



1. Policy and Business Overview

1.1 Vision, Objectives, Goals, and Strategies

Vision	Greenenergy Excellence (environmentally friendly energy business for sustainable development)
Missions	<p>To shareholders/business partners/customers/creditors: Execute businesses with continuous, fair growth in returns on investment</p> <p>To society/communities/environment: Exhibit a business culture that is responsible to the environment and society</p> <p>To employees: Develop professional personnel</p>
Objectives & Goals	<p>Since 1984, Bangchak Petroleum PCL is committed to being a Thai energy company that operates businesses while looking after the environment and society, striving for a balance between value and worth in parallel with engagement in improving lives for Thai society.</p> <p>Bangchak values growth and management excellence in pursuit of world standards, while humbly applying the Sufficiency Economy philosophy to its business operations. To elaborate, profit should not be at the expense of natural resource exploitation. To achieve business goals in 2020, Bangchak has classified its business development goals as follows:</p> <ol style="list-style-type: none"> 1. Security: Enhance national energy security by integrating the upstream petroleum business to supply enough energy to meet the needs of businesses and the public. 2. Stability: Strive for financial stability by diversifying income risks through investment in renewable-energy businesses, marked by income certainty and regularity, including solar power plants, biodiesel and ethanol. 3. Sustainability: Strive for balanced business values and socio-environmental worth.
Business strategies	<p>Bangchak's operating strategies in pursuit of corporate goals in the short term and the long term are</p> <ol style="list-style-type: none"> 1. Strive for business growth and diversify risks toward businesses with secure revenue: Set growth goals by supplementing sustainable value to businesses through growing the proportion of revenue from new businesses of clean energy and other energy businesses, marked



- by constant revenue stream and low risks due to external factors.
2. Pursue the status of a low-carbon company: Set a goal of posting a minimal volume of carbon dioxide emission by relentlessly operating a project to improve energy and refinery resource efficiency, while investigating investment in renewable/alternative energy.
 3. Reformat business activities to benefit society and the environment: Set corporate culture goals to develop businesses side by side with the environment and society for corporate sustainability. Run CSR/CSV businesses complementary to business growth and extend from them. This social enterprise is aimed at creating jobs, generating income, and promoting community members' joint stewardship of their habitats.
 4. Be transparent and accountable: Set business goals based on transparency and accountability, whether when disclosing business data under corporate governance or in line with SET's requirements, while managing proactive environmental work.

1.2 Transition and milestone development

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.

Awards of 2015

- The Board of the Year Awards 2015 contest, awarded by the Thai Institute of Directors (IOD). The contest was organized in conjunction with the Stock Exchange of Thailand, The Thai Chamber of Commerce and Board of Trade of Thailand, Federation of Thai Industries, Thai Bankers' Association, Thai Listed Companies Association (TLCA), and the Federation of Thai Capital Market Organizations.



- Board of the Year Award for Distinction Practices in Good Corporate Governance, in recognition of the boards of directors with efficient and effective performance and due regard for transparency and fairness, leading to awareness of improved performances of the boards and promoting good governance.
- Honorary Award for Boards with Consistent Best Practices, presented to the winning Boards from 2011 to 2013 and still maintained the same quality of performance with efficiency and effectiveness through 2015.
- SET Social Enterprise Investment Awards, conferred to listed companies whose business conduct or investment has supported social activities. Bangchak was also ranked among the 51 listed companies on the Thailand Sustainability Investment list at the SET Sustainability Awards 2015, organized by the Stock Exchange of Thailand (SET) in conjunction with the Money and Banking magazine, based on sustainability assessment criteria. The ranking will be useful for investors who want to invest in quality shares with consistent returns in the long run.
- ASEAN Corporate Governance Awards (TOP 50 ASEAN PLCs), based on a CG survey of Thai listed companies under the ASEAN CG Scorecard 2015 program. This program is a mean benchmark in assessing and ranking corporate governance performance of listed companies in six participating ASEAN member countries (Indonesia, Malaysia, Philippines, Singapore, Vietnam and Thailand) to elevate regional corporate governance standards. ASEAN CG Scorecard Thailand was organized by the Office of the Securities and Exchange Commission (SEC) in conjunction with SET and the Thai Institute of Directors (IOD).
- ASEAN Best Practices Energy Management for Buildings and Industries Awards (Small and Medium Building Category) at the ASEAN Energy Awards 2015, held in Malaysia. It also won the Outstanding Energy Conservation Award 2015 (Non-controlled Building) for buildings featuring advanced technology, for high-efficiency equipment in building management to promote the Green Building and Green Management approach, and for encouraging energy conservation awareness among the workforce, presented at the Thailand Energy Awards 2015, organized by the Ministry of Energy.
- Awards won at the '5th Asian Excellence Recognition Awards 2015' event, organized by the Corporate Governance Asia magazine (Hong Kong-based):



- Best Investor Relations Award for four 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 based on votes and surveys among readers, investors, analysts, etc.
- Corporate Governance Asia Recognition Awards : Asia's Icon on Corporate Governance, for five consecutive years, presented to companies with outstanding performances and tenacity in developing corporate governance in the region at the '5th Asian Excellence Recognition Awards 2015 – THE BEST OF ASIA' event, organized by the Corporate Governance Asia magazine (Hong Kong-based)
- Platinum Award from 'The Asset Corporate Awards 2015' event, 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 two consecutive year.
- Social Empowerment Award, presented at the International CSR Summit 2015 event, for its business development of over 500 agricultural cooperative service stations nationwide through the past 25 years, which has strengthened society, enhanced national competitiveness, added value for Thai farmers as well as increasing their income and improving their well-being. The event was organized by Enterprise Asia, an independent organization in pursuit of entrepreneurship promotion and development across the region.
- Most Socially Responsible Company for the Year Award, in recognition of Bangchak's role and responsibility in championing sustainable business in a socially responsible manner in line with its core businesses, while adopting an ethical and holistic approach in operations in a law-abiding manner and ultimately in adding value for itself and society at large. The award was presented at the Asia Corporate Excellence and Sustainability Awards (ACES Awards) event, organized by MORS and Malaysian non-profit organizations.
- Best Sustainability Report Award 2015, organized by CSR Club, Thai Listed Companies Association, SEC, and Thaipat Institute. The award went to companies with outstanding information disclosure and reporting policies with an emphasis on social responsibility and CSR-in-Process for business conduct. Bangchak has won the award for three consecutive years.
- CG Award 2015 for Bangchak's business conduct under corporate governance principles on transparent, credible information disclosure



and in upholding integrity. CG Award 2015 was organized by the Thai Chamber of Commerce, Office of the National Counter Corruption Commission, and University of the Thai Chamber of Commerce.

- Bangchak was among the 13 listed winners of Level 5: Extended, the highest level of recognition from the Anti-corruption Progress Indicator Assessment for Thai Listed Companies 2015, organized by SEC in conjunction with the Thaipat Institute. The achievement echoed Bangchak's efforts in extending its policy on anti-corruption to cover its business partners, consultants, and business representatives to refrain from getting involved in any form of corruption.
- Certificate of ESG100 Company in recognition of the top 100 companies with outstanding environmental, social, and good governance (ESG) performance. The ranking, together with information on financial statements, will help investors in their investment decision-making. The ranking was conducted by the Thaipat Institute.
- Bangchak earned three awards from the Waste Utilization Promotion Program, namely 3Rs Award for factory waste treatment, Zero Waste to Landfill Achievement Award, and 3Rs+ Award for economic returns under the 3Rs of waste management. One award was a silver medal for the Tank Bottom Sludge Reduction Project by using diesel in petroleum tank cleaning, and another was a complementary award of silver medal for the Sulfur-Containing Waste Reduction Project by adopting new methods in bringing up sulfur from wells. The program was organized by the Bureau of Industrial Waste Management, Department of Industrial Works, Ministry of Industry.
- Best Corporate Social Responsibility Excellence Award at the Thailand Corporate Excellence Awards 2015 event, organized by the Thailand Management Association (TMA) and Sasin Graduate Institute of Business Administration of Chulalongkorn University.
- Outstanding Exhibition Booth Award (presentation of data and activities for investors and shareholders), scored by SET in the City's investors and shareholders.
- Bangchak earned an overall 'Excellent' score for nine consecutive years, based on the assessment outcomes of a survey on CG report of listed companies for 2015, organized by IOD,.
- Bangchak scored an 'Excellent' 100% in all AGM criteria for seven consecutive years under the '2015 Annual General Meeting Assessment Project', organized by the Thai Investors Association.



- Certificate from the Workplace Safety Project in honor of HRH Princess Maha Chakri Sirindhorn, in recognition of Bangchak's success in preventing workplace accidents and illnesses. The project was initiated by the Department of Labour Protection and Welfare, Ministry of Labour.
- Certificate for Outstanding Call Center 2015, presented by the Office of the Consumer Protection Board (OCPB) to companies with social responsibility awareness, standard service quality, timely solution handling, and customers' satisfaction.
- Winner Plaque and Certificate for Zero-Waste Building (Medium Building), given to organizations with environmentally friendly waste treatment systems, waste sorting, and waste reduction, organized by the Bureau of Environment of the Bangkok Metropolitan Administration.
- Bangchak earned a three-year extension for its Certificate for Green Meetings in recognition of its green application for meetings, seminars, and training with due regard for resource maximization and environmental impact minimization. Bangchak was also one of the first two companies granted extension for its Certificate on Greenhouse Gas Emission Reduction for Buildings, organized by the Thailand Business Council for Sustainable Development (TBCSD) and the Thailand Environment Institute.
- Bangchak earned two Bronze Prizes for Mixer Leakage Testing Devices by ME-Innovation team and Reduce Hazardous Waste From JP-1 by LAB-A team, from International Convention on Quality Control Circles (ICQCC), South Korea, held in October 2015 supported by Ministry of industry.

2014

- Planned a 46-day major turnaround period including maintenance for CDU and auxiliary units from May 1st to June 15th, 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.

2013

- Bangchak hired internationally accepted experts to review the operating safety of the overall refinery system and equipment with a HAZOP (Hazard and Operability Study) and it was completed, with a continuous improvement plan defined to push Bangchak's refining safety to a higher standard than those of other international refineries.
- In addition, a tail gas treating unit, a treatment unit at the end of the process, was completely installed and commissioned within the government's timeframe, thus sharply reducing sulfur dioxide emission from the sulfurization unit by 90%.
- Bangchak values the stewardship of Safety Health Environmental and Energy (SHEE). In 2013, the Ministry of Industry awarded to Bangchak a CSR-DIW Level 5 award of its achievement to operate responsibly to society through its community social network toward sustainable development. This achievement, combined with the already awarded Green Industry 4, will lead Bangchak toward Green Industry 5. Moreover, Bangchak is introducing ISO 50001, the international standard for energy management, to help manage its entire energy management system.
- The Company increased its retail volume by expanding distribution channels. Full-scale service stations located in high-potential areas were selected for such expansion. In 2013, there were two main truck service stations, such as SuperK, Chonburi province and Suratthani airport.
- Bangchak is determined to improve its service station image: clean, modern, and catering more to customers' needs. Focusing on



continuous improvement of quality, Bangchak service stations earned the following awards:

- Quality, Safe, and Attractive Service Stations: Department of Energy Business, for the fourth consecutive year, covering 178 stations
 - Trusted Brands Gold Awards (Service Stations): Reader's Digest Magazine, for the third year, following a survey of brands and services in which consumer confidence is high for quality, catering to consumers' needs, social responsibility, and innovative ideas for products
 - Brand of Choice: Based on a survey by a third-party research company in 2013, Bangchak service stations ranked second most popular among domestic service stations for the fifth consecutive year.
- Bangchak continually promoted and expanded sales of Gasohol E20, and Gasohol E85. The Company raised the number of service stations selling Gasohol E20 by 97, and selling Gasohol E85 by 51. To accommodate newer car models, service stations selling E20 and E85 nationwide currently number 678 and 102 respectively.
 - In April 2013 Bangchak entered an Exclusive Partnership, a long-term business joint venture agreement with Big-C Supercenter PCL, which calls for development and installation of 500 Big C-Mini stores in Bangchak's service stations nationwide. Meanwhile, 55 new Big C-Mini stores were added, bringing the total chain to 62.
 - The Company has constantly stressed expansion of its lubricant market to the industrial sector and markets in neighboring countries.
 - **Renewable energy business:** Bangchak has been focusing on the development of new businesses to increase its business value and diversify its revenue portfolio to reduce risk exposure in certain business areas under uncertain, dynamic market and volatile oil price situations. It strictly adheres, however, to its business principles in focusing its production and marketing in parallel with environmental stewardship and social contribution to sustainable growth and financial integrity of the organization. Below are the business moves made by Bangchak.
 - **Biodiesel Business:** Since 2009, the company has invested in a biodiesel plant on its property in Bang Pa-in, known as Bangchak Biofuel Co., Ltd. The company was set up in support of the public policy on alternative-energy promotion while generating income for farmers. In 2013, total biodiesel production averaged 343,000 liters per day, equivalent to a 95% capacity utilization rate.
 - **Solar Power Business:** "Sunny Bangchak" entered a 118-MW power purchase agreement (PPA) with the Electricity Generating



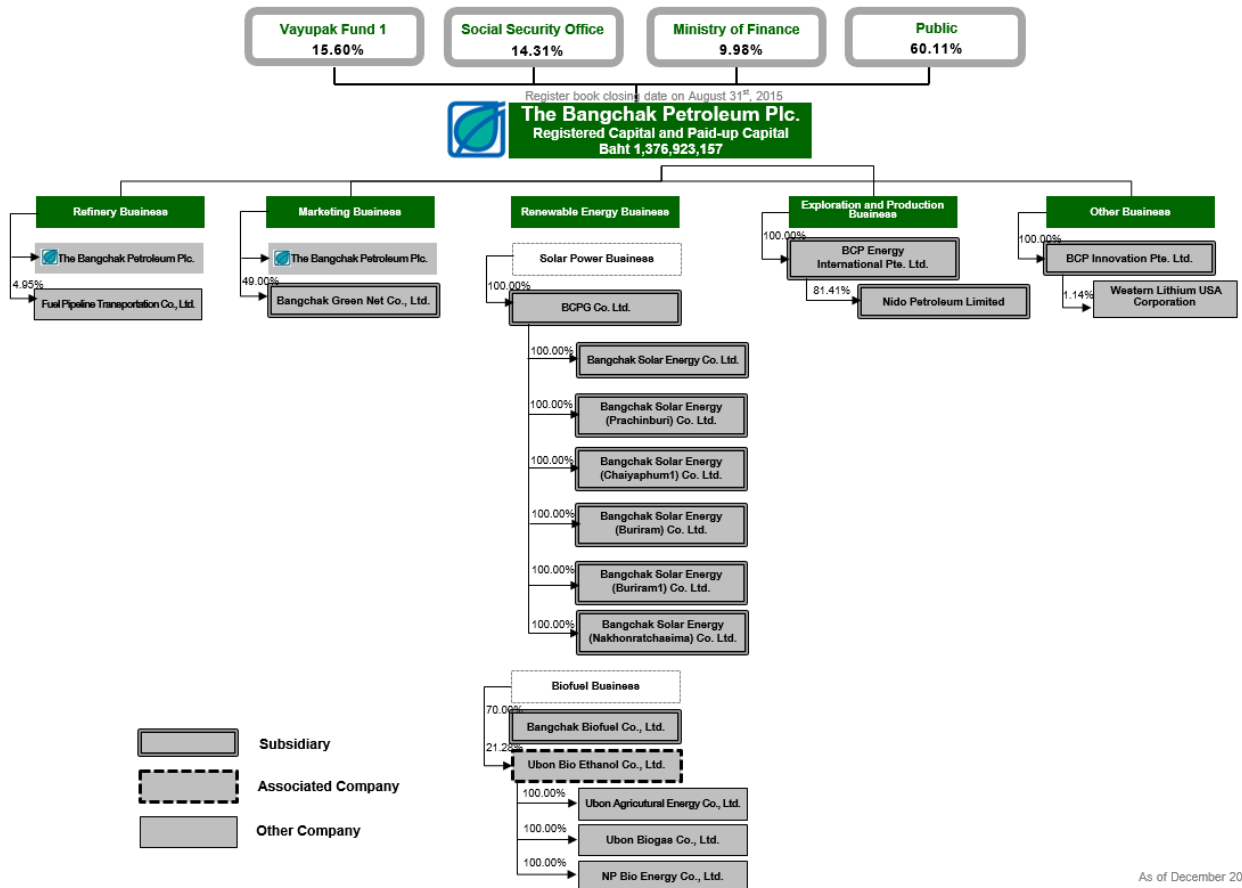
Authority of Thailand (EGAT) and Provincial Electricity Authority (PEA), with an incentive adder rate of Baht 8 per unit. Bangchak Solar Energy Co., Ltd., was founded to manage and operate solar power generation. Bangchak's first phase of 38-MW PPA has been commercially operated since 2012, at Bang Pa-In district, Ayutthaya. Phase 2 consists of 32-MW PPA solar power generation including two solar power generating units of 16 MW PPA each at Amphoe Bamnet Narong, Chaiyaphum, and Amphoe Bang Pa-Han, Ayutthaya, commissioned in 2013.

- **Ethanol business:** Bangchak acquired 583,000 common shares in Ubon Bio Ethanol Co., Ltd., equivalent to 21.28% of the total common shares. Its ethanol plant located in Amphoe Na Yia, Ubon Ratchathani, is capable of producing 400,000 liters a day of ethanol from fresh cassava, cassava chips, and molasses. The plant began commercial production in January 2013 and supplied ethanol to Bangchak and major oil customers.
- **Organizational capability development:** 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. In 2013, Bangchak won the Thailand Quality Class (TQC) for the second year.
- **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. Bangchak has installed an enterprise resource planning system, SAP ERP Version 6.0, through an enterprise network to provide 24/7 access to all employees under ISO27001, 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.



1.3 Shareholding Structure

Equity Chart of The Bangchak Petroleum Plc and Other Companies



As of December 2015

Bangchak Green Net Co., Ltd.

Bangchak Green Net was formed to engage in service station and Inthanin Coffee Shop administration, supported by the sale of other consumer products in Bai Chak and Lemon Green stores to accommodate continual expansion in Bangchak's retail business.

Bangchak Biofuel Co., Ltd.

Located in Amphoe Bang Pa-In, Phra Nakhon Si Ayutthaya, Bangchak Biofuel was founded to develop and produce biodiesel based mainly on crude palm oil. With a current capacity of 360,000 liters per day, it boasts environment-based management, evident in its design and construction of a wastewater treatment system that has achieved the water quality certified by the Department of Industrial Works. In addition, it constructed an artificial swamp that relies on nature to treat the water once again before reusing treated wastewater in plant processes. This is maximization of water consumption without discharge to public waterways. Today, BBF is constructing a second biodiesel (B100) unit



with a capacity of 450,000 liters per day to take the total capacity to 810,000 liters per day.

BCPG Co., Ltd.

BCPG was founded to engage in renewable-energy power generation business and investment, including the operation of phase 1 (38 megawatts, MW) of the solar power generation (“Sunny Bangchak”) project in Amphoe Bang Pa-In, Phra Nakhon Si Ayutthaya.

Bangchak Solar Energy Co., Ltd.

Wholly owned by BCPG, Bangchak Solar Energy (BSE) is formed to manage phase 2 (32 MW) of the solar power generation (“Sunny Bangchak”) project, 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 (total of 48 MW), operated by five subsidiaries. These are located at Amphoe Kabin Buri, Prachin Buri (16 MW), Amphoe Dan Khun Thot, Nakhon Ratchasima (8 MW), Amphoe Prakhon Chai, Buri Ram (8 MW), Amphoe Nong Ki, Buri Ram (8 MW), and Tambon Hua Thale, Phra Nakhon Si Ayutthaya (8 MW).

With BCPG’s phase 1 capacity, Bangchak is now able to generate and distribute power through PV generation to fulfill the 118-MW amount under the PPA.

BCP Energy International Ptd. Ltd.

Incorporated in Singapore, BCP Energy International Pte. Ltd. (BCPE) runs and invests in international businesses concerning energy, petrochemicals, and natural resources. Today it invests in Nido Petroleum Limited at 81.4% of the common shares.

BCP Innovation Pte. Ltd.

Incorporated in Singapore, BCP Innovation Pte. Ltd. (BCPI) runs and invests in international innovation businesses. Today it invests in Western Lithium USA Corporation at 7% of the common shares (as of January 2016).

Nido Petroleum Limited

Registered in the Australian stock exchange, Nido Petroleum Limited (Nido) explores for and produces petroleum with an investment focus in Southeast Asia. It holds rights in producing fields, namely Galoc, Nido, and Matinloc in the Philippines with a current combined output of 5,500 barrels per day. In addition, it holds rights in fields under development and exploration, namely West Linapacan in the Philippines and Gurita in Indonesia.



Ubon Bio Ethanol Co., Ltd.

Located at Amphoe Na Yia, Ubon Ratchathani, Ubon Bio Ethanol engages in the ethanol business with a current capacity of 400,000 liters per day based on fresh cassava, cassava chips, or molasses. Its subsidiary engages in processing cassava into flour with a capacity of 700 tons of flour per day and a biogas power generation plant derived from the treatment of wastewater produced with flour and ethanol processes. At present, biogas power generation plant and the flour plant number 2 already operated.

Fuel Pipeline Transportation Co., Ltd.

Fuel Pipeline Transportation (FPT) was formed to engage in the business of fuel transportation by underground multiproduct pipeline from Bangchak Refinery. The route follows the railway route to the Chong Nonsi Oil Depot, on to Don Mueang 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 with the system of JP One Asset Co., Ltd., to supply aviation fuel to Suvarnabhumi International Airport.

Western Lithium USA Corporation

Registered in the Toronto stock exchange, Canada, Western Lithium USA Corporation (WLC) operates a lithium mining business with lithium carbonate and lithium hydroxide, both of which are key raw materials for batteries with remarkable growth for various products, namely hybrid cars, electric cars, assorted electrical appliances, and batteries for large-scale electricity consumption. This year, WLC merged with Lithium Americas Corp. (LAC), another Toronto stock exchange listed company, which operates a lithium mine in Argentina. LAC is engaged in lithium mining in Argentina. In addition, the Company cooperated with POSCO Company, a major iron and steel industrial operator of South Korea and the developer of the production technology for pure lithium (99.99% pure) to develop lithium batteries from LAC. Production is expected to begin in 2017. As a result, WLC today has two projects under development in Argentina and the US. In Argentina, lithium carbonate production is expected to start in 2017 at a capacity of 20,000 tons per year; while in the US, it will start production in 2019 at a maximum capacity of 26,000 tons per year. In addition, WLC's business is in soil compounds (drilling mud) for petroleum exploration and production drilling, with sale beginning in 2015 at 10,000 tons per year in capacity.



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 power production from solar energy (solar farm) – a clean source of energy from nature, biomass energy, petroleum exploration and production, and innovation-oriented businesses. Bangchak's mission is to enhance national energy security, while investing in new businesses to keep the organization moving forward and ensure sustainability.

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



Refining business

Bangchak boasts a complex refinery with a capacity of 120,000 barrels per day. Most of the yields are high-value products in gasoline and diesel groups. Not only does the quality of gasohol and diesel from Bangchak refinery meet the Euro 4 standard, but Bangchak is also 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, moreover, stresses energy stability in production processes by employing electricity and steam from its cogeneration power plant, while replacing fuel oil usage with cleaner burning natural gas. It is now ready to raise the efficiency of its refining processes with the implementation of 3E and YES-R projects. To increase Bangchak's overall production capacity, various attempts have been made through the following projects:

- Preparedness of oil tanks, pipelines, oil vessels, production process and installation of reserved heat exchange equipment, leading to uninterrupted, efficient refining process. As a consequence,



Bangchak's average production capacity this year reached 113,000 barrels per day, higher than the 105,000-barrel-per-day target.

- Refining capacity achieved 126,600 barrels per day, with a peak capacity recorded in August at average 118,400 barrels per day – the highest since the commissioning of the hydrocracking unit
- Effective supply planning on crude procurement to achieve high GRMs, with an annual average market GRM of US\$9.05 per barrel
- Installation of the Advanced Process Control (APC) system in April this year to raise production efficiency, while reducing energy consumption
- Export of Vacuum Low Sulfur Waxy Residue (VLSWR) with a sulfur content of 0.3% to Japan
- Development of unconverted oil (UCO), a new product, for sale to SK Oil of South Korea for use as lubricant feedstock
- On the environmental front, installation of an additional wastewater treatment unit with high technology, yielding treated water of the quality comparable to tap water, making the treated water reusable for the production processes. Bangchak saved water consumption by 20%.



Marketing business

This year, over 76% of finished products from Bangchak's refining processes were sold through the retail network of over 1,072 stations. Of the total number, 457 were standard stations, while 615 were agricultural cooperative service stations (as of the end of December 2015). At present, **Bangchak ranks second in market share**, 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, and are equipped with stores to provide customers with utmost convenience: Baichak Store and Lemon Green Store selling general goods. Big-C Mini Store, operated under the cooperation with Big C Super Center Plc., is also available to provide more variety of goods at 154 large stations. 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. Bangchak's own "Inthanin" coffee brand boasts 377 outlets, both in service stations and on university campuses. More branches are being planned at prime commercial locations.

As another development, Bangchak initiated the "Bright and Clean Program" for making its retail stations more attractive. The program includes introduction of "Inthanin Garden", a modern form of large coffee shops selling 100% organic Arabica coffee served in biodegradable cups. In the food sector, Bangchak has expanded into freshly cooked quick meals under the "Lemon Kitchen" brand and high-quality food and drink center under the "Lemon Green Square" brand, available at Bangchak stations to draw more attention from customers. Moreover, as many as 17 Bangchak retail stations now have NGV on offer as an additional choice of fuel for motorists. In addition to fuel products, Bangchak has lubricant and premium lubricant products (transmission oil, brake fluid, grease, etc.) under the brand "BCP Lubricants" available in the Thai market at Bangchak service stations, street shops, industrial factories, and the OEM (original equipment manufacturers) market. The products are also exported to foreign market.

In addition, Bangchak agricultural cooperative service stations, which operated since 1990, has developed continuously to the 26th year of business alliance with community organization. The Company 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. Moreover, the Company develops business for cooperative partners by setting up Point of Sale system (POS) to help manage operations and convenient to monitor and analyze sales. Since it would be 100th anniversary of cooperatives in 2016, the Company would attend in cooperative activities. The activities are, for instance, sales promotion only at cooperative service stations, oil discount cards for members and discount cards for Bank of Agriculture and Agricultural Co-operatives members. These projects could help decrease costs for agricultural members. The members would be aware of participation with cooperatives. Cooperative service stations continuously develop new business to strengthen growth for community organization, better well being for members, along with sustainable business for Bangchak.

This year, Bangchak developed and launched new products with "Green S" technology, namely "E20S" gasohol and "Hi Diesel S" diesel, blended with an additive that enhances efficient combustion while giving



more power to the engine and reducing emissions from combustion, thus conserving the environment.



Renewable-energy business

Recognizing that renewable-energy is imperative for national energy security by reducing trade deficits 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. Bangchak's renewable-energy business is made up of:

- **Bangchak Biofuel Co., Ltd.** (70% Bangchak-owned), located in Amphoe Bang Pa-In, Phra Nakhon Si Ayutthaya province, produces biodiesel from crude palm oil with a capacity of 360,000 liters per day. The biodiesel production unit 2, with a capacity of 450,000 liters per day, is being constructed in the same vicinity to raise the total biodiesel capacity to 810,000 liters per day to meet rising domestic demand.
- **Ubon Bio Ethanol Group** (with 21.28% shareholding), located in Amphoe Na Yia, Ubon Ratchathani province. The group consists of Ubon Bio Ethanol Co., Ltd. (with a 400,000-liter-per-day ethanol capacity), Ubon Agricultural Energy Co., Ltd. (with a 100,000-ton-per-year tapioca flour capacity), Ubon Biogas Co., Ltd., and NP Bio Energy Co., Ltd., which produce biogas and generate electricity. The joint investment and support given to the group supply security for Bangchak's ethanol supply and support future expansion of Gasohol E20 and E85 marketing.
- **A project to turn an abandoned orange grove into oil palm plantation**, located at Rangsit Khlong (Canal) 15, is a collaboration between the Ministry of Agriculture and Cooperatives, Ministry of Energy, Bank of Agriculture and Agricultural Cooperatives, and Bangchak. A learning and development center was set up on 1,200 rai (480 acres) in Amphoe Ban Na, Nakhon Nayok province, to engage in research and development (R&D) work dealing with acid soil management in an abandoned orange grove so as to plant oil palm, and to serve as a learning center for the public and interested farmers. Kicked off in late 2011, the project has started to bear fruit and during research conclusion continuously.



- **An R&D project for the production of biofuels and byproducts from algae:** This collaboration between Loxley Public Company Limited, Ratchaburi Electricity Generating Holding Public Company Limited, and Bangchak strives for R&D on selection of species and nursery factors for oil algae and microalgae (laboratory scale and ex-laboratory scale), investigation of oil extraction and high-value extract processes, and preliminary economic cost assessment so as to assess commercial project feasibility. The project lies on the compound of Ratchaburi Power Plant in Ratchaburi province.

Petroleum exploration and production (E&P) business



Petroleum exploration and production business

With a direction to increase its revenue for secure growth, diversify its business risks, and security for raw-material supply for the refining business, Bangchak founded BCP Energy International Pte. Ltd. (BCPE), in Singapore to manage the energy, petrochemical, and natural resource businesses outside Thailand. BCPE now holds common shares in Nido Petroleum Limited, a listed company in Australia engaging in petroleum exploration and production with a focus on investment in Southeast Asia. Currently, Nido Petroleum Limited holds the rights in developed fields, which are Galoc oil field, Nido oil field and Matinloc oil field in the Philippines, and Gurita oil field in Indonesia which still under exploring.

In 2015, Nido increased its ownership in the producing Galoc oil field from 22.88% to 55.88%, resulting in Nido holding the operatorship of the Galoc field with a production of capacity increasing to around 5,500 barrels per day.



Innovation-oriented business



Innovation-oriented business

In 2015, Bangchak set up BCP Innovation Pte. Ltd. (BCPI) in Singapore to manage innovation businesses outside Thailand. It bought shares in Western Lithium USA Corporation, a listed company in Toronto Stock Exchange, Canada running two lithium mines, which are developing in the US and Argentina. Seeing as increasing trend of lithium demand, particularly in the battery industry to keep up with the growth of electric vehicles and various electrical appliances, Bangchak plans to engage itself in related industries to cash in on energy storage and investment in innovative forms of alternative-energy technological investment.

Innovation-oriented business



Solar Power Business

On July 17, 2015, Bangchak set up BCPG Co., Ltd. (BCPG) to operate and invest in electricity generation business using renewable energy with registered capital of 3,700 million baht. After restructuring the renewable energy businesses in late 2015, BCPG manages Phase 1 Project and holds 100 percent of the shares of Bangchak Solar Energy Co., Ltd. and other 5 subsidiaries. At present, BCPG and its subsidiaries has entered into the power purchase agreement of total 118 MW, with total production capacity of 175 MW.

Details of the Group of Solar Power Business

Company name	Location	Shareholding	Production capacity ^{1/} (MW)
BCPG Co., Ltd.	Bang Pa-in district, Phra Nakhon Si Ayutthaya province	100.0 ^{2/}	38
Bangchak Solar Energy Co., Ltd.	Bamnet Narong district, Chaiyaphum province	100.0 ^{3/}	16



Company name	Location	Shareholding	Production capacity ^{1/} (MW)
	Bang Pahan district, Phra Nakhon Si Ayutthaya province	100.0 ^{3/}	16
Bangchak Solar Energy (Prachinburi) Co., Ltd.	Kabin Buri district, Prachinburi province	100.0 ^{3/}	16
Bangchak Solar Energy (Chaiyaphum1) Co., Ltd.	Bamnet Narong district, Chaiyaphum province	100.0 ^{3/}	8
Bangchak Solar Energy (Buriram) Co., Ltd.	Prakhon Chai district, Buriram province	100.0 ^{3/}	8
Bangchak Solar Energy (Buriram1) Co., Ltd.	Nong Ki district, Buriram province	100.0 ^{3/}	8
Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.	Dan Khun Thot district, Nakhon Ratchasima province	100.0 ^{3/}	8
Total			118

Note:

^{1/} Production capacity of the power purchase agreement

^{2/} The Company holds 100% of paid-up capital.

^{3/} BCPG Co., Ltd. holds 100% of paid-up capital.

The Company approved the initial public offering (IPO) of ordinary shares of BCPG Co., Ltd. and the listing of BCPG Co., Ltd. on the Stock Exchange of Thailand within 2016 and the determination of the portion of the shares for an IPO which shall not be more than 30 percent of total registered capital of BCPG Co., Ltd. after an IPO.



Revenue Structure

In 2015, revenue from sale of goods and rendering of services from the consolidated financial statements of the Company and its subsidiaries totaled Baht 151,140 million, consisting of Baht 144,346 million from the Company and the following from its subsidiaries, Baht 28,612 million from Bangchak Green Net Co., Ltd. (where the Company holds 49% equity), Baht 5,414 million from Bangchak Biofuel Co., Ltd. (where the Company holds 70% equity), Baht 2,280 million from BCPG Co., Ltd. and its subsidiaries (where the Company holds 100% equity), and Baht 2,344 million from Nido Petroleum Limited (where the Company's subsidiary holds 81.41% equity). Of this income, Baht 31,856 million was accounted for by connected transaction items, most of which came from selling refined products to Bangchak Green Net. Below is the revenue structure by product and service from all companies in 2013-2015.

Product/Service	Operated by	2015		2014		2013	
		Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%
Refined products ^{1/}	BCP and subsidiary	147,797	97.3	177,265	95.6	182,981	96.6
Electricity	BCP and subsidiary	3,010	2.0	2,692	1.4	1,463	0.8
Consumer products	Subsidiary	333	0.2	361	0.2	578	0.3
Others ^{2/}	BCP and subsidiary	733	0.5	5,157	2.8	4,367	2.3
Total		151,873	100.0	185,475	100.0	189,389	100.0

Note: 1/ The proportions of earnings from sales of products in the domestic in 2015, 2014 and 2013 were 89.1%, 90.3%, and 86.6% respectively.

2/ Other earnings (excluding revenue from sale of goods and rendering of services), namely revenue from investment, gain from crude and product oil prices hedging contract, gain from foreign currency forward contracts, gain on foreign exchange, reversal of allowance for loss from impairment of asset, share of profit of associate, earnings from sales promotions, land lease, service station lease, equipment lease etc.



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 September 2015, Bangchak launched “E20S” gasohol features outstanding properties which complete fuel combustion in the engine, thus providing power and environmental protection.

1.3 Aviation fuels

Intended for commercial jets, Jet fuels must be clean and absolutely pure. 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. In October 2015, Bangchak launched “Hi Diesel S” gasohol 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 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.

3) Feedstock for refineries and petrochemical plants: comprising

3.1 Straight Run Fuel oil (Long Residue)

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

3.2 Reformate

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

3.3 Isomate

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

4) By-product: Sulphur, which is naturally associated with oil, is considered a by-product. Sulphur can be extracted for several direct uses, such as for blending in the production of 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.

2015 Thai Economic Overview

The Thai economy in 2015 remained sluggish, as the agricultural sector income was still low as a result of falling commodity prices, and high household debts leading to low private consumption. Moreover, the export sector contracted further due to lower demand in foreign markets and manufacturing infrastructure obstacles. These obstacles were mainly the loss of competitiveness in manufacturing products with high technology product and labor intensive products together with private-investment contraction following falling domestic and international market demands, as well as migration of manufacturing bases from Thailand to its neighbor countries. However, the rapid expansion of the tourism sector and government-driven economic stimuli, including capital investments on



mega-infrastructures provided positive factors for the Thai economy. With the economy over-relying on exports at more than 50%, the export growth contraction pressured the country GDP down to 2.8%, reported by NESDB on February 15, 2016, lower than originally projected by NESDB (on February 16, 2016) at 3.5-4.5%. In addition to domestic economic structure obstacles, the rise in US currency escalated by the increase of the US FED policy rate and the fall of Chinese Renminbi currency after the devaluation announcement from the Bank of China, as well as the sluggish Asian economy, concurrently drove funds flow out of the region. The Thai currency weakened to Baht 32.35-36.56 per USD with the annual average value of Baht 34.29 per USD in 2015, a fall by 5.6% from the previous year.

The Thai economy in 2016 is projected to grow by 2.8-3.8%, an increase from 2015, supported by government spending and additional economic stimulus measures, higher export projection from the weaker Baht currency, low oil price and other external factors, including global economic recovery, higher commodity prices pushing up the global export and tourism industry. There are, however, certain risks affecting Thai economic growth. The slowdown of global and regional economic growth, the financial market volatility, including the fluctuation of Baht currency in 2016 caused by differences of economic recovery of trade partners in various regions, are the main concerns. Like 2015, the US currency will continue to rise against other currencies while the Chinese yuan is likely to fall, further triggering exchange rates of other Asian market including the Thai Baht to move downwardly. The Thai currency is expected to move within a range of Baht 35.5-36.5 per USD, projected by NESDB on February 15, 2016. The Bank of Thailand is therefore expected to sustain the policy rate at 1.50% to maintain the Thai currency stability.

Domestic oil business

In 2015, Thailand recorded 1,232 million barrels per day of total refining capacity with a daily average of 1,132 million barrels, a increase of 104 million barrels per day or 10.12% from that of 2014. Since there is no turnaround maintenance shutdown among local refineries in 2015. With the planned shutdown maintenance for Bangchak and PTT Global Chemical, and IRPC, the overall supply in 2016 is set to decrease slightly.



Refining Capacities and Average Crude Run of Domestic Refineries 2015

Refinery	Type	Capacity (thousand barrels/day)	Average crude run (thousand barrels/day)	Capacity utilization (%)
Thaioil	Complex	275	313.0	113.82
IRPC	Complex	215	189.0	87.91
Esso	Complex	177	142.0	80.23
SPRC	Complex	165	182.0	110.30
PTT Global Chemical	Complex	280	193.0	68.93
Bangchak	Complex	120	113.0	94.17
Total		1,232	1,132.0	91.9

Source: Energy Policy and Planning Office

Marketing business

The 2015 domestic demand for fuels rose slightly by 4% from 126 million liters per day in 2014 to 131 million liters per day, in line with the slight GDP increase driven by the stronger service sector, government spending and economic stimulus measures. Despite the sluggish economy, demand for petroleum products evidently jumped due to the low retail prices. Demand for gasoline and diesel went up by 13.2% and 4.1% respectively. The demand for ethanol rose by 9.7% to 3.51 million liters per day, by the higher demand for gasohol, leading the market share of gasohol to overall gasoline to rise to 94.7%.

Moreover, the retail price restructuring and the steady erosion in oil prices have resulted in lower retail prices of gasoline and diesel. On the other hand, the prices of LPG and NGV went up in reflection of the market mechanism, pushing consumers to switch to the use of gasoline and diesel. The demand for aviation jet fuel also jumped by 9.4% as a result of the burgeoning tourism sector.



Domestic demand for fuels (million liters per day)

Product	2015	2014	Growth variation
Gasoline	1.37	1.36	+0.7%
Gasohol	25.01	21.94	+14.0%
Gasoline group	26.40	23.30	+13.2%
Aviation fuel	60.05	57.73	+4.1%
Diesel group	16.53	15.10	+9.4%
Fuel oil	5.59	5.68	-1.5%
LPG (million kilogram/day)*	12.11	12.98	-6.8%
Total	131.00	125.85	+4.09%
(KBD)	823.92	791.54	+4.09

Source: Department of Energy Business

*Excluding feedstocks for petrochemical industry, Unit converter: LPG 0.54 kilogram /liter

The domestic demand for fuels in 2016 is expected to consistently grow from 2015, supported by the plunging world oil price and economic growth expansion of Thailand after the integration of ASEAN market or the ASEAN Economic Community (AEC) attracting more investments in the region and Thailand. The demand for fuels for transportation, especially gasohol, is likely to spiral from more modern automobiles and support under the state policy on the use of renewable energy. However, foreign investors still lack investment confidence in Thailand and see the domestic economy as somewhat fragile, as Thailand will still be facing a certain set of economic risks, leading to a slowdown in foreign investments and slow increase in oil consumption in the manufacturing sector. Higher household debts will continue to slow down domestic consumption.

In reflection of higher market demand and higher marketing margins for petroleum products and lower costs of capital for retail investors, following the state policy on reduction of legal reserves of refined products, 820 service stations were added this year, driving up the total service stations nationwide to 25,033 (data registered on September 30, 2015, at the Department of Energy Business). Of these figures, the total number of service stations selling gasohol E20 and gasohol E85 this year went up to 3,038 and 807 respectively, representing 373 and 211 additional in increment for E20 and E85 respectively. The main contributing factors for these increases were retail price restructuring, pushing the retail gasoline price down by Baht 2.00 per liter and more modern vehicles with gasohol-supporting engines in the market. Moreover, retail market competition became more heated, both in pricing



and in service quality. Non-oil businesses were incorporated to generate higher margins, thus forcing investors to continuously improve and modernize their service stations to attract and offer more value-added choices to consumers and increase their own competitiveness at the same time. In support of the government policy and promotion on the use of renewables and alternatives under the Alternative Energy Development Plan (AEDP), certain retailers generated and distributed maps showing locations of their retail stations selling renewable energy, partly to also accommodate consumers with modern technology vehicles. Many domestic retail investors are taking an advantage of this to expand their business to neighboring countries, following AEC integration, as the region is deemed to grow exponentially and of course, boast higher oil demand.

Number of service stations

Unit : station

Oil trader	2015 ^{1/}	2014	2013
PTT	1,578	1,505	1,462
Shell	491	489	515
Esso	534	511	516
Bangchak	1,072	1,070	1,074
Chevron	362	359	366
PTTRM	147	147	148
Others	21,159	20,132	18,923
Total	25,343	24,213	23,004

Source: Department of Energy Business

Remarks: ^{1/} number of stations as of December 31, 2015

During the year, the average sales volume of oil products through service stations around the country was 1,817.7 million liters per month, an increase of 9.8% from last year. Bangchak's sales volume through service stations increased by 8.7%, and remains rank second in market share.



Sales volume of fuels through service stations for 2014 - 2015

Operator	Average Sales volume (million liters/month)			Market share (%)		
	2015	2014	Δ	2015	2014	Δ
PTT	674.8	610.1	10.6%	37.1	36.9	0.3
Bangchak	272.3	250.5	8.7%	15.0	15.1	-0.2
Esso	247.0	240.8	2.6%	13.6	14.5	-1.0
Shell	235.6	211.9	11.2%	13.0	12.8	0.2
Thai Oil	125.3	105.4	18.9%	6.9	6.4	0.5
PTTRM	108.8	102.1	6.6%	6.0	6.2	-0.2
Caltex	94.7	85.9	10.2%	5.2	5.2	0.0
PTG Energy	29.1	18.4	57.8%	1.6	1.1	0.5
Susco Group	27.0	24.6	9.5%	1.5	1.5	-0.0
Others	2.3	4.6	-50.9%	0.1	0.3	-0.2
IRPC	0.9	0.9	7.5%	0.1	0.1	-0.0
Total	1,817.7	1,655.2	9.8%	100	100	

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

For the lubricating oil market, traders under Article 7, the total domestic sales rose by 2% to approximately 31 million liters per month (data as of December 31, 2015, by the Department of Energy Business). In this market, lube oil for automobiles accounts for 60% of the total. The market is likely to grow in line with the national economic growth and primarily driven by the state policy. Traders under Article 7 have been expanding their distribution channels to the neighbor countries continuously.

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 road tankers.

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

Station Format		Number (station)	Share (%)
1.	Company-Owned, Company-Operated stations (COCO): Bangchak is the investor and operates the station through Bangchak Green Net Co., Ltd. Bangchak takes control of the policy and business model. COCO stations are mostly large stations	197	18.38



Station Format		Number (station)	Share (%)
	located on major roads, and, under Bangchak's direct supervision, serve as prototype stations.		
2.	Company-Owned, Dealer-Operated stations (CODO): Bangchak is the investor and land owner, while the station management is carried out by experienced operators, who rent the stations.	51	4.76
3.	Joint Venture stations (JV): This is a joint investment between Bangchak and operators interested in running the service station business.	58	5.41
4.	Dealer-Owned, Dealer-Operated stations (DODO): The operator is the station owner, land owner, and sole investor, as well as a distribution agent.	151	14.08
5.	Co-Operative stations (CO-OP): These stations are invested by the community. In most cases, the community is the land owner and investor.	615	57.37
Total		1,072	100

Remarks: The Bangchak Petroleum PLC, as of December 31, 2015.

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 road tankers, 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 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 either the company, dealers, 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 agents, 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 finished products from Bangchak for feedstock.

4) Export Customers – These customers are overseas oil traders who buy Bangchak oil to feed their production process, 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	2015		2014		2013	
	Volume	%	Volume	%	Volume	%
1. Outlet & End-User Customers	90.5	70.6	82.3	69.5	83.7	69.4
2. Supply Sales Customers	-	-	-	-	0.1	0.1
3. Sale to domestic refineries and petrochemical plants	16.3	12.7	16.5	13.9	16.4	13.6
4. Export Customers	21.4	16.7	19.6	16.6	20.4	16.9
Total	128.2	100.0	118.4	100.0	120.6	100.0

Source : The Bangchak Petroleum PLC.



Sales value of Bangchak's products and services

Products	2015		2014		2013	
	million baht	%	million baht	%	million baht	%
<u>Domestic Sale</u>						
1. High-speed diesel	73,857	56.7	81,991	46.8	86,663	47.3
2. Fuel oil	1,814	1.4	3,467	2.0	4,098	2.2
3. Gasoline	41,319	31.7	49,591	28.3	47,744	26.0
4. Other products and services	13,326	10.2	17,240	9.8	20,625	11.2
Total domestic sale	130,318	90.2	152,289	86.9	159,130	86.8
<u>Export sale</u>						
1. High-speed diesel	2,652	1.8	3,237	1.8	2,126	1.2
2. Fuel oil	10,208	7.1	15,966	9.1	19,014	10.4
3. Gasoline	838	0.6	2,422	1.4	1,314	0.7
4. Other products and services	438	0.3	1,345	0.8	1,777	1.0
Total export sale	14,136	9.8	22,970	13.1	24,231	13.2
<u>Combined sales value</u>						
1. High-speed diesel	76,509	53.0	85,228	48.6	88,789	48.4
2. Fuel oil	12,022	8.3	19,433	11.1	23,112	12.6
3. Gasoline	42,157	29.2	52,013	29.7	49,058	26.8
4. Other products and services	13,766	9.5	18,585	10.6	22,402	12.2
Total sales value	144,454	100.0	175,259	100.0	183,361	100.0
% increase/decrease	-17.58		-4.42		12.63	

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, while increasing storage tanks. 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

	2015	2014	2013
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	59.2	42.4	48.5
2. Fuel oil	16.9	14.9	16.8
3. Gasoline	22.2	17.5	20.0
4. Aviation fuel, kerosene	11.7	8.6	10.8
5. LPG	2.9	2.9	2.5
6. Products for internal use and product loss during operation	0.1	0.0	0.7
Total output volume (B)	112.9	86.5	99.3
% increase of output volume	30.9	-12.9	35.4
% of capacity utilization (B/A)	99.6	76.2	87.6

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 ETOH in the production of GSH.

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.

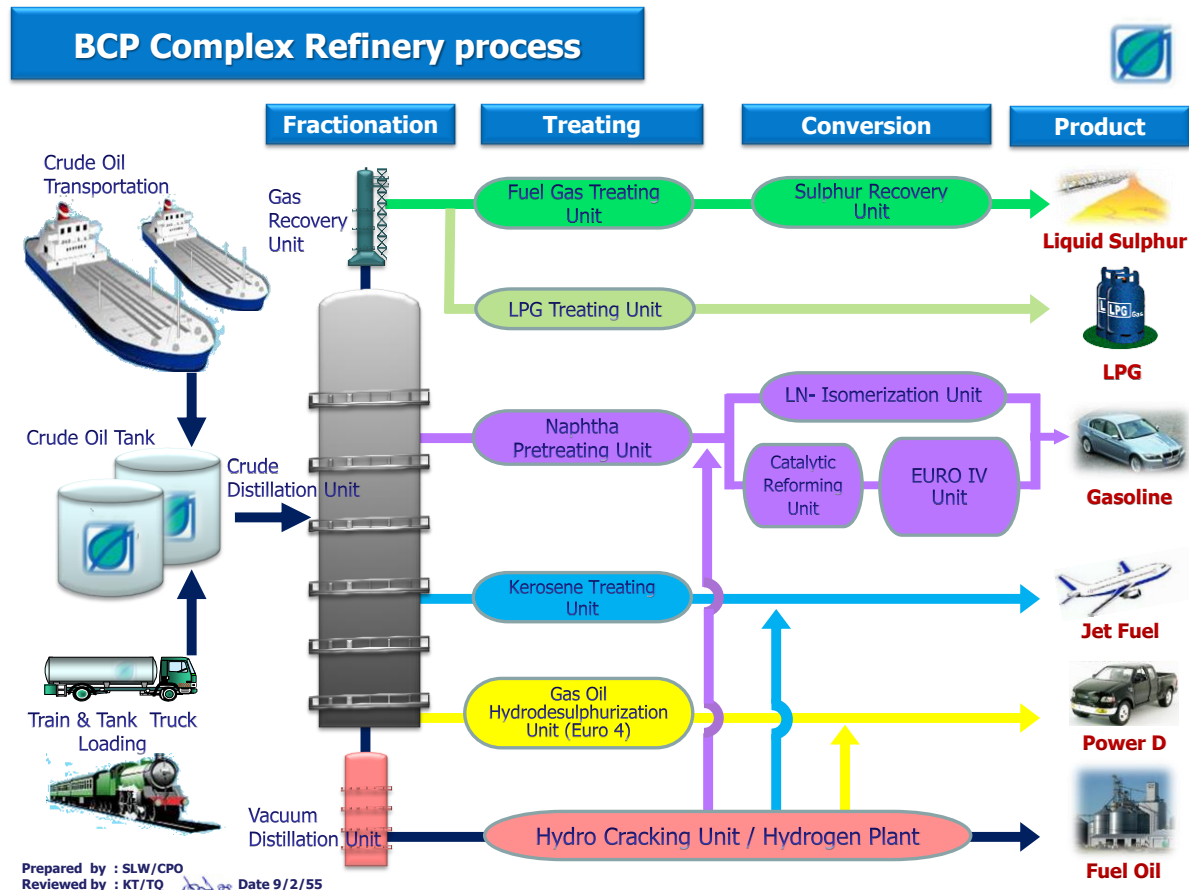


Fuel gas obtained from the process will be refined by removing the sulphur content. Treated fuel oil, diesel after sulphur content removal under the Euro 4 standard, aviation fuel, and cooking gas are kept in storage tanks for sale.

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					
	2015		2014		2013	
	Volume	%	Volume	%	Volume	%
Sirikit	29,095	19.1	27,948	20.2	32,889	22.0
Tantawan	2,247	1.5	1,645	1.2	2,754	1.8
Benchamas	19,711	12.9	22,663	16.4	20,652	13.8
Nasanun/Nasanun East	1,440	0.9	3,590	2.6	1,186	0.8
Jasmine	9,175	6.0	9,796	7.1	10,478	7.0
Big Oil Project	24,229	15.9	24,051	17.4	29,816	19.9
Others	66,490	43.6	48,829	35.2	51,706	34.6
Total	152,387	100	138,522	100	149,481	100

Source: Energy Policy and Planning Office, Ministry of Energy

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

In 2015, Bangchak procured indigenous crude oil from many fields, 20.9% of which is crude from Sirikit (Phet) field, 14.4% from Pattani Field, 13.6% from Benchamas Field, as details below:

Indigenous sources of crude oil (unit: thousand barrels)

Crude Field	2015		2014		2013	
	Volume	%	Volume	%	Volume	%
1. Sirikit (Phet)	3,599	20.9	3,341	20.3	5,150	29.9
2. Pattani	2,473	14.4	2,797	17.0	1,938	11.2
3. Jasmine	984	5.7	1,426	8.7	1,597	9.3
4. Benchamas	2,348	13.6	4,011	24.3	4,080	23.7
5. Tantawan	737	4.3	-	0.0	489	2.8
6. Nasanun East	1,381	8.0	1,214	7.4	277	1.6
7. Arthit Condensate	-	0.0	542	3.3	0	0.0
8. Type 2	-	0.0	-	0.0	86	0.5
9. North Central	521	3.0	-	0.0	618	3.6
10. Songkhla	1,419	8.2	2,143	13.0	2,050	11.9
11. BP (U-Thong / Kamphaeng Saen)	50	0.3	59	0.4	75	0.4
12. Arunothai	189	1.1	214	1.3	218	1.3



Crude Field	2015		2014		2013	
	Volume	%	Volume	%	Volume	%
13. Sang Kajai	91	0.5	39	0.2	45	0.3
14. Phu Horm Condensate	143	0.8	100	0.6	101	0.6
15. POE Night	155	0.9	16	0.1	20	0.1
16. Wichian Buri	32	0.2	46	0.3	69	0.4
17. L 33	15	0.1	16	0.1	17	0.1
18. L53/48	30	0.2	38	0.2	87	0.5
19. Bung krathiem	-	0.0	0	0.0	1	0.0
20. Jakkawan Condensate	-	0.0	0	0.0	0	0.0
21. Bongkhot Condensate	-	0.0	0	0.0	0	0.0
22. Nang Nuan	-	0.0	0	0.0	0	0.0
23. Nong Phak Chee	108	0.6	44	0.3	65	0.4
24. L 53 type 3	155	0.9	139	0.8	170	1.0
25. L 53/48 type 4	36	0.2	63	0.4	67	0.4
26. L 53-2	1	0.0	28	0.2	1	0.0
27. NSE-F6	-	0.0	0	0.0	6	0.0
28. WBEXT-3	215	1.2				
29. L 22/43	18	0.1				
30. Bua Luang	163	0.9	95	0.6	0	0.0
31. Manorah	1,933	11.2	104	0.6	0	0.0
32. Nongyao	414	2.4				
33. Others	-	0.0	0	0.0	0	0.0
Total	17,210	100	16,475	100	17,227	100

Source: The Bangchak Petroleum PLC.

This year, imported crude is detailed below: Crude from the Far East fields are Labuan, Bunga Orkid, and Bunga Kekwa from Malaysia; Seria Light Export Blend, and Champion from Brunei; Banyu Urib, and Pangkah from Indonesia; Montara from Australia. Details of imported crude appear in the following table:



Overseas sources of crude oil (unit: thousand barrels)

Type of crude	Country	2015		2014		2013	
		Volume	%	Volume	%	Volume	%
Far East							
La buan	Malaysia	4,327	18.6	1,867	12.5	2,652	14.6
Belanuk	Indonesia	133	0.6	0	0.0	0	0.0
Bu-nga Orkid	Malaysia	2,633	11.3	1,402	9.4	4,500	24.7
Bu-nga Kekwa	Malaysia	654	2.8	1,078	7.2	1,604	8.8
Dulang	Malaysia	0	0.0	0	0.0	191	1.0
Kike	Malaysia	721	3.1	0	0.0	0	0.0
Seria Light Export Blend	Brunei	2,094	9.0	2,005	13.4	3,815	21.0
Champion	Brunei	2,087	9.0	625	4.2	0	0.0
Buck-ho	Vietnam	237	1.0	366	2.4	0	0.0
Hi Thach	Vietnam	200	0.9				
Cendor	Malaysia	922	4.0				
Tapis	Malaysia	0	0.0	0	0.0	287	1.6
Geragai	Indonesia	315	1.4	0	0.0	806	4.4
Masa	Malaysia	0	0.0	0	0.0	512	2.8
Miri	Malaysia	620	2.7	0	0.0	285	1.6
Pangkah	Indonesia	1,071	4.6	1,030	6.9	175	1.0
Banyu Hurib	Indonesia	1,416	6.1				
Madura	Indonesia	403	1.7				
Kapal	Malaysia	286	1.2	198	1.3	0	0.0
Bentara	Malaysia	51	0.2	96	0.6	0	0.0
Te Giac Trang	Vietnam	0	0.0	310	2.1	0	0.0
Total from Far East source		18,170	78.2	8,977	60.0	14,826	81.5
Middle East			0.0				
Murban	U.A.E.	0	0.0	560	3.7	1,385	7.6
Marib Light	Yemen	0	0.0	217	1.5		0.0
Macila	Yemen	0	0.0	329	2.2		0.0
Total from Middle East source		0	0.0	1,106	7.4	1,385	7.6
Other sources			0.0				
Sty Barrow	Australia	0	0.0	539	3.6		0.0
Enfield	Australia	0	0.0	0	0.0	1,150	6.3
Pyrenees	Australia	0	0.0	0	0.0	554	3.0
Montara	Australia	5,065	21.8	3,957	26.5	281	1.5
Koebo	Nigeria	0	0.0	300	2.0		0.0
Uncanny	Australia	0	0.0	71	0.5		0.0
Total from other sources		5,065	21.8	4,867	32.6	1,985	10.9
Grand Total		23,235	100	14,950	100	18,195	100

Source: The Bangchak Petroleum PLC.

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	2015		2014		2013	
	Million Baht	%	Million Baht	%	Million Baht	%
<u><i>Cost of indigenous feedstock</i></u>						
1. Crude and semi-finished products	41,381	42.1	64,870	43.4	65,925	44.1
2. Finished products	11,387	11.6	29,602	19.8	17,626	11.8
Total	52,768	53.7	94,472	63.1	83,551	55.8
<u><i>Cost of imported feedstock</i></u>						
1. Crude and semi-finished products	45,182	45.9	50,889	34.0	64,078	42.8
2. Finished products	379	0.4	4,892	3.3	1,977	1.3
Total	45,561	46.3	55,781	37.3	66,055	44.2
<u><i>Combined costs of indigenous and imported feedstock</i></u>						
1. Crude and semi-finished products	86,563	88.0	115,759	77.0	130,003	86.9
2. Finished products	1,766	12.0	34,494	23.0	19,603	13.1
Total feedstock cost	98,329	100	150,253	100	149,606	100

Source: The Bangchak Petroleum PLC.



3. **Risk Factors**

Bangchak's policy is to manage various risks to its businesses to ensure business continuity, stable and sustainable growth, and readiness to respond to the changing environment. A risk management policy, based on the COSO ERM and ISO 31000 international standards, has been translated into practice company-wide since 2004. Policy implementation includes risk management structuring, defining a systematic reporting channel, and devising systematic monitoring and assessment methods. The risk management has also been cascaded down to Bangchak affiliates.

Bangchak looks into both internal and external risk factors to keep all risks in the proper level and acceptable. In this respect, the management team calls for regular reviews of risk factors in all aspects, which include operation, strategic, and investment risks. Such reviews are helpful for Bangchak to lay down measures to both prevent risks and mitigate impacts, assign responsible persons, identify risk indicators, and design reporting and monitoring processes. The Enterprise-wide Risk Management Committee (ERMC) will give recommendations on the enterprise-wide risk management policy and guidelines to ensure Bangchak's proper position regarding risk management.

Risk factors

During 2015, the global and local economies were still sluggish, which affected the manufacturing sector and household consumption. Crude oil prices continued to plunge as from late 2014, thus producing direct impacts on the petroleum business, Bangchak's main source of income. To cope with the situation, a risk management policy has been developed and implemented company-wide to minimize impacts on the business and stakeholders. Bangchak assessed all risks to the operations and devised a plan to manage changes, bearing in mind its goal attainment and strategic objectives in order to proceed firmly.

1. Economic risks

To minimize risks in the oil-refining business, which is heavily influenced by the ups and downs of the world oil price, Bangchak has put in place both short-term and long-term risk management methods to assure business goal attainment.

- *Short-term management of risks caused by world oil price fluctuation*

Bangchak closely monitors world oil price movement daily. Changes in world oil trading and price movements are reported to the management and all parties concerned. An oil price-hedging contract will also be proposed whenever appropriate. A Risk Management



Sub-Committee (RMC) was established to specifically follow up risk management performance for further improvement. RMC, in addition, is in charge of policy formulation and goal-setting involving risk management in the refining business, always taking into account oil price fluctuation and the baht value to minimize operation risks.

- *Long-term management of risks caused by world oil price fluctuation*

New investments that can generate steady revenue have become more and more significant. Bangchak has expanded its investment to power plant and energy crop (plant) businesses. Its solar energy business has a current production capacity of 118 MW. BCPG Co., Ltd., was established in 2015 to take charge of investment in power production from renewable energy, both in and outside Thailand, in line with Bangchak's directions and business goals. In the energy crop business, investment has continually been expanded with Bangchak Biofuel Co., Ltd., investing in 2015 in a second biodiesel plant with a capacity of 450,000 liters per day. Commercial production and marketing are planned to start in 2016, which will increase Bangchak's combined production of biodiesel to 810,000 liters per day. Bangchak is also developing a project to start up two additional ethanol plants to reduce risks of biodiesel (B100) and ethanol shortages and increase its renewable-energy production in response to the increasing local demand.

2. Operation, social, and environmental risks

Bangchak conducts its business with concerns on safety, the environment, and society. The management carries out regular assessment of risk and possible impacts caused by both internal and external changes. Lessons learned are used for improving the operations and drawing additional measures. Safety standards are upgraded, while confidence in operations are bolstered through the following activities:

- Operation risk management by continuous application of Safety Integrity Level (SIL), Reliability-Centered Maintenance (RCM), and Risk-Based Inspection (RBI) systems to all processes and equipment to prevent undesired situations and ensure higher safety standards of machinery while raising production process efficiency
- Developing safety systems under the OHSAS 18001 standard with Hazard and Operability Studies (HAZOP) at all refining units while laying down the Process Safety Management System throughout the refining processes
- Making ready emergency response and firefighting systems at all sites to handle emergencies and help neighboring communities by making available advanced fire trucks, upgrading the CCTV system



- at Plant 4 with a digital system, which benefits quick and accurate investigation, and improving the fire hose system
- Making assessment to find ways to prevent or minimize environmental impacts, including making double-hull ships standard for oil vessels for both crude and finished products, construction of an enclosed ground flare to reduce impacts from the flare on communities by 2016, and making tools and equipment more environmentally friendly and safe
- Managing energy risks in production processes by using power and steam from the cogeneration power plant, fueled by natural gas in place of fuel oil, and making an additional plan for the construction of cogeneration power plant unit 2 to raise energy efficiency while reducing carbon dioxide emission.

3. Risks from new investments

In the feasibility study of each new investment, an analysis must be made into any risk that could delay the project, thus making Bangchak miss the expected returns on investment or causing investment costs to balloon. Decisions made in a project must follow a thorough, systematic project analysis to ensure that each project could reach its goal without causing impacts on the environment, society, and communities at all stages of operation.

In selecting its projects, Bangchak employs the “Y model” technique, in which various conditions serve as selection criteria, incorporating assorted project risks, including those of countries of investment, those of each stage of project implementation, and those arising from natural catastrophes. The screening criteria also assess economic effectiveness, governance of joint-venturers, and personnel readiness. The screened and improved plan must receive approval from the Executive Committee and the ERMIC before presentation to the Board to ensure that all new investments can move forward and achieve targeted returns on investment.

4. Business Continuity Management

Bangchak has been certified with ISO 22302:2012 for business continuity standards at its Head Office on the 10th floor of Building A of the Energy Complex, the oil refinery and Bangchak Oil Distribution Center, Central Region’s Administrative Center, and Bang Pa-In Terminal. The certification reflects Bangchak’s successful attempt in upgrading its emergency response standards to an international level while giving assurance to stakeholders that its business is efficiently managed and will be able to constantly deliver products to customers, even in an emergency.

In 2015, to ensure business continuity, this year Bangchak ran an exercise to test its ability to cope with impacts from a fictitious six-magnitude earthquake occurring at the Si Sawat Fault, Kanchanaburi, and



an ensuing fire at a crude tank, which resulted in suspension of the refining operation. Included in the exercise was the relocation of the oil depot. Results of the exercise were used for improvement of the operations and the business continuity plan.

Moreover in 2015, Bangchak made the fifth amendment to its Risk Management Manual by aligning the risk management process with the organization's long-term target and direction for 2020. Part of the amendment was restructuring of the organization management as well as duties and responsibilities to keep pace with the changing environment. The manual will be used as a guideline for creating understanding among all parties involved. The company, in addition, expanded its risk management system to joint-venture companies, while continuously campaigning to make risk management institutionalized and recognized as an organizational culture in both the company and joint-venture companies.

**4. Review of business assets**

Asset	Ownership	Book value Baht million ^{1/}	Obligation
Refinery land	Long-term lease	385	None
Other properties	Ownership	983	None
Buildings	Ownership	222	None
Machinery & distillation tower equipment	Ownership	20,028	None
Power generators	Ownership	0	None
Sales and office equipment	Ownership	1,354	None
Platinum catalysts ^{2/}	Ownership	239	None
Vehicles	Ownership	86	None
Other assets ^{3/}	Ownership	27	None
Works in progress	Ownership	2,051	None
Total	-	25,375	-

Note:

- 1/ This year Bangchak set aside Baht 58 million in allowance (reversal of) for impairment of land property, machinery, and equipment, consisting of Baht 14 million in property, Baht 15 million in machinery and distillation tower equipment, and Baht 29 million in sales and office equipment.
- 2/ "Platinum catalysts": platinum-based catalysts (found in the octane enhancement unit's reactor), the contents of which are set by their producers.
- 3/ "Other assets": oil palm plantations in Pathumthani and Nakhon Nayok province.



Trademarks

Trademark	Number of registered trademarks	Goods/services under trademark	Expiry ^①
<u>Copyrights</u>			
1. Bangchak leaf	11	All fuels, cold tissue paper, pure drinking water, plastic polymers, pens, pencils, notebooks, folders, asphalt, activated carbon	Aug. 30, 2019 Oct. 15, 2019 Aug. 20, 2016
2. GRENA ZENITH SJ	1	Lubricant	Nov. 5, 2016
3. ISO GREEN	1	Gasoline	Jun. 10, 2024
4. GE GOLD	6	Synthetic gasoline-engine lubricant	Jan. 13, 2023 Feb. 12, 2022 Nov. 20, 2021 Dec. 25, 2021 Jan. 15, 2017
5. GE GOLD SM	1	Synthetic gasoline-engine lubricant	Jan. 15, 2017
6. GE PLUS	4	Gasoline-engine lubricant	Jan. 13, 2023 Nov. 20, 2021 Dec. 25, 2021 Jan. 15, 2017
7. GE SILVER	3	Semi-synthetic gasoline-engine lubricant	Nov. 4, 2024 Dec. 25, 2021 Jan. 15, 2017
8. Green Plus	1	Gasoline	Sep. 14, 2024
9. Green Plus 91	1	Gasoline	Sep. 14, 2024
10. Green Plus 95	1	Gasoline	Sep. 14, 2024
11. LOWCOST	1	All fuels	Jun. 23, 2025
12. BANGCHAK MAXDRIVE	1	Gasoline additive	Dec. 25, 2016
13. D3 GOLD	1	Synthetic diesel-engine lubricant	Oct. 9, 2023
14. D3 TURBO	1	Diesel-engine lubricant	Jan. 25, 2021
15. D3 TURBO PLUS	1	Semi-synthetic diesel-engine lubricant	Jan. 15, 2017
16. D3 EXTRA	1	Diesel-engine lubricant	Jan. 25, 2021
17. D3 EXTRA PLUS	1	Diesel-engine lubricant	Jan. 15, 2017
18. D3 PICK UP	1	Diesel-engine lubricant	Jan. 25, 2021
19. D3 PICK UP PLUS	1	Diesel-engine lubricant	Jan. 15, 2017
20. D3 MAX	1	Diesel-engine lubricant	May 14, 2017
21. D3 COMMONRAIL	1	Diesel-engine lubricant	Oct. 30, 2018
22. D3 COMMONRAIL TURBO	1	Diesel-engine lubricant	Oct. 30, 2018
23. SUPER HDX	1	Diesel-engine lubricant	Jan. 15, 2017



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry ¹
24. POWER D B5	1	High-speed diesel	May 20, 2019
25. BANGCHAK POWER D	1	High-speed diesel	Jul. 10, 2018
26. LEMON GREEN [®]	1	Drinking water	Feb. 23, 2019
27. SUPER POWER D B5 (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
28. SUPER POWER D (EURO 4)	2	Diesel-engine lubricant Diesel	Nov. 3, 2020 May 2, 2022
29. PREMIO INTHANIN	5	Drinks, biscuits, cups, plates, tokens, water bottles, pens	Feb. 13, 2021
30. INTHANIN PREMIO BY BANGCHAK	3	Water bottles, water containers, cups, plates, food, bowls, pens	Feb.13, 2021
31. INTHANIN PREMIO COFFEE BY BANGCHAK	5	Drinks, biscuits, tokens, shirts, caps, umbrellas, sunshades	Feb.13, 2021
32. GE NGV	1	Semi-synthetic gasoline-engine lubricant	Dec. 25, 2021
33. GE PLATINUM	1	Synthetic gasoline-engine lubricant	Dec. 25, 2021



Service Marks

Service logo	Number of registered logos	Goods/service under logo	Expiry ^①
<u>Copyrights</u>			
1. Bangchak leaf	3	Goods sales management	Dec. 20, 2018
2. Bangchak colored strips, Bangchak characters, and Bangchak leaf	1	Vehicle service station	Aug. 6, 2023
3. Colored strips and Bangchak leaf	1	Vehicle service station	Aug. 6, 2023
4. Colored strips	1	Vehicle service station	Nov. 3, 2023
5. Bangchak colored strips	1	Vehicle service station	Aug. 6, 2023
6. Hornbill photo	1	Goods sales management	Oct. 10, 2016
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 [®]	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
13. Green Wash	1	Vehicle cleaning & lubrication	Sep. 1, 2025
14. GREEN WASH AUTOCARE	2	Vehicle cleaning	Jul. 25, 2016
15. GREEN WASH EXPRESS	1	Vehicle cleaning	Jul. 25, 2016
16. GREEN BIKE EXPRESS	1	Motorbike maintenance	Jul. 25, 2016
17. GREEN TYRE EXPRESS	2	Tyre sale & mending	Aug. 15, 2016
18. GREEN WASH THE PREMIUM	1	Vehicle cleaning	May 20, 2019
19. INTANIN PREMIO COFFEE BY BANGCHAK	2	Food & fresh coffee business management	Feb. 13, 2021
20. PREMIO INTANIN	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



Service logo	Number of registered logos	Goods/service under logo	Expiry ^①
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



Trademarks and Service Marks advertised abroad

Trademark	Number of registered trademarks	Goods/services under trademark	Expiry
1. Bangchak leaf and Chinese characters (registered in PRC (China))	1	Gasoline, diesel, and lubricants	Dec. 27, 2020
2. Bangchak leaf and BANGCHAK LUBRICANTS - Registered in Myanmar [®] - Registered in LPDR (Laos)	2	Fuel products	- Mar. 20, 2023
3. Bangchak leaf and BCP LUBRICANTS (Registered in Myanmar [®])	1	Fuel products	-
4. Bangchak leaf and BANGCHAK (Registered in Myanmar [®])	2	Fuel products, service stations	-
5. Bangchak leaf and characters (Registered in LPDR (Laos))	2	Fuel products, service stations	Mar. 20, 2023
6. Bangchak leaf and BCP LUBRICANTS (Registered in Vietnam)	1	Fuel products	Jul. 13, 2022
7. Bangchak leaf and BCP LUBRICANTS (Registered in Cambodia)	1	Fuel products	Jul. 5, 2022
8. Bangchak leaf and BCP LUBRICANTS (Registered in Lebanon)	1	Fuel products	Feb. 26, 2029
9. INTANIN COFFEE (Registered in Burma) [®]	1	Food & fresh coffee business management	-
10. BAICHAK MART (Registered in Burma) [®]	1	Miscellaneous goods for consumers' convenience	-
11. GREEN SERVE (Registered in Burma) [®]	1	Vehicle maintenance	-
12. Bangchak leaf and BANGCHAK (Registered in Burma) [®]	2	Fuel products & Vehicle service station	-
13. Bangchak leaf and BCP (Registered in Burma) [®]	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. 23, 2023
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 ⁴)	1	Fuel products	Sep.10, 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 ⁵)	1	Fuel products	Dec. 6, 2023
20. INTANIN COFFEE (Registered in PRC (China))	1	Food & fresh coffee business management	Feb. 20, 2025
21. INTANIN COFFEE (Registered in Vietnam)	1	Food & fresh coffee business management	Sep. 2, 2023
22. INTANIN 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



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry
27. Bangchak leaf (Registered in PRC (China))	1	Service stations	Jan. 27, 2025
28. Bangchak leaf (Registered in LPDR (Laos))	2	Fuel products, service stations	Dec. 4, 2024
29. Bangchak leaf (Registered in Vietnam)	2	Fuel products, service stations	Sep.29, 2023
30. Bangchak leaf and BCP (Registered in PRC (China))	1	Fuel products, service stations	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

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	Filed Nov. 19, 2014
3. LOWCOST	1	Vehicle service station	Filed Apr. 29, 2015

Trademarks and Service Marks under extension process in Thailand

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. INTANIN COFFEE	2	Coffee drinks, biscuits, bakery products, juices	Jul. 20, 2015
2. INTANIN COFFEE	3	Food & fresh coffee business management	Jul. 20, 2015 Aug. 26, 2015

**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 - PRC - LPDR - Iraq - Malaysia - Turkmenistan	5	Fuel products	Filed on: Aug. 7, 2012 Nov. 20, 2013 Aug. 3, 2015 Jun. 10, 2015 Jun. 23, 2015
2. INTANIN COFFEE registered in Cambodia	1	Food & fresh coffee business management	Filed on Sep. 5, 2013
3. BAICHAK MART registered in Cambodia	1	Miscellaneous goods for consumers' convenience	Filed on Sep. 5, 2013
4. GREEN SERVE registered in Vietnam and Cambodia	2	Vehicle maintenance	Filed on Sep. 3 and 5, 2013
5. Bangchak leaf and BANGCHAK, registered in PRC (China)	1	Fuel products & service stations	Filed on Sep. 27, 2013
6. Bangchak leaf and BCP, registered in PRC (China)	1	Fuel products & service stations	Filed on Sep. 27, 2013
7. Bangchak leaf and BCP, registered in Cambodia	2	Fuel products & service stations	Filed on Oct. 1, 2013

Note:

- ① Registered trademarks and service logos are in effect 10 years from registration dates and extendable every 10 years
- ② Belongs to Bangchak Green Net Co., Ltd., a subsidiary
- ③ 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, 2015, 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.



6. General information and other key information

- Company Name : The Bangchak Petroleum Public Company Limited
- Head Office : 555/1 Energy Complex Building A, Floor 10th Vibhavadi Rangsit Rd., Chatuchak, Bangkok 10900
- 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 : 0-2140-8999
- Fax : 0-2140-8900
- Website : <http://www.bangchak.co.th>
- Company establishment: November 8, 1984
- Commercial operation : April 1, 1985
- Registered capital (as of December 31, 2015) 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, 2015)
 - 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 Bangchak community service stations
- Overseas export markets.
- Office and Terminals
 - Head Office: 555/1 Energy Complex, 10th Floor, Building A, Vibhavadi Rangsit Road, Chatuchak, Bangkok 10900
Tel. 0-2140-8999, Fax 0-2140-8900
Email: info@bangchak.co.th
 - Bangchak Refinery and Terminal: 210 Soi Sukhumwit 64, Bangchak, Phra Khanong, Bangkok 10260
Tel. 0-2335-4999, 0-2331-0047, 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. 0-3535-0260, 0-3527-6999, Fax (Central Region Business Office) 0-3535-0290, Fax (Bang Pa-In Terminal) 0-3527-6920
 - Northern Region Business Office: 87/9 Yee-wan Building, 3rd Floor, Thung Hotel Road, Tambon Wat Ket, Amphoe Muang, Chiang Mai 50000
Tel. 0-5330-0484, Fax 0-5330-0485
 - Northeastern Region Business Office: 499 Moo 12, Mitraphab Road, Tambon Muang Kao, Amphoe Muang, Khon Kaen 40000
Tel. 0-4326-1789-92, 0-4326-1751-3, Fax 0-4326-1750
 - Southern Region Business Office: Room 402, 4th Floor, P.C. Tower, 91/1 Moo 1, Kanchanawithi Road, Tambon Bang Kung, Amphoe Muang, Surat Thani 84000
Tel. 0-7722-4790-2, Fax 0-7722-4793
 - Samut Sakhon Oil Distribution Center: 100/149 Moo 1, Tambon Tha Chin, Amphoe Muang, Samut Sakhon 74000
Tel. 0-3482-0974, 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, Fax 0-7728-2943



- Song Kla Oil Distribution Center: 13/1 Moo 6, Tambon Sa Ting Mor, Amphoe Singha Nakorn, Song Kla 90280
Tel. 0-7433-2782, Fax 0-7433-2783
- Suksawat Lubricant Oil Distribution Center: 196 Moo 1, Suksawat Road, Tambon Pak Khlong Bang Pla Kot, Amphoe Phra Samut Chedi, Samut Prakan 10290
Tel. 0-2815-6997-8, Fax 0-2815-6996
- Subsidiaries
 - Bangchak Green Net Co., Ltd.
223/94 Country Complex, Building A, 19th Floor, Sanpawut Rd., Bangna, Bangkok 10260
Tel. 02-3672-699
Fax. 02-7457-9452
 - Bangchak Biofuel Co., Ltd.
28 Moo 9 (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-500
Fax. 035-276-549
Website: <http://www.bangchakbiofuel.co.th>
 - BCPG Co., Ltd. (BCPG)
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
 - Bangchak Solar Energy Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-000
Fax. 035-276-014
E-mail: info-sunny@bangchak.co.th
Website: <http://www.bangchak.co.th/sunny-bangchak/>
 - Bangchak Solar Energy (Prachinburi) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-000
Fax. 035-276-014
 - Bangchak Solar Energy (Chaiyaphum 1) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-000
Fax. 035-276-014



- Bangchak Solar Energy (Buriram) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-000
Fax. 035-276-014
- Bangchak Solar Energy (Buriram 1) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-000
Fax. 035-276-014
- Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in District, Ayudthaya 13160
Tel. 035-276-000
Fax. 035-276-014
- 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
- 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
Website: 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
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Auditor	KPMG Phoomchai Audit Limited 48 th - 51 st Floors, Empire Tower 195 South Sathorn Road, Yannawa, Sathorn, Bangkok 10120 Thailand Tel. 0-2677-2000 Fax. 0-2677-2222
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Registrar and Debenture Holders Representative	Bangkok Bank Public Company Limited 333 Silom Road, Silom, Bangrak, Bangkok 10500 Thailand Tel. 0-2230-1478 Website: www.bangkokbank.com
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	Bank of Ayudhya Public Company Limited 1222 Rama III Road, Bang Phongphang, Yan Nawa, Bangkok 10120 Thailand Tel. 0-2296-5689 Website: www.krungsri.com
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