



1. Policy and Business Overview

1.1 Vision, Objectives, Goals, and Strategies

With a corporate culture of Greenergy Excellence, Bangchak Petroleum Public Company Limited was established to conduct its energy business since 1984 and strives to strike a balance between business value and social and environmental value. To this end, it has constantly applied the Sufficiency Economy philosophy, corporate governance, and social responsibility concept to business management for goal achievement.

In creating business value, Bangchak sets a goal of growth to add sustainable value in tandem with social and environmental stewardship. Specifically, it restructured its refining income, formerly accounting for 70% to 30% for the marketing business. Recognizing high volatility facing the refining business, as well as volatile oil prices and refining margins subject to global and regional economies, which affect its performance, Bangchak set its goal in 2020 for the refining income at 50% versus 50% for emerging businesses, including clean-energy business and other energy businesses. These emerging businesses command steady income and low risks posed by external factors. They include solar power generation and other alternative energy, including biodiesel production from palm oil and palm oil plantation, designed to add secure value to Bangchak's businesses while effectively diversifying risks to future income.

One of Bangchak's goals is to invest in developing current businesses through investment in the 3E Project, encompassing efficiency, energy, and the environment. To elaborate, it seeks to develop the catalytic reforming unit to replace the old, obsolete unit with efficient technology, marked by efficiency, improved energy consumption, and longer operating periods before maintenance. Also, it seeks to erect a cogeneration power plant to raise its energy reliability and consume natural gas, a greener fuel, while heightening safety and environmental stewardship. Bangchak also participated in a benchmarking program on operating performance and apply the findings to improve management efficiency on a par with world-class complex refineries. It also plans to raise its sales through marketing businesses to 100,000 barrels per day, while modernizing its marketing network and seeking greater coverage of high-potential locations to accommodate greater produced volumes. As for emerging businesses, Bangchak focuses on solar power generation to fulfill its PPA volume of 118 MW and grow its investment to



biofuels, including ethanol and palm oil biodiesel to accommodate greater consumption of alternative energy in the future, together with continual investment in other businesses with potential.

At the same time, Bangchak focuses on organizational development. Eyeing system and work process development for greater efficiency, transparency, and international competitiveness, Bangchak has applied the TQA (Thailand Quality Award) criteria to its own development efforts in its stride toward management excellence. To achieve this, it focuses on clear operational approaches with comprehensive implementation so that the approaches can be assessed and improved, then coordinated under uniform directions toward corporate goals. The key issues to be assessed consist of corporate leadership, strategic planning, customer focus, measurement and analysis, knowledge management, human resource focus, process management, and results.

Thanks to the concept of sustainable management to strike a balance between value and merit, Bangchak has included a social and environmental KPI as a corporate KPI, thus enabling it to properly cascade its social and environmental goals into action through its sections and departments. In other words, various action plans must link to or must not conflict with such goals. The direction for social and environmental management relies on key strategies for managing businesses for sustainability as follows.

1. Open, Transparent and Verifiable

The Company adheres to an open, transparent and verifiable policy in its operations. Operational data are transparently disclosed under good corporate governance and The Stock Exchange of Thailand rules. Applying proactive environmental management, it discloses the actual data on quality of air and effluents around the refinery by posting such information at the entrance to the refinery and in surrounding communities.

2. Socially and Environmentally Friendly Business Models (In-process)

Aware that business operations that lack social and environmental activities are unsustainable, the Company is determined to do business in such a way that not only can it sustain continuous growth, but also simultaneously generate positive impacts on society and the environment. Such a model that the Company has been operating successfully is the cooperation of retail stations and agricultural cooperatives. The Company buys agricultural



products from cooperatives in different communities and uses them for retail stations' sales promotion to create jobs and revenue in support of the economic and social development of the communities. In the future, the Company, in cooperation with the Ministry of Agriculture and Cooperatives, the Ministry of Energy and the Bank for Agriculture and Agricultural Cooperatives, will initiate a conversion of abandoned orange farms to palm plantations for orange farmers in Rangsit. The palm produce will be their new source of income and promote the use of alternative energy, which has been the Company initiative for more than a decade as in gasohol and biodiesel promotion. In all, this business model benefits the environment and provides higher income to support social development in agricultural communities.

3. Carbon Neutral Company

Aware that the refining business consumes a large amount of energy and emits considerable carbon dioxide, the Company has set a target to become a carbon neutral company. To illustrate, its carbon dioxide emission will be reduced by more than 50% of the business-as-usual within 2015 as a result of its continuous efforts on clean energy business development, be it a 118-MW PPA solar power plant, palm oil biodiesel plants, tapioca-based ethanol production plants, diesel production from weeds, energy efficiency improvement or the use of clean fuels in the refinery.

Such balanced business management goals backed by determined and ethical staff—committed to the employee culture and values—will enable the Company to add value to business as well as society and the environment and become an organization of sustainable growth.

1.2 Transition and milestone development

2013

- Bangchak has been running its state-of-the-art hydro-cracking refining technology operations under the Complex Refinery concept integrated with the principles of operation safety, reliability, integrity, and environmental stewardship toward the maximum capacity and capability to manage the gross refining margin (GRM) by the target level. This year a HAZOP (Hazard and Operability Study) conducted by internationally accepted experts to review the operating safety of the overall refinery system and equipment was completed, with a



continuous improvement plan defined to push Bangchak's refining safety to a higher standard than those of other international refineries.

- Also, 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 constantly improve refining efficiency by investigating the Efficiency, Energy, and Environment : 3E Project to supplement product value by installing the catalytic reforming unit to replace obsolete units with efficient Continuous Catalyst Regeneration (CCR) technology, improved energy consumption, and extension of maintenance periods. In addition, the Company constructed a cogeneration power plant to raise energy stability and heighten its safety and environmental stewardship.
- Bangchak adopted a PRI (Plant Reliability Improvement) plan to enhance its refining reliability and prevent refining shutdowns. PRI covers four main operational systems: management, work process, procedure, and equipment. In addition, Bangchak has kicked off its Reliability Centered Maintenance (RCM) and Risk-Based Inspection (RBI), led by a world-class consulting team.
- Bangchak values the stewardship of Safety Health Environmental and Energy (SHEE). This year, 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.
- Increasing its retail volume through expanded distribution channels. Full-scale service stations located in high-potential areas were selected for such expansion. Two main truck service stations, located at SuperK, Chonburi province and Suratthani airport, were enlarged in preparation for this strategy, and more are on the way.
- 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.
- 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.
- Promotion and continuous improvement on value-added services. Additional value-added services in the stations covering all modern-day customers' needs seek to increase sales revenue. Instances are the promotion of sales in convenience stores, including Bai Chak Mart community store, and Lemon Green. 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. Other value-added services were continually expanded, including Inthanin Coffee, snacks, bakery items, and drinks in all service stations. Some of these products and services have been introduced to external distribution channels, including educational institutions, office premises, and department stores, to promote the Bangchak brand. Introduction of Green Series services, including automobile maintenance for certain groups of customers looking for alternative choices of services, has continuously been offered.
- Raised sales volumes while maintaining its alternative-energy customer base with its customer relationship management project featuring the Diesel Club card to maintain and grow its customer base while constantly doing the same for those in the alternative-energy group (via the Gasohol Club card).
- The Company has conducted fair marketing business in tandem with environmental stewardship and social services all along, including its cooperation with agricultural cooperatives in buying farmers' products for giveaway items as sales promotional goods to create jobs and decentralize income to rural areas, thus supporting efforts to



strengthen community economies. Besides the Bangchak Card Project, the Gasohol Club card is part of the Company's environmental stewardship thanks to its data on carbon dioxide reduction each time users' vehicles get a tank refill. The year saw a total Baht 2,575,928 donated by Bangchak Gasohol Club and Bangchak Diesel Club cardholders to several non-governmental foundations and public charities.

- The Company has constantly stressed expansion of its lubricant market to the industrial sector and markets in neighboring countries, staged sales promotional activities, improved quality products further, and improved lubricant containers to ease application while being green. The total sales turnover of lubricants for the year grew a healthy 21% to about 3.5 million liters a month.
- **Renewable energy business** Bangchak has been focusing on the development of new businesses, both related and unrelated to current ones, 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. Posting traditionally decent returns, the company was set up in support of the public policy on alternative-energy promotion while generating income for farmers. In 2012, Bangchak Biofuel underwent de-bottlenecking to raise its capacity from 300,000 to 360,000 liters a day to accommodate the rising biodiesel demand. Total biodiesel production averaged 343,000 liters per day this year, equivalent to a 97% capacity utilization rate, considered adequate to Bangchak's current biodiesel demand and sale to external business partners for extra revenue. In addition, the Board granted the approval and a Baht-1,400-million budget to subsidiary Bangchak Biofuels to construct the second biodiesel B100 production unit with a capacity of 450,000 liters per day. Selection of contractor is complete, and it is now under contractor selection process. The project completion is scheduled for the third quarter of 2015.
 - **Solar Power Business:** Sunny Bangchak, Bangchak's solar power learning center, 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, with the first phase delivery of 38-MW PPA by July 16, 2012, at Bang Pa-In district, Ayutthaya. Bangchak also launched an alternative energy learning center to serve the public on alternative energy through various exhibitions and activities such as solar energy, wind energy, wave energy, microalgal fatty oil, and the “Greenergy the Adventure” 4D movie. 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 on March 6 and April 5 this year respectively. The 48-MW PPA Phase 3 is under construction at Amphoe Kabin Buri, Prachin Buri; Amphoe Bamnet Narong, Chaiyaphum; Amphoe Prakhon Chai, Buri Ram; Amphoe Nong Ki, Buri Ram; and Amphoe Dan Khun Thot, Nakhon Ratchasima. All generating units under Phase 3 are set for commissioning early in the third quarter of 2014.

- **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. In 2013, the plant was operating at a 62% capacity utilization rate.
- **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. 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 won the Thailand Quality Class (TQC) this year for the second year.
- **Human resource quality improvement** 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. Continuous learning through various channels, including Knowledge Management (KM), cross-functional and cross-divisional group activities such as QCC Kaizen, Community of Practice (COP), and BCP Blog Award exemplify the systems and tools adopted by Bangchak in promoting knowledge and work experience sharing and leading it to an innovation organization. In addition, a jointly developed Knowledge Management Portal with PTT Group of companies was initiated for the sharing of valuable information resources of skills, technologies, financial knowledge, and lessons learned. The Employee Engagement program was introduced to support effective performance appraisals, a system to ensure high standard organizational capability development. Several activities have been organized to assess employee satisfaction and employee loyalty to the organization. Their outcomes have been increasingly positive. Bangchak and its employees continue to strictly adhere to good governance and its corporate culture on social contribution.

- **Organizational restructuring in response to strategic directions and innovation development** 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.
- **Preparedness of work process efficiency improvement** To assess, identify, and mitigate risks at all levels impacting business goals, an Enterprise Risk Management (ERM) system was launched and integrated with a Business Continuity Management (BCM) system to minimize and prevent disruptions to critical work processes, as part of emergency preparedness. The system has responded favorably and effectively to Bangchak as well as stakeholders, leading Bangchak to comply with the ISO22301 Business Continuity Management Award. Moreover, a continual review of work processes throughout the organization under the Lean Concept operations management continues to improve Bangchak's overall efficiency.
- **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.

Awards of 2013

- Board of the Year Award for Distinction Practices in Good Corporate Governance in the “Board of the Year Awards 2013” 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.
- SET Awards of Honor, presented at the SET Awards 2013 event, organized by the Stock Exchange of Thailand (SET) and Finance and Banking Magazine:
 - Top Corporate Governance Report Award, in its eighth straight year. This award honors listed companies with outstanding reports on compliance with corporate governance
 - Best Corporate Social Responsibilities Award, in its seventh straight year. This award honors listed companies with outstanding social responsibility practices.In addition, the Company won an Outstanding Investor Relations Award.
- Membership Certificate of the Private Sector Collective Action Coalition Against Corruption (CAC). Among CAC’s 249 signatory companies, Bangchak was one of the 22 certified founding members during Thailand's 4th National Conference on Collective Action Against Corruption in 2013. CAC was initiated through the cooperation of eight leading organizations, with IOD as its secretary.
- Thailand Quality Class (TQC) Award of 2013, organized by the National Quality Award Office. This award honors entities with integrated organizational management systems under the National Quality Award guidelines, as well as world-standard quality.
- Recognition Awards 2013 “THE BEST OF ASIA”, organized by Corporate Governance Asia Magazine:



- Asian Corporate Director Recognition Award 2013, this award honors the company leader with his contributions in growing the business, social responsibility, environmental protection and also efforts in raising the standards of corporate governance practice in the country.
 - Corporate Governance Asia Recognition Award 2013, this award is given in recognition to the Company's continuing commitment to the development of Corporate Governance in the region.
- Gold Award, presented at The Asset Corporate Awards 2013, in its third year, organized by The Asset Magazine. This award honors based on the magazine's consideration of corporate governance, social responsibility, environment responsibility, financial, and investor relations aspects.
- The assessment outcome of a survey on corporate governance reports of listed companies of 2013, given by Thai Institute of Directors (IOD), showed that the Company commanded 'excellent' rating.
- A perfect score of 100 under a project to assess the quality of organizations for the Annual General Meeting of Shareholders (AGM) 2013, organized by the Thai Investor Association.
- Best Investor Relations Award, in its second year, honors companies with outstanding investor relation, given by votes from the readers of magazine, investors, analyst etc, presented at 3rd Asian Excellence Recognition Awards 2013 event, organized by Corporate Governance Asia Magazine.
- CSRI Recognition 2013 Award (General Category), presented by the Corporate Social Responsibility Institute in honor of Bangchak's committed and successful development of social responsibility implementation.
- Exemplary Sustainability Report Award 2013 for Bangchak's information disclosure, reporting policy with emphasis on social responsibility, and CSR in process for business conduct, organized by the CSR Club, TLCA, Office of the Securities and Exchange Commission (SEC), and Thaipat Institute.
- CSR-DIW Advanced Award Level 5 (the top level), CSR-DIW Continuous Award, and CSR-DIW Supply Chain Award, recognized by the Department of Industrial Works, for Bangchak's plant operation with social responsibility and community networking in performing public service activities for sustainable development.
- Trusted Brands Gold Awards 2013 in the Service Station Category for the third year in a row, voted by the readers of Reader's Digest



Magazine for consumers' trust, quality, value, understanding of consumers' needs, social responsibility, and creativity in marketing new products.

- Distinction Winner Awards on Website Branding and Website Corporate Communication at the Communicator Awards 2013 event, in recognition of Bangchak's creativity in marketing and communication, organized by International Academy of The Visual Arts.
- ICT Excellence Awards (under the category of Core Process Improvement Project) in recognition of entities with excellence in IT and communication management for the Audit Management System, presented at the Thailand ICT Excellence Awards 2013, sponsored by the Thailand Management Association and the National Electronics and Computer Technology Center.
- Carbon Offset Certification for Organization – Bangchak was Thailand's first entity to win this certificate from the Thailand Greenhouse Gas Management Organization (Public Organization)
- Certification for Bangchak's river terminal, Thailand's first Chao Phraya River oil terminal issued by Marine Department to win this acclaim, formally known as the Statement of Compliance of a Port Facility under The International Code for the Security of Ships and Port Facilities (ISPS Code).
- The Quality and Safety Service Stations Award, presented by the Department of Energy Business and designed to raise the quality of service stations nationwide. Bangchak won this award for the fourth consecutive year, totaling 178 stations: 68 gold, 64 silver, and 46 bronze medals.

2012

- **Solar power plant:** Sunny Bangchak signed a power purchase agreement with the Electricity Generating Authority of Thailand and the Provincial Electricity Authority for 118 megawatts and will derive 8 baht/unit in adder fees. Bangchak Solar Energy Co., Ltd., was set up to manage and operate this enterprise, with the first phase operated in Bang Pa-in, Ayutthaya province. The first set of power generators of 8 megawatts was completed, with the commercial sales date beginning on April 2 this year; the second set of 30 megawatts, on July 16. The Company launched a public learning center for alternative energy through many exhibits and activities, including solar energy, wind energy, wave energy, and oil-bearing algae, in addition to the 4D "Greenenergy the Adventure" film. BCP is constructing its second solar-cell power generation project, phase 2,



in Amphoe Bang Pa-han, Ayutthaya, and in Amphoe Bamnet Narong, Chaiyaphum, with each 16-MW PPA, set for completion in the first quarter of 2013. By 2014, the company plans to invest more in this solar power project to reach 118-MW PPA.

- **Biodiesel production:** Since 2009, the Company has invested in a biodiesel plant on its property in Bang Pa-in, known as Bangchak Biofuel Co., Ltd. Posting traditionally decent returns, the company was set up in support of the public policy on alternative-energy promotion while generating income for farmers. In 2012, Bangchak Biofuel underwent de-bottlenecking to raise its capacity from 300,000 to 360,000 liters per day to accommodate the rising biodiesel demand.
- **Ethanol production:** The Company acquired 583,000 common shares (or 21.28% of the total shares) in Ubon Bio Ethanol Co., Ltd., located in Amphoe Na Yia, Ubon Ratchathani, with a 400,000 liters per day capacity. Currently under commissioning for a process that accommodates more diverse raw materials, depending on their costs, the plant can run on fresh cassava, cassava chips, and molasses. Its commercial sales date is expected in the first quarter of 2013.
- Raised the sales volume by expanding the number of service stations in areas with high potential. It launched the maiden flagship “green station” on Vibhavadi Rangsit Road, a sizeable station featuring modern looks and environmental friendliness complete with amenities and supplementary businesses. This service station was also garnered the First prize in the category of clean and pleasant service stations under the Clean and Pleasant Bangkok Project 2012, and clean toilets in compliance with the standard of Department of Health, Ministry of Public Health, in recognition of Bangchak’s Vibhavadi Rangsit service station (Thailand’s first green station), sponsored by Bangkok Metropolitan Administration. The prizes promoted and upgraded the environmental standards of buildings and public places. The Company plans to expand its flagship service stations to two “Green Stations”.
- The first Bangchak service station in Myanmar was launched in Myawaddy, with quality fuel products on sale
- Continually promoted and expanded sales of Gasohol E20, and Gasohol E85. The Company raised the number of service stations selling Gasohol E20 by 127, and selling Gasohol E85 by 21. To



accommodate newer car models, service stations selling E20 and E85 nationwide currently number 581 and 51 respectively.

- Continued to stress the quality of service and the image of Bangchak service stations of cleanliness, modern looks, and responsiveness to more customers' needs. The year saw Bangchak service stations come in second in a Brand of Choice survey (fourth consecutive year) by outside research company. Due to the advancement and popularity of communication technologies, the Company has developed iPhone and an Android smartphone applications to inform users of immediate retail price movement of Bangchak's products and location of Bangchak service stations nationwide.
- Promoted and improved the image of supplementary businesses at service stations to grow income and embrace comprehensive services, including sales of consumer products at Baichak and Lemon Green outlets. This year, the Company in conjunction with Big C Supercenter Plc launched "Big C-Mini" convenience stores at seven sizeable service stations, designed to ease customers' needs, with a plan to expand these to other service stations nationwide. In addition, the Company has introduced a new car-care service called Green Series
- Continued to manage Inthanin coffee shops, among others. The latter are now found in educational institutions nationwide, office buildings, and department stores to make the name better known. The Company has also undertaken a project to promote well-behaved youths for society by showing recent, attractive short films about alternative energy, environmental stewardship, and energy conservation. Meant to stress living one's life under the Sufficiency Economy and volunteering for public services, the films are screened at 12 Inthanin coffee shops in 12 educational institutions from 250 Inthanin coffee shops nationwide (as of December 2012).
- The Company has constantly stressed expansion of its lubricant market to the industrial sector and markets in neighboring countries, staged sales promotional activities, improved quality products further, and improved lubricant containers to ease application while being green. The total sales turnover of lubricants for the year grew a healthy 23% to about 2.9 million liters per month.
- Employee engagement was Bangchak's focus, as evident in such engagement for the year exceeding that of the year before, with a promising outlook, according to a world-class consultant company



- Information technology was promoted as a tool to enhance the efficiency and transparency of work processes, including the development of SAP ERP 6.0 and Auto Desk Plant Design, improvement of IT Disaster Recovery to accommodate BCM, and improvement of the Storage Expansion System.

Awards of 2012

- SET Awards of Honor, presented at the SET Awards 2012 event, organized by the Stock Exchange of Thailand (SET) and Finance and Banking Magazine:
 - Top Corporate Governance Report Award, in its seventh straight year. This award honors listed companies with outstanding reports on compliance with corporate governance
 - Best Corporate Social Responsibilities Award, in its sixth straight year. This award honors listed companies with outstanding social responsibility practices.

In addition, the Company won an Outstanding Corporate Social Responsibility Award and Outstanding Investor Relations Award.

- Recognition Awards 2012 “THE BEST OF ASIA”, organized by Corporate Governance Asia Magazine:
 - Asian Corporate Director Recognition Award 2012, this award honors Dr. Anusorn Sangnimnuan with his contributions in growing the business, social responsibility, environmental protection and also efforts in raising the standards of corporate governance practice in the country.
 - Corporate Governance Asia Recognition Award 2012, this award is given in recognition to the Company’s continuing commitment to the development of Corporate Governance in the region.
- Outstanding Entrepreneur Award honors Dr. Anusorn Sangnimnuan with his contributions in growing the business, corporate governance, and social&environmental responsibility., presented at ASIA PACIFIC ENTREPRENEURSHIP AWARDS 2012 THAILAND” , organized by Enterprise Asia, a leading NGO for entrepreneurship development in Asia.
- Gold Award, presented at The Asset Asian Awards 2012, organized by The Asset Magazine. This award honors based on the magazine’s consideration of management, corporate governance, financial, social responsibility, and investor relations aspects.
- Best Investor Relations Award honors companies with outstanding investor relation, given by votes from the readers of magazine, investors, analyst etc, presented at 2nd Asian Excellence



Recognition Awards 2012 event, organized by Corporate Governance Asia Magazine.

- IP Champion 2012, in recognition of successful creative entrepreneurs that effectively applied intellectual properties in commercial senses and were commercially outstanding, sponsored by the Department of Intellectual Property, Ministry of Commerce.
- ICT Excellence Awards (under the category of Thai software application) in recognition of entities with excellence in IT and communication management for the e-Legal System, presented at the Thailand ICT Excellence Awards 2011, sponsored by the Thailand Management Association and the National Electronics and Computer Technology Center.
- The assessment outcome of a survey on corporate governance reports of listed companies of 2012, given by Thai Institute of Directors (IOD), showed that the Company commanded 'excellent' ratings in over all categories.
- An excellent score for its quality under the Annual General Meeting (AGM) for 2012 project, given by the Thai Investors Association.
- First prize in the category of clean and pleasant service stations under the Clean and Pleasant Bangkok Project 2012, and clean toilets in compliance with the standard of Department of Health, Ministry of Public Health, in recognition of Bangchak's Vibhavadi Rangsit service station (Thailand's first green station), sponsored by Bangkok Metropolitan Administration. The prizes promoted and upgraded the environmental standards of buildings and public places.
- ISO/IEC 27001:2005 standard certification, under the category of information security management, presented by Bureau Veritas (Thailand) Co., Ltd.
- The Certificate of Green Industry Level 4 (Green Culture), given by Ministry of Industry, which certified that the Company has a systematic environmental management, including the monitoring and continuing development.

2011

- The Company bought 580,000 ordinary shares (21.28%) of Ubon Bio-Ethanol Co., Ltd., located in Amphoe Na Yia, Ubon Ratchathani. The 400,000 litres per day plant is due for completion by Q4/2012, running on fresh cassava and cassava chips supplied by local



farmers, and is to export most of its products to China. Investment in the ethanol business heightens the supply security of ethanol to accommodate the company's sales expansion plans for E20 and E85 gasohol.

- Bangchak operates a 4,200 million-baht solar power plant project, known as Sunny Bangchak, in its first phase with a 38-MW PPA in Bang Pa-in District, Phra Nakhon Si Ayutthaya. Restoration work completion is expected by the second quarter of 2012.
- The company rented 1,200 rai of land in Nakhon Nayok from the Bank of Agriculture and Agricultural Cooperatives for palm planting, while urging farmers with 50,000 to 60,000 rai of land to join in its efforts. The Company agreed to take all outputs and will be constructing a 400 million-baht palm oil extraction plant to accommodate farmers' outputs, in the hope of reaching 50,000 tons per year of extraction capacity to feed the palm oil into its B100 biodiesel plant at Amphoe Bang Pa-in to cut down on palm oil transport costs from the South.
- On March 31, 2011, the Ministry of Energy (through the Department of Alternative Energy Development and Efficiency), the Company, Ratchaburi Electricity Generating Holding Plc and Loxley Plc signed a memorandum of cooperation on the development of bioenergy industry development from oily algae. This move paves the way for a new industry (fuel from algae) as a high-potential alternative-energy innovation that contributes to energy security in addition to easing oil price crises for Thailand, apart from serving as a carbon dioxide sink to cool global warming.
- Raised the sales volume by expanding the number of service stations in areas with high potential. It launched the maiden flagship "green station" on Vibhavadi Rangsit Road, a sizeable station featuring modern looks and environmental friendliness complete with amenities and supplementary businesses.
- The Company focuses on nurturing employee engagement. An employee engagement survey by an internationally accepted consultant found that the Company's employee engagement ranked in the 72nd percentile, which was a vast improvement over the previous year.
- The Company also promoted and encouraged the application of IT to add efficiency and transparency to work processes, including the Plant Information Management system (PIMs), development of TAS



Interface at Bang Pa-in Depot and the IT improvement to the ISO 27001 for Network and Data Center.

- Amendment was made to competency assessment, with a section added on employees' technical competency and application of 180-degree assessment for greater clarity
- Produced and sold gasoline, gasohol and diesel under the EURO IV specifications before the government's enforcement date of January 1, 2012, to contribute to more complete engine combustion while cutting down on air pollution. The company completed its construction for the EURO IV quality improvement project for gasoline and gasohol as planned, with production and sales beginning in December. As for EURO IV diesel, the company had successfully produced and sold this since 2008.
- Thanks to the growth of communication technology, it also came up with an application program for oil prices for iPhone users, with real-time movements of retail fuel prices and information on service station locations nationwide.
- Inthanin launched the first branch modern shop "Inthanin Premio" at Central World Department Store, and Bangchak service station (4.5 km.) as the second branch, to make it better known.
- The Company consistently focused on its marketing to the industrial sector and neighboring countries while launching sales promotion and the Company developed high-quality products in the form of D3 Gold diesel lubricants. Accommodating EURO IV engines, the API CJ-4 technology saves fuels. The total sales volume of all lubricants for the year grew by 12% to 2.4 million litres per month.

Awards of 2011

- Continued to stress the quality of service and the image of Bangchak service stations of cleanliness, modern looks, and responsiveness to more customers' needs. The year saw Bangchak service stations come in second in a Brand of Choice survey (third consecutive year) by outside research company.
- For the third straight year, the Company won the "Quality and Safe Service Stations Award", sponsored by the Department of Energy Business
- Award recognizing "Clean Toilets" for service station toilets that passed the HAS standard, sponsored by the Department of Health, Ministry of Public Health.



- Board of the Year Awards - Hall of Fame 2010/11 for being a Board with commitment to ensuring good corporate governance practices and the Board of the Year Award for Exemplary Practices for three consecutive years in the Board of the Year Awards 2010/11, organized by the Thai Institute of Directors (IOD) in conjunction with the Stock Exchange of Thailand (SET), Board of Trade of Thailand, Federation of Thai Industries (FTI), The Thai Bankers' Association (TBA), Thai Listed Companies Association (TLCA), and the Federation of Thai Capital Market Organizations (FETCO).
- SET Awards of Honor, presented at the SET Awards 2011 event, organized by the Stock Exchange of Thailand (SET) and Finance and Banking Magazine:
 - Top Corporate Governance Report Award, in its sixth straight year. This award honors listed companies with outstanding reports on compliance with corporate governance
 - Best Corporate Social Responsibilities Award, in its fifth straight year. This award honors listed companies with outstanding social responsibility practices.In addition, the Company won an Outstanding Corporate Social Responsibility Award and Outstanding Investor Relations Award.
- Recognition Awards 2011 “THE BEST OF ASIA”, organized by Corporate Governance Asia Magazine:
 - Asian Corporate Director Recognition Award 2011, this award honors Dr. Anusorn Sangnimnuan with his contributions in growing the business, social responsibility, environmental protection and also efforts in raising the standards of corporate governance practice in the country.
 - Corporate Governance Asia Recognition Award 2011, this award is given in recognition to the Company’s continuing commitment to the development of Corporate Governance in the region.
- ASEAN Honorary Fellow Award, presented at Conference of 19th ASEAN Federation of Engineering Organization (CAFEO 29), Brunei. This award honors Dr. Anusorn Sangnimnuan with his contributions and efforts in engineering development.
- The assessment outcome of a survey on corporate governance reports of listed companies of 2011, given by Thai Institute of



Directors (IOD), showed that the Company commanded 'excellent' ratings in over all categories.

- An excellent score for its quality under the Annual General Meeting (AGM) for 2011 project, given by the Thai Investors Association.
- NACC Integrity Awards 2011 (Honorable Mention Award) given by the Office of the National Anti-Corruption Commission. This award is given in recognition to the Company's promotional activities for corporate governance, righteousness, and transparency.
- The Certificate of Green Industry (Level 3), given by Ministry of Industry, which certified that the Company has a systematic environmental management, including the monitoring and continuing development.
- The Crown Standard, for the Company's solar power plant project (Sunny Bangchak) in operating sustainable development and environment protection project, creating stakeholders' participation procedure, and also supporting activities on society, culture and sufficiency economy philosophy, given by Thailand Greenhouse Gas Management Organization.
- A plaque and Certificate of CSR-DIW Continuous Award, as the business with social responsibility, awarded by Management System Certification Institute (Thailand) and the Department of Industrial Works.
- The Certificate for reduction in greenhouse gas emission for buildings for using and maintaining buildings and facilities with low emissions of greenhouse gases, given by Thailand Business Council for Sustainable Development, Thailand Greenhouse Gas Management Organization and Thailand Environment Institute.
- The Certificate for Green Meetings in recognition of meetings, seminars, training sessions and businesses conducive to natural balance and sustainable development through cost-effective resource application and mitigation of environmental impacts, given by Thailand Greenhouse Gas Management Organization and Thailand Environment Institute.
- The Best Oil and Gas Innovation in Refining Technology Award 2011, given by opinion surveys among the readers of the World Finance Magazine.
- The Quality and Safety Service Stations Award from the Department of Energy Business, designed to raise the quality of service stations nationwide. 128 Bangchak stations were awarded with 53 gold (five-



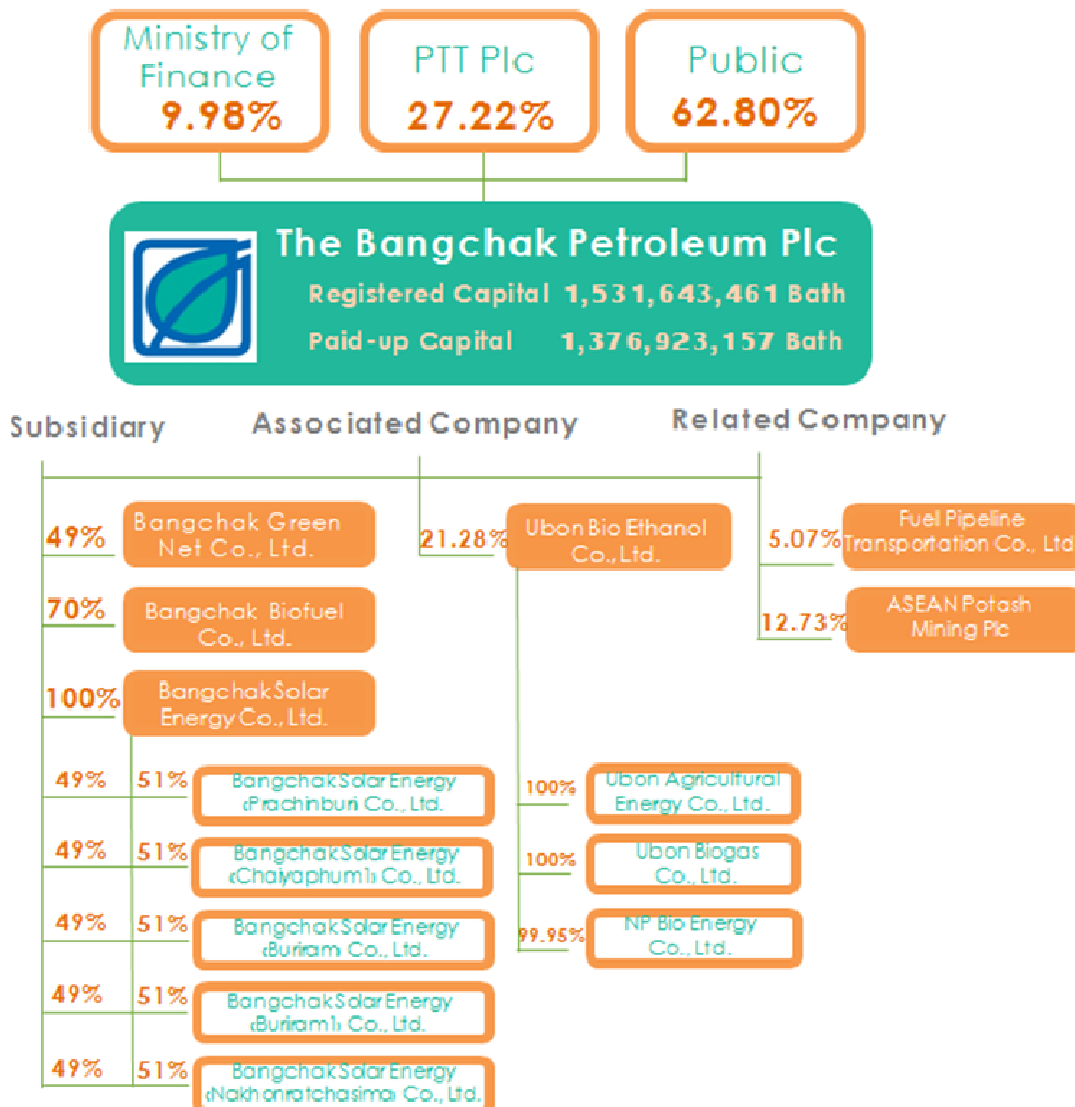
star) medals, 42 silver (four-star) medals, and 33 bronze (three-star) medals.

- Trusted Brands Awards 2011, given by votes from the readers of Reader's Digest Magazine, illustrating consumers' confidence in the Company brand when deciding to buy goods and services.
- Marketing Excellence Awards 2011 (second place), for the Company's an outstanding marketing campaign in green marketing or environmentally friendly marketing, given by MCOT FM 100.5 News Network.



1.2 Shareholding Structure

Equity Chart of Bangchak Petroleum Plc and Other Companies



Bangchak Green Net Co., Ltd. (BGN)

The subsidiary was set up to manage service stations and inthanin coffee shops, and sell consumer products in Lemon Green and *Bai Chak* convenience stores to support the continued expansion of its retail business.

Bangchak Biofuel Co., Ltd. (BBF)

Located in Amphoe Bang Pa-in, Ayutthaya, the subsidiary was set up to develop and produce domestic alternative fuels, with a 360,000 liters per day biodiesel plant running on crude palm oil. Its management philosophy is centered on environmental care. The design and construction of its wastewater treatment system yield high water quality that meets the standard of the Department of Industrial Works. In addition, the Company's



artificial pond leverages natural re-treating of wastewater before recycling it to plants and processes. This closed system is an extremely effective consumption of water.

Bangchak Solar Energy Co., Ltd. (BSE)

Bangchak operates a photovoltaic (PV) power generation project, known as Sunny Bangchak, in its first phase with a capacity of 38 MW PPA in Bang Pa-in District, Phra Nakhon Si Ayutthaya, with the first commercial sales date in April 2012. Promoting Bang Pa-in as Thailand's first integrated learning center and alternative-energy tourist attraction, it founded Bangchak Solar Energy Co., Ltd. (BSE), a wholly owned subsidiary, to manage the project. The second phase, with a capacity of 32-MW PPA (16-MW PPA at Bamnet Narong District, Chaiyaphum, and 16-MW PPA at Bang Pahan, Phra Nakhon Si Ayutthaya), had their first commercial sales dates on March 6 and April 5 this year respectively. Phase three, with a capacity of 48-MW PPA, is under construction in five locations: Kabin Buri District, Prachin Buri; Bamnet Narong, Chaiyaphum; Prakhon Chai District, Buri Ram; Nong Ki District, Buri Ram; and Dan Khun Thot, Nakhon Ratchasima. Bangchak plans additional investment in the PV power generation project to fulfill its power purchase agreement (118 MW) by early in the third quarter of 2014.

Ubon Bio Ethanol Co., Ltd. (UBE)

Ubon Bio Ethanol Co., Ltd. manufactures ethanol from fresh cassava roots and cassava chips, with a capacity of 400,000 liters per day or 132 million liters per year. UBE mainly exports its product to China and sells to domestic traders. Moreover, UBE also has few subsidiaries which were set up to cassava, and own the biogas power plant which use the water that comes out from the production processing.

Fuel Pipeline Transportation Co., Ltd. (FPT)

This company was set up to manage fuel transportation through a network of underground, multi-product pipelines starting from the Bangchak Refinery in parallel with the railway leading to the Chongnonsri and Don Muang depots, and finally to the Company's Bang Pa-in Depot and FPT. This route was extended near the Makkasan area to Suvarnabhumi Airport to transport aviation fuel by JP-One Asset Co., Ltd.

ASEAN Potash Mining Public Co., Ltd. (APMC)

This company was set up to explore for and produce potash around Amphoe Bamnet Narong, Chaiyaphum, for the manufacturing and the retailing of potassium chloride fertilizers. This project arose from collaboration among ASEAN member countries to capitalize on the natural resources of member countries.



2. Business Description

A leading Thai petroleum company that imports crude oil from the Middle East, the Far East and indigenous sources and refining it into products with a maximum crude-processing capacity of 120,000 barrels per day, Bangchak Petroleum Plc operates more than 1,000 service stations and has grown its businesses to solar energy and biofuel businesses to add value and diversify its income-related risks.

For the most part, the Company's complex refinery produces high-value gasoline and diesel products. Gasoline, gasohol, and diesel supplied by Bangchak's refinery all meet the EURO IV quality specifications set by the public sector. Bangchak was the first Asian company to come up with EURO V-standard E20 gasohol with less than 10 ppm in sulphur content, a five-fold reduction from that under the Euro 4 standard. In addition, the refinery is highly energy-efficient, thanks to the purchase of power and steam from a cogeneration power plant (an investment by PTT Plc) and to the use of clean-burning natural gas to power its processes in place of low-sulfur fuel oil.

Most refined products are sold directly to other oil traders via several transportation modes, such as pipeline (Fuel Pipeline Transportation Co., Ltd.), marine or roads while the rest is exported. More than 80% of the refined products are sold directly to consumers through the Company's own nationwide network of service stations. This retail network consisted of 457 standard service stations and 617 community service stations (as of 2013) with direct distribution to users in the transportation, aviation, shipping, construction, industrial and agricultural sectors. Bangchak service stations focus on selling green alternative fuels, including Gasohol 91, 95, E20, and E85 and biodiesel-based SuperPower D, and serves customers with supplementary businesses on their compounds. These businesses include the sale of consumer products at Bai Chak and Lemon Green shops, and cooperation with Big C Supercenter Plc in launching Big C-Mini convenience stores at larger service stations located close to communities, with a variety of goods. Bangchak service stations also house a service center for maintaining and changing lubricating oil and for car wash, collectively known as the Green Series, namely Green Auto Service, Green Serve, Green Wash the Premium, Green Wash Auto Care, and Green Tire. Finally, they house Inthanin Coffee, which is now found at service stations and leading educational institutions, and are expanding to various key commercial locations. Today, 17 Bangchak service stations sell NGV as



an option for consumers. In addition to fuel products, the Company produces and sells “Bangchak” lubricants oil and special lubricant products (transmission fluid, brake fluid and grease). Apart from sales to domestic markets through the network of Bangchak service stations, shops, factories and OEM (original equipment manufacturer) market, the Company exports its products under BCP LUBRICANT brand.

Recognizing the significance of alternative energy, which benefits national energy security and lowers trade imbalances resulting from fuel imports, the Company promoted alternative energy by blending ethanol with gasoline and biodiesel with diesel to obtain 91-octane and 95-octane gasohols together with E20 and E85, in addition to Super Power D. And to ensure continued support to this effort, the Company set up Bangchak Biofuel Co., Ltd., to centralize biodiesel production. The 360,000 litres per day plant, worth over Baht 1,000 million, is located next to Bang Pa-in Depot in Amphoe Bang Pa-in, Ayutthaya province, and runs primarily on crude palm oil. To lower risks from uncertain supply of crude palm oil, the Company initiated a project to turn deserted orange groves into oil palm plantations. At present, it has rented 1,200 rai of land in Nakhon Nayok province as an experiment site for the concept. It acquired common shares in Ubon Bio-Ethanol Co., Ltd. (UBE), located in Amphoe Na Yia, Ubon Ratchathani province. With a capacity of 400,000 litres per day, UBE exports ethanol to China. Another purpose of this move is to enhance the security of ethanol supply to accommodate the Company’s expansion plan for E20 and E85 gasohol sales. In addition, Bangchak has expanded the scope of its business to solar power plant project (through Sunny Bangchak) and signed a power purchase agreement with Electricity Generating Authority of Thailand (EGAT) and Provincial Electricity Authority (PEA) for an 8 baht/unit adder under a 118-megawatt (MW) capacity.

Revenue Structure

In 2013, revenue from sale of goods and rendering of services from the consolidated financial statements of the Company and its subsidiaries totaled Baht 186,514 million, consisting of Baht 183,287 million from the Company and the following from its subsidiaries, Baht 30,354 million from BGN. (where the Company holds 49% equity), Baht 4,401 million from BBF (where the Company holds 70% equity) and Baht 689 million from BSE (where the Company holds 100% equity). Of this income, Baht 32,217 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 2011-2013.

Product/ Service	Operated by	2013		2012		2011	
		Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%	Revenue (Baht Mill.)	%
Refined products ^{1/}	BCP and subsidiary	185,936	98.2	164,482	97.8	157,915	98.5
Consumer products	Subsidiary	578	0.3	764	0.5	695	0.4
Others ^{2/}	BCP and subsidiary	2,899	1.5	2,916	1.7	1,724	1.1
Total		189,413	100.0	168,162	100.0	160,334	100.0

Note: 1/ The proportions of earnings from sales of products in the domestic in 2013, 2012 and 2011 is 86.7%, 91.5% and 86.9% respectively.

2/ Other earnings, namely interest receivable, earnings from hedging gain, profit from exchange rates, loss adjustment from impairment assets, 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

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 used to fuel 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. Earlier, Bangchak sold 95-octane and 91-octane gasoline under the Gasoline Greenplus 95 and Gasoline Greenplus 91 as the marketing names. Then in 2001, gasohol, a blend of gasoline and ethanol (ethyl alcohol) or 99.5% pure alcohol produced from sugar cane and tapioca (cassava) at the ratio of 10%, was launched under the marketing names of Gasohol Super Fast 95 and Gasohol Super Fast 91. The new products are compatible with gasoline vehicles and have been confirmed by a number of motorists that no engine modification is needed.



Gasohol offers benefit in many areas like 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 December 2007, Bangchak discontinued the sale of gasoline Greenplus 95 following the government's alternative energy policy to promote biofuels and improve the environment.

In January 2008, Bangchak started marketing E20 gasohol, a blend of gasoline and ethanol at the ratio of 80:20, offering an octane rating of 95 under the Ministry of Energy's standards. The fuel is compatible with vehicles designed for E20.

In November 2008, Bangchak introduced E85 gasohol to the market. A mixture of gasoline and ethanol at the ratio of 15:85, with an octane rating higher than 100, the fuel follows the standards of E85 in the US and Europe and is compatible with vehicles designed for E85. It cleans the engine and can best reduce pollution from engine combustion compared with other fuels.

In November 2011, Bangchak was successful in producing and marketing gasohol under the Euro4 standard with a tenfold reduction of sulphur of and 2.5-fold reduction of benzene. The fuel completes combustion and reduces toxic vapor, thus benefiting the environment and clean air. The product was launched even earlier than the official enforcement on January 1, 2012.

In March 2013, Bangchak became the first in Asia to sell E20 gasohol of the Euro 5 standard, under which the sulphur content is lower than 10 ppm or a fivefold reduction from that of Euro 4 standard. It can thus better reduce pollution caused by engine combustion. Moreover, the new fuel is produced with the Supertech formula, which contains two additives, namely Boost up Cleaner, a detergent that benefits complete combustion.

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 2004, Bangchak took part in the Department of Alternative Energy Development and Efficiency's research on the production and use of biodiesel, a kind of alternative energy produced from crops that is comparable in quality to diesel. Biodiesel lowers air pollution while offering savings from oil imports avoided. As a result of continuous development, Bangchak's diesel is a blend of 5% of biodiesel with the conventional diesel, with a commercial name of Biodiesel PowerD B5. It can be used with diesel vehicles without engine modification. (The mixing ratio of biodiesel is subject to the government's directive.)

In April 2010, Bangchak started selling a new type of diesel, Bangchak Super Power D of the Euro 4 standard, in which two US-certified additives were blended. One is Super Power, which enhances completes combustion. The other is Super Clean, which cleans the injection device, thus making the engine work at its full capacity. With Bangchak's emphasis on being the leader in fuel quality and environmental friendliness, the new Bangchak Super Power D lessens pollution from combustion and reduces the sulphur content by sevenfold, while also reducing carbon monoxide, hydrocarbon, nitrogen oxide, and dust particles. The fuel was launched one year and a half ahead of the government's enforcement (January 1, 2013).

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, among others.

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 multi-purpose grease, heavy-duty and heat-resistant grease, and food-grade grease.

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, to 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

Refining Business

- Bangchak is determined to develop products to satisfy the market and customers with an emphasis on environment-friendliness ('green'). The company, moreover, expanded its logistics cooperation with business partners to achieve cost-effectiveness and reduce manufacturing and marketing limitations. Regarding refining process upgrading and production efficiency control, the implementation of the Product Quality Improvement Project has rendered Bangchak's



crude sourcing more flexible, while creating more added value to products in the long run.

- Bangchak closely monitors the world oil situation and refining margins to ensure efficient risk management, under which various financial tools are used, including price hedging and refining-margin exchange-rate hedging, to minimize impact when the Baht is strong. Other financial tools, such as option and swaption, are also considered, depending on price, timing, and types of products.
- Bangchak tries to source crude with satisfactory refining margins and suitability for producing low-sulphur oil for export, which offers better financial returns than domestic sale.
- Bangchak manages its working oil stock to avoid risks of oil price fluctuation.
- Bangchak hired world-class experts to review its safety systems and equipment in the refining business, using Hazard and Operability Study (HAZOP) and taking into consideration safety principles and stable refining process along with environmental conservation. This is to enhance confidence in the refining business, which will consequently enable Bangchak to raise refining volumes. Bangchak also manages its refining margins to achieve the target revenues in parallel with environmental management, under which continuous plans were drawn up to raise Bangchak Refinery's safety standards beyond the usual safety bottom line.
- Regarding environmental conservation, Bangchak installed a Tail Gas Treating Unit as required by the government to ensure that sulphur dioxide currently released from the sulphur production unit can be further reduced by up to 90%.
- Bangchak jointly invested with PTT in a co-generation power plant to ensure stability of power supply to Bangchak Refinery, with lower utility costs. Bangchak also buys natural gas from PTT to replace fuel oil for the refinery, resulting in lower costs and promoting environment-friendliness.

Marketing Business comprises two sectors, namely the retail market and industrial market.

- Retail market – Bangchak embarked on its retail network restructuring with an emphasis on investment in strategic locations to generate higher income and sell higher volumes. As the leader in alternative energy is still the highlight, Bangchak also undertook its station rebranding, particularly along major roads, with a focus on service upgrading to impress customers by providing training and knowledge to station operators and workers. The Mystery Shopper project was



also initiated to ensure service standards. Bangchak, in addition, joined PTT in launching NGV refueling stations while continuously expanding its non-oil businesses, namely Inthanin Coffee shop; the Green Series backyard services, which comprise Green Wash , Green Serve, and Green Auto Service; and Big C-Mini, in cooperation with Big C Supercenter Plc.; among others.

- **Industrial Market** – Products in the industrial market mostly involve aviation fuel, diesel, fuel oil, and lubricants. Bangchak's Jet A-1 is sold to Thai Airways International Plc. In the diesel market, where price competition has become fiercer due to the need to release refined volumes that exceed domestic demand, Bangchak turned to exports to neighboring countries. For the fuel oil, price competition was still strong, following a sharp fall in demand. Bangchak, therefore, maintains its sales standard by focusing on quality products and services while keeping close ties with major customers. In the lubricant market, Bangchak managed to expand exports to neighboring countries.

Industry and competition

The refining business faces tough competition in the regional market because prices are dictated by the location of the refinery. Therefore, refineries are found scattered around the locations where demand exists. Unlike 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.



The Thai economy was sluggish throughout 2013 with a growth rate of 3.5%, affected by a slowdown in consumption and private investment, concerns on the cost of living, and higher household debts. At the same time, the US and China's economies, which moved slower than expected, hindered the export sector from expansion. The Baht value fluctuated during the first four months of the year. It was strong because of influx of foreign investment into the bond and capital markets before heading downward following the US Fed's signal to reduce QE and the political tensions towards the end of the year. This was coupled with the Bank of Thailand's announcement to reduce interest rates, which caused foreign funds to leave the bond and capital markets. In sum, the average Baht value for the year was Baht 30.86 against the US Dollar and is expected to drop in during 2014 amid the weaker economy. The Bank of Thailand, on January 8, 2014, forecasted that Thailand's economy in 2014 will expand slower at 2.5% because of economic factors both in and outside the country together with prolonged political conflicts, which affect the confidence of both local and foreign investors.

Domestic oil business

In 2013, Thailand recorded 1.232 million barrels per day of total refining capacity with a daily average of 1.059 million barrels, an increase of 8.1% from that of 2012. In 2014, the total capacity is expected to drop, since some refineries have scheduled maintenance turnarounds. Refineries have therefore agreed to stagger their shutdowns while keeping sufficient reserves for domestic consumption.

Refining Capacities and Average Crude Run of Domestic Refineries 2013

Refinery	Type	Capacity (thousand barrels/day)	Average crude run (thousand barrels/day)	Capacity utilization (%)
Thaioil	Complex	275	280.2	101.9
IRPC	Complex	215	188.0	87.4
Esso	Complex	177	141.9	80.2
SPRC	Complex	160	179.4	112.1
PTTGlobal Chemical	Complex	285	167.7	58.8
Bangchak	Complex	120	101.7	84.7
Total		1,232	1,058.9	85.9

Source: Department of Energy Business



Marketing business

In 2013, demand for fuels in Thailand rose by 3.0% from the previous year to 871,400 barrels per day (138.5 million liters per day). Demand for products in gasohol and diesel groups surged in line with the economic growth and the government's policy on tax refunds for first-time car buyers, which brought about a dramatic increase in the number of small cars and pick-up trucks. The National Energy Policy Council (NEPC)'s announcement to discontinue the sale of gasoline 91 on January 1, 2013, also produced an increase in gasohol demand by as much as 68.1%. In contrast, demand for gasoline reportedly dropped by 76.5%. Besides, people have turned to use private cars more, especially on long routes. Nevertheless, oil demand experienced a slowdown towards the end of the year as a result of political conflicts, which caused a number of service stations in some Bangkok areas to close down.

Domestic demand for fuels (million liters per day)

Product	2013	2012	2011
Gasoline	2.1	8.9	8.5
Gasohol	20.5	12.2	11.5
Gasoline group	22.6	21.1	20.1
Diesel group	57.2	56.2	52.6
Aviation fuel	15.2	14.0	13.9
Fuel oil	5.9	6.5	6.7
LPG	37.6	36.8	34.3
Total	138.5	134.5	127.6
(KBD)	871.4	845.8	802.7

Source: Department of Energy Business

It is expected that Thailand's demand for fuels in 2014 will slow down in line with the country's economy. Increased household debts will affect people's daily spending, while political conflicts will hold up the government's economic stimulus policies and government spending. Demand for gasohol products will still increase with the higher number of new cars, which will also cater to the government's Alternative Energy Development Plan (AEDP). Moreover, some oil retailers in Thailand are expanding their businesses to neighboring countries in view of the ASEAN Economic Community (AEC), which is due to start in 2015.

As for the number of service stations, at the end of the third quarter, a total of 22,625 stations were registered, an increase of 5.7% from



21,406 stations last year. Among major oil companies, PTT, Bangchak, and Esso stations have increased by 2.9%, 0.7%, and 0.2%. On the contrary, the number of Shell stations has declined by 2.6%.

Number of service stations

Unit : station

Oil trader	2013 ^{1/}	2012	2011
PTT	1,445	1,404	1,326
Shell	519	533	547
Esso	513	512	523
Bangchak	1,074 ^{2/}	1,067	1,068
Chevron	371	371	390
PTTRM	148	146	146
Others	18,561	17,373	16,252
Total	22,625	21,406	20,252

Source: Department of Energy Business

Remarks: ^{1/} number of stations as of the third quarter of 2013

^{2/} number of Bangchak stations as of the end of 2013

During the year, the average sales volume of oil products through service stations around the country was 1,591.8 million liters per month, an increase of 4.6% from last year, in which 1,522.2 million liters per month was recorded on average. Bangchak's sales volume through service stations increased by 12.0%, with a market share increase of 1.0% in this sector.

Sales volume of fuels through service stations for 2012 - 2013

Operator	Sales volume (million liters/month)			Market share (%)		
	2013	2012	Δ	2013	2012	Δ
PTT	608.2	586.9	3.6%	38.2	38.6	-0.3
Bangchak	235.9	210.6	12.0%	14.8	13.8	1.0
Esso	239.8	243.8	-1.6%	15.1	16	-0.9
Shell	201.6	191.9	5.0%	12.7	12.6	0.1
PTTRM	103	103.4	-0.4%	6.5	6.8	-0.3
Chevron	87.3	90	-3.0%	5.5	5.9	-0.4
Thaioil	74	53.4	38.6%	4.7	3.5	1.1
Susco Group	25.9	31.4	-17.4%	1.6	2.1	-0.4
PTG Energy	12.1	7.1	69.9%	0.8	0.5	0.3
Others	3.9	3.6	7.5%	0.2	0.2	0
Total	1,591.8	1,522.2	4.6%	100	100	-0.3

Source: Department of Energy Business and Bangchak Petroleum PLC.



The dealer's lubricant market, under Article 7, recorded a sale of 31.3 million liters per month in 2013, a rise of 2.2%. The automotive lubricant sector, meanwhile, took a lead in the lubricant market with a market share of 60%. The consumption of lubricants in the manufacturing sector is also set to grow in line with economic growth. Finally, the national GDP and state policy measures are still the main drivers for the lubricant market.

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

1.1) Service stations – This is the usual retail channel, that 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 located on major roads, and, under Bangchak's direct supervision, serve as prototype stations.	171	15.92
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.	69	6.42
3.	Joint Venture stations (JV): This is a joint investment between Bangchak and operators interested in running the service station business.	97	9.03
4.	Dealer-Owned, Dealer-Operated stations (DODO): The operator is the station owner, land owner, and sole investor, as well as a distribution agent.	120	11.17
5.	Co-Operative stations (CO-OP): These stations are invested by the community. In most cases, the community is the land owner and investor.	617	57.45
Total		1,074	100.00

Remarks: Bangchak Petroleum PLC. As of December 31, 2013



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	2013		2012		2011	
	Volume	%	Volume	%	Volume	%
1. Outlet & End-User Customers	83.7	69.4	77.0	76.7	72.4	70.1
2. Supply Sales Customers	0.1	0.1	0.1	0.1	0.5	0.5
3. Sale to domestic refineries and petrochemical plants	16.4	13.6	12.7	12.6	16.0	15.5
4. Export Customers	20.4	16.9	10.6	10.6	14.3	13.9
Total	120.6	100.0	100.4	100.0	103.2	100.0

Source : Bangchak Petroleum PLC.

Sales value of Bangchak's products and services

Products	2013		2012		2011	
	million baht	%	million baht	%	million baht	%
<u>Domestic Sale</u>						
1. High-speed diesel	86,663	53.2	78,492	48.2	74,696	47.6
2. Fuel oil	4,098	2.5	6,449	4.0	5,156	3.3
3. Gasoline	47,744	29.3	43,341	26.6	40,387	25.7
4. Other products and services	20,625	12.7	20,556	12.6	20,591	13.1
Total domestic sale	159,130	86.8	148,838	91.4	140,830	89.7
<u>Export sale</u>						
1. High-speed diesel	2,126	1.3	1,341	0.8	237	0.2
2. Fuel oil	19,014	11.7	10,542	6.6	14,995	9.5
3. Gasoline	1,314	0.8	1,196	0.7	153	0.1
4. Other products and services	1,777	1.1	882	0.5	713	0.5
Total export sale	24,231	13.2	13,961	8.6	16,098	10.3
<u>Combined sales value</u>						
1. High-speed diesel	88,789	54.5	79,833	49.0	74,933	47.7
2. Fuel oil	23,112	14.2	16,991	10.6	20,151	12.8
3. Gasoline	49,058	30.1	44,537	27.3	40,540	25.8
4. Other products and services	22,402	13.8	21,438	13.1	21,304	13.6
Total sales value	183,361	100.0	162,799	100.0	156,928	100.0
% increase/decrease	12.63		3.74		16.56	

Source : Bangchak Petroleum PLC.



2.3 Supplies of products and services

1) Production capacity and production volume

Bangchak's complex refinery, situated at 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 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

	2013	2012	2011
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	48.5	39.9	41.8
2. Fuel oil	16.8	9.3	14.8
3. Gasoline	20.4	14.9	16.7
4. Aviation fuel, kerosene	10.8	7.7	10.3
5. LPG	2.5	0.8	0.1
6. Products for internal use and product loss during operation	0.7	0.9	2.1
Total output volume (B)	99.3	73.4	85.7
% increase of output volume	35.4	-14.4	-0.6
% of capacity utilization (B/A)	87.6	64.7	75.6

Source : 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 crude run does not equal the refining capacity because additives are excluded.

3/ The gasoline output excludes the amount of MTBE and ETOH in the production of GSH and ULR.



- In August, 2003, Bangchak hired Universal Oil Products (UOP) to assess the refinery's efficiency, with the following findings:
 - 1. Inspection:** At all times, Bangchak has kept its refining machinery in good operating conditions. All materials in the refinery are tidily kept, which supports easy work flow. Similarly, work tools are kept in good conditions. According to staff interviews, UOP found no negative comments about the conditions of tools and machines in the refining process.

Regarding the life of Bangchak Refinery, in UOP's view, a lot of refineries in North America, which have been running for over 50 years, possess similar refining technology to that of Bangchak. Therefore, there is no limitation for Bangchak Refinery, which conducts regular inspection and maintenance, in carrying on its operation for a comparable period.
 - 2. Reliability:** Overall, Bangchak Refinery is highly reliable as a result of preventive maintenance and equipment condition monitoring. By UOP's inspection experience, Bangchak Refinery is better managed than many other refineries in North America.
 - 3. Process Control:** UOP found that Bangchak Refinery is equipped with good control and safety systems, and conforms to the government's regulations.
 - 4. Offsites, Utilities and Refinery Oil Loss:** Utilities and the various supporting systems were able to support the output volume. These systems are steam and power generation, water supply, waste management, air and nitrogen system, and the crude and product storage system. UOP also discovered that Bangchak's production system was well managed and did not harm the environment. The refinery should, therefore, maintain these standards.
 - 5. Process Technologies:** Overall, existing technologies were found capable of responding to refining demand. However, new technology may be required to cope with the expected change in demand.
- In 2004, Bangchak hired UOP LLC. and Foster Wheeler Corporation, which are the proprietors of world-class refining technologies from the US, to conduct a technological inspection and provide investment options for upgrading the refining efficiency and reducing the production of fuel oil. They recommended that Bangchak install of a vacuum distillation unit and hydrocracking unit, together with other supporting units, to reduce the production of fuel oil from 30% to 10%



of the total production. This gave birth to Bangchak's Product Quality Improvement Project.

- On August 29, 2005, the Board of Directors agreed on an investment in a hydrocracking unit to facelift Bangchak Refinery from a simple refinery into a complex one, capable of producing products of higher values.
- On April 21, 2006, Bangchak hired CTCL Overseas Corporation Limited and CTCL (Thailand) Co., Ltd., to construct a hydrocracking unit. Starting in May 2006, the entire project required 30 months for construction and a test run.
- In 2009, the Product Quality Improvement Project (PQI) was brought on stream and its commercial operation started in December, turning Bangchak Refinery into a complex refinery with higher capability. The refinery can take on a wider variety of crude oil and produce finished products of higher values.
- In 2013, realizing the need to upgrade the refinery's efficiency and reliability, particularly its safety and environmental conservation, Bangchak initiated projects gearing towards world-class excellence, namely:

1. Safety

- Commissioning outside safety experts, that is, from DuPont, to assess the management system and provide recommendations on improvement of the refinery's process safety management
- Commissioning outside safety experts, that is, from Foster Wheeler, to help in risk analysis, as well as analytical and assessment techniques to identify risks and find out obstacles in the production process through HAZOP (Hazard and Operability Study)
- Being continuously successful in the reassessment of TIS 18001 / OHSAS 18001 standards

2. Reliability & Engineering

- Commissioning outside safety experts, this is, from DuPont, to assess the management system and provide recommendations for improvement of the refinery's asset integrity management
- Commissioning engineering experts, that is, from Quest Integrity Service, to assess the management system and provide recommendations on improvement of the refinery's inspection management, and arranging for more stringent equipment inspection, that is, Risk Based Inspection (RBI), to ensure that vital refining equipment, especially those subjected to high pressure, are always ready for operation



- Improving the reliability of controlling equipment using the Safety Integrity Level (SIL) technique together with installation of highly reliable equipment
- Improving reliability of the power system
- Improving the machinery maintenance system, that is, the Reliability Centered Maintenance (RCM)

3. Process Technologies

- The start-up of Tail Gas Treating Unit (TGTU) helped reduce contaminants from the stack emissions of the sulphur recovery unit

4. Process Control

- Some software was upgraded and the number of monitoring screens for the Distributed Control System (DCS) was increased

5. Utilities

- The raw water production unit was upgraded by using the reverse osmosis technology
- The wastewater management unit was upgraded and installed with a filter press unit and a reverse osmosis system

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.

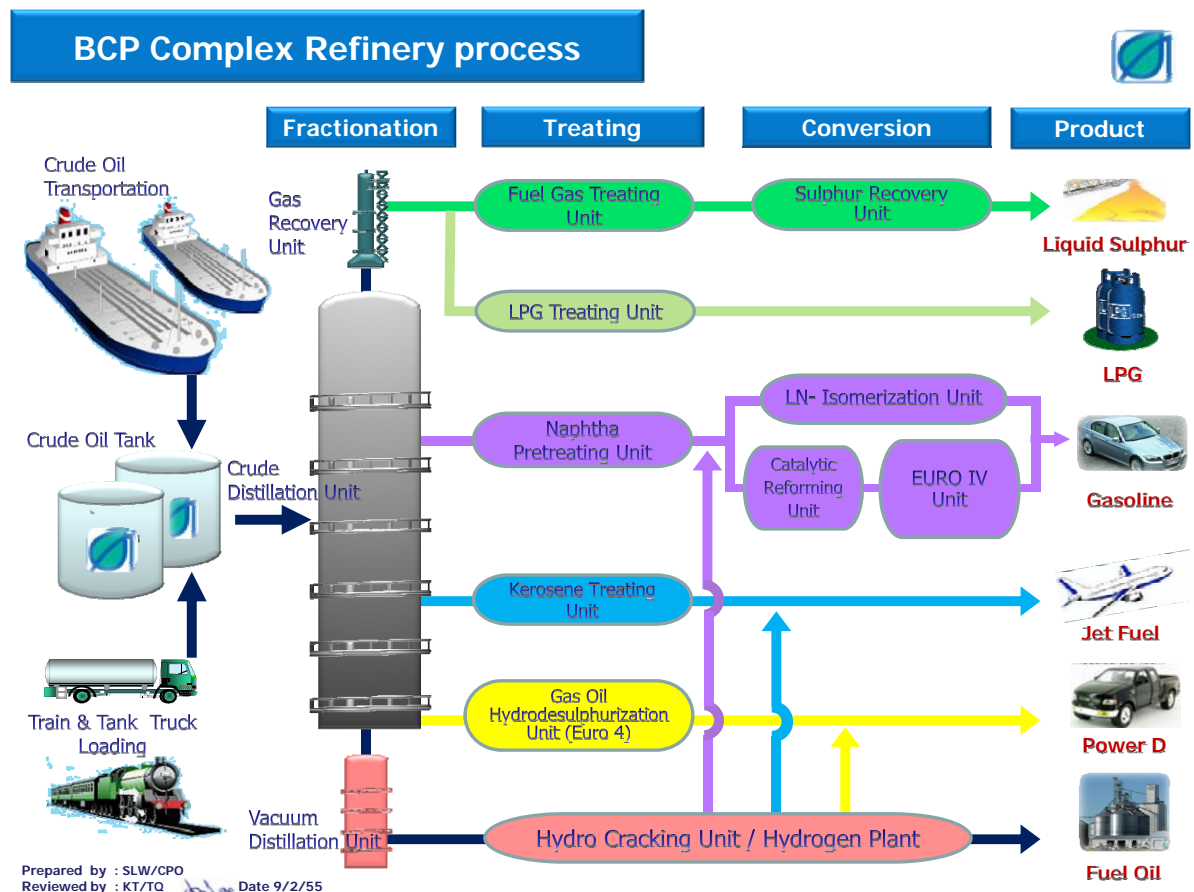
Low-sulphur diesel production unit of Euro 4 standard – This is quality improvement for diesel, using hydrogen in combination with a catalyst under specified pressure. By the Euro 4 standard, sulphur



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. 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 33 days in running its refinery.

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

Crude Field	Production Capacity					
	2013 ^{1/}		2012		2011	
	Volume	%	Volume	%	Volume	%
Sirikit	33,250	22.1	28,423	19.1	22,974	16.4
Unocal	30,111	20.0	28,281	19.0	30,643	21.9
Songkhla	20,458	13.6	19,883	13.3	9,787	7.0
Benchamas	20,443	13.6	25,439	17.1	27,077	19.3
Bualuang	12,327	8.2	7,200	4.8	7,641	5.5
Jasmine	10,480	7.0	10,408	7.0	12,762	9.1
Tantawan	2,867	1.9	3,748	2.5	5,428	3.9
Banyen	2,669	1.8	3,685	2.5	4,620	3.3
Chaba	1,196	0.8	1,699	1.1	2,167	1.5
Na Sanun	1,189	0.8	1,375	0.9	2,474	1.8
Others	15,265	10.2	18,834	12.6	14,419	10.3
Total	150,255	100	148,975	100	139,992	100

Source : Energy Policy and Planning Office, Ministry of Energy

Remark 1/ As of November 30, 2013

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 2013, Bangchak procured indigenous crude oil from 22 fields, 83% of which is Phet Crude from Sirikit Field, and some from Jasmine Field, Pattani Field, Benchamas Field, and North Central Field, as detailed below:

Indigenous sources of crude oil (unit: thousand barrels)

Crude Field	2013		2012		2011	
	Volume	%	Volume	%	Volume	%
1. Sirikit (Phet)	5,150	29.9	6,618	47.6	4,765	30.4
2. Benchamas	4,080	23.7	1,927	13.9	2,441	15.6
3. Songkhla	2,050	11.9	295	2.1	159	1.0
4. Pattani	1,938	11.2	1,729	12.4	2,441	15.6
5. Jasmine	1,597	9.3	1,131	8.1	3,277	20.9
6. Tantanwan	489	2.8	208	1.5	759	4.8
7. Na Sanun East	277	1.6	344	2.5	611	3.9
8. Type 2	86	0.5	34	0.2	178	1.1
9. North Central	618	3.6	597	4.3	500	3.2
10. BP (U-Thong / Kamphaeng Saen)	75	0.4	92	0.7	86	0.5
11. Arunothai	218	1.3	222	1.6	-	-
12. Sang Kajai	45	0.3	44	0.3	58	0.4
13. Phu Horm Condensate	101	0.6	115	0.8	72	0.5
14. POE Night	20	0.1	21	0.2	26	0.2
15. Wichian Buri	69	0.4	99	0.7	70	0.4
16. L 33	17	0.1	26	0.2	85	0.5
17. L53/48	87	0.5	268	1.9	168	1.1
18. Bung krathiem	1	0.0	1	0.0	1	0.0
19. Nong Phak Chee	65	0.4	4	0.0	-	-
20. L 53 type 3	170	1.0	18	0.1	-	-
21. L 53/48 type 4	67	0.4	-	-	-	-
22. L53-2	1	0.0	61	0.4	-	-
23. NSE-F6	6	0.0	47	0.3	-	-
Total	17,227	100	13,901	100	15,697	100

Source : 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 from Brunei; Enfield from Australia; while Murban was imported from the UAE in the Middle East. Details of imported crude appear in the following table:

Overseas sources of crude oil (unit: thousand barrels)

Type of crude	Country	2013		2012		2011	
		Volume	%	Volume	%	Volume	%
Far East							
1. Labuan	Malaysia	2,652	14.6	4,220	32.6	3,374	23.6
2. Malampaya Condensate	Indonesia	-	-	-	-	305	2.1
3. Bunga Orkid	Malaysia	4,500	24.7	3,045	23.5	1,219	8.5
4. Bunga Kekwa	Malaysia	1,604	8.8	1,285	9.9	2,485	17.4
5. Dulang	Malaysia	191	1.0	-	-	-	-
6. Kikeh	Malaysia	-	-	-	-	605	4.2
7. Seria Light Export Blend	Brunei	3,815	21.0	1,070	8.3	912	6.4
8. Tapis	Malaysia	-	-	607	4.7	-	-
9. Dai Hung	Vietnam	-	-	288	2.2	-	-
10. Tapis	Malaysia	287	1.6	-	-	-	-
11. Geragai	Indonesia	806	4.4	-	-	-	-
12. Masa	Malaysia	512	2.8	-	-	-	-
13. Miri	Malaysia	285	1.6	-	-	-	-
14. Pangkah	Indonesia	175	1.0	-	-	336	2.4
Total from Far East		14,826	81.5	10,515	81.2	9,236	64.6
Middle East							
1. Murban	UAE	1,385	7.6	1,888	14.6	1,909	13.4
Total from Middle East sources		1,385	7.6	1,888	14.6	1,909	13.4
Others							
1. Sokol	Russia	-	-	-	-	1,444	10.1
2. Sty Barrow	Australia	-	-	-	-	345	2.4
3. Enfield	Australia	1,150	6.3	551	4.3	529	3.7
4. Pyrenees	Australia	554	3.0	-	-	828	5.8
5. Montara	Australia	281	1.5	-	-	-	-
Total from other sources		1,985	10.9	551	4.3	3,146	22.0
Grand total		18,195	100	12,954	100	14,291	100

Source: 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	2013		2012		2011	
	Million Baht	%	Million Baht	%	Million Baht	%
<u><i>Cost of indigenous feedstock</i></u>						
1. Crude and semi-finished products	65,925	44.1	52,499	37.4	56,326	42.8
2. Finished products	17,626	11.8	35,002	24.9	23,612	18.0
Total	83,551	55.8	87,501	62.3	79,938	60.8
<u><i>Cost of imported feedstock</i></u>						
1. Crude and semi-finished products	64,078	42.8	49,906	35.5	50,936	38.7
2. Finished products	1,977	1.3	3,045	2.2	652	0.5
Total	66,055	44.2	52,951	37.7	51,588	39.2
<u><i>Combined costs of indigenous and imported feedstock</i></u>						
1. Crude and semi-finished products	130,003	86.9	102,405	72.9	107,262	81.6
2. Finished products	19,603	13.1	38,047	27.1	24,265	18.4
Total feedstock cost	149,606	100	140,452	100	131,527	100

Source: Bangchak Petroleum PLC.



3. Risk Factors

The Company implements its risk management system under the internationally accepted COSO Enterprise Risk Management (COSO ERM) and ISO 31000 standards to ensure goal achievement and preparedness for changing circumstances. It defines a risk management policy that requires compliance by all employees and all units by managing risks to acceptable levels. Its Enterprisewide Risk Management Committee (ERMC) manages the Company's risk management for high efficiency. The key risk factors for the Company's businesses are summarized below.

Strategic and Financial Risks

Committed to undertaking its energy businesses in an environmentally friendly way for sustainable development and alternative-energy leadership, the Company defines strategies that focus on maintaining competitiveness; on investment expansion to attain clean energy through the likes of solar-cell power generation, biodiesel plants, and ethanol plants; and on application of advanced, environmentally friendly technologies to refining processes to create clean energy products like Gasohol 91-octane, 95-octane, E20, and E85, and Diesel "Super Power D".

Risks inevitably facing the Company's overall performance arise from the volatile oil price and the baht, currency exchange rates, uncertainty of output volumes as well as global and domestic energy demand, the public sector's policy, and investment choices for new businesses. To tackle such risks, the Company organizes executive seminars to define business strategies compatible with changing circumstances, conducts analyses of risk factors facing new-venture projects at each project stage, strategic risk management plan, conducts risk management for oil prices and currency exchange rates, and accommodates its future growth by drawing up manpower plans and short-term & long-term competency development plans for its personnel. Senior executives also monitor the Company's performance weekly and monthly to ensure goal achievement. Bangchak has drawn up a manpower plan and a competency development plan (for both the short term and the long term) to accommodate its growth and enable its stock price to remain among SET 50-the top 50 common stocks with high market capitalization, regularly traded amid high liquidity, and with a minor shareholding ratio meeting securities adjustment criteria. To this end, Bangchak has defined a KPI of being among the SET 50 companies, while mapping out a risk management plan so as to boost confidence in achieving this goal. Third-party assessment has been agreed with TRIS Rating Co., Ltd., to bolster confidence in the quality and risks of Bangchak's financial instruments.



Operating Risks

Since its business could inflict damage on surrounding communities, the Company recognizes and highly values the safety of employees and society. Accounting for such risk are internal factors arising from operations and external factors caused by a third party or unforeseen hazards (including terrorism and natural disasters) facing communities, properties, and the environment, and leading to business disruptions. As a result, the Company constantly values environmental management and safety by focusing on operating strictly under the law, the TIS-OHSAS 18001 occupational health and safety management system, and the ISO 14001 environmental management system to bolster the confidence of those living around the refinery. Besides, the Company has set up a center to report the refinery's environmental quality parameters, complete with a communication system to alert communities around the refinery thoroughly. It also regularly and continually monitors, reviews, and conducts drills for crisis management plans and emergency plans. Bangchak instituted regular execution of business continuity management (BCM) actions under ISO 22301:2012. This can assure all stakeholders that Bangchak is well prepared for responses to all situations and thus able to carry on its business and product deliveries even during crises. In this regard, a crisis drill was held under the scenario of employee absences due to a major epidemic. To cope with frequent political events and protest rallies, which affect Bangchak personnel's job performance and main communication routes, Bangchak has applied its crisis management plans for being locked out of its offices and disrupted transport routes. So the company continually operates and supplies its products to the customers. The Company also continually assessed the risks and impacts caused by external circumstances and took lesson learned in order to improve operation process and conduct additional plan of Business Continuity Management (BCM).

Risks from Regulations on The Environment, Reputation, and Engagement with Communities and The Environment

The Company strictly values compliance with the law and relevant regulations, evident in its leaders that set role models for transparency and social responsibility, as well as the awards presented to the Company all along. Apparently, legislative and regulation changes or the Company's own strategies for new-venture investments could require certain projects to undergo the approval process for environmental impact assessment (EIA) reports and secure community acceptance. Limitation and delays resulting from this process could pose risks affecting the Company's operation and costs.

**4. Review of business assets**

Asset	Ownership	Book value Baht million ^{1/}	Obligation
Refinery land	Long-term lease	424	None
Other properties	Ownership	972	None
Buildings	Ownership	269	None
Machinery & distillation tower equipment	Ownership	19,931	None
Power generators	Ownership	3,280	None
Sales and office equipment	Ownership	1,143	None
Platinum catalysts ^{2/}	Ownership	239	None
Vehicles	Ownership	67	None
Works in progress	Ownership	995	None
Total	-	27,320	-

Note:

- 1/ This year Bangchak set aside Baht 61 million in allowance (reversal of) for impairment of land property, machinery, and equipment, consisting of Baht 14 million in property, Baht 17 million in machinery and distillation tower equipment, and Baht 30 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.

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. 20, 2016 Jul. 17, 2019 Oct. 15, 2019 Aug. 30, 2019
2. GRENA ZENITH SJ	1	Lubricant	Nov. 5, 2016
3. ISO GREEN	1	Gasoline	Jun. 30, 2014
4. GE GOLD	5	Synthetic gasoline-engine lubricant	Jan. 13, 2023 Feb. 12, 2022 Nov. 20, 2021 Jan. 15, 2017
5. GE GOLD SM	1	Synthetic gasoline-engine lubricant	Jan. 15, 2017



Trademark	Number of registered trademarks	Goods/services under trademark	Expiry ^๑
6. GE PLUS	3	Gasoline-engine lubricant	Jan. 13, 2033 Nov. 20, 2021 Jan. 15, 2017
7. GE SILVER	2	Semi-synthetic gasoline-engine lubricant	Nov. 4, 2014 Jan. 15, 2017
8. Green Plus	1	Gasoline	Sep. 14, 2014
9. Green Plus 91	1	Gasoline	Sep. 14, 2014
10. Green Plus 95	1	Gasoline	Sep. 14, 2014
11. LOWCOST	1	All fuels	Jun. 23, 2015
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	May14, 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
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 ^๑	1	Drinking water	Feb. 23, 2019
27. SUPER POWER D B5 (EURO 4)	1	Diesel-engine lubricant	Nov. 3, 2020
28. SUPER POWER D (EURO 4)	1	Diesel-engine lubricant	Nov. 3, 2020
29. INTHANIN COFFEE	2	Coffee drinks, biscuits, bakery products, juices	Sep. 29, 2015
30. PREMIO INTHANIN	7	Drinks, biscuits, cups, plates, tokens, water bottles, pens	Feb. 14, 2021
31. INTHANIN PREMIO BY BANGCHAK	2	Water bottles, water containers, cups, plates, food, bowls, pens	Feb.14, 2021
32. INTHANIN PREMIO COFFEE BY BANGCHAK	6	Drinks, biscuits, tokens, shirts, caps, umbrellas, sunshades	Feb.14, 2021



Service Marks

Service logo	Number of registered logos	Goods/service under logo	Expiry ¹
Copyrights			
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, 2015
12. GREEN SERVE	1	Vehicle maintenance	Sep. 1, 2015
13. Green Wash	1	Vehicle cleaning & lubrication	Sep. 1, 2015
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. INTHANIN COFFEE	3	Food & fresh coffee business management	Sep. 29, 2015 Nov. 10, 2015
20. INTHANIN PREMIO COFFEE BY BANGCHAK	2	Food & fresh coffee business management	Feb. 14, 2021
21. PREMIO INTHANIN	2	Food & fresh coffee business management	Feb. 14, 2021
22. Baichak	1	Food & drink sale	Mar. 15, 2021
23. Baichak Mart	1	Food & drink sale	Jan. 18, 2022



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 Laos)	2	Fuel products, service stations	Mar. 20, 2023

Trademarks and Service Marks under deliberation in Thailand

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. GE GOLD	1	Synthetic gasoline-engine lubricant	Filed Dec. 26, 2011
2. GE NGV	1	Semi-synthetic lubricant	Filed Dec. 26, 2011
3. GE PLATINUM	1	Synthetic gasoline-engine lubricant	Filed Dec. 26, 2011
4. GE PLUS	1	Gasoline-engine lubricant	Filed Dec. 26, 2011
5. GE SILVER	1	Semi-synthetic gasoline engine lubricant	Filed Dec. 26, 2011
6. GE SYNTECH	1	Semi-synthetic gasoline engine lubricant	Filed Jun. 17, 2013
7. Baichak Mart	1	Miscellaneous goods for consumers' convenience	Filed Apr. 2, 2013
8. Colored strips, Bangchak leaf, and three leaves	1	Vehicle service stations	Filed Sep. 25, 2013

**Trademarks and Service Marks under deliberation abroad**

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. Bangchak leaf BCP LUBRICANTS registered in - Cambodia - Vietnam - PRC - LPDR - Jordan - Lebanon - Kenya - OAPI countries	3	Fuel products	Filed on: Jul. 11, 2012 Jul. 25, 2012 Aug. 7, 2012 Nov. 20, 2013 Nov. 24, 2013 *Application under the registrar's consideration
2. INTHANIN COFFEE registered in PRC, Vietnam, LPDR, Cambodia, and Myanmar	5	Food & fresh coffee business management	Filed on Sep. 2, 3, 4, 5, and 9, 2013
3. BAICHAK MART registered in PRC, Vietnam, LPDR, Cambodia, and Myanmar	5	Miscellaneous goods for consumers' convenience	Filed on Sep. 2, 3, 4, 5, and 9, 2013
4. GREEN SERVE registered in PRC, Vietnam, LPDR, Cambodia, and Myanmar	5	Vehicle maintenance	Filed on Sep. 2, 3, 4, 5, and 9, 2013
5. Bangchak leaf and BANGCHAK, registered in - PRC (China) - LPDR (Laos) - Vietnam - Cambodia - Myanmar	10	Fuel products & service stations	Filed on: Sep. 27, 2013 Sep. 30, 2013 Sep. 30, 2013 Oct. 1, 2013 Oct. 24, 2013
6. Bangchak leaf and BCP registered in - PRC (China) - LPDR (Laos) - Vietnam - Cambodia - Myanmar	10	Fuel products & service stations	Filed on: Sep. 27, 2013 Sep. 30, 2013 Sep. 30, 2013 Oct. 1, 2013 Oct. 24, 2013



Trademarks under transfer process in PDRC

Trademark	Number of registered trademarks	Goods/services under trademark	Remarks
1. Bangchak leaf	1	Fuel products	-
2. BCP	1	Fuel products	-

Note:

- ❶ Registered trademarks and service logos are in effect 10 years from registration dates and extendable every 10 years
- ❷ Belongs to Bangchak Green Net Co., Ltd., a subsidiary
- ❸ In registering trademarks in Myanmar, one must submit declaration(s) of trademark ownership and place advertisement(s) to that effect in local newspapers every 2-3 years

Policy of investment in subsidiaries

As of December 31, 2013, Bangchak Petroleum invested in the following subsidiaries:

1. Bangchak Green Net Co., Ltd., with a registered capital of Baht 1 million and 49% shareholding
2. Bangchak Biofuels Co., Ltd., with a registered capital of Baht 281.5 million and 70% shareholding
3. Bangchak Solar Energy Co., Ltd., with a registered capital of Baht 4,100 million and 100% shareholding
4. Bangchak Solar Energy (Prachinburi) Co., Ltd., with a registered capital of Baht 1,400 million and 49% shareholding. Bangchak Solar Energy holds the rest.
5. Bangchak Solar Energy (Chaiyaphum 1) Co., Ltd., with a registered capital of Baht 780 million and 49% shareholding. Bangchak Solar Energy holds the rest.
6. Bangchak Solar Energy (Buriram) Co., Ltd., with a registered capital of Baht 755 million and 49% shareholding. Bangchak Solar Energy holds the rest.
7. Bangchak Solar Energy (Buriram 1) Co., Ltd., with a registered capital of Baht 765 million and 49% shareholding. Bangchak Solar Energy holds the rest.
8. Bangchak Solar Energy (Nakhon Ratchasima) Co., Ltd., with a registered capital of Baht 760 million and 49% shareholding. Bangchak Solar Energy holds the rest.



Supervision of subsidiaries

In charge of managing Bangchak's service stations, Bangchak Green Net coordinates and defines a core policy under which management of all stations may follow the same direction as Bangchak's marketing policy. Effective from October 1, 2003, Bangchak delegated its representatives to replace resigning directors of the subsidiary, thus increasing the number of Bangchak representatives on Bangchak Green Net's board of directors to a majority. As a result, Bangchak has since controlled the operating and finance policies of Bangchak Green Net.

Set up to produce biodiesel for sale to Bangchak and other customers, Bangchak Biofuel coordinates and defines a core policy to forge a uniform business direction. To this end, Bangchak delegated four senior executives to serve as directors out of six on the board of the joint venture. In the first five years of the company's founding, the manager or managing director of this company came from Bangchak's nomination, thus enabling Bangchak to control the operating and financial policies of Bangchak Biofuels.

Set up to operate solar power generation and sell it to the Electricity Generating Authority of Thailand and the Provincial Electricity Authority, Bangchak Solar Energy was wholly owned by Bangchak. Its five wholly owned subsidiaries were founded to operate solar power projects in different regions. Bangchak delegated senior executives to serve as directors of each of these companies, thus enabling it to control the operating and financial policies of Bangchak Solar Energy.

The operating approaches and the preparation of financial statements for these three subsidiaries follow Bangchak's directions. All their financial statements, including the five subsidiaries of Bangchak Solar Energy, have been consolidated and reported in Bangchak's financial statements since 2003, 2008, 2011, and 2012 respectively to allow efficient consolidated performance measurement.



5. Legal disputes

Below are details as of December 31, 2013, 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

Bangchak Petroleum Plc was founded in response to a Cabinet resolution of June 19, 1984. Its structure allows unity, with freedom of administration and business flexibility as in private companies. Registered as a private company limited under the Civil and Commercial Code, Bangchak began operating as a limited company on November 8 the same year.

Bangchak began its business on April 1, 1985. It transformed into a public company limited on April 23, 1993, and securitized its stocks on the Stock Exchange of Thailand (SET) on August 2, 1994. Today its registered capital amounts to Baht 1,531 million, of which Baht 1,377 million was paid up.

Bangchak's petroleum business ranges from crude oil procurement from abroad and domestic sources. At its complex refinery with a nameplate capacity of 120,000 barrels per day, the oil is refined into petroleum products. It also sells products to consumers through its nationwide network of service stations and to oil-trading companies by pipeline, boat, or land transport for subsequent sale to consumers through other networks of service stations and other channels. Bangchak also exports its petroleum products. In addition, it operates a solar power generation plant (the Sunny Bangchak Project), the first phase of which (located at Bang Pa-in District, Phra Nakhon Si Ayutthaya) has a capacity of 38 MW; electricity was first commercialized in April 2012.

General 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 : An oil refinery with a nameplate capacity of 120,000 barrels per day, a petroleum business covering retail and wholesale, and solar power generation with a capacity of 38-MW PPA.



- 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, 2013) 1,531,643,461 Baht, of which Baht 1,376,923,157 was paid up, dividing in to 1,531,643,461 shares, at 1 Baht per share.
- Shareholders of BCP (as of December 31, 2013)
 - PTT Plc 375 Million shares 27.22%
 - Ministry of Finance 137 Million shares 9.98%
 - Minor Shareholders 865 Million shares 62.80%
 - 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.
 - Electricity Generating Authority of Thailand (EGAT) and Provincial Electricity Authority (PEA)
- 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
 - Bangchak Refinery and Terminal: 210 Sukhumwit 64 Road, 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 3, 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, 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, Ayudtthaya 13160
Tel. 035-276-500
Fax. 035-276-549
Website: <http://www.bangchakbiofuel.co.th>
- Bangchak Solar Energy Co., Ltd.
99/1 Moo (Highway No. 3048), Tambon Bang Krasan, Bang Pa-in
District, Ayudtthaya 13160
Tel.: 035-276-000
Fax.: 035-276-014
E-mail: info-sunny@bangchak.co.th