markets.
  
- Office and Terminals
  - Head Office  
2098 M Tower Building, 8<sup>th</sup> Floor, Sukhumvit Road, Bangchak, 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, Bangchak, 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  
Fax (Bang Pa-In Terminal) 0-3527-6920
  - Northern Region Business Office  
87/9 Siri 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, 0-4326-1789,791, Fax 0-4326-1790
  - Southern Region Business Office  
Room 402, 4<sup>th</sup> Floor, P.C. Tower, 91/1 Moo 1, Kanchanawithi Road, Tambon Bang Kung, Amphoe Muang, Surat Thani 84000  
Tel. 0-7722-4790-2, Fax 0-7722-4793
  - Samut Sakhon Oil Distribution Center  
100/149 Moo 1, Tambon Tha Chin, Amphoe Muang, Samut Sakhon 74000  
Tel. 0-3482-0519-520, Fax –none-
  - 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 0-7433-2782
- 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)  
99/1 Moo 9 (Highway No. 3048), Tambon Bang Krasan,  
Bang Pa-in District, Ayudthaya 13160  
Tel. 0-2619-0778 Fax. 02619-0779  
Email: [info@bcpgroup.com](mailto:info@bcpgroup.com)  
Website: <http://www.bcpgroup.com>
  - 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
  - Bangchak Retail Co., Ltd. (BCR)  
223/94 Country Complex, Building A, 18<sup>th</sup> Floor, Sanphawut Rd.,  
Bangna, Bangna, Bangkok 10260  
Tel. 0-2335-4995 Fax. 0-2361-2252
  - Bangchak Biofuel Co., Ltd. (BBF)  
28 Moo 9 (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6500 Fax. 0-3527-6549  
Website: <http://www.bangchakbiofuel.co.th>



- Bangchak Bioethanol (Chachoengsao) Co.,Ltd. (BBE)  
96/10-11 Moo 7, Tambon Koh Kanoon, Amphoe  
Panomsarakham, Chachoengsao 24120  
Tel. 0-3809-0670-2 Fax. 0-3809-0673
  
- Bangchak Solar Energy Co., Ltd. (BSE)  
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6000 Fax. 0-3527-6014  
E-mail: [info-sunny@bangchak.co.th](mailto:info-sunny@bangchak.co.th)  
Website: <http://www.bangchak.co.th/sunny-bangchak/>
  
- Bangchak Solar Energy (Prachinburi) Co., Ltd.  
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6000 Fax. 0-3527-6014
  
- Bangchak Solar Energy (Chaiyaphum 1) Co., Ltd.  
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6000 Fax. 0-3527-6014
  
- Bangchak Solar Energy (Buriram) Co., Ltd.  
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6000 Fax. 0-3527-6014
  
- Bangchak Solar Energy (Buriram 1) Co., Ltd.  
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6000 Fax. 0-3527-6014
  
- Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.  
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in  
District, Ayudthaya 13160  
Tel. 0-3527-6000 Fax. 0-3527-6014
  
- BCP Energy International Pte. Ltd.  
8 Marina Boulevard # 05-02, Marina Bay Financial Centre,  
Singapore 018981



- BCP Innovation Pte. Ltd.  
8 Marina Boulevard # 05-02, Marina Bay Financial Centre,  
Singapore 018981
  
- BCP Trading Pte. Ltd.  
8 Marina Boulevard #05-02, Marina Bay Financial Center,  
Singapore 018981
  
- Nido Petroleum Limited  
Aquila Centre, Level 3, 1 Preston Street, COMO WA 6152,  
Australia  
Tel. +61 8 9474 0000  
Fax. +61 8 9474 0099  
E-mail: [reception@nido.com.au](mailto:reception@nido.com.au)  
Website: [www.nido.com.au](http://www.nido.com.au)



- Information on Reference Persons

Securities Registrar	The Stock Exchange of Thailand 93 Ratchadaphisek Road, Dindaeng, Dindaeng, Bangkok 10400 Thailand Tel. 0-2009-9000 Fax. 0-2009-9991
Auditor	KPMG Phoomchai Audit Limited 48 <sup>th</sup> - 51 <sup>st</sup> Floors, Empire Tower 195 South Sathorn Road, Yannawa, Sathorn, Bangkok 10120 Thailand Tel. 0-2677-2000 Fax. 0-2677-2222
Registrar and Debenture Holders Representative	Bangkok Bank Public Company Limited 333 Silom Road, Silom, Bangrak, Bangkok 10500 Thailand Tel. 0-2230-1478 Website: <a href="http://www.bangkokbank.com">www.bangkokbank.com</a>  Bank of Ayudhya Public Company Limited 1222 Rama III Road, Bang Phongphang, Yan Nawa, Bangkok 10120 Thailand Tel. 0-2296-5689 Website: <a href="http://www.krungsri.com">www.krungsri.com</a>
Legal Advisor	<b>Baker &amp; McKenzie Ltd.</b> 25 <sup>th</sup> Floor, Abdulrahim Place, 990 Rama IV Road, Silom, Bangrak, Bangkok 10500 Thailand Tel. 0-2636-2000 Fax. 0-2636-2111  <b>LS Horizon Limited</b> 14 <sup>th</sup> Floor, GPF Witthayu Tower, A 93/1 Wireless Road, Lumpini, Phatumwan, Bangkok 10330 Thailand Tel. 0-2627-3443 Fax. 0-2627-3250



**Clifford Chance (Thailand) Limited**  
130-132 Sindhorn Building Tower 3,  
21<sup>st</sup> Floor, Wireless Road, Lumpini,  
Phatumwan, Bangkok 10330 Thailand  
Tel. 0-2401-8800 Fax. 0-2401-8801

**Chandler and Thong-ek Law Officers  
Limited**  
20 Bubhagit Building, 7<sup>th</sup>-9<sup>th</sup> Floor, North  
Sathorn Road, Silom, Bangrak,  
Bangkok 10500 Thailand  
Tel. 0-2266-6485 Fax. 0-2266-6483