



Sustainability Report 2016

The Bangchak Petroleum Public Company Limited



"...If we do not have alternative fuels, we will be in trouble. We are worried, but in fact we don't have to be that worried. If others do not work on it, they will not have biodiesel to use. We will. I mean I will. Because I am working on this myself. If others do not have it, it's fine. We must (sometimes) be selfish. If everyone is selfish, it will be all right because everyone will have to try and find alternative energy..."

His Majesty the late King Bhumibol's discourse to delegates in audience on the occasion of his birthday anniversary at Dusidalai Pavilion, Chitralada Villa, December 4, 2005.

In the Footsteps of the Father of Thailand in Energy Development



Your loyal subjects humbly recall
Your Majesty's boundless and gracious Kindness

- Religious rites dedicated to the late King
- Collective loyalty pledging remembrance of the late King
- Mass ordination of 33 novices and monks (employees) between November 6 – 10, 2016, in dedication to the late monarch
- Distribution of rice to mourners who paid homage to the late monarch at the Grand Palace
- Distribution of "In the Footsteps of His Majesty the King" calendars marking the 100th day of his demise to mourners at the Grand Palace, and by Bangchak service stations nationwide
- Distribution of "Think good, Do good" for students and mourners who paid homage to the late monarch and volunteers in Big Cleaning Day Activity at Sanamluang

Contents

002 In the footsteps of
the father of
Thailand

004 Message
Letter from
President & CEO

006 About Bangchak

009 Bangchak at
a glance

010 Sufficiency
Economy based-
the Bangchak
way

011 Bangchak and
Sustainability

014 Bangchak and its
stakeholder

- Stakeholder Engagement
- Materiality Matrix

026 Sustainability
Strategy

036 Corporate
Governance

- Corporate Governance
- Anti-Corruption
- Corporate Risk Management

046 Sustainability
Performances

- Economic Performance
- Environment Performance
- Social Performance

109 Sustainability
Performances
Statistic

115 About this report

118 GRI G4 Content
Index / SDG
Content Index

125 Bangchak GC
Advanced COP
Self Assessment

127 External
Assurance
Statement



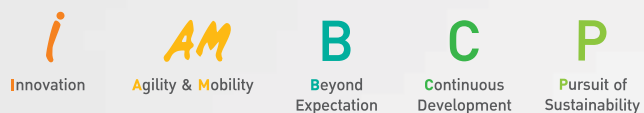
Message from the President & CEO (G4-1)

In 2016, Thailand suffered and grieved over the immense loss of His Majesty King Bhumibol Adulyadej (Rama IX). Throughout 70 years of his reign, the late King worked tirelessly for the well-being of his citizens. Even on energy issues, he turned crises into opportunities. During an oil price hike, he advocated alternative energy, which not only mitigated Thailand's trade deficit and lowered its dependence on imported fuels, but also raised the income of Thai farmers. He was therefore acclaimed as "**The Father of Thailand in Energy Development**". To pay tribute to the several talents of his with the deepest gratitude, Bangchak Petroleum humbly published in this Sustainability Report excerpts of his discourses and guidance graciously given to groups of people and citizens on different occasions.

Since its inception, Bangchak has applied the Philosophy of Sufficiency Economy in its business conduct by seeking moderate profits and optimizing its use of natural resources. In line with dynamic global situations, it has set a new vision of "Evolving Greenovation"



and values of "I AM BCP" this year by adding the issue of Innovation, Agility & Mobility to Beyond Expectation, Continuing Development, Pursuing Sustainability.



Bangchak also restructured itself and developed the employees' capacity so that they may be ready in all value aspects. It also continues driving the business with 3Ss strategy: Security, Stability & Sustainability.



The 4 GREEN Sustainability Strategy consists of



Green Business

focusing on investment in clean-energy businesses and being a low-carbon company



Green Production

reducing waste discharge and use of natural resources while managing its carbon footprint and water footprint to enhance the management effectiveness and improve Bangchak's safety management with Process Safety Management (PSM)



Greenovative Experience

coming up with the eco-friendly concept of Greenovative Product & Service Station, offering supplementary businesses to fulfill customers' needs and experiences under the Single One Roof Concept, and



Green Society

aiming to expand the practice of sustainability business to suppliers. Bangchak also announced its Supplier Code of Conduct to ensure sustainable businesses by asking suppliers to conduct self-assessment whose outcomes were then applied to define the supplier development plan. It aims to develop every single supplier based on this code by 2020.

Furthermore, it expanded the network to service stations under the Green Partnership Award Project to improve the management quality and social responsibility of service station owners and agricultural cooperatives under Created Share Value (CSV) guidelines. Bangchak also initiated social enterprise by jointly establishing Omsuk Social Enterprise Co., Ltd., with the Foundation of Buddhist Economics by the revered monk V. Vajiramedhi. It buys, processes, R&D and distributes agricultural products, rice, and organic crops.

Moreover, Bangchak continues its long-term sustainability mission by selecting and implementing 9 UN Sustainability Development Goals (SDGs) based on its competency and interests. It initiated several projects, such as water management under Sufficiency Economy, enhancing the youth's education, and employing the disabled. It also targets the reduction of greenhouse gas (GHG) emissions as a key performance indicator to limit the rise in global temperature to 2 degrees celsius.



We are pleased to inform you that Bangchak recently relocated its Head Office to M Tower, Floor 8 - 22A, on Sukhumvit Road, Bangkok, an eco-friendly building that applied the LEED (Leadership in Energy and Environmental Design). It is also well equipped with Smart Office, Smart Meeting and Smart Display Solution, which provides advanced and efficient facility management to achieve Bangchak's sustainability goal.

(Signed) Chaiwat Kovavisarach

[Chaiwat Kovavisarach]

President & CEO

About Bangchak

Our Business (G4-3)

Bangchak Petroleum Public Company Limited

Ticker Symbol : BCP

Bangchak's core businesses consist of oil refining, marketing, bio-products, now expanding to solar farms (a clean, natural energy), oil and gas exploration and production, and downstream innovation. BCP's goals are to enhance national energy security while stepping into new business ventures for corporate continuity and sustainability (G4-9)

Date of establishment : November 8, 1984

Head office :

2098 M Tower Building, 8th floor, Sukhumvit, Khwaeng Bangchak, Khet Phra Khanong, Bangkok 10260

Chief Executive Officer : Mr. Chaiwat Kovavisarach

Paid-up registered capital : Baht 1.376 billion

Employee : 1,196 (as of December 31, 2016)

Type of business : Petroleum and alternative energy

Business Culture : Develop sustainable innovative business in harmony with environment and society

Employee Culture : To be virtuous, knowledgeable, and contributive to others

Vision



Mission

BCP is committed to bringing disruptive and inclusive greenovation to delight our customers, being a trusted partner and value creator for all stakeholders, and promoting sustainable development of society. We emphasize inclusive and sustainable business, pursue domestic and overseas expansion, embrace good corporate governance principles, and nurture a high-performance, learning culture and happy workplace

Core Values

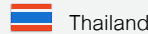


Refining business group

: procure crude oil from domestic and overseas sources and refine it into various petroleum products

Capacity

- 120,000 barrels per day

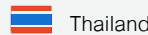


Marketing business group

: Sell over 77% of refined petroleum products directly to consumers through its service station network across the country and industrial customers with a focus on renewable, energy, including Gasohol 91/95/E20/E85 and Bio -Hi-Diesel Engage in non-oil businesses at service stations, including distribution of consumer products at Bai Chak outlets, Lemon Green, Big C Mini, and SPAR Minimarts

Capacity

- **Oil business** : builds service station network with 460 standard and 615 community service stations
- **Non-oil businesses** : cover prime locations with non-oil businesses, including 50 branches of Inthanin Coffee and 11 of Big C Mini, and introduce SPAR Minimarts under a single roof concept and Inthanin Garden, new-look organic coffee shop. (G4-8)

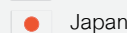
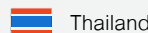


Alternative-energy business

For green-energy diversity, Bangchak is engaged in solar power generation

Capacity

- BCPG Plc operates a solar power generation with a capacity of 203 MWdc.



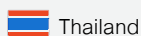


Bio-product business

To enhance national energy security, cut trade deficit as a result of fuel imports, and to benefit farmers and the environment, Bangchak invests in renewable energy, biodiesel, and ethanol businesses

Capacity

- Bangchak Biofuel Co., Ltd., is engaged in the biodiesel business with an 810,000 liter/day capacity
- Ubon Bio Ethanol Co., Ltd., produces 400,000 liters/day of ethanol
- Bangchak Bioethanol (Chachoeng sao) Co., Ltd., has a capacity of 150,000 liters/day of ethanol



Petroleum exploration and production business

For secure growth and business risk diversification, Bangchak founded BCP Energy International Pte. Ltd. (BCP Energy) in Singapore and invest in Nido Petroleum Co.Ld. to engage in the energy business and natural resources in Southeast Asia

Capacity

- Investment in Nido Petroleum Limited, a producer of 6,000 barrels per day of crude oil from the Galoc field

- Australia
- Philippines
- Indonesia



Other businesses

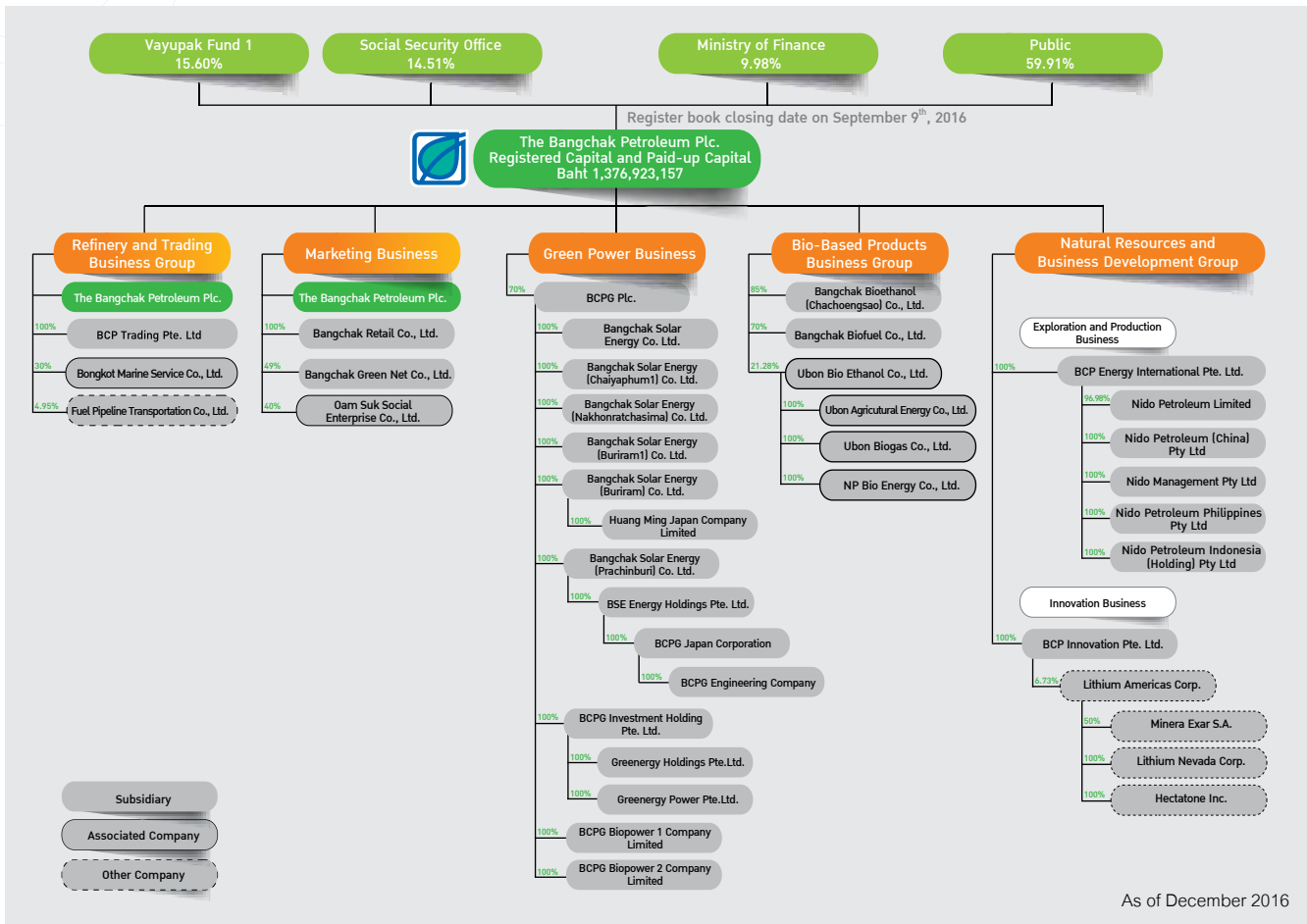
To prepare for change in vehicle technology, Bangchak founded BCP Innovation Pte. Ltd. to engage in innovation-related businesses abroad

Capacity

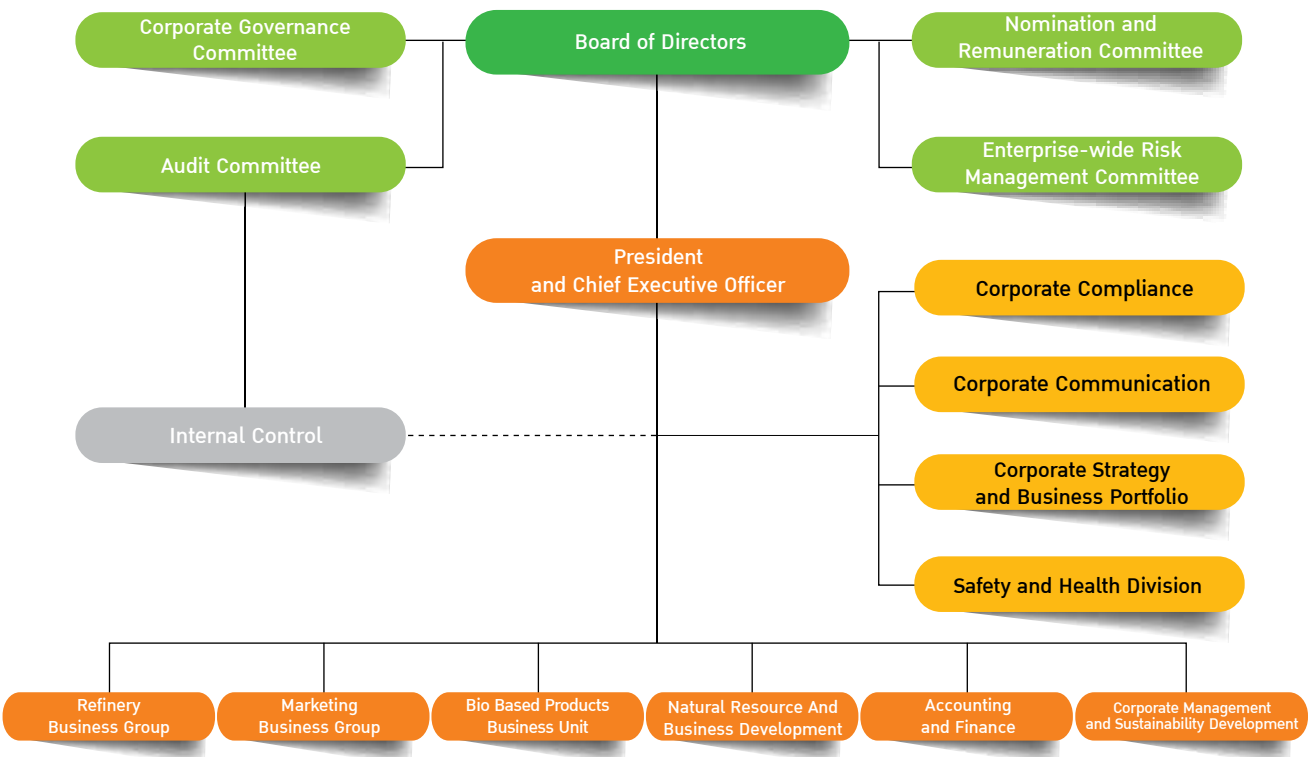
- Investment in Lithium Americas Corporation, a producer of lithium carbonate, a key raw material for battery manufacturing, which began production and distribution in early 2015, with average production of 10,000 tons per year

- Canada
- Argentina
- USA

Shareholding Structure (G4-7)



Management Structure (G4-34, G4-35, G4-38)



As of December 2016

Note :

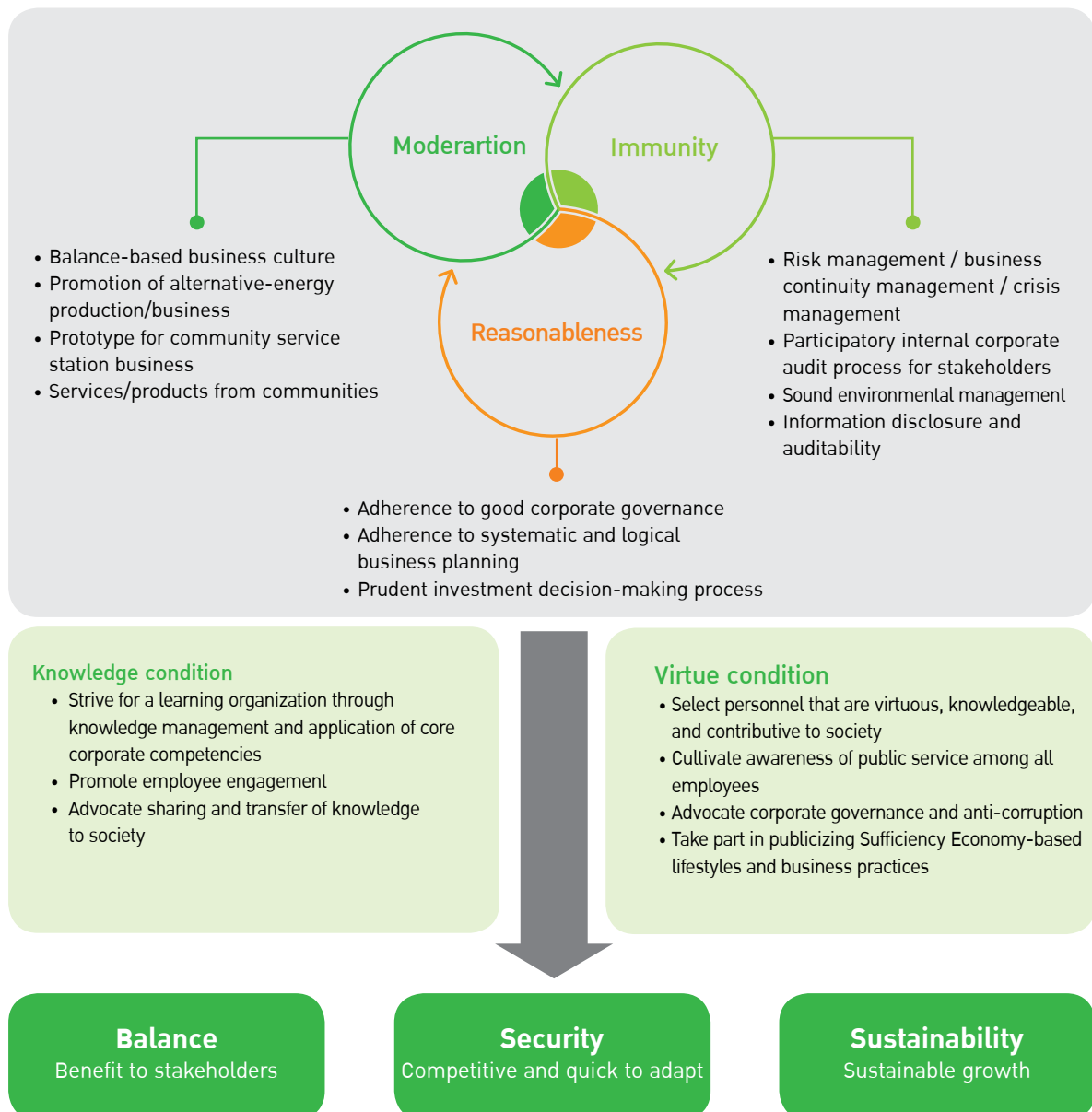
The Audit Committee considers, appoints, transfers, and assesses the performance of the head of Internal Control, in addition to reviewing the unit's independence

“...The word “enough” means enough for consumption and general use, both for home use and for agricultural and industrial use. There must be enough water. If not, everything will be become paralyzed. Eventually, everthing that we have been proud of, the progress and prosperity of our nation, will stop. There can be no prosperity...”

His Majesty the late King Bhumibol’s discourse to the audience of well-wishers on the occasion of the Royal Birthday At the Dusidalai Hall, Chitralada Villa, Dusit Palace
On Saturday, 4 December 1993

Sufficiency Economy-based: the Bangchak Way

Ever since its establishment as an entity that forges national energy security and promotes the quality of life for Thais, Bangchak has undertaken its business by applying **HM the late King’s Sufficiency Economy Philosophy** to corporate management on a foundation of moderation and prudence, with due regard for sufficiency, reasonableness, and immunity. One should be governed by knowledge and virtue. This translates into sufficient, reasonable profit; fair treatment of customers; refraining from creating impacts on communities and society; and a focus on forging community benefit and being a commendable corporate citizen.



Bangchak at the glance in 2006



Corporate Governance

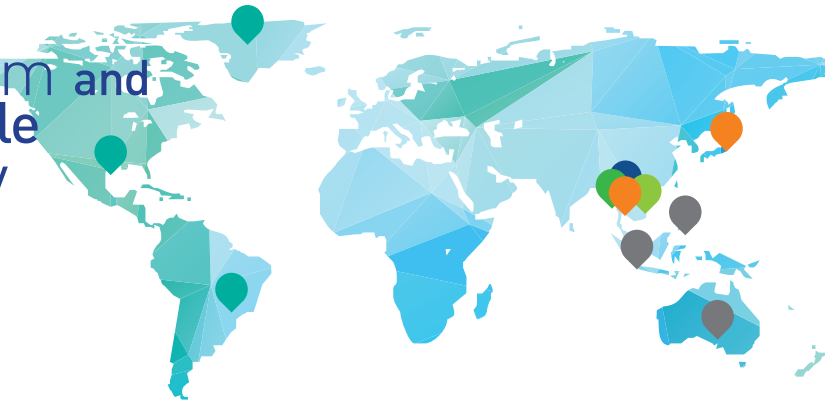
The **13th** revision of CG Policy

Recertificate for membership of **CAC**
(Thailand's Private Sector Collective Action Coalition against Corruption).

68 Suppliers
Suppliers declared their intention to join CAC

NO Gift Policy encouraged **3** year consecutively

Petroleum and Renewable Energy



Economic Growth

Revenue

145,232



THB Million

Net Profit

4,729

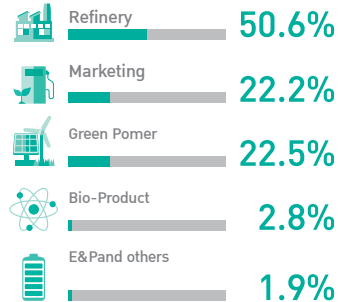
THB Million

Earnings per Share

1.80

THB/Share

EBITDA by Business



Local Procurement

4,351 **98%**
THB Million

*Exclude Raw Material

SCOC: Supplier Code of Conduct

Agree to conform SCOC **55** Suppliers | Self-assessed in SCOC **32** Suppliers

Established Bangchak Initiative and Innovation Center : BIIC

EBITDA **11,363**
THB Million

Benefit from innovation Project **125 THB Million**



In harmony with Environment

GHG Emission: Equity Share

1.3 Million tCO₂e

GHG emission by business

Refinery 77%
Bio-Product 23%
Green Power 0.36%
Marketing 0.07%



Energy Consumption

15,320
Terajoules



EII = 103

Energy Intensity Index (Refinery)



2.3 Million tCO₂e
Water Consumption

Recycled Water **2.1%** of total Water Consumption

Water discharged **0.8** Million cu.m.



85% Waste Management by 3 Rs of total waste



And Society

Safety

Accident with Lost time (LWC)

Total workforce **0**
Contractor **1**

Total recordable injury rate (TRIR)



Total workforce **Male 3.0 Female 1.65**
Contractor **Male 1.7 Female 4.09**

Customer

Net Promoter Score

TOP 2nd Ranking

Satisfaction **79.4%**

Employee

The Best Employer Score **68%**

High Employee Engagement **69%**

Average training **44 hrs.** hr.

Society

Employee Volunteer

11,673 hrs.

Support Community Product

Rice 10 THB Million

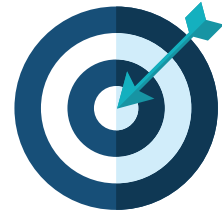
People who received benefit

1.57 Hundred Thousand Persons

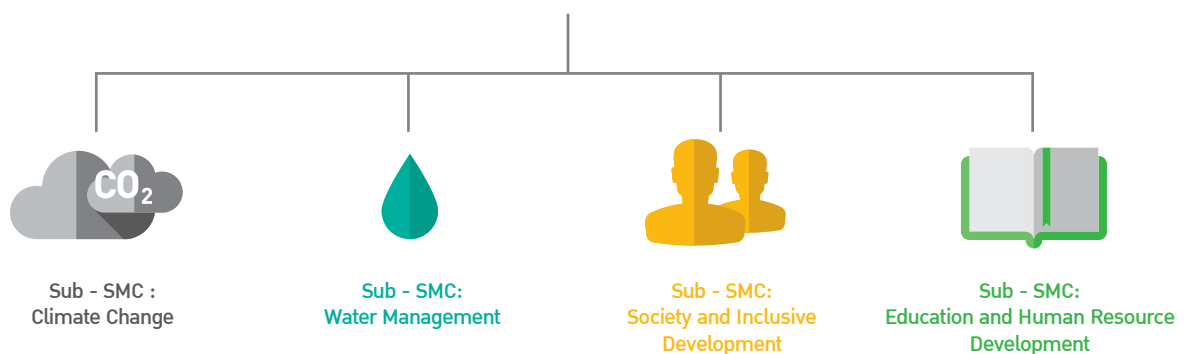
"Oam Suk Social Enterprise"

Bangchak and sustainability

Since corporate sustainability is highly valued, The Board of director and the management set the corporate structure to facilitate the business sustainability from policy to management level and for the implementation among Bangchak Group. It is determined to infinitely develop Green innovation and respond to stakeholders, society and environment for business excellence and sustainability.






Corporate structure (G4-36)



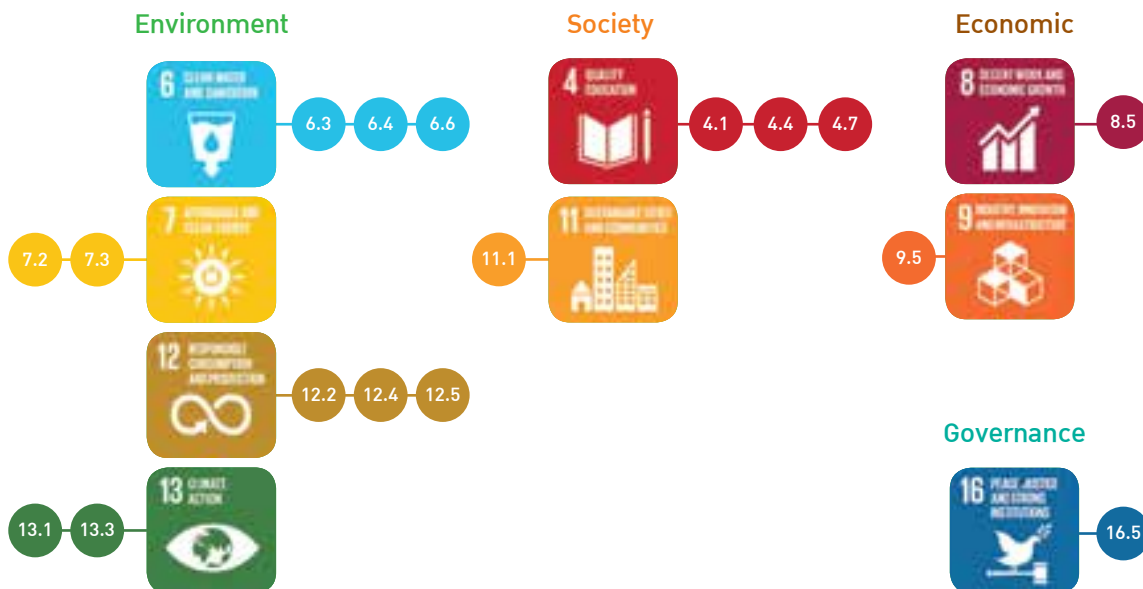
Principle and conceptual framework of sustainability (G4-56)

Bangchak ranks SDG goals by issue corresponding to Thai society's problematic issues and global trends that align with its core competency and interests as follows. (G4-15)

Rank	Alignment			Project type (contents in Sustainability Strategy)
	Core competency	Industry	National policy	
Core : SDG 7 / 6 / 12 / 13 	●	●	●	Continuous : Carry out existing business and projects continuously Extending : Building on businesses and projects Onward : Initiate projects in search of new opportunities for business and social development at the national level
Additional : SDG 16 / 8 	●	●	●	
Supplementary : SDG 4 / 9 / 11 	●	●	●	

Remark : Level of alignment ● High ● Moderate ● Low

The scopes of goals and aims for Bangchak in environmental, social, economic, and corporate governance are as follows. (Details about goals and aims appear at the end of "About this Report".)



The corporate vision and SDGs are not the only tools for strategic planning. To achieve sustainable development, Bangchak also integrates international practices on sustainability and development for excellence, including TQA (Thailand Quality Award), ISO 26000 for Corporate Social Responsibility, UNGC (United Nations Global Compact). (G4-14)

This year Bangchak therefore amended its Sustainable Development Policy to embrace eight aspects for greater clarity and alignment. A set of sub-policies were designed to bolster immunity for Bangchak and its subsidiaries. (For details of the Sustainable Development policy, please log on to www.bangchak.co.th.)

(G4-56)

Sustainable Development Policy	Sub-policy	Practical guideline / tool / standard
<ul style="list-style-type: none"> Corporate Governance 	<ul style="list-style-type: none"> Corporate governance policy Business continuity management policy Intellectual property management policy 	<ul style="list-style-type: none"> CAC (Thailand’s Private Sector Collective Action Coalition against Corruption) ISO 31000 / COSO ERM / ISO 22301 BCM
<ul style="list-style-type: none"> Fair Business Conduct Human Rights and hiring to drive the economy toward sustainability 	<ul style="list-style-type: none"> Corporate governance policy Green procurement and hiring policy Human resource management policy Welfare and benefits policy Corporate learning and personnel development promotion policy 	<ul style="list-style-type: none"> ISO 26000 (social responsibility) The Best Employer ISO 26000 (social responsibility) Supplier Code of Conduct for Sustainable Business Development
<ul style="list-style-type: none"> Water and Climate management 	<ul style="list-style-type: none"> SHEE (Security, safety, health, environment, and energy) policy 	<ul style="list-style-type: none"> ISO 14001 (environmental management) ISO 50001 (energy management)
<ul style="list-style-type: none"> Goods production and service with responsibility and promotion of sustainable society 	<ul style="list-style-type: none"> SHEE policy Quality policy for Quality Analysis Division Proactive marketing communication policy Customer centricity management policy Business continuity management policy 	<ul style="list-style-type: none"> TIS/OHSAS 18001 (occupational health and safety management) ISO/IEC 17025 The Most Admired Brand ISO 31000 / COSO ERM / ISO 23001 BCM
<ul style="list-style-type: none"> Investment in clean-energy business Engagement in development of educational quality Engagement in community and social development and promotion of sustainable innovation 	<ul style="list-style-type: none"> - - - 	<ul style="list-style-type: none"> Joint-venture supervision guidelines ISO 26000 (social responsibility) ISO 26000 (social responsibility)

Based on the above-mentioned sustainability principles and policy, coupled with stakeholders’ needs and expectations, Bangchak developed its “Sustainability Strategies” to define its corporate work scope, goals, and KPIs. (G4-42)

Bangchak and Stakeholders

Stakeholder Engagement (G4-24)

Under a clear mission that aims to respond to stakeholders' needs and expectations properly and extensively, Bangchak divides stakeholders into 9 groups (G4-25), namely employees, business partners, customers, shareholders, society and communities, the media, creditors, government agencies, and competitors. Responsible units have been established with manpower provided and duties assigned. Communication channels have also been defined for them to work in agreement with the way each group of stakeholders operates. The responsible units are required to regularly review the needs and expectations of their respective groups of stakeholders to ensure that responses from Bangchak are recognized as valuable and satisfactory.



Engagement Methods (G4-26)

- Appointing a staff member as Engagement Ambassador for each business group
- Employee engagement survey (B-Voice) and New VMV (I am BCP) surveys
- President-employees engagement session
- Company's intranet
- Employees' Committee
- Procurement staff / Bangchak staff (users)
- Annual seminar with business partners / group meetings
- Performance assessment / satisfaction with business partners' performance
- Developing business partners according to Supplier Code of Conduct / visits to business partners' sites
- Joint improvement of work environment
- Assessment of community relations activities / focus groups
- community committee seminars
- community activities
- Krobkrua Baimai journal
- online air quality reports
- CSR activities focusing on the youth / agricultural cooperatives
- AGM / Opportunity Day
- IR website / news / marketing activities
- News
- Networks and marketing campaigns

Engagement Methods (G4-26)

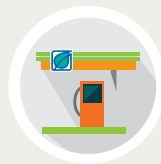
- Customers' satisfaction surveys
 - Market surveys on brand preferences and NPS scores
 - CRM activities
 - Call Center / official Facebook / official LINE account / website
-
- Marketing representatives / managers
 - Customer service staff
 - Technical service staff / product advisory staff
 - Maintenance staff
 - Annual activities to foster relations
 - Call Center
-
- Marketing representatives / managers
 - Monthly/quarterly group meetings
 - Annual customer seminar
 - Customers' satisfaction survey among service station operators
 - Call Center
-
- Quarterly visits to news agencies
 - Press conferences / press releases
 - Press tours
 - Exclusive media-requested interviews, such as public impacts of change of government policy
-
- Meetings, clarification, discussions, and participation in government programs
 - Site visits
-
- Analyst meetings
 - Consultation
 - Site visits



Customers



Industrial customers



Service station operators



The media



Government agencies



Creditors

From stakeholder engagement as above, it's help to seek the stakeholders' need and expectations and Bangchak can responded to in the details as follow ;

The Color of text indicates the frequency of engagement method

- Regularly
- Monthly-Quarterly
- Annually

"..Above all, one must ensure that one has an open mind, and a steadfast one, ready to listen to opinions or ideas, and even intelligently listen to criticisms from others. In fact, listening intelligently to others serves as a brainstorming session of other people's intellect and varied experience to enable the work to be completed more perfectly.."

His Majesty the late King Bhumibol's discourse on the occasion of the Civil Service Day, April 1, 1993.

Stakeholders (G4-24)	Needs/ Expectations (G4-27)	2016 responses (G4-26)	2016 results
-------------------------	-----------------------------------	---------------------------	--------------



Employees

<ol style="list-style-type: none"> 1. Talent management and staff management 2. Career opportunities 3. Learning and development 4. Safety at work 	<ol style="list-style-type: none"> 1. Talent management and staff management 2. Career opportunities <ul style="list-style-type: none"> - Starting 360-degree performance assessment method for director level and upward - Setting up criteria for promotion with mandatory training required - Offering scholarships for staff to pursue master's degrees - Providing career information for staff at managerial level to cascade down the line 3. Learning and development <ul style="list-style-type: none"> - Providing mandatory courses for all staff - Having Kaizen and Knowledge Management as part of individual KPIs 4. Safety at work <ul style="list-style-type: none"> - Implementing PSM - Redesigning operators' outfits using higher-grade materials - Stepping up access control measures at various areas for visitors, staff, and contractors - Providing training on safety for staff and new recruits - Providing training on safety for supervisory staff 	<ol style="list-style-type: none"> 1. Resignation rate of 3.26 and employee engagement score of 68% 2. Assessment of career opportunities, learning and development showing scores 49, 57 respectively 3. Five levels of mandatory courses provided for all staff 4. Staff participation in "We Share" KM scoring 86% 5. Significant improvement in safety statistics among staff and contractors
--	---	--



Communities and Society

<p>Short term:</p> <ol style="list-style-type: none"> 1. Safe Operational 2. Environmental preservation 3. Prompt communication in emergencies 4. Participation in community relations/ engagement activities, especially in educational and youth development programs 	<ol style="list-style-type: none"> 1. Upgrading safety standards (PSM) 2. Increasing air quality check points with reports presented on billboards 3. Running more projects to monitor environmental impacts on communities with the launch of regular environment watchdogs around communities 4. Using LINE application to support faster communication with community leaders 5. Improving and regularly maintaining the refinery-communities public broadcasting system 6. Carrying on with youth development programs 	<ol style="list-style-type: none"> 1. Safety statistics for employees and contractors significantly improved 2. Three complaints involving air pollution lodged 3. Community relations/engagement performance outcomes: <ul style="list-style-type: none"> - Satisfaction – 98.7% - Community engagement – 82%
---	--	--

Stakeholders (G4-24)	Needs/ Expectations (G4-27)	2016 responses (G4-26)	2016 results
-------------------------	-----------------------------------	---------------------------	--------------



Society (the youth, agricultural cooperatives, farmers):

1. Providing support and development for the youth
2. Participating in the development of farmers' quality of life

1. Initiating national-level projects for society and the environment, such as Thailand Go Green
2. Raising the potential of community service stations to ensure sustainability through the Green Partnership Award project, which enabled them to better respond to agricultural members' and other customers' demand

- 80 participating schools with over 80,000 students
- 40 community service stations having joined the project offering benefit for altogether 80,000 people in society



1. Clear scope of tasks, products, and services
2. Transparent, auditable procurement process
3. Sustainable growth with Bangchak

1. Improving proactive procurement to enable analysis and planning for faster and more efficient procurement
2. Providing training and developing a precise scope of work / product specifications, and centralizing information
3. Improving procurement protocols and approval authority to keep up with economic circumstances and developing an e-procurement system based on SAP SRM
4. Developing business partners complying with the Supplier Code of Conduct
5. Managing relationship with partners by paying visits to work sites and evaluating satisfaction levels for partners' performance

- Procurement made faster by 8%
- 68 Suppliers found to follow Supplier Code of Conduct
- 83% Suppliers' satisfaction



1. Acquiring suitable, consistent, and fair income from contracted volumes of work to ensure business security
2. Joint business development
3. Enjoying a good quality of life at work

- Improving transport plans using large trucks and 24-hour delivery
- Improving the Transportation Management System (TMS) and monitoring via CCTVs to make information accessible to Bangchak, transport operators, and service station operators through an application
- Improving Bangkok oil depots, transport operators' offices, its parking area, and canteen
- Conducting a survey to gauge mutual satisfaction levels
- Implementing safety measures and complying with laws, such as truck driver training on safe driving, firefighting, product loading, using experienced personnel as training facilitators
- Expanding contracts from three years to five or eight years

- Use of large trucks for product transport increasing by 25%
- A steady drop in the number of complaints on product transport
- One accidents involving delivery trucks (with damage over Baht 1 million) recorded
- Managing all contracts efficiently and fairly (80% achieved)
- Reducing losses by using backhaul for carrying ethanol, resulting in a cost saving on feedstock delivery of Baht 0.5 million per year

Stakeholders (G4-24)	Needs/ Expectations (G4-27)	2016 responses (G4-26)	2016 results
-------------------------	-----------------------------------	---------------------------	--------------



Customers

1. Quick, quality services
2. Convenient locations
3. Availability of restaurants, convenience stores, and clean restrooms
4. High-quality green products
5. Discounts for using services

1. Responding to customers' need (Customer Centric) by developing green products, quality services, and good image of service stations for a Greenovative Experience
2. Setting up a team to develop the Most Admired Service Station Project to improve forecourt service process
3. Expanding installation of Point of Sale Automation to community service stations so that station operators may manage their sites at dispensers, making the service faster while raising standards of operations and services at community service stations through the Co-Op Coaching project
4. Engaging a consultant to develop customer segmentation to better understand each customer group's demand and developing a Customer Relationship Management system with new features, including the launch of a new marketing program which offers point accumulation and discounts for customers
5. Working with a world-leading additive developer in launching oil products with a Green S Revolution formula
6. Expanding the retail network with a focus on strategic locations to reach wider customers
7. Developing new business models / expanding non-oil businesses, including 36 Inthanin Coffee outlets, and 11 Mini Big-C stores

- Bangchak ranked as No.2 in 2016 as a service station brand customers would recommend to others
- Having the second-largest market share in the domestic oil retail market
- Average sales volume per station increased
- 40 stations added to the network as planned



Stakeholders (G4-24)	Needs/ Expectations (G4-27)	2016 responses (G4-26)	2016 results
-------------------------	-----------------------------------	---------------------------	--------------






Service station
 - Dealers
 - Cooperatives
 - Bangchak Greennet Co, Ltd.

1. Better financial performance
2. Providing support and keeping up service station standards to ensure competitiveness
3. Sales promotional programs and advertisement
4. Premium-grade product development
5. Financial and equipment support to improve business competitiveness
6. On time/no-loss fuel deliveries

1. Assigning the Most Admired Service Station team to work on service development, including:
 - 1.1 Hiring a consultant to redesign the Standard Operation Procedure (SOP) to raise service standards
 - 1.2 Providing training for service station attendants nationwide to ensure their understanding of the newly-designed SOP and improve their service attitude
2. Developing a Professional Franchise Scheme to raise service station operators' management efficiency
3. Installing the POS Automation System at community service stations to facilitate station operators in improving forecourt service
4. Developing a CO-OP Turn Pro Program to fund community service stations with high potential to provide integrated services
5. Developing a CO-OP Coaching Program by sending experienced staff from Bangchak Green Net Co., Ltd. to provide retail station management coaching
6. Developing new formats while expanding retail station network and non-oil businesses
7. Running continuous sales promotional campaigns to spur the sales volumes of products in each category, such as agricultural cooperatives joining the Bank for Agriculture and Agricultural Cooperatives in using products from Royal Projects as part of sales promotional campaigns
8. Using products from cooperatives facing price slumps in sales promotional campaigns

- Bangchak ranked as No.2 in 2016 as a service station brand customers would recommend to others
- Having the second-largest market share in the domestic oil retail market
- Average sales volume per station increased
- 40 stations added to the network as planned



Stakeholders (G4-24)	Needs/ Expectations (G4-27)	2016 responses (G4-26)	2016 results
 <p>Industrial customers</p>	<ol style="list-style-type: none"> 1. Price 2. After-sales service 3. Marketing representatives' service quality 4. Relationship-building activities 	<ol style="list-style-type: none"> 1. Promoting regional and overseas sales and after-sales service 2. Providing training on product knowledge / emergency response / after-sales service / equipment support / regular check-ups, which included arrangement of emergency drills and provision of machinery maintenance service 3. Conducting assorted relationship-building activities 4. Developing a CRM system to manage the customer database and customer relationship and enable better analyses of customers' expectations 	<ul style="list-style-type: none"> • Industrial customers' satisfaction with after-sales service scoring 90%, a slight decrease
 <p>Government agencies</p>	<ol style="list-style-type: none"> 1. Compliance with laws or exceeding them 2. Corporate responsibilities for society and the environment and sustainable co-existence with communities 3. Good safety and environmental management systems for plants 4. Providing timely information to and support for government programs 	<ol style="list-style-type: none"> 1. Complying with laws and regulations on business operations correctly and transparency 2. Keeping superior control of environment quality to meet legal requirements 3. Providing prompt, accurate information to regulators 4. Cooperating with the public sector to promote green projects 	<ul style="list-style-type: none"> • Renewal of factory/plant licenses continuously granted • Certified with Green Industry Level 5 – the highest level - from the Department of Industrial Works
 <p>Shareholders</p>	<ol style="list-style-type: none"> 1. Higher returns on investment (capital gains) 2. Regular, satisfactory dividend payments 3. Steady, robust revenue growth 4. Valuing petroleum business excellence 5. Setting clear goals and directions for business expansion 	<ul style="list-style-type: none"> • Paying suitable dividends on a par with peers • Investing in new, diverse businesses for growth • Adding communication channels to facilitate access to company information • Staging activities where executives can interact with minor shareholders, such as Opportunity Day and the exhibition booth at the SET in the City event • Staging activities where executives can engage major shareholders (institutional investors) • Adding the frequency of shareholders' engagement, such as roadshows (both in and outside Thailand), participating in conferences and events • Improving the Investor Relations website to provide comprehensive information and make it more user-friendly • Developing quarterly factsheets for shareholders and investors on business operations and quarterly performances 	<ul style="list-style-type: none"> • Bangchak ranked among the SET 50 • Bangchak winning Asian Excellence Recognition Awards 2016 – Best Investor Relations Company, Best CEO • Bangchak invited to more roadshows (both in and outside Thailand), reflecting investors' interest in Bangchak shares

Stakeholders (G4-24)	Needs/ Expectations (G4-27)	2016 responses (G4-26)	2016 results
 <p>The media</p>	<ol style="list-style-type: none"> 1. Demand for accurate, timely information on updates of existing businesses and new ones, as well as issues about the global trend 2. Other business relevant knowledge/information 	<ul style="list-style-type: none"> • Responding to the media with information favorable for the company and society at large, and the media presenting assorted Bangchak news • Releasing news and holding press conferences regularly • Supporting activities organized by the media for the public as well as supporting founding anniversaries of the media to promote ties and mutual sincerity 	<ul style="list-style-type: none"> • Bangchak news regularly presented in the media, reflecting healthy relations
 <p>Creditors</p>	<ol style="list-style-type: none"> 1. Honoring terms and agreements on loan and debenture contracts 	<ul style="list-style-type: none"> • Strictly meeting the terms of loan and debenture agreements • Strictly observing regulations of financial institutions issued by public agencies • Giving accurate, prompt answers to questions from loan officers • Arranging site visits for confidence in business performance and good relations with financial institutions 	<ul style="list-style-type: none"> • Winning confidence in business performance from financial institutions and having good relations with them
 <p>Competitors</p>	<ol style="list-style-type: none"> 1. Conducting businesses with transparency under fair competition 	<ul style="list-style-type: none"> • Business continuity under competition dictated by liberalized market mechanisms 	<ul style="list-style-type: none"> • Achieving business continuity under competition dictated by liberalized market mechanisms without complaints or negative comments

Key Sustainability Issues

For business sustainability, stakeholders and global environment are highly important. To meet its objectives in creating value for business, society and environment, Bangchak has developed a set of key sustainability issues derived from various data, the stakeholders' needs/expectation in addition to market directions and future sustainability development goals, Dow Jones Sustainability Indices (DJSI) evaluation criteria, Thailand's national economic and social development plan, as well as corporate business plans and competency for systematic and suitable response.

Key sustainability issues selection criteria (Materiality) (G4-18)

These key sustainability issues or the materiality are guided by the GRI G4 (G4-18) process as follows.

1. Identification of key sustainability issues for Bangchak and stakeholders

Key sustainability issues are compiled and reconciled data with potential impacts on sustainability. Both internal and external factors that may impact on sustainability including economic, environment and society are considered. (G4-15)

- **Internal factors**, were derived from the executive brainstorming workshop in addition to business strategies, sustainability issues and enterprise risk with potential short-term and long-term impacts.
- **External data**, were future trends of sustainability and the expectations of the 9 stakeholders from structured or unstructured and formal or informal channel such as forums, focus groups, conferences, seminars, or interviews as well as the global direction

on sustainability or SDGs, DJSI, United Nations Global Compact (UNGC), Thailand's national economic and social development plan, All these issues were then grouped and prioritized for further review. (G4-15)

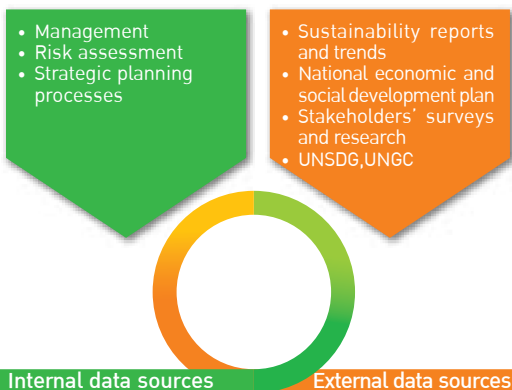
2. Prioritization

The prioritization of key sustainability issues was done using correlation and conformance between the set of key sustainability issues significant to business and stakeholders and 40 indicators recommended in the GRI G4 guidelines. A total of 40 issues were categorized into 26 aspects and mapped in the Materiality Matrix with two distinctive considerations:

- **Horizontal axis:** Key sustainability issues significant to BCP by considering short-term and long-term impacts.
 - **Vertical axis:** Key sustainability issues significant to stakeholders by considering impact level may occur.
- Materiality Matrix Analysis

3. Validation

The matrix, were considered, and endorsed by the Sustainability Policy Committee (SPC) (G4-48) and found the similarity to those identified in previous years. These issues are tabulated as follows.



Identification of key sustainability issues for Bangchak and stakeholders

Materiality Matrix Analysis



- Governance**
 1. Clear business growth
 2. Good governance: Excellence in core business
 3. Regulatory compliance
 4. Transparency & Accountability



- Economic**
 1. Robust, stable financial performance
 2. Transparent, effective procurement processes
 3. Good development of joint ventures and quality of life
 4. Good service contracts with clear scopes of work
 5. High contract administration efficiency



- Environment**
 1. GHG / Transportation
 2. Energy consumption
 3. Good product development
 4. Reused water
 5. Water consumption
 6. Air pollution emission
 7. Flare
 8. Waste management



- Social**
 1. Workplace safety
 2. Good service / Customer satisfaction / Sales promotion / Sales promotion and advertisement
 3. Emergency preparedness
 4. Community engagement
 5. Employee training
 6. Talent and personnel management
 7. Career opportunity
 8. Communication with accurate data



Key sustainability issue (G4-19)	Aspect GRI G4	Impact on the corporation	
		Internal (G4-20)	External (G4-21)
Corporate Governance 1. Clearly defined business expansion direction 2. Core business excellence 3. Regulatory compliance 4. Transparency and accountability	1. Economic 2. Economic 3. Compliance 4. Anti-Corruption	BCP/ BCPG/ BBF/ UBE/ BGN BCP/ BCPG/ BBF/ UBE// BGN BCP/ BCPG/ BBF/ UBE// BGN BCP/ BCPG/ BBF/ BGN	Shareholder/MMass Media/ Creditor/ Shareholder/ Community and Society/ Government Agency Supplier/ community and Society Government Agency
Economic 1. Secure, strong business performance 2. Transparent procurement 3. Supplier and quality of life development 4. Good service contract practices and clear scope of work 5. Efficiency of service contract administration	1. Economic 2. Anti-corruption 3. Sustainable Supplier Development 4. Procurement Practices 5. Efficiency of service contract administration	BCP/ BCPG/ BBF/ UBE/ BGN BCP BCP BCP BCP	Shareholder/ Supplier /Creditor Supplier Supplier Supplier Supplier
Environment 1. Greenhouse gases 2. Product delivery 3. Energy consumption 4. Product development 5. Water recycling and reuse 6. Water consumption 7. Air pollution 8. Flare 9. Waste	1. Emissions 2. Transport 3. Energy 4. Product&Service Labelling 5. Water 6. Water 7. Emissions 8. Emissions/Flaring 9. Effluents& Waste	BCP/ BCPG/ BBF/ UBE/ BGN BCP/ BGN BCP/ BCPG/ BBF/ UBE/ BGN BCP/ BGN BCP BCP BCP BCP BCP	Supplier/Community and Society/ Government Agency Customer/Dealer/ Community and Society//Government Agency/ Supplier Customer/Dealer/ Community and Society//Government Agency/ Supplier Customer/Dealer/ Community and Society//Government Agency Community and Society/ Government Agency Community and Society/ Government Agency Community and Society/ Government Agency Community and Society/ Government Agency Community and Society/ Government Agency
Society 1. Workplace safety 2. Good service/ customers' satisfaction/ sale promotion/ advertisement 3. Emergency preparedness 4. Community engagement 5. Employee training 6. Talent and personnel management 7. Career opportunities 8. Communication with accurate data	1. OH&S 2. Product & Service Labelling Marketing Communications 3. Emergency Preparedness 4. Local Communities 5. Training& Education 6. Labor/Management Relations 7. Training& Education 8. Communication Local Communities	BCP BCP BCP BCP BCP BCP BCP BCP	Supplier/Community and Society/ Government Agency Customer/ Supplier/ Community and Society/ Community and Society/ Community and Society/ Mass Media/ Community and Society/ Shareholder

With a commitment to becoming a green innovative organization, Bangchak decided to adjust its vision and mission from 'Greenery Excellence' to "Evolving Greenovation" and modify its core values to "I AM BCP". These changes were made in mid-2016 in preparation to cope with internal and external changes and growth. Following the changes,

Significance	Contents / indicator	page
1. Meet corporate needs to grow and become a green innovative group of companies	1. Our Business/ CEO Statement/ Risk Management/ Sustainability Strategy/ Economic Performance/ G4-EC1	4-7 26-33
2. Retain income from core businesses	2. Risk Management Economic Performance/ G4-EC1	48
3. Good practices with strict regulatory compliance	3. Corporate Structure/ Good Governance/ Compliance/ EN 29	36
4. Systematic disclosure of data and assumption of accountability for stakeholders' scrutiny	4. Good Governance/ Anti-Corruption/ / G4-SO4	36-38
1. Maintain business stability and growth	1. Economic Performance/ G4-EC1	48
2. Control of cost and corruption	2. Supply Chain Management/G4-SO4 Anti-Corruption/ G4-SO4	50-51/ 37-38
3. Quality joint operation with good production of goods and services	3. Supply Chain Management Number of Suppliers completed the self-assessment SCOC (No GRI indicator)	50-51
4. Improve work accuracy and speed, and ability to respond to all needs	4. Supply Chain Management/ G4-EC9	
5. Fair to business partners and optimal allocation of resources	5. Product Transport/ Percentage of transport contractors management (No GRI indicator)	78-80
1. Meet corporate goal to become a low-carbon company	1. Energy Consumption / G4-EN3 Climate Change/ G4-EN15-16	59-61
2. Deliver in time, safely, and completely	2. Product Transport / G4-EN30	78-80
3. Cost control, environment-friendly	3. Energy Consumption / G4-EN3 Climate Change/ G4-EN15-16	59-61
4. Quality products, environment-friendly, and availability of premium-grade products	4. Sustainable Development of Goods and Services/ G4-PR5	69-77
5. Reduce costs and optimize resource consumption	5. Water Management/ G4-EN10	62-63
6. Optimal use of resources and minimize impacts on households	6. Water Management/ G4-EN8	62-63
7. Improve air quality beyond regulatory standards	7. Air Pollution Management// G4-EN21	66-67
8. Reduce impacts on communities	8. Air Pollution Management/ G4-EN21/ G4-OG6	66-67/ 111
9. Compliance with academic principles and regulations including the use of 3Rs	9. Waste / G4-EN 23	68
1. Zero incidents with impacts on lives and properties of employees and contractors, as well as surrounding communities	1. Safety and Occupational Health/ G4-LA 6	84-86
2. Provide service and Greenovative Experience to customers to become a service provider of choice	2. Sustainable Development of Goods and Services/ G4-PR5 Customer Relationship and Responsibility Management / G4-PR7	69-77/ 87-88
3. Ensure round-the-clock ability to handle any emergency	3. Safety and Occupational Health/ G4-LA 6	84-86
4. Provide benefit to surrounding communities	4. Community and social participation/G4-SO 1	101-108
5. Provide capability training to cope with business growth	5. Employee Stewardship/G4-LA9	94-96
6. To motivate and retain talents	6. Employee Stewardship Best Employer Score by AON Hewitt (No GRI indicator)	89-92
7. Provide technical and general career opportunities to all employees	7. Employee Stewardship/G4-LA9	94-96
8. Instant communication with accurate data	8. Stakeholder Management (mass media) Community and social participation/G4-SO 1	101-108

organizational restructuring, formation of more work committees and taskforces, training and development of employees with more knowledge and new skills, and education on breakthrough technologies and innovations were planned and executed. Details of the management of these changes and innovations are illustrated on pages 49, 52-55 of this report.

“...May all of you enjoy and our livelihood in Thailand. Evidently, everyone has a right to their thoughts and a right to practice, so I ask simply that we do not infringe upon others....”

His Majesty the late King Bhumibol’s discourse to representatives from religious institutes and organizations in audience on the occasion of his birthday anniversary at Pakabhirom Pavilion, December 4, 1968.

Sustainability Strategy

To grow its business sustainably and advance its operational excellence to the international level, and to humbly induce the philosophy of Sufficient Economy to integrate with its business for reasonable profit and avoid profiteering under full realization of the value of natural resources, Bangchak manages its businesses to strive for a vision to become a “leader in green innovation in Asia with good governance, inclusive and sustainable business operations”, known as “Evolving Greenovation”, towards its 2020 business goals and socio-environmental targets. (G4-15)

3S Strategy :

3S Strategy (Security, Stability, Sustainability) remains the key business strategy for Bangchak to advance its business growth and sustainability in line with global megatrends and clearly meet the demands and expectations of all stakeholders. These can be achieved by:



Security :

Enhance national energy security. Extend its petroleum business to the upstream to secure energy supply and meet the demands of the business and household sectors.

Stability :

Grow with business development and diversify into businesses with more stable income. Generate higher, sustainable income from new, clean businesses and other businesses.

Sustainability :

Develop businesses and activities beneficial to the environment and society balancing between economics value and environmental and social worth, —the principle Bangchak is strictly adhered to from day one.

Our vision, mission, and corporate values were reviewed this year to ensure alignment with the annual business strategy and growth plans. Restructuring of the organization and streamlining areas of responsibility of each business group enhance our offensive strategy.

The sustainability strategy, 4 GREEN , is integrated to the corporate strategies in order to sustainably operate its overall business with a clear direction as follow:



1. Green Business

Our Green Business strategy focuses on sustainable, responsible investments and value creation by diversifying the investment portfolio toward an increased share in clean-energy businesses and other businesses, leading Bangchak toward being a low-carbon company. Solar power plants (solar farms), geothermal, biomass, bioenergy, biodiesel and ethanol exemplify Bangchak's investment under the Green Business strategy, which also defines the types of investment with stable returns and low domestic and international risks.



2. Green Production

Green Production controls our operations under the Process Safety Management (PSM) system, TIS/OHSAS 18001 (occupational health and safety management system), ISO 14001 (environmental management system), ISO 50001 (Energy Management), Waste treatment and management, stable, and efficient consumption of water and energy resources guided by the Roadmap of Carbon and Water Footprint – a strategic plan developed to align with the Paris Agreement following COP21 World Conference on Global Climate Change to limit the global temperature rise to no more than 2 degree Celsius and to cope with regional drought and severe water deficiency.

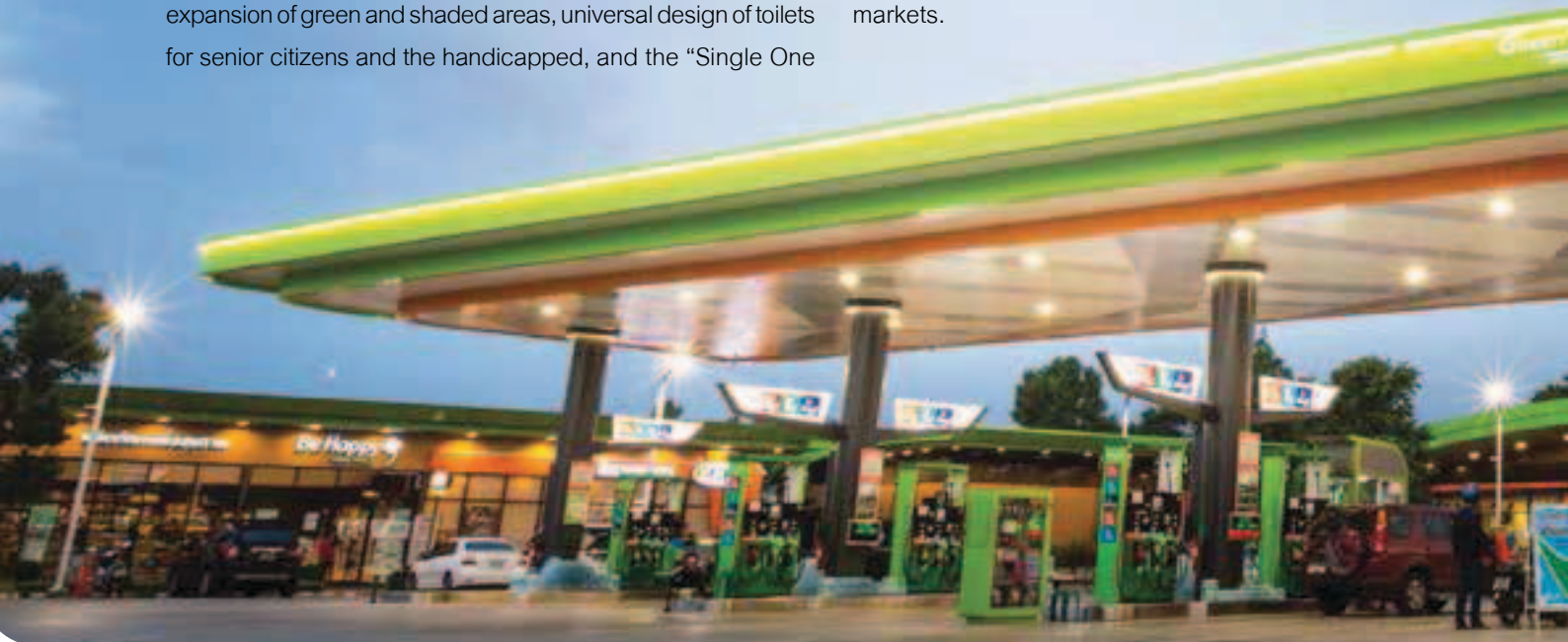
3. Greenovative Experience

The strategy focuses on development of green experience and green innovation for customers of the modern generation. The concept is based on ideas and practices for customers to naturally participate in sustainable environmental conservation and environmental setting under the new economic development defined and driven by the national “Thailand 4.0” policy. Included in the strategy are:

- Greenovative Product** All products developed and produced to satisfy customers’ needs must be green and derived from clean-energy development. During 2016, new products developed under this strategy were “**Bangchak Green S Revolution**” – a series of gasohol products including Gasohol 91, Gasohol 95, Gasohol E20 and Gasohol E85 fit for all new DIG (Direct Injection Gasoline) engines, and new development of Inthanin Garden coffee houses serving only organic coffee beans of chemical-free and forest conservation plantations. The program also calls for reduction of waste and usage of resources. Bangchak is promoting only bio-degradable coffee cups at all branches and offer discounts to customers who bring their own coffee cups.

- Greenovative Service Station** A newly modernized retail station providing services with four work processes including Renewable, Recycle, Reuse, and Reduce including installation of a solar rooftop to generate solar power for the station, installation of EV chargers for electric vehicles, dedicated automatic bins for recycling plastic bottle to produce polyester fiber, a “recycle and reuse system” to use rainfall and used water to water plants, usage of energy-saving materials, expansion of green and shaded areas, universal design of toilets for senior citizens and the handicapped, and the “Single One

Roof” architectural design for shops and stores at service stations. Under this building concept, all services and complimentary services are housed under one roof, providing convenience for all customers to enjoy and service quality for Bangchak to become the Most Admired Brand. “All in One food station” is another food store concept providing high-quality food prepared with health consciousness and environmental protection. Under a joint venture with a supermarket chain from the Netherlands, Bangchak launched a newly designed mini-mart under the brand of “SPAR” ‘FRESH & EASY FOOD MARKET’, providing new, different shopping experience with fresh, high-quality goods and services. With these distribution channels, local communities can use space in SPAR to offer their products to Bangchak customers. More and more local products are planned for branding as SPAR for export to international markets.



4. Green Society

- Greenovative Service** The service is an integration of IT and high-quality service to maximize service efficiency and customer satisfaction. Starting with the installation of the Automation Point of Sale system, data on customers and services and system applications have been developed to offer convenience to various customers, such as the Professional Franchise Scheme Application system, BCP Link, AOS, or Auto Ordering System. The goal is to become “The Most Admired Brand”.

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

- CSR in Process** Joint ventures with local co-ops to operate retail service stations have been promoted for many years. Following the centennial of the Thai co-operatives, Bangchak launched several campaigns to commemorate the event, including a standard upgrade of local community stations, a coaching program for co-op management staff to grow their knowledge and capability, a sales promotion of farm produce from local communities, leveraging Bangchak’s service stations as distribution channels, particularly during price downturns for farm produce or oversupply.
- CSR after-Process** Bangchak continues to support society and local communities with a focus on education, safety, sports, quality of life, the environment, stakeholder relations, and economic development.
- For sustainable success in the creation of green society,** Bangchak sees a crucial need to engage suppliers to mutually drive for joint success. A Supplier Code of Conduct (SCOC) was developed to designate joint operating procedures to support mutual benefit and business growth in a sustainable way.
- Pursuing its business model toward Social Enterprise (SE)** with an establishment of Oam Suk Social Enterprise Co., Ltd., jointly with the Buddhist Economic Foundation, by revered monk Phra Maha Vutthichai Vajiramedhi, SE operates agricultural businesses, including buying and selling of farm produce, modifying rice and organic vegetables for value-added products, marketing and distribution, and R&D.



Progress on sustainable and business operations

Strategy 1

Sustainable, responsible investments and value-creation (Green Business)

7.2 9.5

Response to SDGs

Business Plan	Performance	2020 Business Targets
1.1 Develop power generation businesses from solar and wind energy and become an Asian player.	<ul style="list-style-type: none"> ● Able to generate and distribute 203 MWdc of solar power, 177 MWdc in Thailand and 26 MWdc in Japan. ● Launched an IPO for BCPG Public Company Limited on September 28, 2016, to raise capital to fund additional renewable-energy projects. 	<ul style="list-style-type: none"> ● Increase capacity from solar power and renewable energy to 1,000 MWdc.
1.2 Develop the bio-diesel business to 920,000-liter/day capacity.	<ul style="list-style-type: none"> ● Added 520,000-liter/day biodiesel capacity, pushing the total capacity to 810,000 liters/day with a throughput of 93% (Bangchak Biofuel Co., Ltd.) 	<ul style="list-style-type: none"> ● Increase bio-diesel capacity to 935,000 liters/day. ● Establish a biofuel research center to conduct R&D projects on commercial bioenergy and extra productivity for farmers, as well as high-value bioproducts to increase business opportunities.
1.3 Develop the ethanol business with capacity exceeding 50% of the total domestic demand.	<ul style="list-style-type: none"> ● Invested in Bangchak Bioethanol Co., Ltd., to increase ethanol capacity by 150,000 liters/day with a throughput of 89%, thus raising the total capacity to 550,000 liters/day. The remaining was 550,000 liters/day with a throughput of 86% from Ubon Bio Ethanol Co., Ltd. 	<ul style="list-style-type: none"> ● Increase the overall ethanol capacity to 750,000 liters/day.
1.4 Develop innovation businesses to add value and business opportunities.	<ul style="list-style-type: none"> ● Increased Bangchak's working interest in lithium mining to 16.5% with an investment of US\$37.5 million. ● Established and registered Bangchak Innovation and Initiative Center. 	<ul style="list-style-type: none"> ● Invest more in innovation businesses including incubators and start-ups with a budget exceeding US\$10 million. ● Generate more than 1% of total corporate EBITDA from innovative products. ● Add more than eight research personnel.

Strategy 2

Upgrading of environmental and safety management (Green Production)



Response to SDGs

Business Plan	Performance	2020 Business Targets
<p>2.1 Invest in renewable-energy businesses (same as 1.1-1.3)</p> <p>2.2 Replace fuel oil with clean-burning natural gas.</p> <p>2.3 Invest in projects to improve the stability and efficiency of energy consumption.</p> <p>2.4 Generate electricity and steam from combined-cycle power plants.</p> <p>2.5 Share knowledge and raise public awareness to support the effort to limit the global temperature rise to 2 degrees Celsius.</p> <p>2.6 Improve the efficiency of water consumption for production processes by reducing consumption and reuse-recycle.</p> <p>2.7 Develop a Water Footprint to manage water consumption throughout product life-cycles</p> <p>2.8 Implement a Process Safety Management (PSM) system and enlarge surrounding community areas to promote awareness of safety, occupational health, and the environment.</p>	<ul style="list-style-type: none"> ● Same as 1.1-1.3 ● Pursued the use of KPIs on cumulative greenhouse gas (GHG) emissions (tCO₂e Carbon dioxide equivalent) for the corporate and all business groups, with direct links to the performance of top executives in 2017. ● Successfully replaced fuel oil consumption with natural gas by 86%. ● Proceeded with the YES-R+ project to develop stable, sustainable yield, energy efficiency, safety and reliability, to reduce production losses. ● Continued the energy efficiency improvement project in the refinery. The current energy intensity index of Bangchak is 103. ● Commissioned the 25-MW combined-cycle power plant as planned, continual by raising the overall power generating capacity. ● Continued the 3E construction project as planned, including <ul style="list-style-type: none"> ● a 12-MW combined-cycle plant, scheduled for completion in 2018. ● Continuous Catalyst Regeneration Unit (CCR) ● Debottlenecking to improve distillation unit efficiency. ● Continued programs to share knowledge and raise public awareness through activities including seminars, Thailand Go Green activities, and fill-with-member cards. ● Reduced water consumption by 2% y-o-y. ● Improved water consumption efficiency to 60.6 cu.m./thousand barrel of oil equivalent . ● Entered an MoU with the Joint Graduate School of Energy and Environment, King Mongkut University of Technology Thonburi to study and develop water footprints for Bangchak's products, on December 14, 2016. (G4-16) ● Appointed PSM Governance Committee (PSM GC) ● Continued development safety processes to complete the PSM system. ● Prepared and rehearsed safety operation for the joint emergency drill with the surrounding communities. 	<ul style="list-style-type: none"> ● Cut carbon dioxide emission by 60% through carbon offset – a replacement with renewable businesses, by 2020 and down to 0% emission (Carbon-Neutral Company) by 2030. ● Replace fuel oil with natural gas by 100% of the original fuel oil consumption. ● Complete the YES-R+ project to develop stable, sustainable yield, energy efficiency, safety, and reliability to reduce production loss. ● Complete the energy efficiency improvement project in the refinery and drive the refinery energy intensity index down to 90. ● Continue the 3E construction project as planned, including <ul style="list-style-type: none"> ● 12-MW combined-cycle plant ● Continuous Catalyst Regeneration Unit (CCR) in 2019 ● Debottlenecking to improve distillation unit efficiency in 2020 ● Enroll more than 80,000 youths/year in the project ● Reduce consumption of tap water by 15% based on the 2015 level. ● Water consumption efficiency to 54 cu.m./ thousand barrel of oil equivalent . ● Continue development activities on safety to consistently generate trust and engagement with communities. ● Complete development of all 14 PSM and put in place as the organizational safety culture, and develop enhancing safety software system.

Strategy 3

Development of green and innovation experience
(Greenovative Experience)

12.2 12.4 12.5

Response to SDGs

Business Plan	Performance	2020 Business Targets
<p>3.1 Develop customer-centric service stations, including the concept and image redesign, service upgrade, complimentary and value-added services to deliver novel service experience to customers.</p>	<ul style="list-style-type: none"> ● Greenovative Product: Launched new line of gasohol products, including Gasohol 91, 95, E20, and E85. ● Greenovative Service: Modernized the format and image of service stations under the 4Rs concept (Renewable, Recycle, Reuse, and Reduce) under a Single Roof Top architectural design. ● Greenovative Service: Improved the service standard and provided training and development to service personnel nationwide. Expanded installation and use of Automation POS to 363 stations (Total 641 stations) and upgraded the IT system, especially on customer databases to improve service speed and quality for optimal customer satisfaction. 	<ul style="list-style-type: none"> ● Gear toward the Most Admired Brand. ● Develop more than 25 master green service stations with good management on energy and water consumption and treatment of waste.



Strategy 4

Development of businesses and activities benefiting society and the environment (Green Society)



Response to SDGs

Business Plan	Performance	2020 Business Targets
<p>4.1 Develop new sets of activities for society for mutual benefit of Bangchak, society, and the environment (CSV – Creating Shared Value concept).</p>	<ul style="list-style-type: none"> ● Supported the sale of local farm produce at Bangchak’s service stations, such as investment of more than Baht 1 million for the sale of 300 tons of jasmine rice. ● Co-developed 13 more service stations with community agricultural cooperatives. ● Upgraded 34 high-potential community service stations with COOP Coaching and COOP Turn Pro programs. ● Broaden the sustainability network with suppliers whose overall transactions exceed US\$1 million, by sharing the business Code of Conduct and enforcing self-assessment. ● Founded a social enterprise, (Oam Suk Social Enterprise Co., Ltd.) to work closely with local farmers by sharing business acumen and market distribution channels for farm and organic produce. 	<ul style="list-style-type: none"> ● Organize annual promotions of products and farm produce from local farmers’ groups in Bangchak’s stations. ● Develop 20 service stations/year with agricultural cooperatives. ● Complete an upgrade of high-potential community service stations and certify 34 service stations passing the test. ● All qualified suppliers participated the code of conduct programs and self-ethical assessment. ● Organize a pilot joint program with farmers under the Buddhist Economic Foundation in Chiang Rai.
<p>4.2 Develop activities for society to respond to social needs on tackling national social issues.</p>	<ul style="list-style-type: none"> ● Organized more than 250 activities to improve the community quality of life in all aspects: economic, social, and environment, leading to a sustainable healthy and livable society. ● Conducted a feasibility study and applied for a license to set up a dedicated organization with the sole objective of social activities to strengthen Thai farmers’ competitiveness and develop potential for Thai youths in the global labor market. 	<ul style="list-style-type: none"> ● Consistently develop community relations activities, generate ideal and self-sustainable communities. ● Complete development of major projects toward sustainability, and grow economic infrastructure in parallel with improvement of quality of life under the philosophy of sufficient economy.

Remarks: Responses to governance targets under SDG 16 and human resource management under SDG 8 are listed under Good Governance, Anti-Corruption, and Employee Stewardship.



At the beginning of 2017, Bangchak moved to its new Head Office at M Tower, Floors 8 to 20A, under the concept of “Smart Building”, reflecting the “Evolving Greenovation” vision of a model building committed to environmental conservation. Bangchak applied the “Platinum” criteria of LEED (Leadership in Energy and Environmental Design) to Floors 8 and 10 and the “Certified” level between Floors 11 and 22A. As a whole, it included consideration of location, selection of innovative design materials, care of environmental quality within the building, and efficient water and energy management. Moreover, Bangchak developed the “Smart Office, Smart Meeting, and Smart Display Solution” systems to support its management in conjunction with its “Building Management System”.



BTS Bangchak Station/public transport
Proximity to communal areas and public transport system Suitable location



Furniture made from recycled materials /
decorating materials with zero VOC emission
Selection of environment-friendly materials

650
m²



Over 650 sq. m. of green area and recreation
area on every floor Environmental
quality within the building



Innovative design : Smart Solution System to link with
Bangchak's **Building Management System**



**Smart
Office**

160-seat work stations
to support those not stationed
in M Tower who can reserve
these stations via Smart
Office System



Water saving

Air-conditioning system performance
control shown via TV Digital Signage and
information analysis through the energy
management system



Energy
saving

**Smart
Display**

**Smart
Meeting**



Meeting-room booking via
mobile phone / Air-conditioning
system automatically turned
on after room log-in




“...Good deeds are not that easy to commit and their results are very slowly visible, but they are imperative nonetheless. For if one fails to do them, immoral deeds- which are closer to human nature-are bound to replace them and, before one knows it, quickly accumulate. Therefore, each of us must consciously focus on doing good deeds and try our utmost to do and repeat them...”

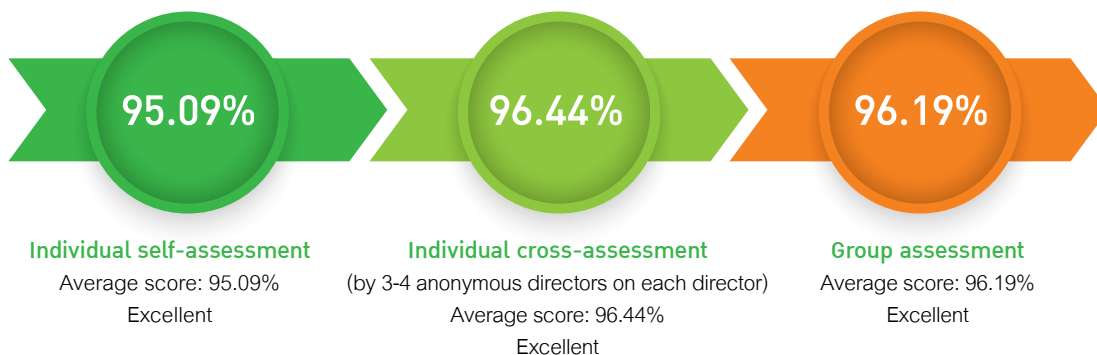
His Majesty the late King Bhumibol’s discourse at the commencement ceremony of the Police Cadet Academy, Amporn Garden
On Thursday 6 August, 1982

Corporate Governance

Good governance is the cornerstone of business. Ever since its inception, Bangchak has therefore defined a Corporate Governance Policy to guide directors, executives, and employees in their business conduct. A Corporate Governance Committee, consisting of five directors, steers Bangchak’s compliance with the policy and revises it to keep pace with international standards each year. This year, meetings were held to monitor outcomes of the corporate governance development plans as follows.

Policy revision	Determined commitment	Sharing of views
<p>Undertook the 13th revision of the policy, including</p> <ul style="list-style-type: none"> Limiting the number of companies where directors can serve to two listed companies each and adding to the roles and responsibilities of the Board Chairman in Section 3 (Board of Directors) Adding a code of conduct for Investor Relations in Section 8 (Disclosure of information and transparency) 	<ul style="list-style-type: none"> Required all employees to acknowledge and complete the annual test on the policy Required all employees to provide their information concerning conflicts of interest annually Joined forces in declaring the anti-corruption intention at the 2016 Anti-corruption Day (Karma for Cheaters theme), staged by the Anti-corruption Organization of Thailand at the Sanam Luang ground Staged the CG Day 2016 to communicate guidelines for corporate governance among employees and campaign on ongoing anti-corruption in the corporation Issued an annual letter on the No-Gift Policy to repeat the message among employees and all involved in Bangchak Group 	<ul style="list-style-type: none"> Shared experiences on corporate governance and anti-corruption with others, including Amata Corporation Plc, TOT Plc, Bangkok Aviation Fuel Services Plc, and Thanachart Group Staged an annual business partner seminar to roll out the “Supplier Code of Conduct for Sustainable Business Development” and encourage business partners to become CAC allies, as detailed under Anti-corruption, page xx Promoted subsidiaries’ declaration of the intention to join CAC allies, as detailed under Anti-corruption, page 38

To enable corporate governance practices to achieve full efficiency, the Board has required performance assessments in three formats, namely



In addition, each subcommittee was assessed, as detailed in the 2016 annual report under Management Structure. Page 35

“... Major fundamental traits for all include conscience, shame for sins, integrity in the mind and action, unselfishness, and refraining from carelessness and rudeness. Above all, perseverance...”

His Majesty the late King Bhumibol’s discourse to audience in the commencement ceremony of Srinakharinwirot University, Amporn Garden, on Friday, 22 June 1979

Anti-corruption



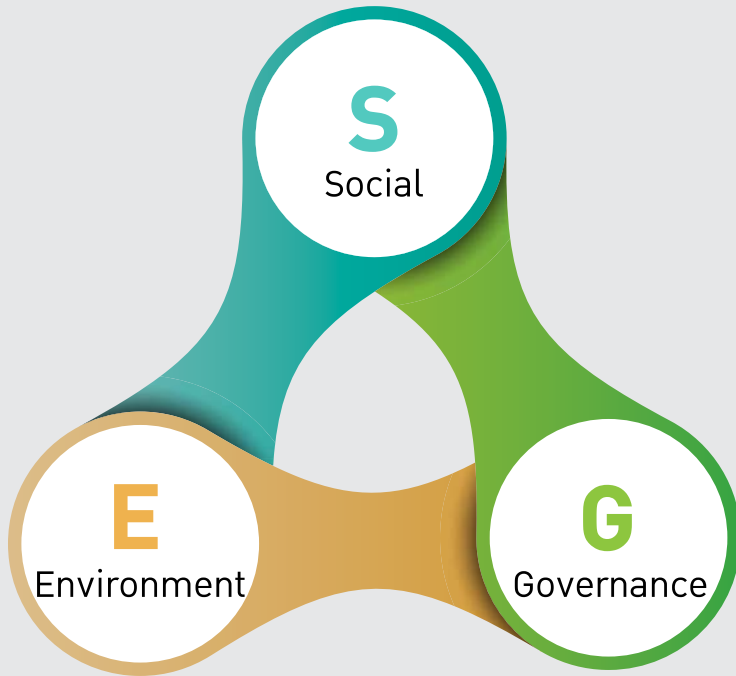
This year Bangchak was certified (renewal) for membership of CAC (Thailand’s Private Sector Collective Action Coalition against Corruption). (G4-16) It was among the first 22 companies to have received the certification in 2013.



Bangchak has illustrated its commitment to anti-corruption in the following ways.

- **Communication and education** Bangchak relied on the “We Share” online learning channel to inform executives and employees to learn and take tests on the corporate governance policy, help them understand correctly the policy and learn efficiently
- **Anti-corruption measures** For the third year in a row, informed employees and those parties relevant to Bangchak and subsidiaries about the No-Gift Policy for festive periods and other occasions to stress Bangchak’s commitment to laying down a solid foundation for fair business with all





- **Sharing of views** : Staged the annual business partner seminar to announce the Supplier Code of Conduct, which consisted of ESG (Environment, Social, and Governance) to promote their business dealings in line with Bangchak's code of conduct to foster growth and sustainability together. Also, Bangchak has encouraged 3 year consecutively business partners to join CAC This year, 68 suppliers agreed to declare such intention.(G4-S04)

The number of business partners that declared their intention to join CAC this year (G4-S04)



Bangchak also encouraged these subsidiaries to join CAC:



BCPG Public Company Limited
on June 13, 2016



Bangchak Biofuel Company Limited
on August 9, 2016



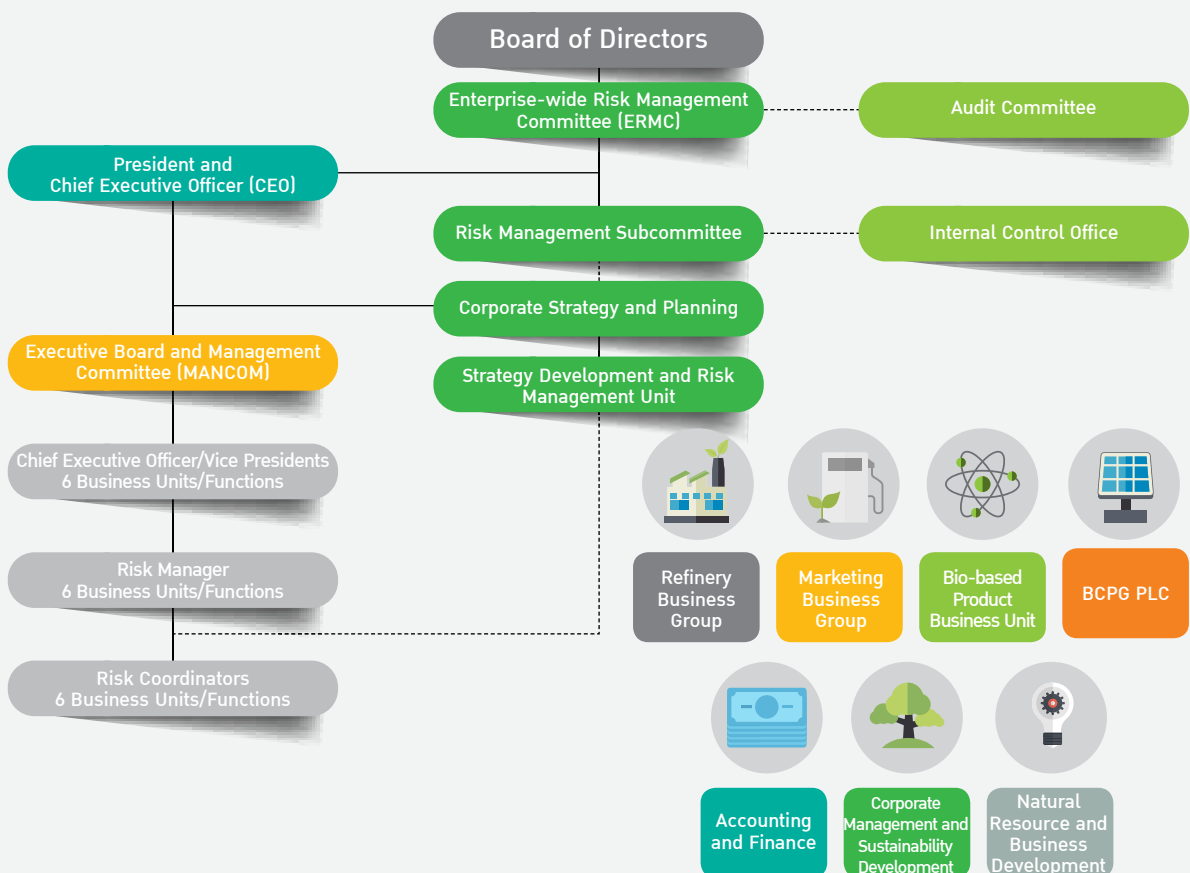
Bangchak Green Net Company Limited
on September 28, 2016

“ ...In leading life as a human, it is impossible to expect only normalcy and happiness. There are bound to be suffering, danger and obstacles passing through life. The key point is that everyone must prepare both the body and the mind, and must always be ready to face and solve irregular troubles with due diligence, under principles of reason and unity. Only then can we lessen the severity and turn the situation from bad to good...”

His Majesty the late King Bhumibol’s discourse to his subjects on the occasion of the New Year 1985, December 31, 1984.

Corporate Risk Management

Risk management represents the development of corporate immunity, the same principle as the philosophy of Sufficient Economy. Bangchak has adopted an enterprise-wide COSO ERM and ISO 31000 as tools for its risk management system and applied them to all levels from business groups to divisions, sections, and individual staff of the corporation and all subsidiaries. Systematic risk assessment, reporting channels, and a risk management structure have been put in place to ensure full coverage of risk management at all operating levels and business processes to cope with uncertainties and continuously changing environment so that Bangchak may drive short-term and long-term business successes and pursue sustainable businesses. (G4-45)



Bangchak's risk management scope is summarized as follows:

1. Corporate Risk Management:

Assessment of internal and external risks along with future trends that could impact the business and operations. Corporate risk management is transmitted and executed in parallel with the strategic implementation of the corporation, business groups, divisions, and sections to strive for both short-term and long-term successes.



2. New Business Investment Risk Management:

Assessment of risks relevant to new business investment. The process requires preparation of a project risk execution plan and presentation for endorsement to the ERMC before getting approval from the Board.



3. Business Continuity Management (BCM):

Assessment of risks incurred from various events which could impact and explicitly disrupt businesses. The process also includes joint preparation of a business continuity plan and an emergency response plan owned and operated by safety units division to ensure complete preparation of an operating strategy and resources to cope with potential crises. Monitoring and review of work procedures are done continuously.



Risk Management Performance

With a thorough review of all risks that could impact the business, derived from internal and external sources including megatrends and World Economic Forum's "The Global Risks Report 2016, 11th Edition", Bangchak developed a risk management plan and concurrently identified business opportunities. Four sets of risks have been identified:

- Strategic risks
- Operating risks
- Financial risks
- Reputation risks

including risks pertaining to legal and regulatory non-compliance, and risks to society, the environment, and work

safety. Risks with higher potential and impacts on Bangchak's core businesses are energy price shocks caused by high oil price volatility, and environmental risks, namely climate change, water crisis, extreme weather events, biodiversity loss, and ecosystem collapse. (G4-15)

Consequently, Bangchak has launched a series of measures to minimize risk exposures and mitigate potential impacts together with respective response plans to alleviate investment concerns in the company's businesses as follows:

1. Corporate Risk Management

Corporate Risk Management

Risk: Oil price volatility

Impact: Uncertain revenue stream from petroleum businesses

Short-term measures : These include round-the-clock, close monitoring and tool development for managing global oil prices and financial hedging, as well as spreads between crude and refined products. This is achieved through the deliberation of the Price Risk Management Committee (PRMC) to handle Bangchak's risk arising from continual oil price and baht currency volatility to ensure that such business volatility least affects Bangchak's performance.

Long-term measures : Reducing risk exposure on global oil prices by resetting the revenue portfolio to balance with revenues from other sources including:

- **Green Power:** Setting up BCPG Co., Ltd., a subsidiary responsible for investment and operation of electricity generation and alternative energy within and outside Thailand.
- **Bio-based products :** Expanding bio-based production including biodiesel from 360,000 to 810,000 liters per day, an increase of 450,000 liters per day. The project COD was July 2016. Bangchak Bioethanol (Chachoengsao) Co., Ltd. was in charge of 150,000- liter-per-day production, raising the total ethanol production to 550,000 liters per day and revenue to the company.
- **Innovative business :** 7% equity in Lithium Americas Corp. was invested to produce lithium batteries, a future energy source, and set Bangchak up for growth in alternative energy.

Risk: Supply chain and raw material management

Impact: Business disruption/ production costs

- Securing crude offtake agreements in a more long-term format from both i domestic and overseas sources to consistently stabilize the level of crude supply.
- Procuring crude oil quality more suitable to existing technologies to maximize yield and value to the company.
- Categorizing suppliers with a focus on high-value raw materials and feedstock, goods, and services properly processed with appropriate sets of risk assessment, i.e. economic, environmental and social, to ensure tbe business continuity.



Environmental Risks

Risk: Water supply deficiency

Impact : Insufficiency of water for production processes

- Formulation of a Refinery Water Management Taskforce to explore optimal water management measures to stabilize the entire production processes, minimize water consumption, reuse, and recycle with reverse osmosis technology. This year Bangchak successfully reduced the volume of discharged effluent and consumption by 2.1% of the total water consumption.
- Developing a water footprint to enhance water management through the product life-cycles.

Risk: Climate change

Impact : Business disruption by natural disasters

- Implementing a 3Es project (Efficiency, Energy, and Environmental Improvement Project) to reduce energy consumption and carbon dioxide emission
- Replacing the use of fuel oil with electricity and steam power from the natural gas cogeneration plant. Developing a plan to construct the second unit of cogeneration power plant. Both projects were pursued to increase energy efficiency and reduce the emission of carbon dioxide.
- Moving forward with an energy conservation program in the refining facilities (details shown under Energy Use).
- Continuing the energy conservation program at the new Head Office with the LEED standard for building design and selection of environment-friendly materials.

Risk: Ecosystem collapse

Impact : Oil spills from marine transportation could cause severe impacts on the ecosystem

- Deploying oil spill prevention measures by redefining the standards for crude and refined product vessels with double hulls.
- Locating more equipment to contain oil spills and storing it at the depot of Thai Public Port Co., Ltd., in addition to those at the refinery.
- Increasing capability for oil spills and fires on board through emergency preparedness with joint drills at Sriracha Oil Depot and during shipment.
- Constantly developing and enhancing safety technologies for equipment, system, and instruments at ports under the standards defined by Oil Company International Marine Forum (OCIMF) such as the upgrade of the firefighting system and redesigning the wharf to become a Quick Release Hook, and installation of additional closed-circuit television (CCTV) system at the jetties.
- Pursuing a joint study with entomologists from Kasetsart University on the changing density of fireflies near Khung Bang Kachao, Amphoe Phra Pradaeng, Samut Prakan, opposite the refinery.

Social Risk

Risk: Operations could create impacts on communities and the public

Impact: Public and community confidence in Bangchak's operations

- Increasing production process stability with the development of the Power Management System (PMS) by 2016. Commencing construction on a natural gas co-generation plant, set to be completed in 2017. Both projects would increase power supply stability and minimize the probability of unplanned emergency shutdowns.
- Adding Safety Integrity Level (SIL), Reliability-Centered Maintenance (RCM), and Risk-Based Inspection (RBI) to the risk management system to expand risk assessment coverage all equipment and work processes and design the maintenance program in advance with high accuracy, leading to reduction of accidents.
- Complying the Occupational Health and safety Management System with TIS/OHSAS 18001 standard, identifying work hazard (HAZOP, Hazard and Operability Studies) and implementing the Process Safety Management System (PSM).
- Installing an enclosed ground flare to reduce emission impact on surrounding communities. The project is set for completion in 2018.
- Increasing 2 online air emission monitoring stations at Sai Jai Thai Foundation (under the royal patronage) on Sanpawuth Road, and the entry gate No. 2 of Bangchak Refinery. The installation of these two new monitoring stations increased the coverage of air emission control and bolstered the confidence level among the surrounding communities and the public. There are now six online air emission monitoring stations.
- Promoting activities with surrounding communities for more knowledge and better understanding, as well as awareness of safety. People from schools, temples, and nearby condominiums attended these activities and participated in evacuation and firefighting drills. Installing fire alarm and communication systems to better communicate with the communities and having community representatives participate in and observe emergency drills.

Process risk management

- Under the Quality Information Process (QIP) framework, Bangchak has developed specially designed work processes for all business groups and functions. Risk assessment on all these processes is routinely run to identify risk exposure, loopholes, or chances for fraudulent acts, critical errors, accidents or inefficiency. Every business group and function is accountable for running its own control self-assessment (CSA) 100%, 171 Work processes.

2. New business investment risk management

In addition to consideration of strategic alignment and returns on investment of new businesses, project risk management is crucial to business success. A systematic project review has been developed to ensure project success as originally designed, without negative impacts on the environment, communities, and the public. Project risk assessment includes different risk dimensions, such as risks at various stages of investment, country-based investment risks, and natural disaster risks.

3. Business Continuity Management (BCM)

Bangchak continues to be ISO 22301: 2012-certified for its BCM standard, covering its old Head Office on the 10th floor of Building A, Energy Complex, refinery, and Bangchak Oil Distribution Center, Central Region Business Office, and Bang Pa-in Oil Distribution Center, the same certification for four years in a row for an international standard and efficiency on crisis management and an emergency response system. This recognition bolsters confidence among stakeholders in Bangchak's ability to properly respond to any potential emergencies and deliver products to customer without disruption. Under the system, 10 emergency response and crisis management plans and additional 5 business continuity plans (BCPs) jointly developed with emergency response plans operated by the Safety Division.



From the Global Risk data, risks from terrorism were found to increase. An emergency BCP drill was therefore executed in 2016 to respond to a simulated terrorist threat to the refinery and Bang Pa-in Oil Distribution Center. The findings were collected and integrated with process improvement, including allocation of more resources to improve BCM efficiency. Communication of the drill and findings was transmitted to all subsidiaries to raise their awareness and learning through observation so that all subsidiaries could further develop their BCM systems to be efficient and align with the master plan of the corporation to ensure no disruption and the ability to quickly resume business operations with stability and sustainability like Bangchak.



ECONOMIC PERFORMANCE





Revenue

145,232

THB Million

Net Profit

4,729

THB Million

EBITDA

11,363

THB Million

Local Procurement

4,351 | 98%

THB Million

Percentage of EBITDA by Business



50.6%

Refinery



22.2%

Marketing



22.5%

Green Power



2.8%

Bio-loased Product

Exploration and Production/Others **1.9%**

Revenue

(G4-17)



This year, Bangchak and subsidiaries grossed THB 144,705.29 million in sales and service revenue, which translated into THB 4,729.41 million in consolidated net profit, of which Bangchak's portion was THB 4,502.30 million. The above-mentioned revenue came not only from the refinery and marketing businesses, but also from its subsidiaries' alternative/renewable energy businesses, including solar farms, biodiesel, or and petroleum exploration and production.

Bangchak produced gasohol and diesel products of the quality meeting the Euro 4 standard. It was the first Asian producer of gasohol 20 of the Euro 5 standard, which is environmental friendly with less than 10 parts per million (ppm) in its sulfur content. In addition, it seeks to enhance energy stability in the production process by using electricity and steam generated from cogeneration power plants and natural gas, to replace fuel oil. Finally, it raised the efficiency of its refining processes under the 3Es and YES-R projects, which also enhanced Bangchak's process capability.

This year's sales and service revenue fell by 4.26% from last year due to a 4% drop in the sales prices of petroleum products, although the sales of all products rose by 5%. The year saw a basic refining margin of US\$5.99 per barrel, a decline from last year, because the price spread between UNL 95 (gasoline) and DB (Dubai) plunged with a slowdown in Indonesia's imported gasoline and in this region there was oversupply of gasoline. Still, Bangchak gained THB 590 million from its oil stock. Finally, the refinery business successfully operated at high efficiency, averaging 101.39 thousand barrels per day (KBD).

From the alternative/renewable energy business group, Bangchak derived sales and administration revenue, notably from the solar farm business, which is currently under subsidiary BCPG Public Company Limited, which has a total production and sales capacity of 151 MW, of which domestic power plants accounted for 118 MW; collaboration with community cooperatives, 7 MW; and from Japan, 26 MW. In the biodiesel business, outputs averaged 0.41 million liters per day. In the petroleum E&P business, sales revenue amounted to THB 1,503 million, a 36% drop from last year, and sales this year decreased by 287,423 barrels from last year. The average sales price came to US\$47.62 per barrel, roughly US\$10.5 per barrel lower than last year.

Expenditure



Bangchak posted THB 6,876.87 million lower than last year's operating expenses, due mainly to lower sales cost in line with sliding oil prices. Crude oil prices this year hovered around US\$22-55 per barrel, averaging US\$41 per barrel, a decline from the average last year of US\$51 per barrel, as the markets continued to face supply gluts through the year. Early on in the year, the glut totaled roughly 2 million barrels per day, whereas this year OPEC producers upped their outputs by about 1 million barrels per day. As a result, the overall crude oil supply continued to grow from last year. Other expense items, including the stewardship of society, schools, and communities and donation in cash and in kind, amounting to about THB 76.70 million. Pay and welfare expenses rose by THB 484.22 million from last year. This was a result of employee welfare improvement and higher amount of employee. Bangchak paid THB 175 million more this year to state and local agencies according to increase in profit. Finally, this year Bangchak paid out a total of THB 2,753.53 million in dividends, a rise from last year.

“ .. Our nation requires urgent and efficient improvement together with development to fully benefit from the resources present in our land, and from all the forces of our Thai intellect. We cannot delay or wait at all because we will then lose these available benefits, which is detrimental..”

His Majesty the late King Bhumibol’s discourse to his subjects on the occasion of the New Year 1994, December 31, 1993.

Change management

Dynamic changes in and outside Bangchak, including cut-throat competition, a degraded environment, resource depletion, and changing public policies, impact Bangchak’s sustainability. Therefore, change management is essential for upgrading Bangchak’s ability to foster value added, while elevating its competitiveness over its competitors. It therefore defined a new vision and new values as “Evolving Greenovation” and “I AM BCP” to keep up with change, since it believes that for the future world, a prompt response to all aspects of change and application of innovations are bound to heighten competitive advantages.

As a result, the **Corporate Change Management Department** was founded to collaborate with core business unit groups, strategy-formulating units, and support units in focusing on efficiency analysis and searching for development opportunities through Business Process Redesign (BPR) to add sustainable corporate efficiency and capability in all aspects, namely shortened procedures, work streamlining, operating expense reduction, income growth, and IT application to ease and speed up work, while ensuring accuracy.



2020 goals

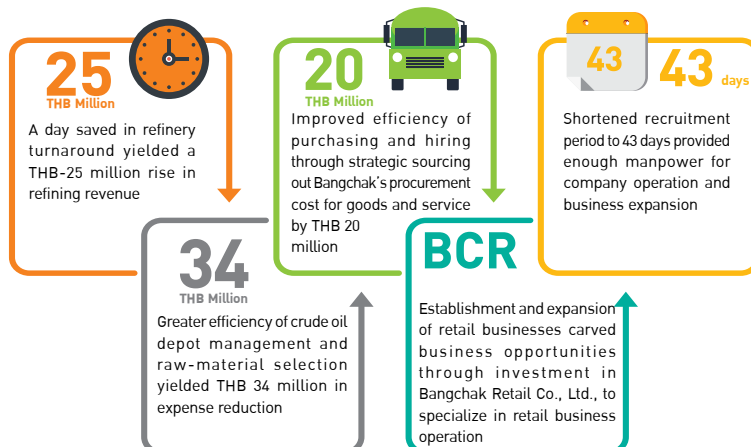
1,



THB Million

Grow business value

Case study: Major change management projects of 2016



Still, until 2020, Bangchak has planned projects to develop and improve business processes in accordance with change management principles, estimating more than THB 1,000 Million in value added to the corporation. This very year, it continued to analyze and pursue opportunities for developing and improving business processes through driving change inside the corporation and leveraged change management principles while inducing acceptance and a positive attitude among employees, and fostered enthusiasm ahead of change to cultivate a culture of “I AM BCP” the new Bangchak values.

“...In undertaking any enterprise to its successful conclusion, much perseverance, diligence and integrity is required as a foundation. The person must also have loving-kindness and compassion, non-infringement on others and willingness to be of public service as needed...”

His Majesty the late King Bhumibol’s discourse at the commencement ceremony of Chulalongkorn University, July 12, 1956.

Supply chain management

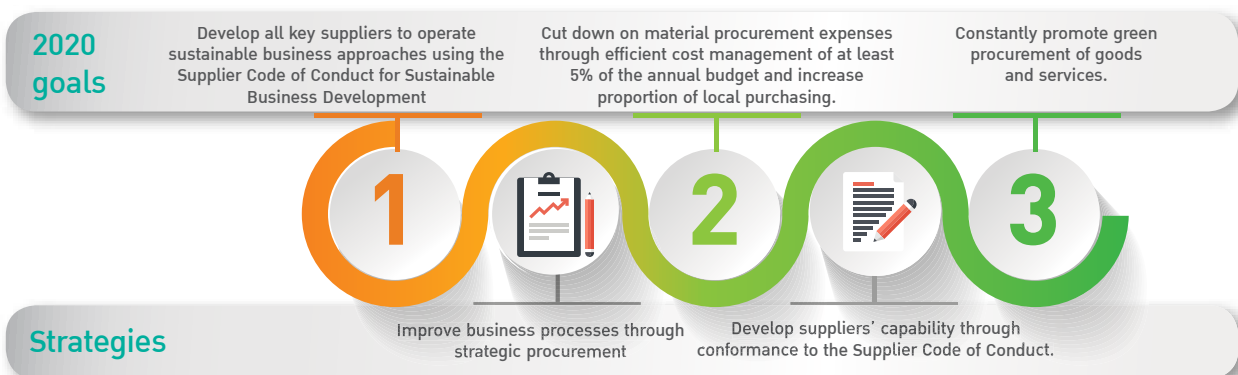


Since **suppliers** represent a critical group of stakeholders contributing to value creation and growth, Bangchak maintains the intention to promote suppliers/suppliers’ sustainable business in line with Bangchak’s own way of conducting business. To this end, it has prepared a “**Supplier Code of Conduct for Sustainable Business Development**”, which consists of ESG (Environment, Social, and Governance), an international approach for sustainable business. Bangchak believes that if its suppliers engage responsibly in business with the five aspects

- **Business ethics**
- **Labor treatment and human rights**
- **Safety and occupational health**
- **Environmental**
- **Community development engagement**

stated in this code of conduct, they too will experience sustainable growth.

To this end, Bangchak has developed concrete business processes with suppliers and is committed to developing supply chains and suppliers in pursuit of strong and sustainable business allies as follows.



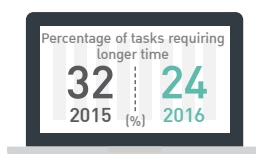
Performance in 2016

(G4-DMA)



- Amended rules/table for approval authority for material procurement to keep pace with changing business circumstances
- Amended SAP SRM (an electronic system for procurement and hiring) in line with the amended approval authority
- Amended the procedures and KPIs in line with corporate goals

- Implemented strategic sourcing by redesigning material procurement processes to raise competitiveness and educate material procurement officers more on goods and services that suit changing market circumstances
- Trained Bangchak’s and subsidiaries’ procurement officers on strategic sourcing that takes into account time, resources, and cost efficiency



Result : Better procurement time management; reduced excessive procurement time Percentage reduction of tasks requiring longer time than standard **(Target: 40%)**



Result : Efficient cost reduction by over THB 20 million

Suppliers Development

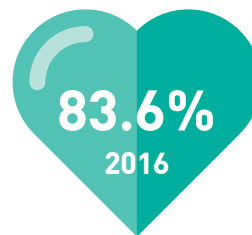
Supplier relationship management

- A long-term measure for common sustainable operation of Bangchak and suppliers. Bangchak developed a “Supplier Code of Conduct for Sustainable Business Development” for distribution to suppliers for acknowledgement and compliance
- Ranked key supplier groups with supply agreements worth over US\$1 million (THB 35 million) per year (70 parties) for seminar and clarification about the code, and completion of the self-assessment form to measure sustainability performance in five aspects. Next year, similar actions will be extended and suppliers with agreements worth less than this level.
- suppliers’ plant/office visits to foster relations, provide advice on collaboration, and establish understanding about the code and completion of the self-assessment form
- Instituted a satisfaction survey of suppliers’ performances to apply the findings as the baseline information for future supplier selection
- Visited suppliers’ operations to jointly hear views on collaboration between the suppliers and Bangchak employees. These visits also represented a random audit of their operations and conformance to Bangchak’s regulations and code of conduct, including their use of PPE (personal protective equipment) and safe workplace stewardship. Such visits provided helpful data for future improvement.
- Visited suppliers’ operations to jointly hear views on collaboration between the suppliers and Bangchak employees. These visits also represented a random audit of their operations and conformance to Bangchak’s regulations and code of conduct, including their use of PPE (personal protective equipment) and safe workplace stewardship. Such visits provided helpful data for future improvement.



Result :

- suppliers that agreed to conform to the code of conduct
- Key suppliers that conducted self-assessment to measure performance under the code (supply agreements worth over THB 35 million per year)



Result :

Percentage of Bangchak employees’ satisfaction with suppliers’ performances (Target : 80%)



Innovation

Green procurement

Initiated the development of a system to assess online the Supplier Code of Conduct for Sustainable Business Development for the first time among corporations, with storage of attachments

- Constantly added to the lists of green and local goods and services
- Developed a manual and a directory of green goods



Results :

- The system was completed for suppliers to undertake assessment and send attachments.
- It also calculated scores for instant display after the assessment,
- Cutting down on the forwarding of enormous amounts of data by email. Data storage is secure, and suppliers’ performances can be tracked and audited every year,
- Bangchak and suppliers being able to plan business process improvement systematic ally, which shortens work time and lowers resource consumption.



Results :

The number of green goods and services
List of 12 goods 2016
(Target : 10)



Percentage of Local Purchasing of goods and services (G4-EC9)

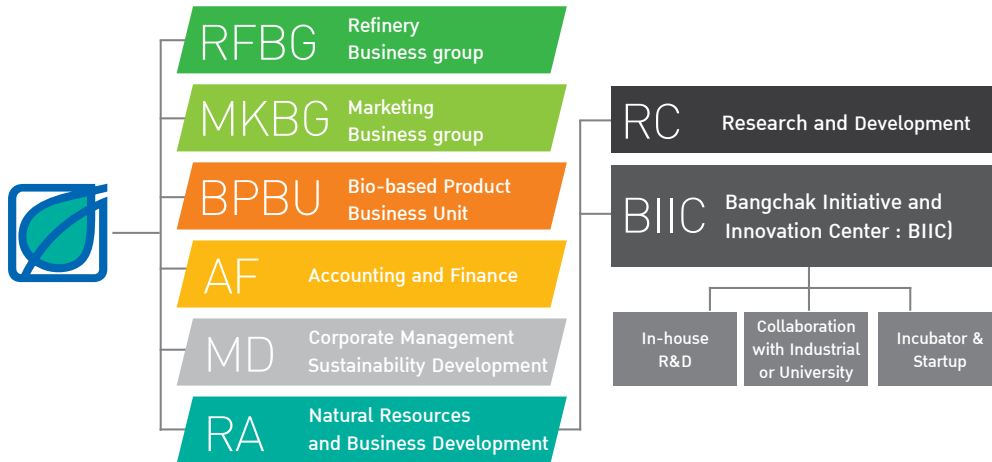
"..At present, science and technology have become instrumental for modernizing the country. We should support serious invention of technology suitable for the conditions and requirements of the country. The more we can invent, the more economical it will be, and the more it can be applied for wider usage .."

His Majesty the late King Bhumibol's discourse on the occasion of the National Science Week and the 120th Anniversary of the year King Mongkut's Wa Kow Expedition, Chitralada Villa, August 1, 1988.



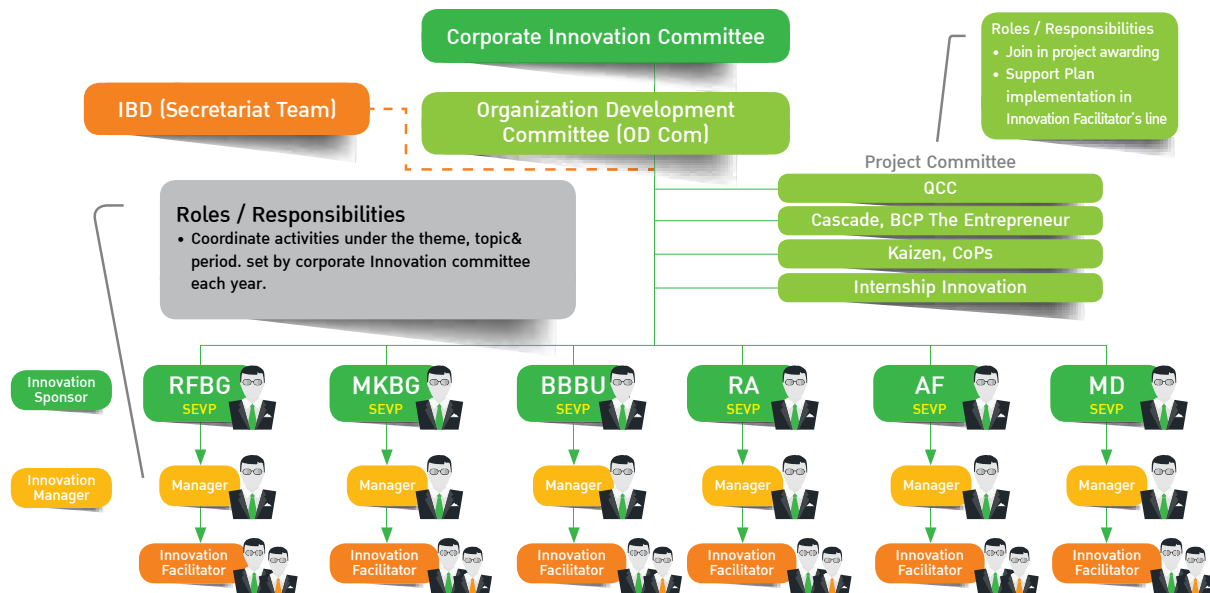
Innovation management

Since it is widely accepted that innovation is vital to today's businesses through enhanced competitiveness and its fostering of sustainability, Bangchak has set a policy of promoting corporate learning and personnel development and has structured administration that favors an ambience of learning and innovation in process development and establishment of novel products and services at individual, business group, and corporate levels by deploying proper tools. An Organization Development Committee (OD Com), consisting of senior management from all business groups, is in charge of deliberation and screening of related tasks. This year, under Bangchak Initiative and Innovation Center (BIIC), Bangchak set up a Department of Research and Product Development (RC), responsible for product development, novel research, or business development with external agencies.



Bangchak has also appointed for all business groups innovation facilitators, innovation managers, and innovation sponsors to promote understanding, to cultivate a learning culture, and to improve work done by respective business groups in line with the ultimate "Learning Organization" goal.

BCP Corporate Innovation Structure

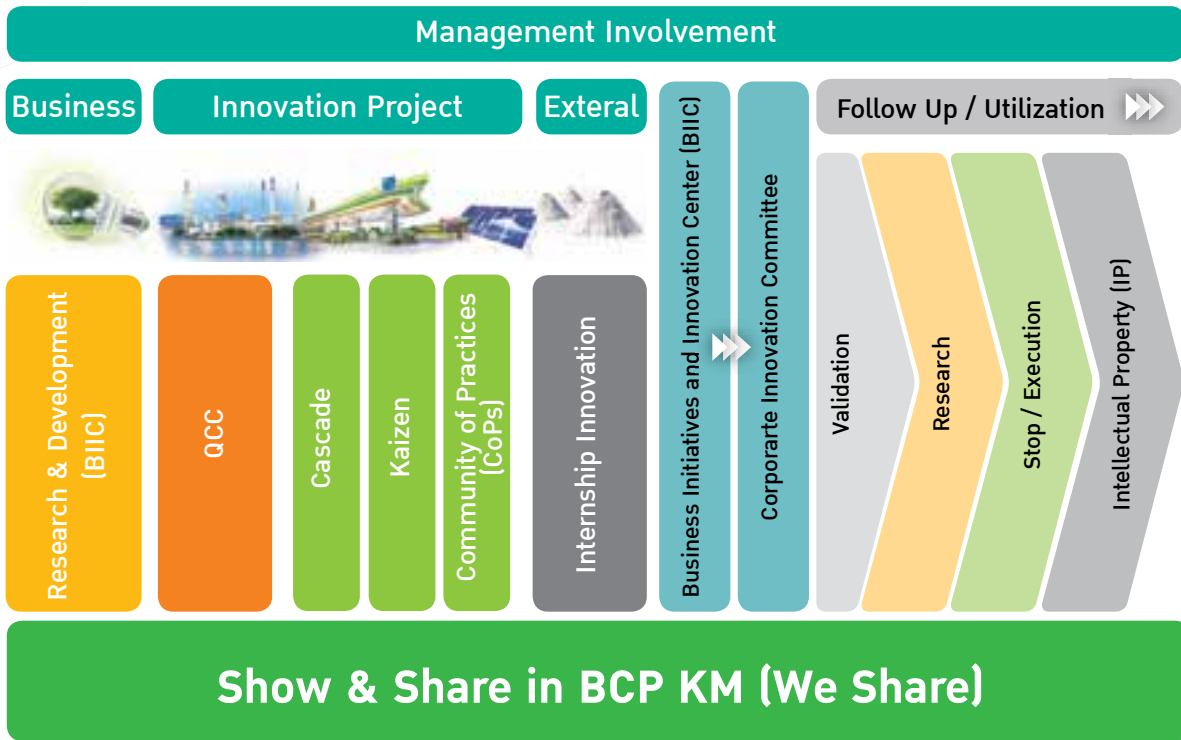


Bangchak deploys various necessary tools and projects to come up with employee innovation in cross-functional teams as described below.

Tool / project	Detail	Staff group
QCC	To cut costs and raise efficiency, which are complicated and need multiple data analysis	RFBG
Kaizen	Improve business processes to cut cost, raise efficiency, and improve work environment	Companywide
Cascade	Format development of businesses, products, or services under each year's project theme, set in line with strategies	Companywide
Community of Practice (CoP)	Grouping by professional expertise to develop specialized knowledge CoP IT : Activities include IT Share, IT Talk, IT Clinic, IT Day CoP Marketing Representatives : marketing representatives: Collective business process improvement for market representatives CoP TQA : Application of TQA criteria and management tools	Groups of professional practitioners
Internship Innovation	Application of TQA criteria and management tools	Student interns



Corporate Innovation Framework



Projects at different levels call for deliberation by their corresponding panels, including the Kaizen and the QCC panels. Corporate-level projects go to BIIC (Bangchak Initiative and Innovation Center), which consists of relevant executives, academic/business experts, are members, and the Corporate Innovation Committee, which consists of Bangchak’s management team members, for commercialization.

To advocate the innovation culture, Bangchak has set innovation project participation as a KPI for each employee. The executives also join the activities in each step of project launch,, project-awarding, and commendation. That way, employees may recognize the value of innovation and modify their behavior for the desired culture under corporate VMV.

Knowledge derived from innovation projects is recorded, distributed, shared, and extended in the corporation through “WeShare” under the BCP Knowledge Management system. All employees have ready access (called Anywhere Anyplace Anytime) through computer devices and mobile phones. A “Gamification Function” attracts employees’ participation round the clock. This year Bangchak modified “We Share” to accommodate business units’ essential knowledge and also the recording and approval systems of Kaizen projects to ensure modernity and efficiency of corporate innovation development.

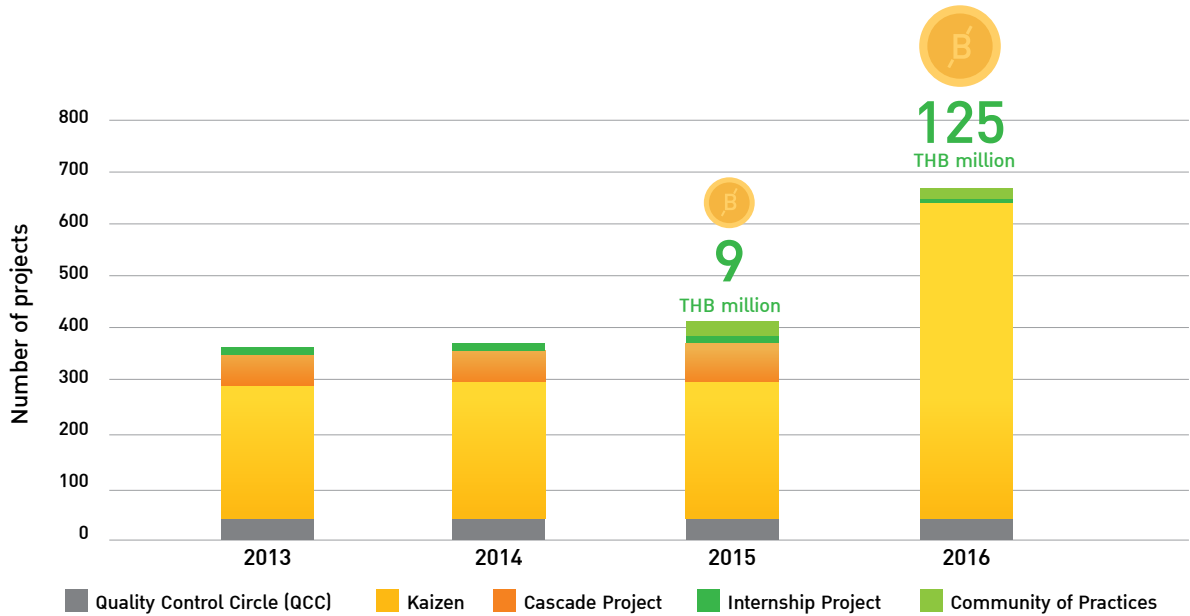




Performance in 2016

Innovation Results from 2013 to 2016

Project benefits in Baht million



Category	2013	2014	2015	2016
Implemented Business Model projects	2	1	1	1
Innovation awards	2 outstanding QCC awards (Ministry of Industry)	2 outstanding QCC awards (Ministry of Industry) 2 Thailand Kaizen Awards	2 outstanding QCC awards (Ministry of Industry)	2 outstanding QCC awards (Ministry of Industry) 1 Thailand ICT Award (TMA)

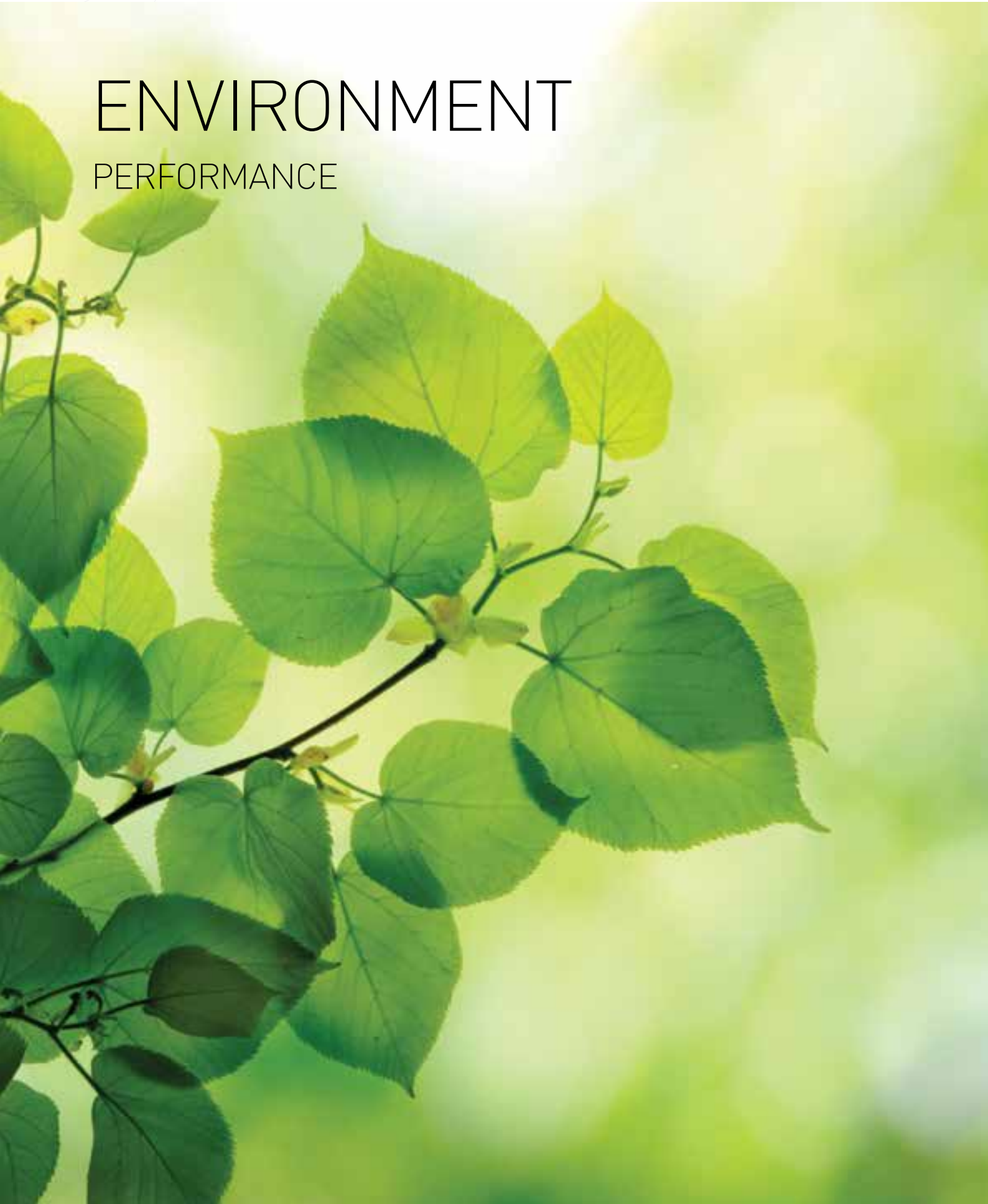


Future plans

For the coming year, the Executive Committee will develop the “Cascade for Innovation” project into the “BCP The Entrepreneur” project to enable employees to jointly develop real-life new businesses by setting their profit sharing in the first year’s EBITDA. This will build an innovation culture while employees are groomed in management skills and tangible project ownership in project push.

ENVIRONMENT

PERFORMANCE



GHG emission
(Equity Share)

1.3

Million TOCE

Energy Consumption

15,320

Terajoules

Reduce water consumption

2.1%

of total water used



85%

Waste management
by 3Rs.



0.8

million cu.m.
total volume
Water Discharge

Sustainable
Products & Services

GREEN S
REVOLUTION



".. Everyone's contribution is to adjust their opinions rightly and with determination. In holding the benefit of the nation as a top priority, we must reduce our focus on our own personal benefit and reduce conflicts of non-essential matters..."

His Majesty the late King Bhumibol's discourse to his subjects on the occasion of the New Year 1994, December 31, 1993.

Operational Eco-efficiency

This year Bangchak won a "Green Industry Level 5: Green Network" award, the top recognition by the Department of Industrial Works. The acclaim incorporated its environmental side of business along with the extension / promotion of good environmental practices to stakeholders throughout the supply chain, communities, and consumers toward a green network. Such is Bangchak's determination to improve its environmental mandate to form a corporate culture of social responsibility.

Despite the 45-day major turnaround from February to March this year, the Refinery Business Group maintained its average refining capacity at 101,000 barrels per day, substantially higher than the goal of 96,000 barrels per day.

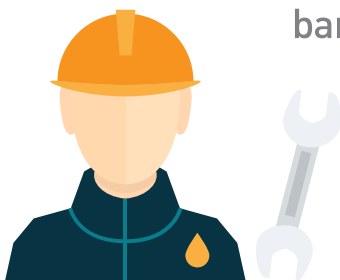


Environmental impacts and operating safety being Bangchak's top priorities, Bangchak added measures for these aspects by applying chemical decontamination in all corners of the refinery to make it easier, cleaner, and safer for workers to clean instruments. In addition, Bangchak heightened operating safety standards while forging a safety culture and awareness among all by pioneering its PSM (Process Safety Management) application.

Bangchak efficiently allocated resources for optimal benefit, especially on material issues concerning environmental KPIs that address corporate goals and align with stakeholders' needs and expectations, leading to sustainable operations as follows.

101,000

barrels/day



Average refining capacity

“...We must find ways that will not increase carbon dioxide, that is, not increase things we fear. If we increase it, there will be more carbon dioxide, then we must find technology to decrease its emission or maybe sequester it, and not release it into the atmosphere above, where it can damage the heat shield...”

His Majesty the late King Bhumibol’s Discourse to the Asia-Pacific Ambassador Corps and General Consuls in audience at Chitralada Villa, July 26, 1989.

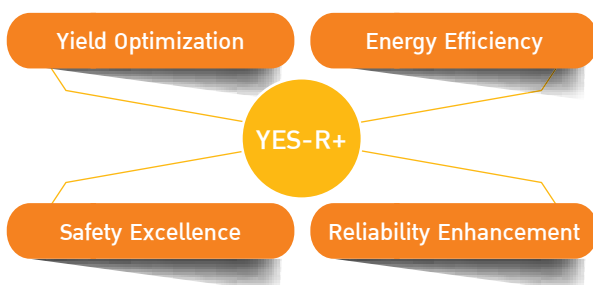
Energy Consumption



Since its core business (the refining business) is an energy-intensive industry, minimized emission of carbon dioxide is one of Bangchak’s key goals. That is a reason Bangchak is concerned about energy efficiency in parallel with refinery operation stability. It also pursues renewable-energy investment of various forms to raise the proportion of renewable energy for the benefit of the world while keeping the global temperature rise to less than 2 degrees Celsius supporting the Paris Agreement.

Refinery Business Group

Besides keeping tab on energy efficiency with annual short-term goals against its energy management under ISO 50001, which began in 2014, to reduce greenhouse gas (GHG) emissions, Bangchak executed intermediate-term projects by the process improvement called Yield optimization, Energy efficiency, Safety excellence, and Reliability enhancement—more commonly referred to as YES-R. These suite of projects give oil refining ongoing efficiency. Bangchak also invested in long-term projects to significantly reduce energy consumption, called the 3Es Project (Efficiency, Energy, and Environmental improvement).



Efficiency, Energy, and Environmental improvement project.
 The 3Es Project consists of the installation of a cogeneration unit, replacing a boiler unit, lowering energy consumption; to ease environmental impacts; and raise the efficiency and ability to convert fuel oil into a clear fuel. Construction is to be completed in stages from 2018 onward.

Goals for the year 2016

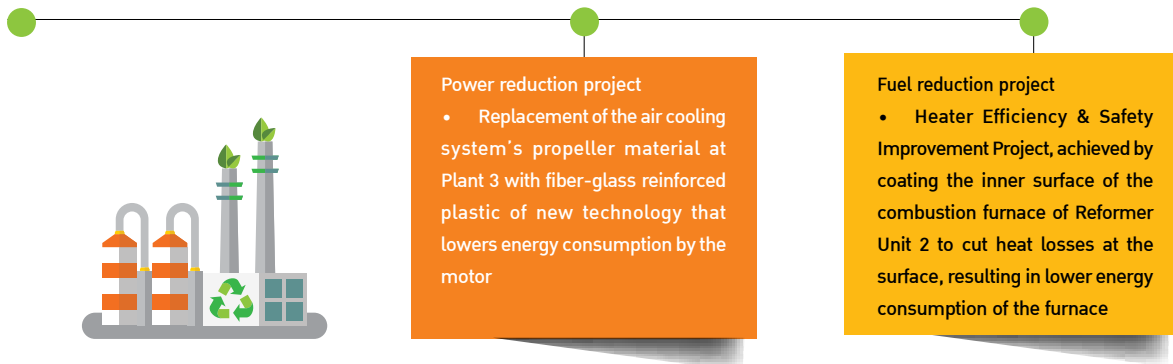
1. EII (energy intensity index) of less than 102.5 (and less than 85, the excellent level under Solomon Benchmarking, by 2020)	2. Production process units’ energy consumption of 5.92% of FOEB (fuel oil equivalent barrel).
--	--

- **Yield Optimization** : An Advanced Process Control (APC) system was installed and operated at Plant 2 and Plant 4, resulting in product value addition. Bangchak also implemented “Roll Month” derivative exercises to trim costs of crude oil purchase.
- **Energy Efficiency** : As a rule, energy represents the key cost for production processes. At Bangchak, non-renewable energy is consumed, whereas renewable energy is advocated. Through assorted projects, the company has applied the management system to raise continuously its energy efficiency and to conserve the environment with a consumption goal each year. The energy consumption and plan were tracked for optimal results. Below are the goals.

Performance in 2016

Bangchak invested some THB 80 million in a new automatic power intake/offtake administration system, replacing the old one, for enhanced power distribution security and lower risks of unplanned shutdowns. This enabled it to control and administer power intake/offtake with greater stability, adjust it more promptly, thus lowering unplanned shutdown risks due to power system fluctuations. Bangchak is aware of its need to run energy reduction and energy-saving projects in the business group. This year, two projects were therefore completed, resulting in /more than 800 terajoules of energy saving.

Refinery Business Group’s energy efficiency improvement projects



Refinery Business Group’s performance outcomes

Energy intensity index (EII)					Process unit energy consumption [% of FOEB]				
Target	106	107	109	102.5	Target	6.00	5.89	6.07	5.92
Actual	109.8	114.4	105.8	103.1	Actual	5.75	5.96	5.70	5.69
	2013	2014*	2015	2016*		2013	2014*	2015	2016*

* Annual major turnaround during these years

This year’s energy consumption went as planned at 5.69% of FOEB, whereas the EII of 103.1 was slightly over the goal due to maintenance work at the cogeneration unit, so it was necessary to add power generation and steam capacities from boilers instead, which accompanied lower efficiency.

Future plans

To reduce energy consumption and increase stability to electricity and steam generation, Bangchak constructed a gas turbine generator, due for completion in 2018. This generator can replace electricity and steam generation from boilers, which have lower efficiency, while lowering fuel oil consumption. In addition, the following projects will proceed:

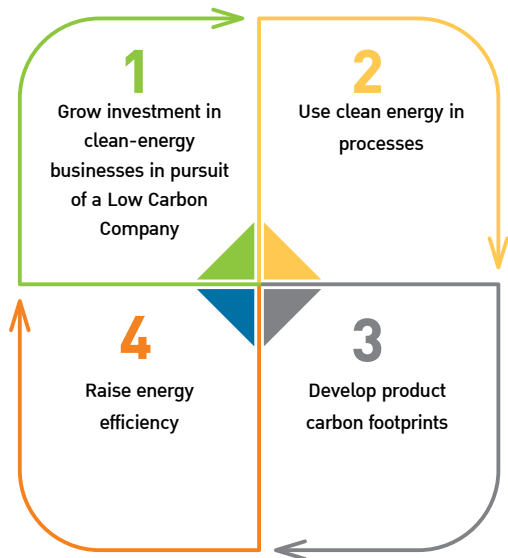
1. Installation of a system to re-direct naphtha to the distillation unit to lower energy consumption at the crude distillation unit’s furnace at Plant 3
2. Installation of an additional heat exchange system to the water system at the Desalter unit of Plant 3’s crude distillation unit
3. Installation of a system to take boilers’ effluents for low-pressure steam production from it at the Gas Turbine Generator
4. Installation of a system to use low-pressure steam instead of medium-pressure steam at the Gas Turbine Generator.



Climate change

Recognizing problems brought about by climate change and natural catastrophes, which wreak havoc on lives, properties, and natural resources, Bangchak executed proactive, responsible business moves. Besides reducing energy consumption, which contributes to such problems, the company has set a corporate KPI for 2017 for cumulative carbon dioxide emission within the group of companies so as to demonstrate their collective intention to curb the global temperature rise to within 2 degrees Celsius.

Strategy



2020 goals

60%
Cut 60% carbon dioxide emission with carbon offsetting of Bangchak's renewable-energy businesses of affiliates

100%
Replace the entire fuel oil volume with natural gas for production processes

Performance of 2016

Bangchak's investment in renewable-energy businesses is getting more visible. Capital mobilization on the stock exchange was carried out by subsidiary BCPG Plc to operate solar farms and renewable energy, with a goal to add 1,000 MWdc, coupled with investment to add biodiesel capacity by 520,000 liters per day together with ethanol capacity by 150,000 liters per day.

Bangchak's overview of carbon dioxide emission in 2016

(Tons of carbon dioxide equivalent, TOCE)

Operational control approach (TOCE)		Equity share approach (TOCE)	
Co ₂ emission 1,129,362	Co ₂ emission 2,362,540	Co ₂ emission 1,105,389	Co ₂ emission 1,305,207
Co ₂ emission from Biogenic 37,157 ¹	Co ₂ emission from Biogenic* 77,797,252 ²	Co ₂ emission from Biogenic 7,907 ¹	Co ₂ emission from Biogenic ² 16,555,277
2015	2016	2015	2016
(exclude biogas consumption at UBE)	(Include biogas consumption at UBE)		

¹ GHG emission from biogenic in UBE only.

² This was the first year in which the report was done by aggregate from subsidiaries.

In view of Bangchak's (Refinery Business) GHG emissions of 2015 and 2016, one finds that this year's emissions are 10% lower than the base year (2013), mainly due to the annual turnaround maintenance of the distillation units. When compared per product unit, this year's emissions were 8% lower than the base year. Note that the average refining capacity of 101.4 barrels per day was 10% lower than the base year

".. When we are in a place where water management is already in effect, we think it is normal and may forget how difficult it was to build and install a system of water for the people's consumption. As all of you have already helped to construct such as system, you appreciate how difficult it is.."

His Majesty the late King Bhumibol's discourse to the Committee and Members of the Druggist Association in audience at Chitralada Villa, April 16, 1981.



Water Consumption

For the last few years, Thailand has experienced severe drought, clearly caused by climate change, which posed adverse impacts on households, agriculture, and industry. Bangchak recognizes its roles and responsibilities as a large industry in urban area to reduce water consumption and properly manage wastewater quality and quantity, since plant construction. In 2015 Bangchak established a Refinery Water Management Taskforce to systematically and worthily manage water consumption in both short and long terms so that it does not affect communities. As a result of initial reduction and a number of measures, the water consumption has been continuously reduced. Next improvement might be a harder step because advance technology with high investment may be needed. In addition, it initiated a feasibility study to reuse and

retreat treated water from Bangkok Metropolitan's wastewater treatment system with additional treatment and further use in the refinery.

2016 achievement highlights (G4-EN8)

Bangchak used 2,302,777 cubic meters of water produced by the Metropolitan Waterworks Authority. Additional 49,517 cubic meters was drawn from the Chaophraya River and stored for tank cleaning. This resulted in 2,352,294 cubic meters of water use. The ratio of water used per barrel of oil produced is 0.061 cubic meter/barrel. This number is less than that of last year, thanks to reuse and recycling of water efforts.

This year Bangchak reduced water consumption and water discharge to public waterways, accounting for 73,177 cubic meters 2.1 % of total water used by maximizing its consumption efficiency. This included reduction of water losses, reuse, and recycling of water. Additional projects in 2017 are as follows:

Key strategy

- Apply 3Rs to improve water consumption efficiency
 - Reduce
 - Reuse
 - Recycle
- Manage water consumption with state-of-the-art technologies.

2020 target

- Use water efficiently. Control new water intake to no more than 54 cubic meters / KB

- Reduce by 15% of tap-water use (2015 is the base year)

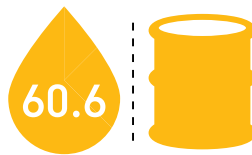
2016 achievement highlights

2016 plan	Achievement
1. Use reverse osmosis to purify water obtained from the wastewater treatment unit for further use in the cooling tower.	• Reduced water use by 73,177 cubic meters / year (2.1% of total water demand) (G4-EN10)

Results



Cut tap-water use by 73,177 cubic meters or 2.1% of total water demand



60.6 cubic meters / KB Water used per thousand barrel of oil produced



* Based on water consumption data in Phra Khanong District, where the refinery is located and with 1.85 persons/household. Average consumption here is 0.56 cubic meter/person/day or 1.04 cubic meters/household/day.

Future Plans

- Increase the capacity of the existing Reverse Osmosis System simultaneously with the water supply treatment unit using reverse osmosis / electro de-ionization systems as pre-treatment prior to demineralization at the power plant
- Conduct water footprint for water management throughout product life-cycles.



"... then we need "filtration" to treat contaminated water to turn it into clean water and let it flow for agricultural use. The excess water will then be discharged to sea without polluting the sea.

His Majesty the late King Bhumibol's discourse to the corps of Ambassadors and Consuls of Europe, Africa and Middle East in audience, led by the Minister and official of the Ministry of Foreign Affairs, December 29, 1989.

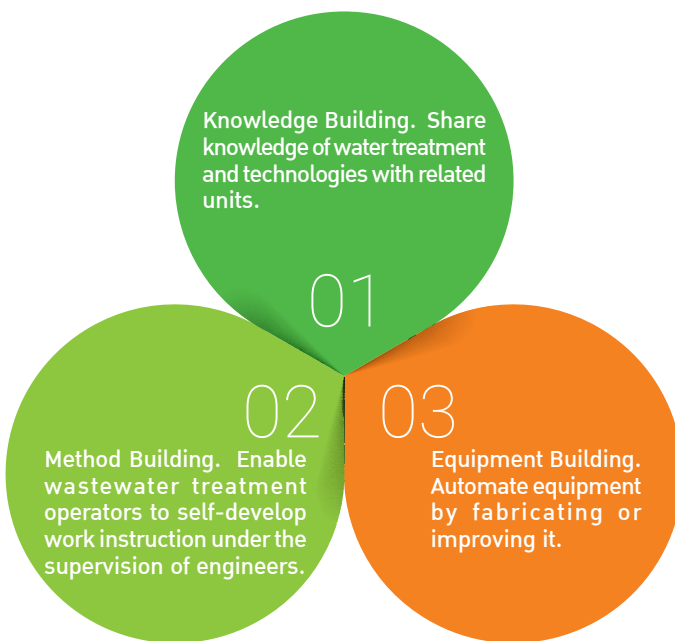
Water Pollution



Bangchak treats and improves the quality of process wastewater by using physicochemical treatment and biological treatment so that the water quality may be better than effluent standards. In addition, the treated water is processed to a filter system for further recycling and use. The quality is analyzed by an in-house laboratory registered with the Department of Industrial Works (DIW) and certified with ISO/IEC 17025. The readiness of equipment are monitored by the assigned staff. The quality of the effluent is reported online from the refinery's control room the Department of Industrial

Works (DIW) prior to discharge. Environmental billboards showing the quality of discharged water were installed within the surrounding communities so that stakeholders has confidence in its environmental protection and measures. So far, the quality of discharge has continually been superior to the environmental standards.

Strategies



2020 targets



- Wastewater treatment operators know, understand, and can operate the system.
- Develop and improve the system to become more automatic.

2016 achievement highlights

This year Bangchak conducted turnaround maintenance, causing fluctuation in the wastewater quality fed into the wastewater treatment system. Therefore, it implanted additional measures as follows:

- 1) Used additional sand filter to remove solids from wastewater generated by maintenance before entering the wastewater treatment system.
- 2) Treated and disposed of expired chemicals or concentrated wastewater by external parties.
- 3) Prepared and closely supervised wastewater treatment operators' to efficiently operate the system. Therefore, the quality of discharged water was continually better than standard requirements. The total volume discharged to public water ways was 839,945.3 cu.m. (G4-EN22)

In addition, Bangchak organized two sessions of training on wastewater treatment techniques for operators to strengthen their capability. To be able to continually monitor water quality data, it also developed Wastewater Treatment Unit (WWTU) Daily Report Guidelines for operators.



Future plans

Bangchak plans to invest THB 26 million to replace the sludge - drying bed with a solid /sludge separation unit. This unit will reduce the volatile organic carbons (VOCs) emission into the workplace. Furthermore increase in continuity of bottom sludge drainage help sustain the stability of the wastewater treatment system. The unit is expected to complete in 2017.



Air Emission



Keenly aware that its emissions may be a concern to communities, Bangchak uses fuel gas and natural gas, considered the cleanest energy sources in its production processes. As a result, emission to air is far better than governing emission standards. Bangchak continues monitoring the quality of air emission by using on-line measuring devices and periodical measures by , third-party to ensure that the quality of ambient air around the refinery always meets or superior to the

emission standards. Any abnormal will be investigated, and measures will be determined to prevent recurrence. These will be reviewed and continually improved by the management team of the refinery in accordance with the ISO 14001 Environmental Management System Standard in a proactive approach.

2016 achievement highlights

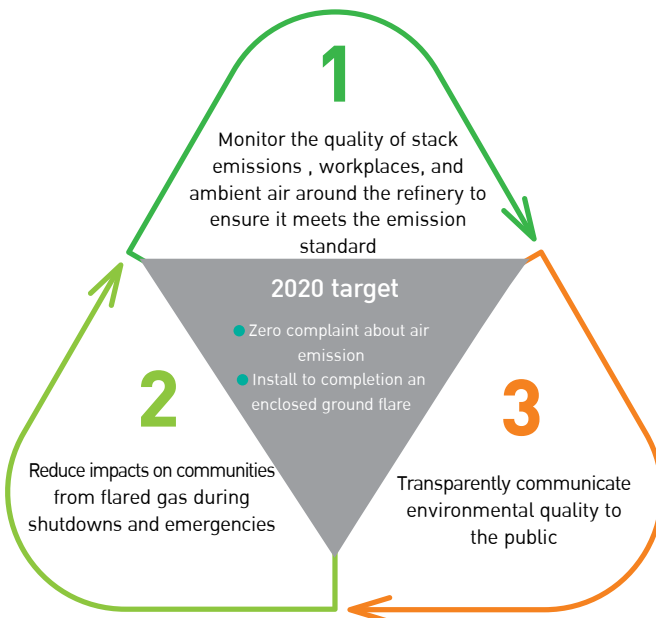
Bangchak installed continuous air emission devices in accordance with proactive environmental protection as follows:

Air emission monitoring

- Installed five on-line air emission monitoring devices to measure total volatile organic carbons (VOCs) in production areas, the tank farm, and the wastewater treatment system.

- In addition to those installed to the north and east, Bangchak installed the third air emission monitoring system located at the south side of the refinery at Sai Jai Thai Foundation office, Sanpawuth Road.

Strategies



Reducing impacts on communities from gas release

- Fabricated and constructed an enclosed ground flare to reduce impacts of flared gas on communities, with expected completion by 2018.

Transparent communication of environmental quality to the public

- Install two additional public environmental monitoring billboards at Sai Jai Thai Foundation office on Sanpawuth Road and at the west gate next to the old railway road, Bang Na, for a total of six public environmental billboards.



As part of proactive environmental protection, Bangchak has established a new team called the Contractor Environmental Officer Team, which focuses on provision of awareness and promotion of active participation among contractors on environmental protection during the turnaround maintenance. They are to ensure that contractors acknowledge environmental information, participate in activities, follow Bangchak’s environmental practices, including conducting daily audit at the work site. If deviation is identified investigation is conducted, to identify root cause(s), determine measures, and initiate immediate actions to prevent recurrence. The benefits of this initiative are to minimize potential environmental impacts, promote safe work environment, reduce incidents and injuries, and ensure contractors’ compliance with laws.

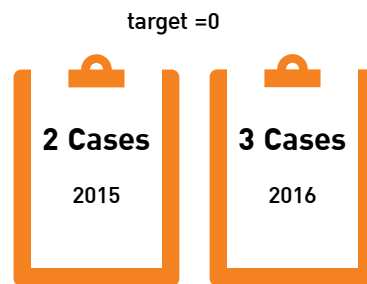
The above activities are part of Bangchak’s proactive environmental management system, which has been ISO 14001:2015-certified for 19 consecutive years. In addition, it has earned Green Industry Level 5 (Green network) certification, the highest green certification from the Department of Industrial Works.

Future plans

- Continue control of fugitive VOCs
- Utilize on-line air emission data for trending as part of its air quality surveillance program for communities around the refinery.

Results

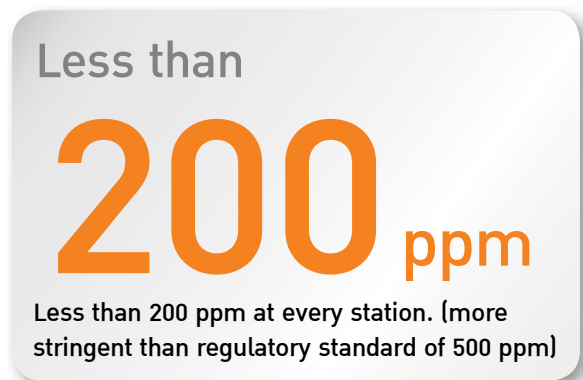
Complaints on air emission



Quality of air emission monitored by a third party



Fugitive VOCs (ppm)



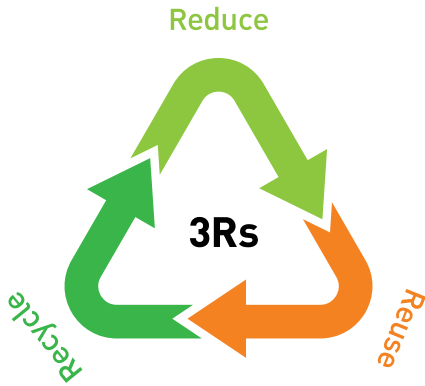
Waste



Bangchak considers waste management vital, of which strict compliance with applicable laws and regulations is the foundation. Furthermore, it has implemented the 3Rs (Reduce, Reuse and Recycle) waste management principle so that it minimizes waste generation and enable itself to manage waste to its full value. Bangchak is determined to reduce waste to landfill to zero, except waste which is technologically infeasible to manage, for example, heat insulation.

There was a major turnaround maintenance in 2016; as a result, more waste was generated. However, by implementing 3Rs, Bangchak managed to dispose of 85% waste generated. In other words, it achieved the 15% waste generation goal.

Strategy



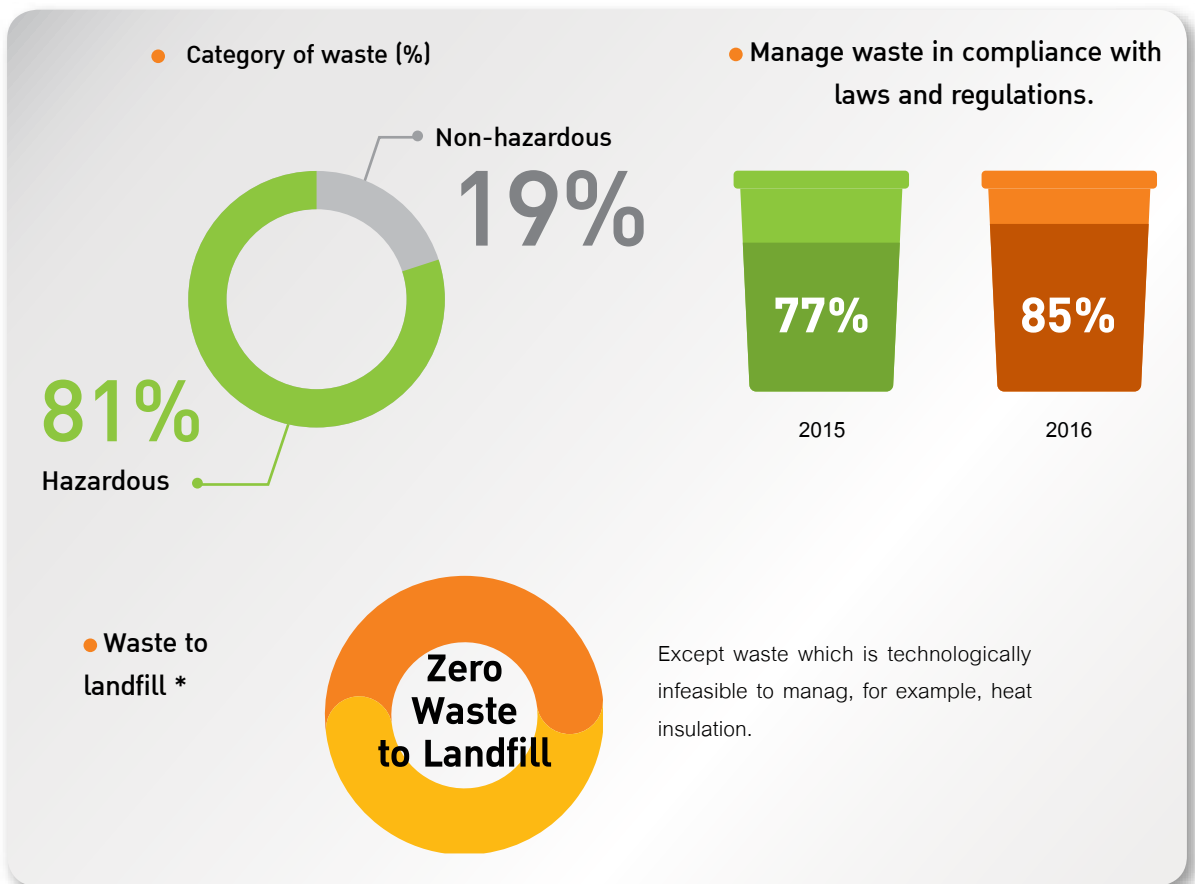
2020 target



- Minimize waste disposal
- Zero waste to landfill

- Continue implementing 3Rs.

Results :



Developing sustainable products and services



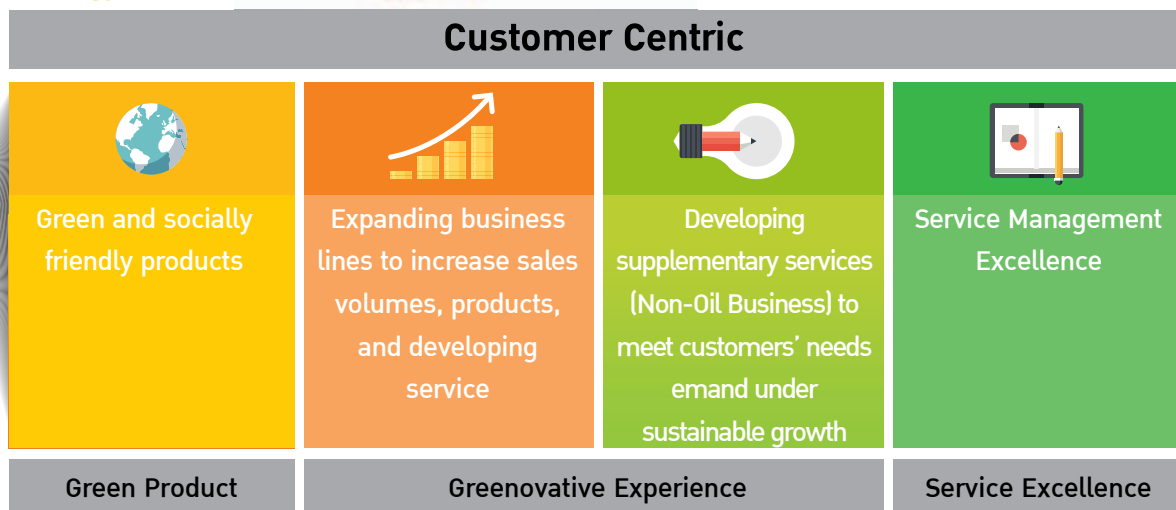
With a Vision to become “The Most Admired Brand” for service stations for Thai citizens, Bangchak has adopted a “customer centric” business strategy to respond to the needs of customers ranging from end user groups, dealers and co-ops, to industrial groups. Under the “Bangchak Greenovative Experience” conceptual framework, developing products and services with innovative technologies that are environmentally friendly (green) and socially friendly has always been its main focus. To ensure that all products and services are up to this standard, it enforces a program to track all goods with marketing tools including Net Promoter Score (NPS), Brand Loyalty, and Customer Satisfaction. For service quality, it enforces the uses of the Mystery Shopper program (service station facility audit by unclassified and undisclosed company representatives), mobile lab (product quality inspection by company’s mobile lab facility), and service audits.

Bangchak’s analytical research on customers’ needs and expectations strongly suggests that customers demand good quality and speedy service, convenient locations, adequate supplies, a variety of supplementary services such as food stores and restaurants, convenient stores, and a sufficient number of clean toilets. Good quality, green products are high on customers’ list. It has therefore deployed a business strategy with clear goals toward the findings and, as a result, driven itself to success and achieved outstanding performance.



The Most Admired Brand

Strategy



2020 Targets



To become customers' "The Most Admired Brand" for service stations, evaluated with Net Promoter Score as the indicator



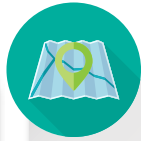
To push the sales volume up from 300 to 500 million liters/month



To develop non-oil businesses and supplementary services at service stations in response to customers'



To develop non-oil businesses and supplementary services at service stations in response to customers' needs



To expand the number of service stations more than 700 nationwide



To upgrade the community retail service stations to the standard service stations

Bangchak Greenovative Experience

Bangchak Greenovative Experience is developed for customers to get Greenovative experience together with special value-added care suitable for all ages in modern society, combined with social participation to sustainably conserve the environment in parallel with business and economic growth as well as social and market consumption in support of Thailand 4.0.

Net Promoter Score

NPS is a customer satisfaction index derived from word-of-mouth or member-recruit-member marketing techniques, beginning with questions like, "Which gas service station do you like and would recommend to others?" These techniques were developed from consumer behavior to refer the brand of preference to others to also enjoy such products and services for further satisfaction. NPS is a very famous tool worldwide.



2016 Business Performance

Green and socially friendly products

- Developing innovative products: Bangchak Green S Revolution. All gasohol products at all service stations perfectly fit all gasoline engines, either direct-injection gasoline (DIG) or old engines. All products are blended with a cleaning additive, protecting nozzle clogs, perfecting combustion, reducing toxic emissions, minimizing friction and lubricating cylinders, leading to higher engine power and lower fuel consumption while maximizing engine capacity.
- Promoting sales of community products as supplementary products for alleviating farmers' suffering, especially during periods of market farm product oversupply and price downturns.



Expanding business lines to increase sales volumes, products, and developing service station image

- Expanding retail service stations with the new standard by 24 stations
- Modernizing the image of 311 service stations along main roads to reflect Bangchak's highly competitive capability in supportive management structure and service under the concept of "Renovate, Bright & Clean, Refresh"
- Developing a new service station prototype with innovative technology that can generate a different experience for consumers and focus on environmental preservation and reducing greenhouse gas emissions
- Upgrading high-potential community retail stations that are ready to expand their businesses with a more complete set of supplementary services to better respond to customers' needs by increasing their competitiveness with the "Co-Op Turn Pro" program and CO-OP Coaching
- Growing the number of fleet card users via the Bangchak Fleet Card-TMB program, jointly developed with Thai Military Bank, and the pre-paid Bangchak Cash Card-TMB program.
- Enlarging the new-industry customer base and taking care of customers by means of sales programs and after-sales service programs



Additional displays of Greenovative Experience



EV Charger

EV (Electric Vehicles) installation for electric car charging



Nature

Lavatory rooftop and open-ceiling design for natural lighting



Rooftop

Rooftop ventilation design for natural cooling



Eco Firendy Inverter

Procuring only the inverter system for all air-conditioners to save up to 20-30% on energy bills



DIMMER

Planting electricity dimmers around glass walls in store areas to save energy



LED

Use of LED (light emitting diode) light-bulbs throughout the station to save energy



Green S Revolution

จำหน่ายผลิตภัณฑ์ที่เป็นมิตรต่อสิ่งแวดล้อม อาทิ เช่น ผลิตภัณฑ์เชื้อเพลิง สูตรใหม่ Green S Revolution



Solar Roof Top

Installation of a solar rooftop with the Single One Roof building design and provision of generated electricity to customers for mobile-phone charging



สินค้าทางการเกษตร

Promotion of sale of local produce brought and participated by farmers.



Developing supplementary businesses to serve customers under the “Single One Roof” concept

The Single Roof concept

is a retail-business model housing all supplementary services to serve customers under one roof for their convenience

- Assigning **Bangchak Retail Co., Ltd.**, to expand and run supplementary businesses in all stores including
 - 36 Inthanin Coffee shops and Inthanin Garden
 - 6 SPAR branches
 - 11 Mini Big C stores
 - 3 Lemon Kitchen restaurants
- Developing a new convenience store business with a joint venture from the Netherlands under the “SPAR” brand under the “Fresh & Easy Food Market” concept. Six retail stores have been in operation in Bangkok and its vicinity. In addition to products manufactured by Bangchak, local produce and OTOP (One Tambon One Product) products from farmers and communities, as well as products under the SPAR brand, are available. Sale of SPAR brand products is believed to exceed 50% of the overall sale. The store houses two main areas, a 300-sq.m. neighborhood store and a >500-sq.m. supermarket. Part of these areas is allocated to be a ‘Co-Working’ space with free-WiFi to serve customers. The plan calls for 400 stores within 2020.

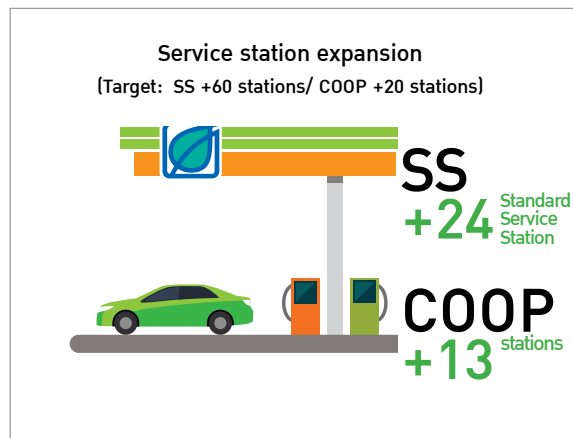
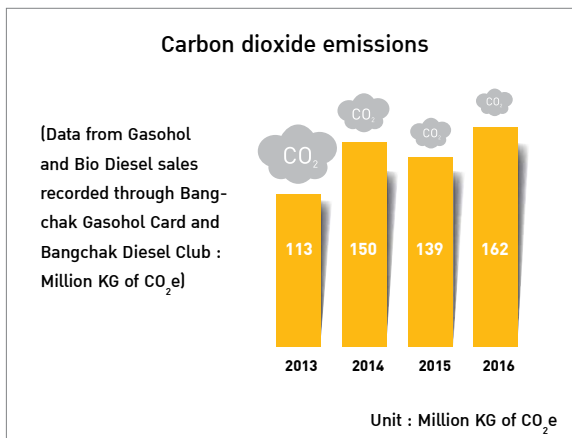
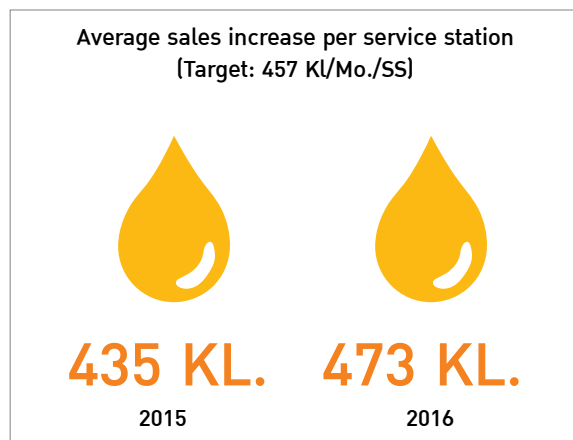
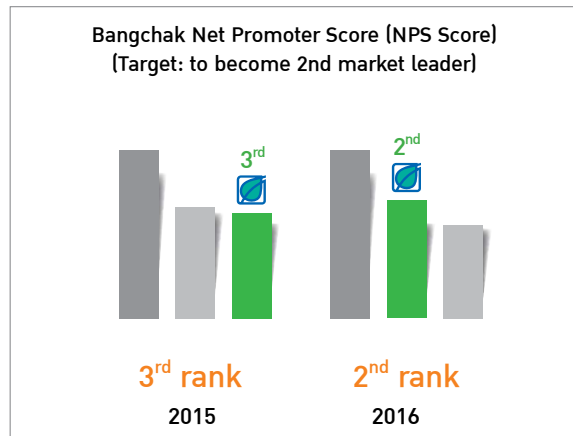
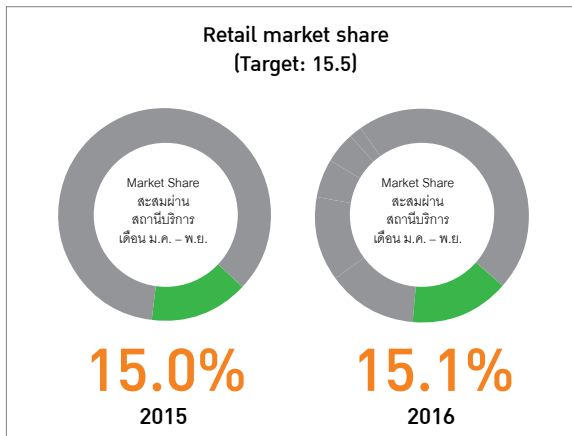


Development of services and management system toward excellence



- Expanding Automation Point-of-Sale (POS) system for all service stations to increase potential and work efficiency for all station owners and dealers, accelerate work at the forecourt, quicken financial transactions, and prevent losses and fraud. Moreover, POS data can significantly enhance analyses to identify ways to continuously improve services to maximize customers' satisfaction in the future.
- Developing a Standard Operating Procedure (SOP) to help define standards of existing and new services to fit the behavior of customers. Organizing related training for more than 4,000 service personnel from over 700 service stations to fully understand modern servicing standards and adapt their service attitude toward service excellence.
- Service Monitoring and Auditing by Mystery Shopper Project and Mobile Training & Lab (Mobile Training and Product quality check at the service station)
- Implementing a Co-Op Coaching program to upgrade management and service levels for international standards.
- Developing programs to enhance the income of station owners and dealers
 - Continuous sales promotion for each customer group, such as projects under the Royal Project jointly organized by co-ops and BAAC (Bank for Agriculture and Agricultural Cooperatives). (G4-16)
 - Organizing special sales promotions of local produce and products from co-op members during price downturns.
 - Setting up a new food and drink business development group to increase choices of income for owners

KPIs



MR Consultant (Smart MR)

is a management program designed to develop marketing representatives to become professionals who can guide owners and dealers to increase revenue and profit from oil businesses.



Innovative Products and Services in 2016

Fuel Automation Point of Sale and Tag Attendant development projects

Because of incomplete installation of the Automation POS system at all fuel dispensers at service stations, financial transactions are imperfect, causing a shortage of cash, loss of cash, and fraud that are hard to inspect resulting in high forecourt staff turnovers. Realizing the benefit of the system, Bangchak initiated a development project to install fuel automation POS to collect sales data, financial transactions, membership information, customer service, and receivables, as well as gasoline in stock. These data and their movements, current and historical, can then be promptly scrutinized and reconciled. The Tag Attendant development project was also introduced to identify activities performed by service personnel by using tags. For instance, forecourt operators must touch the tag attached to the dispensing unit to record their names and services provided from the beginning to payment made by customers. All activities can be audited to identify any errors if they are operational or financial. Corrections can then be made to resolve problems, like missing cash. The system also reduced work complexity and assessed work processes, increasing transparency while reducing workers' distress, eventually slashing the turnover rate from 25% to only 10%. All data can also be analyzed to initiate development of services and proper customer relationship activities.

Bangchak Green S Revolution:

An innovative gasoline fit for all types of engine, whether new engines like direct-injection gasoline (DIG) or old ones. Additives clean engines, preventing nozzle clogs, perfecting combustion, reducing toxic emissions, minimizing friction, lubricating cylinders, leading to higher engine power and lowering fuel consumption while maximizing engine capacity.



Professional Franchise Development:

scheme to study and develop pragmatic management control for service station owners and dealers to manage their stations efficiently.



BCP Link Application development:

This computer and mobile-phone application provides links and communication channels between Bangchak and service station owners and dealers, other Bangchak businesses, and relevant people in other functions on the sharing of information, news, activities, and other programs, to optimize the business.



What is a pre-paid Fleet Card?

Bangchak Prepaid Card and Bangchak Prepaid card plus are an innovation of prepaid card designing for SMEs to better control and use. There is no need for Bank credit approval and ready to launched in Q2, 2017.

Bangchak sharing for Thai rice farmers

One of the projects Bangchak has conducted continuously, Bangchak Sharing to Thai society. In year 2016, Thai farmers faced with extremely low price of rice, jasmine rice in particular., Bangchak help alleviate the problem by direct purchase from rice farmers for resale to Bangchak's customers with discount of more than 300 tons with a monetary value more than 10.5 THB million. Such program has created significant the distribution of income for more than 24,000 households in the Northeast.



CO-OP Coaching Program

Co-operative (COOP) service stations have grown and become stronger, leading to more business expansion among the group. However, not all co-op stations are equally successful because of a lack of confidence and skills in business, as well as management expertise. Recognizing the need to develop and equip these dealers with management knowledge and skills, Bangchak Green Net Co., Ltd. experiencing in the operation of 190 service stations, has been assigned to set up a dedicated team to provide training and development to co-op service stations. During 2016, the program was joined by 24 co-op stations resulting in X% higher monthly sales.



Future Plans

- Expanding mre than 100 service stations for Greenovative Experience
- Developing the convenient mart "SPAR" to ease customers' access
- Developing and distributing environmental friendly lubricant oil and light fuels.


Product Transport



To ensure that deliveries of products through various distribution channels, namely pipelines, trucks, and ships, at customers' service stations, and at industrial sites are made with the correct types and volumes of products and with punctuality and safety, Bangchak raises the efficiency of business partners (transport operators) to the same standard as that of the company which in turn enhances its overall efficiency in product transport. It is a joint effort for making partners' business strong and sustainable. Bangchak therefore drew up its "Supplier Code of Conduct" for partners to observe for business sustainability. To this end, training and seminars were provided to improve the work environment, while various activities fostered relationships between business partners and Bangchak. This develops business partners to their maximum potential.



2020 Targets

Product transport by large trucks (semi-trailer trucks) to increase by 2% per year	Product delivery to meet future distribution plans (based on expansion of the retail network) by 350 stations in 2020	Zero Accident	Complaints about product transport to be under 3.5 cases per 1,000 delivery trips
<div style="display: flex; align-items: center;">  <div> <p>Strategies</p> <ol style="list-style-type: none"> 1. Expanding mre than 100 service stations for Greenovative Experience 2. Developing the convenient mart "SPAR" to ease customers' access 3. Developing and distributing environmental friendly lubricant oil and light fuels. </div> </div>			

Project to increase product transport by large trucks (semi-trailer trucks)

The change from using oil tanker to semi-trailer (40,000-liter capacity) reduces not only transport costs but also greenhouse gas (GHG) emissions per oil unit and reduces risk for accidents. Bangchak has seriously driven the change by giving discounts to station operators who opt for semi-trailer trucks. The attempt has resulted in an increased use of semi-trailer trucks by up to 5% from the previous year, reflecting cost savings of over THB 38 million. This also lessens the chance for accidents and reduces fuel consumption, thus, carbon dioxide emission reduction more than 3,000 tCo2e.

Plan for 24-hour oil delivery

Bangchak has developed a transport plan to enable 24-hour oil delivery which involves having two drivers per truck instead of one without increasing the number of trucks. This has led to mutual gains for Bangchak, partners, and station operators. Apart from direct benefit to itself, the 24-hour delivery can assure station operators that they will always have products in stock for sale, thus increasing their business opportunity. Business partners can also make more money from more delivery trips with their fleets.





Smart Transportation

This project further improves the Transportation Management System (TMS). Currently, all oil trucks are equipped with CCTVs and GPS to facilitate the monitoring of delivery schedules, delivery routes, delivery time as well as driver behavior and driving speeds. All information is sent to the control room, where operators work around the clock to keep track of oil trucks with the assistance of the notification system to prevent accidents and fraud along delivery routes. This year Bangchak has made another development in this area. With a mobile application, information from CCTVs installed on oil trucks can be traced on smart phones. Station operators can view real-time movements of delivery trucks and track their locations throughout the routes, starting from oil depots. All parties involved can check the delivery status at the same time. The new system has enhanced transparency and satisfaction, while reducing complaints about product transport.

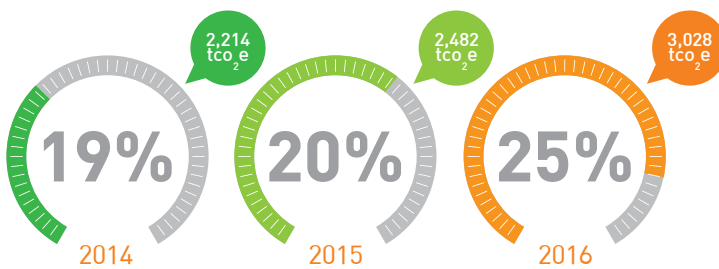
Developing professional truck drivers

Bangchak provided training on professional driving for truck drivers to equip them with knowledge of safe driving and firefighting, as well as depot operations. Learning about TMS and information management on the SAP system helps enhance drivers' confidence and professionalism. The attempt has resulted in a better quality control for delivering good and efficient transport to station operators

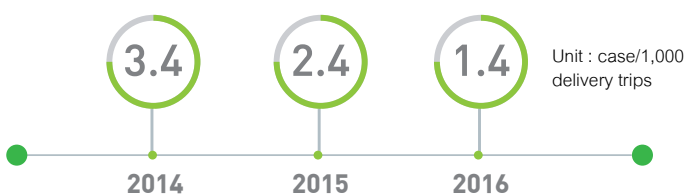
The strategy has brought about an outstanding transport performance, that is, Bangchak can manage transport contract more efficiently (80%). Bangchak calculate this indicator from distribution plan/ actual number of each supplier's truck per day.

KPIs

Ratio of clear-fuel transport by semi-trailer
 (Target: increase by 2% per year to reduce CO₂ emission)
 CO₂ emission Reduction : tCO₂e (G4-EN30)



No. of transport complaints
 (Target: ≤3.5 complaints per 1,000 delivery trips)



No. of Accidents*
 (Target: Zero accident)



(*cases of over THB 1 million damages)

Innovation

Development of Auto-Ordering System (AOS) and E-Complaint System : To efficiently manage product orders from retail stations and efficiently plan punctual delivery, Bangchak has developed AOS to help station operators calculate their daily sales volumes and stock balances. They can then regularly place an automatic order with Bangchak using AOS. Retail stations can thus manage their stocks to ensure availability of products for sale. Essentially, transport plans and the number of trucks to be used can be better managed. Starting this year, AOS has been implemented at over 200 retail stations operated by Bangchak Green Net Co., Ltd.

E-Complaint System : Bangchak has developed an E-Complaint System to ensure that complaints about product transport are systematically managed. Each step in dealing with problems can be followed up, and the cases can be closed efficiently. Moreover, in 2017 the online complaint-receiving system will be linked to the payment system, in which fines can be automatically calculated and added to transport service charges, particularly where complaints made on transport operators are so serious that Bangchak's corporate image may be tarnished. This is another way to maintain the standard of transport service since penalty is evident.



Plan for backhaul

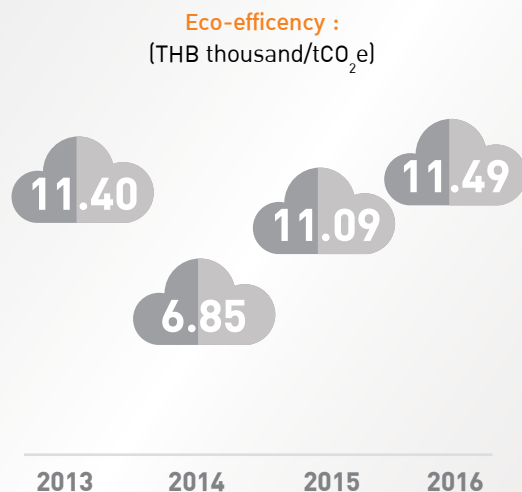
In general, unloaded trucks on their return trips to oil depots after delivery of products at retail stations or industrial sites are considered as loss of business opportunity. Bangchak has devised a plan for making use of backhaul. Empty trucks are used for receiving ethanol from ethanol plants located on return routes to feed the refinery's oil production processes. This year Bangchak made use of over 170 trips of backhaul, resulting in cost reduction for feedstock transport by over THB 0.5 million.

Future Plans

- Improve TMS so that all transport operators can join the 24-hour monitoring of product transport via CCTVs
- Develop a system to prevent drowsiness while driving – a system that can alert drivers while notifying the operator on duty at the control room in oil depots.

Eco-efficiency

Eco-efficiency indicates the proportion of corporate economic growth to environmental impacts. Financial performances, e.g. revenue, profit, etc., present the economic growth. and the volume of resources used or waste emitted can be indicators for the environmental impact. The higher the eco-efficiency, the more efficient production. Bangchak considers EBITDA an indication of economic growth for a unit volume of carbon dioxide equivalent (which is a currently significant environmental parameter for the petroleum industry). It was found that the year 2016 had higher value of Eco – efficiency than last year. It shows that the company can generate revenue with less emitted GHGs due to better energy efficiency.



Environmental Cost Accounting

Bangchak has prepared and developed environmental cost accounting, embracing oil refining processes, Bangchak Oil Depot, and Bang Pa-In Oil Depot. Such accounting has been publicized to external agencies and investors through its quarterly MD&A articles and IR Newsletters. In addition, knowledge has been constantly transferred to students and other interested agencies.

This year's total environmental expenses dropped by THB 19,707.41 million (21%) from last year. Most of the drop (99%) was for material costs of product outputs, which fell by THB 19,672.31 million with the 16% drop in the world oil price and the major turnaround maintenance of refining units during the months of February and March. As a result, the material costs of non-product outputs rose this year by THB 34.82 million, corresponding to slop oil, which climbed by THB 33.01 million.

This year, expenses for pollution control equipment fell by THB 83.29 million, or 21%, most of which was depreciation of pollution control equipment, which dropped by THB 108.56 million. As for the expenses for environmental protection, one notices a mild rise.

Also dropping was the financial benefit of by-products and reuse of scrap (by THB 1.64 million, or 9.52%) because liquid sulfur and glycerin sold for THB 3.32 million less, whereas iron scrap and surplus aluminum sold was higher for THB 1.68 million due to the turnaround maintenance.

(Unit: THB Million)

Environmental cost accounting (G4-EN31) :	2014	2015	2016
Material costs of product outputs			
Crude Feed	106,781.94	79,314.43	60,029.81
Ethanol	7,043.31	6,872.01	6,668.93
B100 biodiesel	3,993.63	4,407.44	4,966.32
Wasted vegetable oil	18.70	19.92	12.93
Chemicals	41.28	106.08	145.04
Process water	29.48	33.02	25.45
Process energy	3,779.22	2,278.92	1,511.03
Material costs of non-product outputs			
Slop oil	142.98	32.49	65.50
Oil sludge from crude/fuel oil tanks	0.25	-	-
Effluent	8.14	9.64	10.97
Excess chemicals from neutralizing pond	0.34	0.26	0.21
Low-quality sulfur	0.04	0.05	0.59
Waste and emission control costs			
Environmental equipment maintenance	53.38	30.34	38.82
Pollution control equipment depreciation	240.94	354.00	245.44
Effluent treatment	6.71	7.38	8.81
Waste disposal	12.72	6.11	21.48
Environmental fees and taxes	N.A.	N.A.	N.A.
Fines	-	-	-
Prevention and other environmental management costs			
Monitoring and measurement	16.73	11.10	24.58
Waste storage area depreciation	0.21	0.13	0.13
Management system operation	0.23	0.30	0.23
Environmental equipment maintenance	0.00	0.30	0.26
Benefits of byproducts and recycling			
Liquid sulfur	(8.64)	(13.30)	(10.18)
Glycerine	(0.38)	(0.52)	(0.33)
Iron and aluminum scrap	(10.27)	(3.42)	(5.11)
Paper	-	-	-

SOCIAL PERFORMANCE





Safety

LWC

Employee **0** Contractor **1**

TRIR

- Employee Male **3.0** Female **1.65**
- Contractor Male **1.7** Female **4.09**

Customer

Net Promoter

Score **2nd** Ranging

Employee

Best Employer Score

68 %

Average training hr

44 hrs.



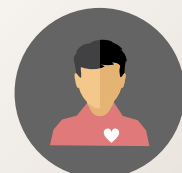
Established
Social Enterprise

"Oam Suk"



Community products
(Rice)

10.5 THB Million



Employee
Volunteer hour

11,673 hrs.
(3.55 THB Million)

Occupational Health and Safety



Safety is vital to the petroleum business, not only for the organization, but also for employees, contractors, and communities. Bangchak's implemented Security, Safety, Occupational Health, Environment and Energy (SHEE) policy requires employee and contractors to perform their tasks safely for themselves and co-workers in accordance with applicable laws and Bangchak's own safety standards. The policy required a functional SHEE organization and an OHSAS 18001 Safety and Occupational Health Management System. In addition, Bangchak established a Process Safety Management Governance Committee (PSMGC) and continues implementing Process Safety Management (PSM), designed by Du Pont since 2013. As a result of these efforts, its safety performance is significantly improved.

Bangchak underwent a turnaround maintenance in 2016. Additional programs and activities included

- A Management Walk Around program to strengthen morale and demonstrate care for employees and contractors
- Teaming up with contractors' safety teams to promote safety awareness through a walk-about campaign
- Communication of safety targets and goals through bulletin boards during the turnaround
- Presentation of safety certificates for contractors who perform work safely without injuries or accidents
- Presentation of safety awards for contractors who comply with safety procedures and requirements, including the use of complete and proper personal protective equipment.



Safety values: The 3Es

- Everyone goes home safely every day :
- Efficient and Reliable Operation :
- Environment and Asset are protected :

2016 safety achievement highlights

Continuing program

- Continued strengthening safety awareness and culture throughout the workforce by implementing the Felt Leadership Program (FL) to lead by example, and conducting Field Risk Assessment (FRA).
- Continued forging a safety culture and awareness to recognize workplace hazards and preventive measures, including developing the Log-out Tag-out Standard, Line Break Standard, and Hot Work Standard.

New initiatives

- Developed Process Safety Information (PSI) and database to compile basic information on production processes and their potential hazards.
- Implemented Process Hazard Analysis (PHA) to identify potential hazards in the production processes and determine proper safety measures.
- Implemented Incident Investigation (II) to identify root causes of incidents to systematically and determine precautionary measures to prevent recurrence.

2016 occupational health achievement highlights

Bangchak continues using a proactive approach. Health Risks Assessment is, hazard control at point sources, and the workplace monitor are introduced so that appropriate preventive measures to risks can be provided as well as the improvement for safe workplace.



Continuing program

- Implemented employee medical examination for pre-employment, employment, and post-employment
- Implemented annual employee medical examination. Such examination included both basic and occupational health risk-specific examination by Bangchak's occupational doctors and industrial hygienists. In the event of unlikely health risks, medical follow-up is provided.
- Implemented international medical and health surveillance program standards. Determined proactive requirements and guidelines for high-risk, medium-risk, and low-risk workforce.
- Implemented an occupational health program for contractors, including workplace preparation, procedures, protective equipment, and education
- Executed medical emergency drills so that Bangchak's emergency rescue team and contracted hospitals understand their roles and responsibilities, consequently enhance coordination and efficiency between both parties

New initiative

- Hired experts to improve occupational health work in alignment with international standards, including OSHA, ACGIH, and NIOSH.



Future plans

Safety Continued implementing three PSM elements as follows:

- Management of Change –Technology: MOC-T
- Management of Change –Facilities: MOC-F
- Pre-Startup Safety Reviews: PSSR.

As a result of its commitment and efforts for safety management, Bangchak's safety performance in 2016 improved significantly despite intensive activities during the turnaround maintenance.

Safety statistics	2014	2015	2016	
			Male	Female
Injury frequency rate (IFR)				
● Employees and permanent contractors	1.4	1.3	0	0
● Contractors	2.7	39.2	0.59	0
Injury severity rate (ISR)				
● Employees and permanent contractors	18.1	8.6	0	0
● Contractors	16.1	300.0	27.09	0
Total recordable injury rate (TRIR)				
● Employees and permanent contractors	3.9	5.2	3.0	1.65
● Contractors	9.4	39.2	1.77	4.09





Customer relationship and responsibility

In pursuit of **The Most Admired Brand** goal, Bangchak has stressed its “customer centric” strategy of developing its marketing catering to customers’ needs and therefore evolved customer relationship with different groups in both proactive and passive ways to achieve sustainable loyalty among its customers.

To this end, below are Bangchak’s four major groups of customers for its analytical work.



End users



Dealers



CO-OPs



Industrial users

Target: The Most Admired Brand

Development of two-way communication tools between customers and Bangchak

Development of systems and technology to support relationship

Relationship management to maintain current customers and obtain new ones

1. Seeking information

- Constant development of offline and online social media:
 - Facebook
 - Website
 - Email
 - Line
 - Mobile Application
- Net Listening Software to mine customers’ data from online social media
- Market representatives
- Call center
- CRM (Customer Relationship Management) developed to accommodate emerging features through the introduction of new marketing programs to enable customers to redeem membership points for items or discounts at major outlets as well as sales promotions
- Installation of automation points of sale at service stations

2. Obtaining services

- Have evolved channels for fuel purchase orders through the call center since 2007 to ease dealers’ and CO-OPs’ purchase orders around the clock and through Web ordering and mobile application

3. Feedback

- Annual market research
- Focus group preparation in search of customers’ needs and satisfaction

Consumers

- Bangchak membership Card and privileges of point redemption (discounts)
- Sales promotions, including
 - CO-OP Centennial coupons
 - Happy Friday, four half-price menu items only for Friday
 - Japan trip prize draws with Inthanin
 - E85 slip stubs for THB 30 off at Inthanin
- In support of farmers, select agricultural products as sales promotion items, including drinking water, emblic myrobalan (Indian gooseberry), tomato juice, dried longan, and jasmine rice

CO-OP operators of service stations/ community service stations

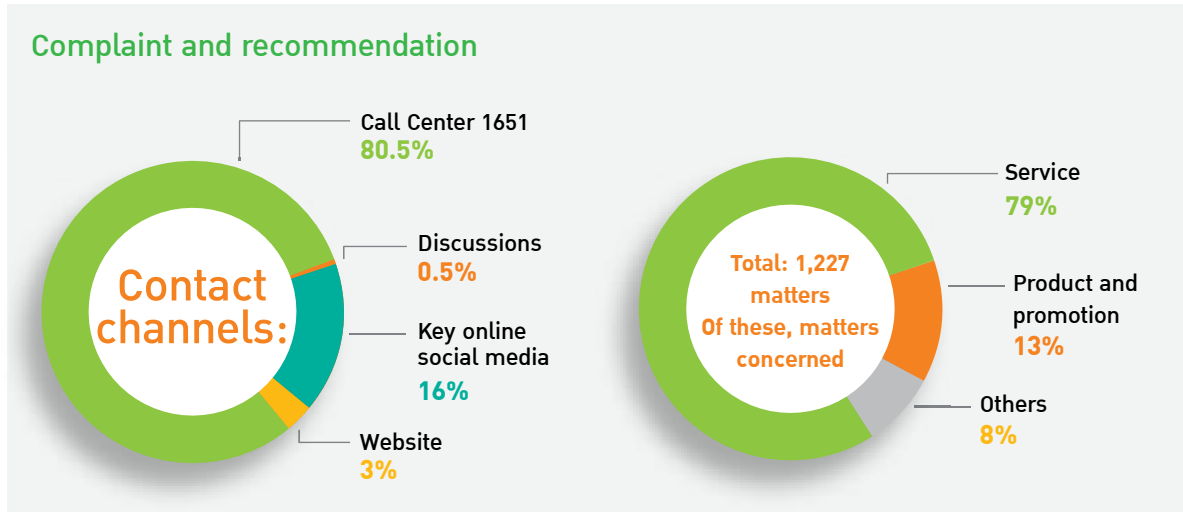
- Increased business management capability through the Triple M course
- Developed Professional Franchise Scheme for higher efficient management of service stations
- Education to develop service station personnel, including education on products and service tasks
- Developed CO-OP Turn Pro Program for community service stations with potential and readiness for operating complete business and supplementary services
- Developed CO-OP Coaching Program and taught service station management by service station supervision experience staff from Bangchak Green Net Co., Ltd.,

Industrial customers

- training on products / emergency planning / after-sales service / equipment support / equipment check / machinery care

Development of complaint channels enabled Bangchak to handle complaints better and acknowledge customers' needs and expectations more. This year therefore saw an increase in the number of complaints, with more filed through Facebook online channels. As a result, complaints closure were achieved as planned, that is, no

more than 2.5 days each. Moreover, in case of any damage to customers, Bangchak could provide compensation that satisfied them and were convenient to them, so that they may continue being its customers. Also undertaken was statistical analysis for planning through VOCC (Voice of Customers Committee), which efficiently served as success indicators.

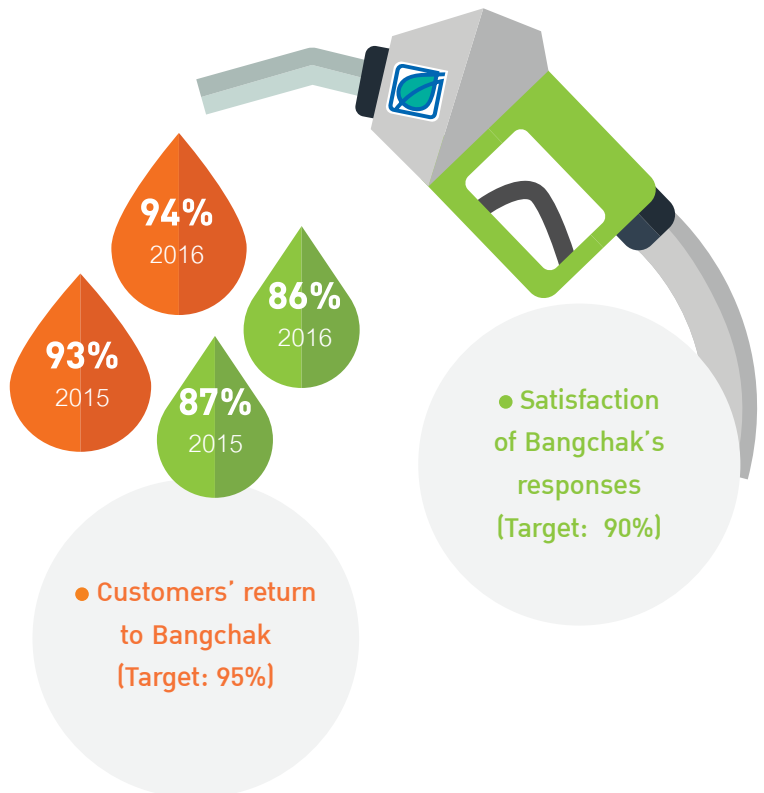


Voice of Customers innovation in 2016

- Bangchak hired a consultant from a reputable educational institute to fix its service format for prompt service. The results, including the Marum Matum Service Project, have impressed customers, earning Bangchak a higher Net Promoter Score.



Results



“.. In doing your civil work, assume your duties as duties. Do not focus on prizes, gifts or benefits. Think of undertaking your duties with full effort as both a prize and benefit that will make Thailand, our country, happy and secure..”

His Majesty the late King Bhumibol’s discourse to government officials on the occasion of Civil Service Day, April 1, 1990.

Employee stewardship



The year posed a major challenge for Human Resources to develop personnel in line with the “Evolving Greenovation” vision and new “I AM” values, along with the existing “BCP” values. Bangchak reviewed and reorganized the management structure to ensure flexibility in all business groups while maintaining “The Best Employer” strategy, which could effectively serve the new values and business growth in time and in line with employees’ needs and expectations. The HR system was



designed and allocated with the guidelines of Sasin Graduate Institute of Business Administration, Chulalongkorn University, together with Aon Hewitt (Thailand) Co., Ltd. (a world-renowned HR consultancy), focusing on four key areas: Compelling Employer Brand, High-Performance Culture, Effective Leadership, and High Employee Engagement.



HR Goal

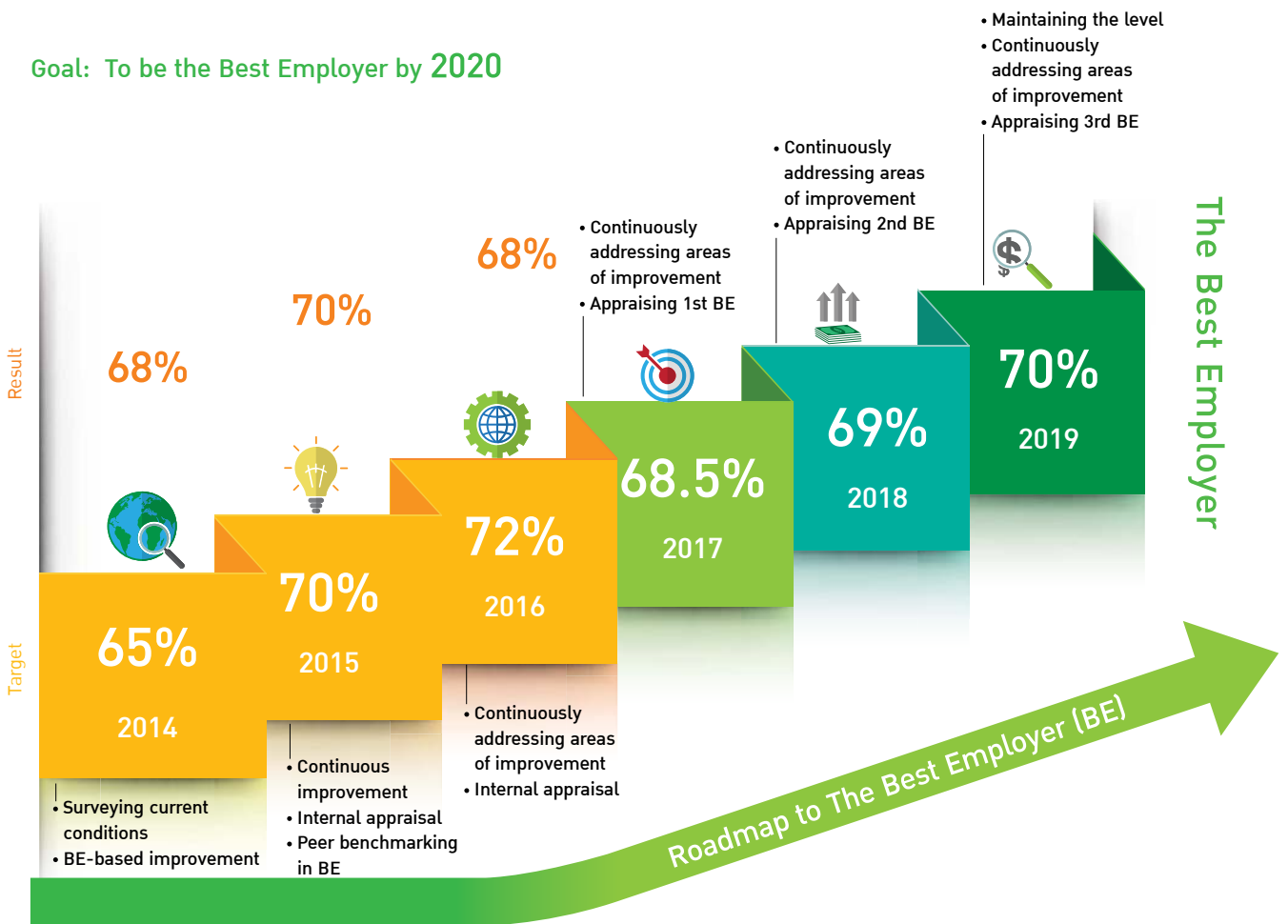




Moreover, Bangchak established a Management Development Sub Committee (Sub MDC) for each business group to screen HR issues before proposing them to the Management Development Committee (MDC). This enhanced the efficiency of employee stewardship to become faster and better serve the needs of each business group, leading to appropriate manpower planning aligned with the corporate strategy and business expansion.

Moreover, the format of performance appraisal, HR development, and human rights audit were improved and transferred to the subsidiaries to ensure that Bangchak's operation is on the right track and does not violate labor laws and regulations.

Goal: To be the Best Employer by 2020



Appraisal criteria for Best Employer





High Employee Engagement

Employee Engagement

Bangchak values high employee engagement as an aspect of operation improvement, measuring the outcome by annually conducting an employee opinion survey. It also gathers the factors to improve different dimensions, formulate plans, and upgrade the standard of HR management to match leading companies and peers. The survey criteria under “The Best Employer” guideline were designed for high employee engagement, effective leadership, compelling employer brand or corporate image, and high-performance culture to achieve the goal of “The Best Employer by 2020”.

In the employee engagement survey 2015, Bangchak conducted the analysis to find the potential for improving the HR system and forging employee engagement. The survey revealed the top three factors to be improved, including talent and personnel management, learning and development, and career path. This led to the development of HR management in different dimensions of The Best Employer.

payment. However, gender affects neither the compensation setting nor promotion.

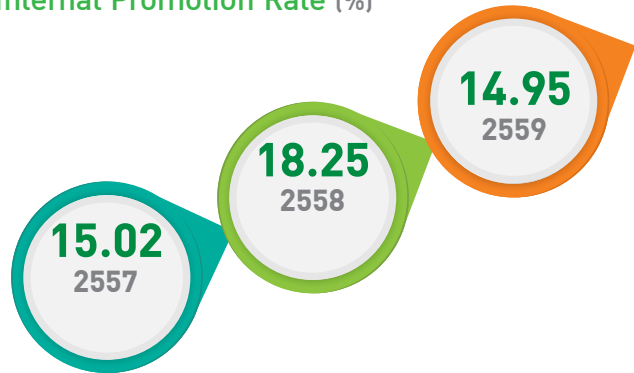
In 2016, Bangchak improved the system of performance appraisal by conducting 360-degree competency assessment to ensure that outcome management is efficient and straightforward. Furthermore, the outcome more clearly conveys the message based on Bangchak’s expectations for employees at each level. The pilot assessment started from vice president and higher in parallel with the existing assessment to test the reliability and appropriateness.

Results

Turnover (Target in 2016: < 3%)



Internal Promotion Rate (%)



High-Performance Culture

Compensation management and Employee retention

Sound compensation management and employee retention promote the talented who will efficiently drive the organization toward a high-performance culture under the direction of The Best Employer. This principle will also attract and retain the talented. Bangchak therefore annually conducts a survey by benchmarking its compensation and welfare against peers in petroleum and related industries. The outcome is used to not only review and appropriately improve its payment criteria, but also study the compensation payment trend in line with the expectation of new-generation employees and long-term

Compensation per employee (Female : Male)



0.88 : 1
Manager and higher



0.92 : 1
Executives



1 : 0.78
Operational level

Human Rights

Bangchak clearly declares its determination to work on human rights in the policy to develop sustainable business in parallel with the environment and society. This topic is included under Section 3: Human rights and employment to sustainably drive the economy. Bangchak applies the UN Global Compact by supporting and respecting human rights protection, treating employees with equity, and promoting the employment of local labor, disadvantaged people and the disabled. In 2016, Bangchak planned to employ the disabled as staff, with the ratio of 1: 100, to serve SDG 8 in 2020.

Bangchak Petroleum Plc Labor Union

Bangchak Petroleum Plc Labor Union, set up under the law, counts 20% of the workforce as its members, Bangchak Petroleum Plc Labor Union cooperates with the Bangchak in looking after employees' well-being through regular consultations with top management and collecting feedback from employees about their needs to improve labor conditions. Bangchak also established an Employee Committee, consisting of 13 union representatives who were elected by employee. The committee is engaged in consultations with representatives from top management on matters of employees' welfare and benefits. To date, the consultation sessions have gone well, with all concerns or queries properly addressed, thus resulting in high employee satisfaction. In 2016, Bangchak has increased the age range of employees' child in OPD payment.

Employee Development

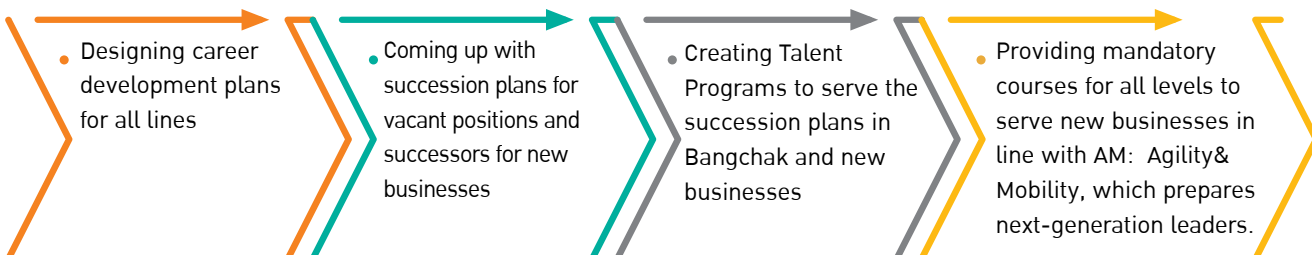


Each year Bangchak plans and develops employees at each level to ensure that they enjoy career advancement and see progress in their line of work. This is aligned with the corporate direction and strategies to gear toward a high-performance culture under the direction of The Best Employer.

Strategies



Target 2020



Career Development

- Bangchak targets the management and employees to understand career development process well enough to set their own career paths in their Career Passport. It holds training courses for the managerial levels and higher so that they can understand and communicate with subordinates to eventually create shared career paths.
- To be prepared for business expansion and retirement of key managerial employees (Vice president and higher), Bangchak came up with a Successor Project. The management is evaluated with 90-Degree Assessment (Self & Boss) and ADEPT by Assessment Center. In 2016, Bangchak added contemporary issues (general knowledge) and an EQ test. The qualifications of potential successors must be aligned with Bangchak Leadership DNA.
- Specialist & Successor Development For specialist successors, such as those in the refinery. Bangchak established a “Capacity Building Division for Refinery Employees” to systematically prepare specialists and successors in each major field by using technical career ladder development following the international standards of oil companies. This aims to improve the capacity of highly experienced engineers, shift superintendents, unit superintendents, and supervisors so that they may be knowledgeable and capable of working in competency areas, such as combustion, Hydrocracking unit (HCU) operation, HCU process, metallurgy, electrical, rotating machines, and instruments. Bangchak also plans to cover other areas including safety, occupational health, and environment.

Bangchak Leadership DNA

5 Gives

Give direction, Give example,
Give opportunity, Give time, Give value



Curriculum Development

Strongly determined to continuously enhance employees' skills and capacity, Bangchak established a *Training Roadmap* for every employee group. It properly trains them in not only necessary skills and knowledge of business growth, but also managerial skill development. For example, the *Executive Development* Plan, aligned with *Leadership DNA*, requires the management to train with local and international institutes. With enhanced knowledge and capacity, they may be able to support Bangchak's growth and form business networks. **Mandatory Courses**, focusing on business knowledge and leadership development, are divided into five sub-courses by work level. **Competency Courses** involves competency-based development in business knowledge focusing on employees' entrepreneurship perspectives. The English Skills Development Program is held to expand overseas businesses. The Smart Technology Program aims to support Thailand 4.0 and Industrial 4.0, which highlights the use of technology and computers to serve future businesses.

Mandatory Courses



Performance in 2016

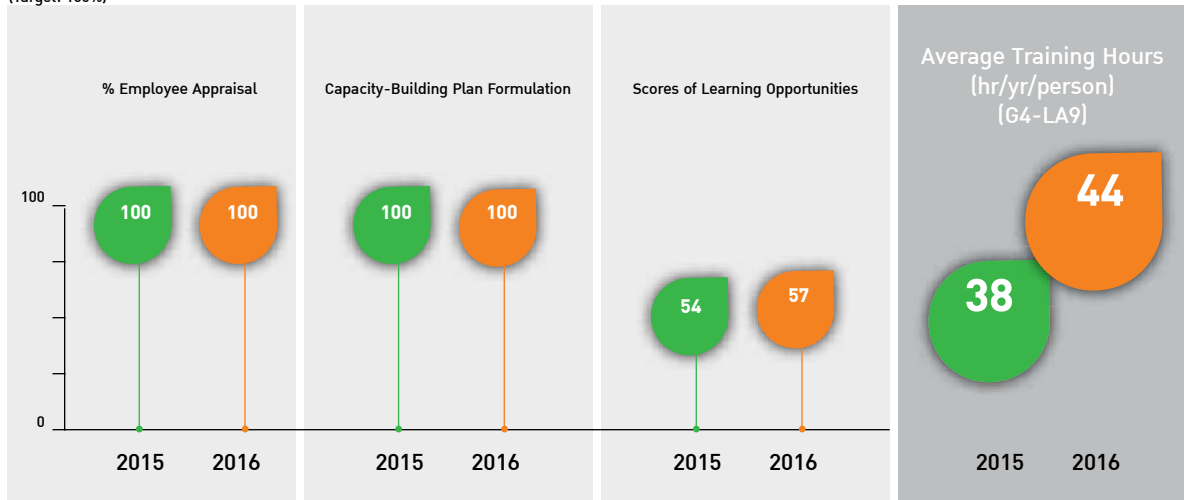
In addition to the courses at five levels, Bangchak offered extra courses in 2016 as follows:

- **Bi-ChEPs** a joint project with King Mongkut's University of Technology Thonburi (G4-16), enhanced chemical engineering knowledge of shift superintendents, unit superintendents, and supervisors. They could apply the technical and technological knowledge to their respective experiences.
- **Knowledge and experience sharing with experts** from Cosmo Oil Co., Ltd., Japan Cooperation Center Petroleum (JCCP) Co., Ltd., and SK Group from Korea enhanced the effectiveness of production control. This led to safer and more stable processes.
- **Marketing Refreshment course**, in collaboration with the Marketing Association of Thailand, equipped marketing employees with advanced marketing knowledge. They could then search for customers' needs and changing customer behavior, initiate projects to improve service effectiveness, and create Greenovation Experience that met customers' needs.

- **BCP Scholarships** were granted to employees to further their studies domestically (Business Administration and Engineering) and internationally (focusing on fields that expand existing businesses, renewable energy, technological and innovation management). In 2016, Bangchak offered four scholarships.

Targets

(Target: 100%)



Innovation

- **Engineering Career Ladder (ECL) Program Development** comprehensively analyzes and displays an overview of staff proficiency levels by category and five levels as expected by the organization:

- 1) Awareness
- 2) Can do Functional
- 3) Competent
- 4) Advanced
- 5) Expert

It is used as a guidebook to improve employees' targeted capacity so that the management may obviously notice the change. This also increased the efficiency of technical career ladder development and succession planning of employees in the refinery.

- **Engagement Ambassador Project** consists of 5% of employees' representatives of from each business line. This project not only is the communication center handling feedback from employees in each business group, but also holds activities that promote higher employee engagement. The Senior Executive Vice President of every business group serves as sponsor of the Engagement Ambassadors to ensure the activities' success.



Future Plans

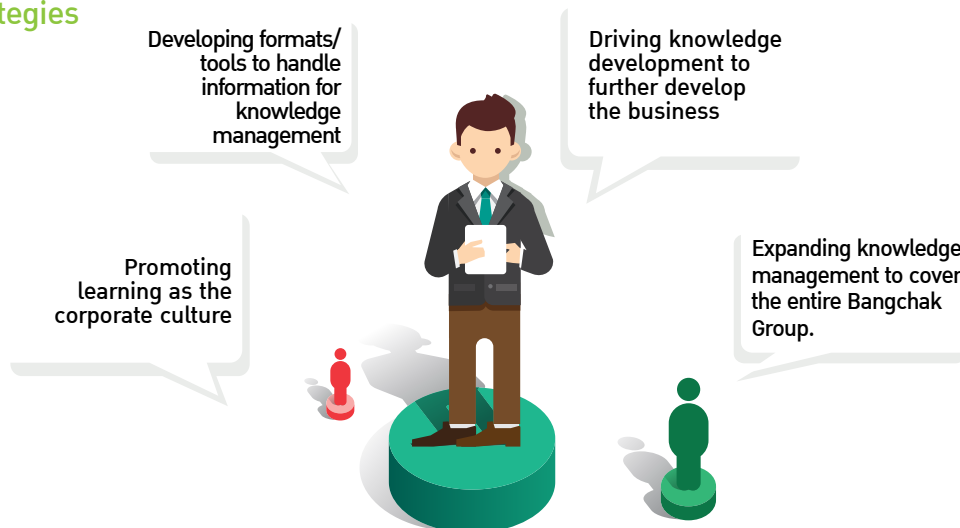
- Cooperating with professional associations/ expert communities to learn and accumulate experiences at the international level. This will encourage expert employees to play the roles of instructors who transfer knowledge under their areas of expertise to new employees or third-party persons/organizations. This knowledge sharing can develop employees in the refinery so that they may work and transfer the knowledge to others (advanced).
- Developing user-friendly HR management applications (Digital HR) to manage employees' profiles, to serve business growth as part of the Big D Project 0 ("BCP is in Digital"), and to respond to national growth (Thailand 4.0).

Knowledge Management

Encouraging individual learning, Bangchak included knowledge transfer and sharing in the annual employee performance appraisal and established an Organization Development Committee to set a direction to implement knowledge management, encourage employees to participate in learning, evaluate performances, and continuously improve the knowledge management process.

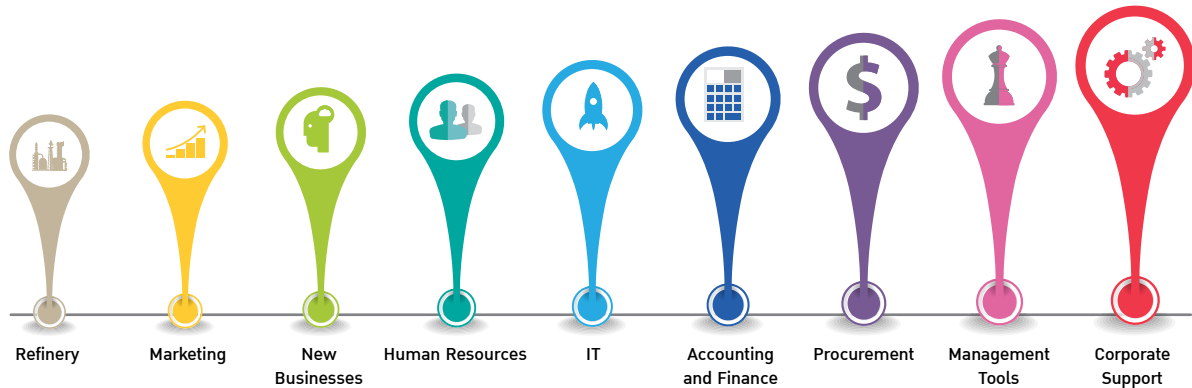


Strategies



In 2016, Bangchak developed a knowledge management system called “We Share” to replace the old previous system, serving as a platform for employees to share and apply

work knowledge. They can exchange experiences, trials and errors, lessons learned, and tips and tricks. “BCP Knowledge” is divided into nine categories as seen below:



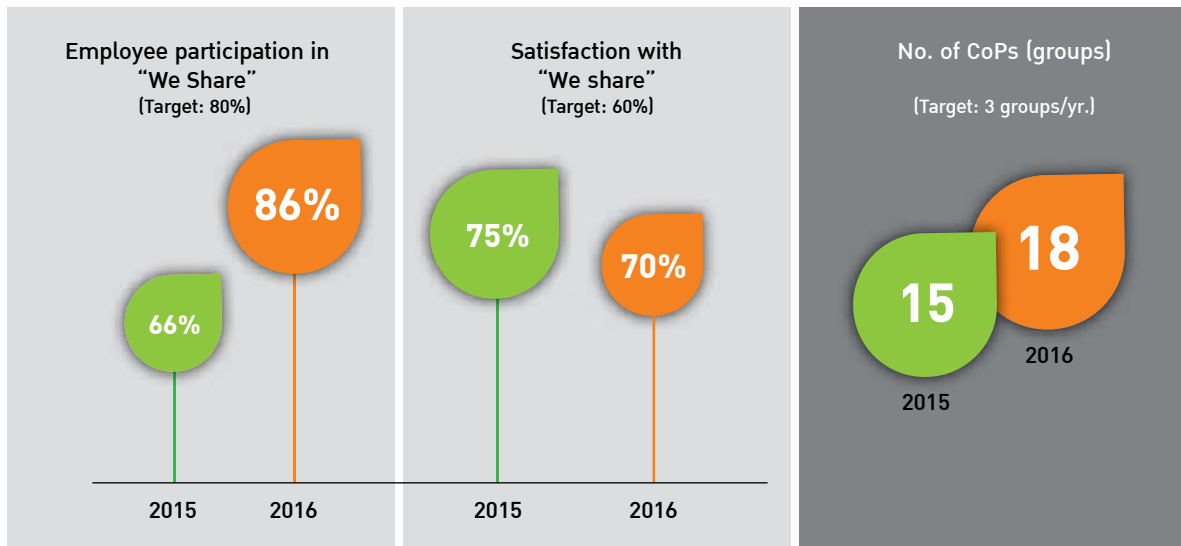
In addition to learning via We Share, the Refinery Business Group developed a Technical Development Center system to compile internal and external information on refinery operations for transferring and sharing within Bangchak. In 2016, it procured “Goldfire” (a search engine that searches for and analyzes a large amount of data from reliable petroleum institutes and selects contents that the inquirer need the most) as an additional tool in the “Knowledge Content” system. The tool works fast and provides the right data for employees to solve problems under “root cause analysis”. It is therefore an appropriate tool for the production engineering group to solve operation problems more efficiently.

In addition to the systems provided, Bangchak supported activities by establishing the Community of Practice (CoP), an assembly of knowledgeable people with the same interests come and share their knowledge among members to gain more knowledge. In 2016, three new CoPs were established (from 15 to now 18 groups) as seen below:

Technical Development Center system to compile internal and external information on refinery operations for transferring and sharing within Bangchak.



Results



 **Compelling Employer Brand**

Manpower planning and recruitment

Bangchak formulates its short-term (one-year) and mid-term (three-year) manpower planning by grooming talents to advance in the managerial and operational work. They have a chance to rotate or transfer jobs to take up more challenging responsibilities (internal promotion), which serves their needs and expectation on career advancement. This encourages them to more focused at work.

In addition to internally preparing employees, Bangchak recruits and selects external personnel to join the workforce by considering qualified people who are both smart and conscientious in line with the corporate culture. To ensure that manpower preparation meets the timeline, Bangchak restructures HR administration to enhance the effectiveness of work processes and the workforce and finally lowered the recruitment cycle time to less than 45 days.

Strategies



Performance in 2016

- Reviewed the management structure and improved corporate structure to ensure flexibility in all business groups and to be aligned with the future corporate direction.
- Established a Management Development Subcommittee (Sub MDC) in every business group/ business unit to collect, screen, and find the approach to develop HR, such as restructuring, manpower planning, recruitment, selection, rotation, HR development, evaluation, salary and welfare adjustment, setting operational guidelines, creating positive mindsets, and a corporate culture. With MDC, Bangchak understands every employee segment and adjust HR management based on their expectations and in line with the future business trend.



Target

- To reduce the recruitment cycle time to 30 days

- Campus Tour and Bangchak Open House form a proactive recruitment process which builds relationship with educational institutes, both universities and vocational colleges, so that the students may have a chance to know Bangchak before applying for positions. They will learn, enhance work experience, learn about the career and how to work in a corporation, and start a career path with Bangchak.
- The Talent Internship Program is open for junior students to join in various units to give them learning opportunities to efficiently adapt themselves, join the workforce after graduation, and work happily. In 2016, more than 70 students joined the program.
- The scholarship project covers tuition fees, education-related expenses, and the essential cost of living at school for needy engineering students with good scores and good behavior.

- Dual Vocational Training (DVT) supports dual vocational study (for three consecutive years) by selecting first-year high vocational students to attend one-year internship at the refinery. Bangchak provides the allowance, welfare, and travel charges fees throughout the internship period. Afterward, Bangchak will consider hiring potential students that fit the company's criteria 17 vocational students (accounting for 63% of total project participants) from the first-generation and second-generation were employed.

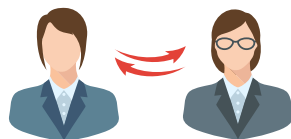


Results

Recruiting new employees (persons)



Recruitment period
(Target in 2016: 45 days)



43 days

2016



Effective Leadership

Bangchak promotes and develops management capacity at all levels under "The Best Employer" approach, which requires the management to focus on Future Vision, Valuing People, and Business Excellence. As a result, Bangchak formulated an "Executive Development Program" to enhance the management's knowledge and capacity to be aligned with the direction, including developing networks with external organizations.

- Future Vision
- Valuing People
- Business Excellence

Future Plan

- Developing a recruitment and selection system by applying technology for more rapid and efficient implementation, such as the Applicant Tracking System and an online testing system.

“...Assisting and supporting the people in their livelihoods and allowing them to have enough for basically sustaining their lives is of utmost importance because those who have a means of living, enough to be self-sufficient, can truly contribute to higher progress in the future...”

His Majesty the late King Bhumibol’s discourse at the commencement ceremony of Kasetsart University, July 19, 1974.

Community and Social Engagement



In addition to offering products and services with responsibility, one key mission of Bangchak is participation in enriching the quality of life for Thais. To accomplish the mission, Bangchak adheres to the principles of ISO 26000 - international standards on social responsibility and SDG Goal 11 - making cities inclusive, safe, resilient and sustainable. The social responsibility work is divided into two areas, namely:



- Social development at operating site level
- Social development at national level.

Social development at operating site level



At its refinery and Bang Pa-in Oil Depot, Bangchak categorizes neighboring communities into four groups, namely community, schools, households, and condominiums, to properly respond to their needs and expectations. Analyses have been made into their respective needs and expectations to draw up guidelines for arranging activities, which cover seven areas -- education, safety, sports, quality of life, the environment, relationships and cultural conservation, and economy. During 2016, over 200 activities were held, providing benefits to over 27,000 people.

Community relations strategy

Continue arranging activities that respond to community needs with an emphasis on promoting friendship, usefulness, and safe feeling

2020 targets

Zero complaint from the broad community

Achieving a satisfaction score of $\geq 90\%$ for participation in community relations activities

Achieving a score of 85% for the assessment of community engagement

Achieving a score of $\geq 85\%$ for the assessment of friendship, usefulness, and safe feeling

Target group in Community Relations (G4-S01)

	Community	Household	School	Condominium
Population estimates	10 communities in Bang Na / Phra Khanong 1 military flat 1 Bang Nam-phueng subdistrict in Phra Pradaeng district 17,416 people	5,342 households who are subscribers of Khrob Khrua Bai Mai bulletin	14 schools in Bang Na, Phra Khanong districts, and Bang Nam-phueng subdistrict	14 projects around the refinery
Participants in activities (number / percentage)	11,454 people 66%	5,342 people 100%	8,916 people 100%	583 people 5.86%
THB-17-million social investment (development budget / donation)	54% 12%	11%	20%	3%

Performance in 2016

- **Safety project: Evacuation / Emergency exercise :** This project aimed to equip community people surrounding the refinery with knowledge about evacuation in an emergency so that they could help themselves and their neighbors. Under cooperation among Bangchak and Phra Khanong District Office as well as Phra Khanong Fire Brigade, a table-top emergency exercise (TTX) was arranged with eight communities. A review was made on the evacuation plan for the pilot community, Ban Suan Pattana Community, which will be followed by an evacuation drill on the ground in 2017. The results of the exercise will be used for improving the plan and for producing a drill manual for other communities.

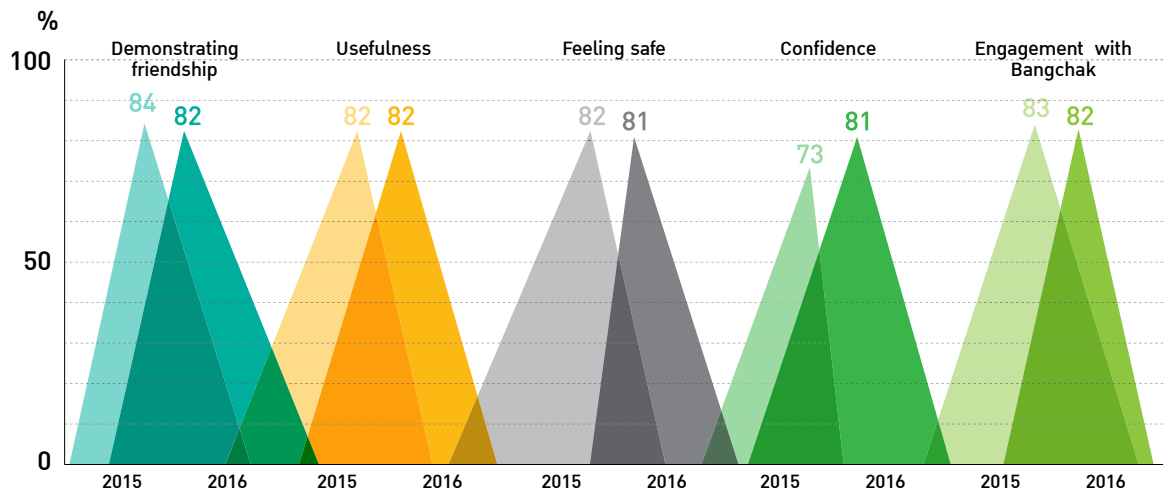


- **Bangchak Exemplary Youth Project (Yaowachon Khon Dee Bangchak)** Participation in this project is voluntary. Bangchak staff, community leaders, and parents jointly organized the project for the youth. This three-year project, designed to run in the form of a focus group, aims to develop the potential of the young generation. An assessment shows that the 34 participants achieved 95% on their psychological development, thinking, personality, and school exam results.

- **Sufficiency Community Project (Khun Jaeo Clean Service Community Enterprise)** Having witnessed household economic problems and personal debts of community people, Bangchak based this project on HM the late King Bhumibol's Sufficiency Economy Philosophy. The project, started in 2015, has provided knowledge and understanding about planning of household finance and personal finance. Community people have been taught about setting their goals, making retirement plans, and opening new opportunities for their living by making additional income. The attempt has led to the establishment of Khun Jaeo Clean Service Community Enterprise, a grouping of community women to render cleaning service for condominiums surrounding the refinery. Bangchak brought instructors from a professional housekeeping training school to train the women's group. Members of the enterprise were encouraged to take part in project initiation, project design and administration, as well as financial management to ensure that they can move forward with sustainable self-reliance. After assessment, it was found that 100% of project participants managed to reduce their household spending while making more savings. Even better, they could settle their personal debts. They can also make efficient financial plans and set their life goals, resulting in a happier family.



Results



Bangchak staff's man-hours on volunteer projects (hour/THB)



Satisfaction score for community relations projects around the refinery (%)



Ongoing projects

Aspect	Expectations	Ongoing projects
Education	<ul style="list-style-type: none"> Youths' learning and development that suit their ages, and awareness of being both ethical and capable 	<ul style="list-style-type: none"> Bangchak Exemplary Youths, Year 2 Wide World of Learning with Bangchak, Year 7 Citizen Awareness, Year 6 Bangchak Youth Scholarships, Year 12 Read and Write with Ease (Literacy), Year 3
Safety	<ul style="list-style-type: none"> Confidence in the refinery's safety Swift and effective safety response in an emergency 	<ul style="list-style-type: none"> Arrangement of emergency exercises and fire drills for schools, communities, and neighboring condominiums Donation of fire extinguishers and other apparatus (For more information on the refinery's safety development to address all stakeholder groups' expectations, please refer to "Safety" chapter.)
Sports	<ul style="list-style-type: none"> Strong and healthy youths Drug-free community Income generation Increased educational opportunities through sports 	<ul style="list-style-type: none"> Bangchak Youth Futsal, Year 13 Bangchak Youth Soccer Club, Year 10
Quality of life	<ul style="list-style-type: none"> Better quality of life 	<ul style="list-style-type: none"> One Family, Year 23 Healthy Community, Year 7
The environment	<ul style="list-style-type: none"> Environmental problems recognized and efficient use of resources 	<ul style="list-style-type: none"> Thot Pha Pa, Raksa Ton Nam, Chaiyaphum province, Year 12 Purchase of used vegetable oil from communities around the refinery, Year 5 Firefly Routes, Conservation Way, Year 2 Mangrove reforestation, Bang Poo, Year 1
Relations and cultural conservation	<ul style="list-style-type: none"> Stronger cordial relations between the refinery and neighboring communities 	<ul style="list-style-type: none"> Roving Communities, Year 8 Fill-up with Knowledge with Bangchak Refinery, Year 11 Khrob Khrua Bai Mai bulletin (Year 12) and Rop Rua newsletter (Year 12) Sanook Kit, Wan Pid Term, Year 7 Bangchak Children's Day, Year 32 Paying visits to senior citizens in communities on Songkran Day Paying visits to communities on Father's Day, Mother's Day, New Year's Day, etc.
Economy	<ul style="list-style-type: none"> Income generation and more opportunities for community people to leverage their knowledge and skills to work for themselves and families 	<ul style="list-style-type: none"> Sufficiency Community, Year 2 Purchasing food and snacks from community outlets, worth over THB 100,000, to generate community income Recruiting qualified community people for Bangchak Allowing community food outlets to cater for contractors during turnarounds, generating an income of THB 5.3 million for communities

Future Plan

As a result of a survey on community needs and expectations as part of the assessment of community relations projects in 2016, education was found to still be the main issue. Bangchak will carry on with the plan to provide training for teachers based on 'Learning of the 21st Century', which is a schooling system that allows learners to think creatively under the changed global context by applying the 7 Habits and STEM Education methods. Community people were also found to be expecting more assistance in health promotion. Bangchak, in 2017, will respond more in this area through elderly care with an emphasis on holistic health care (body and mind), which aims to encourage the elderly to proactively take care of their own health so that they can live with good mental health, happiness, and a better quality of life.



“...Education is vital for creating and developing the knowledge, the thoughts, the behavior and virtues of a person. When society and the nation provide good education that is all round and appropriate to its youths, that society and nation will be populated with quality persons who can maintain the growth and security of the country and support its continued development..”

His Majesty the late King Bhumibol’s discourse to teachers and students who received the Royal Awards at Dusidalai Pavilion, July 28, 1981.



Social development at national level

Bangchak has designed activities and projects that can respond to target groups, namely the youth and farmers, with an emphasis on creating awareness of the environment, society, and the economy. Strategies and targets are detailed below:

 Strategies	2020 Target
<p>1 Incorporate activities concerning the environment into the policy that aims to decrease classroom time and increase learning time</p>	<p>≥ 80,000 children per year to be equipped with knowledge about the environment and global warming</p>
<p>2 Give support to agricultural groups and make a better society by increasing the number of community service stations and social support projects</p>	<p>Expand community service stations by 20 sites per year</p> <p>Promote activities that demonstrate Bangchak’s social responsibility in community service stations, targeting ≥ 30 sites per year</p> <p>Establish Oam Suk Social Enterprise Co., Ltd., a pilot social enterprise engaging with sustainable organic agriculture business</p>

Performance in 2016

Youth group

In collaboration with Office of the Basic Education Commission, Ministry of Education, and the Pollution Control Department, Bangchak organized the 10th year of Thailand Go Green Competition on the topic of “Thailand Free of Garbage, Join Hands to Limit Global Temperature Increase by No More than 2 Degrees Celsius”. The competition aims to encourage students to search for information while developing a habit of sustainable production and consumption to reduce waste, which is an everyday issue yet a big national problem. A total of 70 schools sent their entries to the competition while over 130,000 students have gained knowledge from the project. The project is also used as part of the Ministry of Education’s policy on decreasing classroom time – increasing learning time.



Agricultural group

- **Increasing the number of community service stations** – Cooperation between Bangchak and agricultural cooperatives in opening community service stations since 1992 not only saves energy expenses, but also generates income for farmers. Members benefit from the cooperative in the form of dividends, average returns from the business, and welfare. Bangchak aims to increase the number of community stations every year (by 20 stations per year) as another means to help raise the standard of living for over 1 million agricultural households. It is expected that the figure will climb to 1.12 million by 2021.

- **Green Partnership Award** – In addition to expanding community service stations, which is part of the business value chain, Bangchak held the Green Partnership Award project as a way to support agricultural cooperatives to improve their business administration and promote activities that benefit society. The project aims to create shared value for society by making use of the potential and capability of cooperatives in response to the needs of cooperative members, customers, society and communities in the form of CSR-in-Process that is run in parallel with the business. The project was participated by 39 agricultural cooperatives and service station operators across the country.





8 projects
on staff care



13 projects
on customer / business
partner care



12 projects
on environmental care



15 projects
on social care

- Turning community service stations into solar farms -- Seeing the potential of some agricultural cooperatives, Bangchak has tried to raise their potential further by entering into a joint investment with them in the solar farm business. The initiative can create an income of THB 3 million per year for three cooperatives, namely Wiset Chaichan Agricultural Cooperative in Ang Thong province, Muang Phra Si Ayutthaya Agricultural Cooperative and Bang Pa-in Agricultural Cooperative in Ayutthaya province. The solar farms are operated under a 25-year contract for the production of 5 MW of electricity with a purchase price of THB 5.66 per unit under the feed-in-tariff (FIT) scheme.

- Establishment of Oam Suk Social Enterprise Co., Ltd. – During 2014-2015, Bangchak helped out the farmer school belonging to Phra Maha Vuthichai Vachiramethi's Buddhist Economics Foundation by using their rice produced as part of sales promotion campaigns at Bangchak retail service stations. Bangchak aims to support the foundation to pursue sustainability and stand on its own feet. Therefore, Bangchak joined hands with the foundation in establishing Oam Suk Social Enterprise Co., Ltd., to run a business that buys organic agricultural product from farmers to process for marketing. The support has even been extended to research and development. It is believed that this will be a pilot social enterprise to build a sustainable organic agricultural society benefiting 200 households of organic farming members.



Future Plans

Bangchak will keep on seeking new social tools for driving its work on community economic and educational development in a sustainable manner, keeping in mind the Sufficiency Economy Philosophy. Feasibility studies are under way for establishing a dedicated unit to take charge of the work beyond the company's scope of business. This is considered another step forward in demonstrating the ambition of developing the quality of life for the Thai society, which forms part of the company's missions laid down since business inception. The endeavor will also respond to national development toward sustainable growth in the Thailand 4.0 age.

Statistic for Sustainability Performance



Economic Performance (G4-17)

Revenue	unit	2013	2014	2015	2016
Sales and services	Million Baht	183,286.49	178,300.35	151,140.36	144,705.29
Total Revenue	Million Baht	186,150.64	181,876.03	151,683.24	145,232.40
Net profit	Million Baht	3,971.58	296.10	4,097.38	4,729.41
EBITDA	Million Baht	9,348	5,192	11,081	11,363

Expenditure for income distribution to stakeholders (G4-EC1)	unit	2013	2014	2015	2016
Operating expenses	Million Baht	175,868.10	176,384.23	139,686.22	132,809.35
Interest expenses paid to financial institution creditors	Million Baht	989.22	1,293.81	1,614.56	1,483.80
Tax payment to government and local authorities	Million Baht	1,118.50	51.50	647.32	822.32
Community and social development	Million Baht	35.91	25.52	37.45	38.88
Donation to society and schools	Million Baht	18.14	22.73	57.62	37.82
Dividend payment to shareholders	Million Baht	2,065.05	1,858.80	2,039.44	2,753.52
Dividend payment to shareholders	Baht/Share	1.50	1.35	1.40	1.80
Wages and employee benefits	Million Baht	1,337.33	1,341.58	2,419.60	2,903.82

Supply chain management (G4-EC9)	unit	2013	2014	2015	2016
Local purchases of goods and services*	Million Baht	N.A.	4,707	5,407	4,351.18
Ratio of local purchases of goods and services*	Percent	N.A.	91	93	98

Local purchasing in Thailand, exclude raw material and crude oil

Corporate Income Tax (BCP)	unit	2016
Thailand	Million baht	341.53



Environment Performance

Detail	Refinery				Bio-based Product				Green Power			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Material (Ton)												
Renewable Material		334,348	360,650	305,374		162,967	490,584	434,836		0	0	0
Non- Renewable Material	5,864,844	5,492,211	6,109,564	5,358,267	156,799	2,065	6,098	5,681	3	3	4	3
Product (KL)	9,421	9,324	10,329	8,618	N.A.	N.A.	N.A.	268,751				

* There was no classification of raw material consumption in 2013

	Refinery				Marketing				Bio-based Product				Green Power			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Energy¹ (Terajoule) (G4-EN3)	12,875.6	11,786.5	14,501.5	13,561.3	128.8	199.8	1,149.1	1,686.6	1.0	4.2	4.5	8.9	76.6	59.7	72.4	63.8
• Non- Renewable Energy Consumption	12,875.6	11,786.5	14,501.4	13,561.3	128.8	199.8	323.5	386.1	1.0	4.2	4.5	8.9	76.6	59.7	72.4	63.8
Energy used in process:																
• Fuel gas and LPG	7,129.8	6,163.2	6,924.4	6,589.8	-	-	-	-	-	-	-	-	-	-	-	-
• NG	2,626.4	2,612.8	3,937.4	3,227.1	-	173.8	179.8	208.5	-	-	-	-	-	-	-	-
• Natural gas for cogeneration	-	-	1,620.3	2,719.6	-	-	-	-	-	-	-	-	-	-	-	-
• Fuel oil	1,028.8	1,075.0	1,040.0	913.4	116.2	9.7	-	-	-	-	-	-	-	-	-	-
Electricity and steam used in process:																
• Electricity	552.8	505.7	327.8	102.8	12.6	16.3	143.7	162.7	1.0	3.2	3.6	8.0	76.6	59.7	72.4	63.8
• Steam	1,537.7	1,424.0	646.9	-	-	-	-	-	-	-	-	-	-	-	-	-
Other : Fuel oi	0.1	5.8	4.6	8.4	-	-	-	14.9	-	1.0	0.9	0.9	-	-	-	-
• Renewable Energy	-	-	0.1	0.1	-	-	825.6	1,300.5	-	-	-	-	-	-	-	-
• Wind and Solar	-	-	0.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-
• Biomass and Biogas	-	-	-	-	-	-	825.6	1,300.5	-	-	-	-	-	-	-	-
• Energy	242.4	252.4	251.0	-	-	-	-	-	214.2	580.2	699.1	914.4	-	-	-	-
• Renewable Energy: Electricity generated by PV cells	242.4	252.4	251.0	-	-	-	-	-	214.2	580.2	699.1	914.4	-	-	-	-
Energy Intensity Index (EII) (G4-EN5)	N.A.	N.A.	105.8	103.1												

¹ Calculated multiplying fuel volumes with the conversion factor provided by the Department of Alternative Energy Development and Efficiency

	Refinery				Marketing				Bio-based Product				Green Power			
	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
Greenhouse gas (GHG) emissions (G4-EN15) (G4-EN16) (unit: TCOE)	Operational Control Approach															
• Direct GHG emissions from production processes (Scope 1)	819,846	753,078	999,297	989,258	8,937	9,757	48,063	1,322,219	24	68	63	66				
• CO ₂	818,556	751,876	997,689	987,722	8,907	9,748	10,882	12,745	22	66	62	65				
• Biogenic CO ₂				25			37,157	77,797,225				2				
• CH ₄	807	738	1,044	990	9	2	6	35,628	1	1		0				
• N ₂ O	483	464	564	546	21	7	18	1,273,845	1	1	1	1				
• Indirect GHG emissions from power and steam purchases (Scope 2)	171,528	157,173	84,793	15,540	1,818	2,479	20,662	24,588	147	2,572	2,585	1,219	11,010	8,591	10,424	9,649
• CO ₂	171,528	157,173	84,793	15,540	1,818	2,479	20,662	24,588	147	2,572	2,585	1,219	11,010	8,591	10,424	9,649
Total	991,374	910,251	1,084,090	1,004,798	10,755	12,236	68,725	1,346,807	171	2,640	2,648	1,285	11,010	8,591	10,424	9,649
Equity Share Approach																
• Direct GHG emissions from production processes (Scope 1)	819,846	753,078	999,297	989,258	6,255	6,832	15,145	287,097	24	68	63	46				
• CO ₂	818,556	751,876	997,689	987,722	6,235	6,824	7,227	8,439	22	66	62	46				
• Biogenic CO ₂				25			7,907	16,555,250				2				
• CH ₄	807	738	1,044	990	6	3	4	7,584	1	1	1	0.7				
• N ₂ O	483	464	564	546	14	5	7	271,074	1	1						
• Indirect GHG emissions from power and steam purchases (Scope 2)	171,528	157,173	84,793	15,540	1,272	1,735	5,624	7,676	147	2,572	2,585	853	5,395	4,210	5,108	4,728
• CO ₂	171,528	157,173	84,793	15,540	1,272	1,735	5,624	7,676	147	2,572	2,585	853	5,395	4,210	5,108	4,728
Total	991,374	910,251	1,084,090	1,004,798	7,527	8,567	20,769	294,773	171	2,640	2,648	899	5,395	4,210	5,108	4,728
GHG Intensity (Ton/Ton of raw material)	0.17	0.15	0.17	0.21												

/1 The reportation and direct and indirect carbon emission utilized calculation tools from PTT PCL (IPCC2006)

Air emissions (G4-EN21)/(G4-066)	unit	2013	2014	2015	2016
Nox (Combustion) ³	Ton	521	451	399	349
Intensity Nox	Ton/ 1,000 Ton crude oil	0.11	0.11	0.07	0.07
SO ₂ (Combustion & SRU/TGTU Stack) ³	Ton	205	25	51 ¹	35
Intensity SO ₂	Ton/ 1,000 Ton crude oil	0.01	0.04	0.01	0.01
TSP PM10 (Combustion) ³	Ton	20	8	8	17
Intensity TSP	Ton/ 1,000 Ton crude oil	0.00	0.00	0.00	0.00
H ₂ S (SRU/TGTU Stack) ³	Ton	0.03	7.08	0.47	0.36
Intensity H ₂ S	Ton/ 1,000 Ton crude oil	0.00	0.00	0.00	0.00
Fugitive VOCs ⁴	Ton	N.A	2.53 ²	4.91 ²	2.99
Intensity VOCs	Ton/Barrel	N.A	N.A	0	0
Flared hydrocarbon ⁵	KL	N.A	4,548.05	1,934.87	1,892.1
Flared hydrocarbon ⁵	Ton CU.M. (Gas)	N.A	1.2505	0.6686	0.2047
Vented hydrocarbon	Ton CU.M. (Gas)	N.A	N.A	N.A	N.A

¹ Excluding SO₂ from Acid Flare, ² Including additional cogeneration plant acquires from PTT Plc. but exclude Inventory VOCs ³ Target
³ Calculated from production capacity using a third-party entity ⁴ Calibrated measurement tools ⁵ Including Flared hydrocarbon from Plant 2, 3, 4

Water (Unit : Thousand cu.m.)	ธุรกิจโรงกลั่น			
	2013	2014	2015	2016
Water used in production ¹ (G4-EN8)	2.37	2.38	2.81	2.36
Reused water ^{2,5} (G4-EN10)	N.A.	N.A.	1.06	1.1
Water discharged in Bang Ao Canal (G4-EN22)	0.11	0.97	0.87	0.84
Ratio of water used per barrel of oil produced (cu.m/BOE) ³	N.A.	0.072	0.066	0.061
COD (Ton) ⁴	66.85	66.33	48.28	42.00
BOD (Ton) ⁴	9.38	10.73	7.40	5.96
Oil and Grease (Ton) ⁴	2.35	2.26	3.08	1.68
TSS (Ton) ⁴	18.76	14.31	10.53	10.92
TDS (Ton) ⁴	2,181.31	1,465.15	1,121.80	1,321.23
Sulfide (Ton) ⁴	0.47	0.32	0.47	0.29
Mercury (Ton) ⁴	0.00	0.00	0.00	0.00

¹ Volume from water usage invoices ² Volume from water meters ³ Volume from water balance and measuring values by laboratory that is licensed by department of Industry work
⁴ Calibrated measurement tools ⁵ 2016 Total volume of recycled water combines condensate water, which is of high quality collected from the boiler and plant 4, and water from wastewater treating unit which is further treated with reverse osmosis.

Waste (Ton : Percentage) (G4-EN23)	2013	2014	2015	2016
Type of Waste				
Hazardous waste ¹	1,253 (48)	3,261 (83)	1,268 (88.5)	1,573 (20.2)
Non-hazardous waste ¹	1,363 (52)	644 (16.5)	62 (4.3)	179 (2.3)
Treatment of Waste				
Hazardous waste from oil and chemical spill clean-up ²	N.A.	1.1	3 (0.2)	0
Construction waste ²	N.A.	N.A.	99 (6.9)	1,204 (15.5)
Hazardous waste for Turnaround Maintenance				4,745 (61)
Non-Hazardous waste for Turnaround Maintenance ²				84 (1)
Total	2,616 (100)	3,905 (100)	1,432 (100)	7,785 (100)

¹ Weight from waste manifest ² Estimate from volum of waste sent to disposal based on calculation of number of bags per container and average weight per bag /container

Waste Management Method (Ton) (G4-EN23)	2015		2016	
	Hazardous Waste	Non-Hazardous Waste	Hazardous Waste	Non-Hazardous Waste
Reuse	-	-	-	-
Recycle	396	-	1,137	16
Recovery, including	581	21	4,281	235
Incineration	109	-	901	-
Sent to secure landfill	-	41	-	11
On site storage	185	161	318	-
Other (Land Reclamation)	-	99	-	1,204
Total	1,271	322	6,637	1,466

Oil and chemical spills (G4-EN24)	2013	2014	2015	2016
Number of significant oil and chemical spills (more than 150 liters each)	0	0	0	0

Supply Chain Management	2013	2014	2015	2016
New Supplier/ Key Supplier were self assessed on SCOC criteria	N.A.	2	N.A. ¹	32 ²
<small>/1 2015 Preparation for screening process of potential Suppliers in accordance with sustainable business practices in three dimension : ESG /2 2016 Number of Key suppliers were self assessed on Bangchak's Supplier Code of Conduct</small>				

Environment Compliance (G4-EN29)	2013	2014	2015	2016
Number/Monetary Value of significant fines	0	0	0	0



Social Performance

1. Employment

Employee* (G4-10)/ (G4-LA1)	2013		2014		2015		2016	
	Persons	%	Persons	%	Persons	%	Persons	%
• Total Employee by gender								
Male	753	73.18	762	72.43	822	72.81	847	70.82
Female	276	26.82	290	27.57	307	27.19	349	29.18
Total	1,029	100	1,052	100	1,129	100	1,196	100
• Total Employee by Level								
• Manager up (Level 10-14)	98	9.52	101	9.60	116	10.27	135	11.29
Male							91	67.41
Female							44	32.59
• Manager up (Level 5-9)	462	44.9	494	46.96	557	49.34	616	51.51
Male							373	60.55
Female							243	39.45
• Practitioner (Level 1-4 :)	469	45.58	457	43.44	456	40.39	445	37.21
Male							382	85.84
Female							63	14.16
• Total Employee by age								
Younger than	296	28.77	287	27.28	305	27.02	303	25.33
Between 30-50	661	64.24	699	66.44	739	65.46	791	66.14
More than 50	72	7.00	66	6.27	85	7.53	102	8.53
• Total Employee by area								
Head office								
Refinery	135	13.12	112	10.65	131	11.60	159	13.29
North District	809	78.62	855	81.27	934	82.73	972	81.27
Central District	11	1.07	10	0.95	8	0.71	39	3.26
North-East District	54	5.25	57	5.42	37	3.28	9	0.75
South District	12	1.17	10	0.95	11	0.97	10	0.84
Ratio of Salary by gender (Female : Male)	8	0.78	8	0.76	8	0.71	7	0.59
• By Level							Female	Male
Executive up (Level 10-14)							0.88	1.00
Manager up (Level 5-9)							0.92	1.00
Practitioner (Level 1-4)							1.00	0.78

*The Company has an exclusive full-time employment policy. There are no temporary, part-time, or self-employment and no seasonal difference in manpower

Employee (G4-LA1)	จำนวน	ร้อยละ	จำนวน	ร้อยละ	จำนวน	ร้อยละ	จำนวน	ร้อยละ
Employees Turnover								
• Turnover rate		3.31		3.46		2.67		3.20
• By Gender								
Male	31	77.5	32	86.49	13	59.09	35	67.31
Female	9	22.5	5	13.51	9	40.91	17	32.69
• By Age								
Less than 30	20	48.78	25	67.57	7	31.82	32	61.54
Between 30-50	19	46.34	8	21.62	13	59.09	18	34.62
More than 50	2	4.88	4	10.81	2	9.09	2	3.85
New Employee								
• By Gender								
Male	35	79.55	44	67.69	84	74.34	64	52.89
Female	9	20.45	21	32.31	29	25.66	57	47.11
• By Age								
Less than 30	43	97.73	61	93.85	88	77.88	99	81.82
Between 30-50	1	2.27	4	6.15	23	20.35	21	17.36
More than 50	0	0.00	0	0.00	2	1.77	1	0.83
Maternity leave								
• Maternity leave	5	N.A.	8	N.A.	6	0.53	5	0.42
• Employee back to work after maternity leave	5	N.A.	8	N.A.	6	0.53	5	0.42

2. Training

Average Training hr (G4-LA9)	2013	2014	2015	2016
• Total training hour			43,304	53,741
• Total average training hour	39.16	44.86	44.86	44.92
• By gender				
• Male	38.94	42.62	36.42	41.10
• Female	39.75	50.87	43.53	53.90
• By Level				
• Executive up (Level 10-14)	79.51	60.20	58.07	62.00
• Manager up (Level 5-9)	39.01	54.30	47.44	59.20
• Practitioner (Level 1-4)	30.44	29.44	22.23	20.10
• By Business Category				
• President	46.67	63.18	53.34	52.90
• Corporate Management and Sustainability Development	48.00	50.06	44.58	58.20
• Accounting and Finance	42.20	43.25	37.25	53.90
• Marketing Business Group	21.68	24.82	20.21	43.67
• Refinery Business Group	44.67	52.55	44.98	39.80
• Natural Resource and Business Development	69.11	58.87	51.56	62.20
• Bio Based Product Business Unit	41.14	54.00	52.18	47.30

3. Employee Engagement

Best Employer	2013	2014	2015	2016
Best Employer (Percentage)	N.A.	66.00	70.00	68.00
Employee Engagement (Percentage)	4.26 (Score 5)	66.00	69.00	69.00
Labour and Human rights Complaint: (Case)	0	0	0	0

4. Safety and Occupational Health

Safety (G4-LA6)	2013	2014	2015	2016	
				Male	Female
• Total work hour (hr)					
• Total workforce (employee and supervised workers)	N.A.	N.A.	N.A.	4,423,247.80	1,215,312.80
• Independent contractors	N.A.	N.A.	N.A.	1,697,877.00	244,628.00
• Near miss report (case)					
• Total workforce (employee and supervised workers)	N.A.	N.A.	N.A.	6	
• Independent contractors	N.A.	N.A.	N.A.	7	
• TRIC					
• Total workforce (employee and supervised workers)	N.A.	N.A.	N.A.	3	2
• Independent contractors	N.A.	N.A.	N.A.	3	1
• LWC					
• Total workforce (employee and supervised workers)	N.A.	N.A.	N.A.	0	0
• Independent contractors	N.A.	N.A.	N.A.	1	0
• Fatalities					
• Total workforce (employee and supervised workers)	0	0	0	0	0
• Independent contractors	0	0	0	0	0
• TRIR					
• Total workforce (employee and supervised workers)	4.4	3.2	5.2	3.0	1.65
• Independent contractors	0	9.4	39.2	1.77	4.09
• IFR					
• Total workforce (employee and supervised workers)	0.8	1.4	1.3	0	0
• Independent contractors	0	2.7	39.2	0.59	0
• ISR					
• Total workforce (employee and supervised workers)	13.5	18.1	8.6	0	0
• Independent contractors	0	16.1	300	27.09	0
• Rate of work-related illness					
• Total workforce (employee and supervised workers)	0	0	0	N/A	N/A
• Independent contractors	0	0	0	N/A	N/A
• Absentee rate (Percentage)					
• Total workforce (employee and supervised workers)	0.88	0.90	0.90	0.83	
• Tier 1 Process Safety Event	0	0	0	0	
• Tier 2 Process Safety Event				0	

Customer Responsibility	หน่วย	2013	2014	2015	2016
Customer Satisfaction survey : Customer (G4-PR5)	Percentage	84	N.A.	81.2	79.4
Customer Satisfaction survey : Industrial customer	Percentage	91	95	N.A.	90.3
Net Promoter Score	RANKING	N.A.	N.A.	3 rd ranking	2 nd ranking
Total number of substantiated complaints regarding breaches of customer privacy	Case	0	0	0	0
Case of Non compliance in marketing communication laws (G4-PR7)	Case	N.A.	N.A.	N.A.	0

About this report

Background

This 12th sustainability report illustrates the annual economic, social, and environmental performance outcomes spanning the 2016 calendar year. It relies on the Global Reporting Initiatives Guideline Version 4.0 (GRI G4) Oil & Gas Sector Supplement (OGSS) in accordance with CORE option of key indicators and the United Nations Global Compact: Advanced Level. In addition, Bangchak has linked compatible operation and initiated new projects to address SDGs (sustainable development goals) to show its commitment to forging sustainability and value for society and the environment in parallel with business in its response to stakeholders' needs and key goals for global sustainable development. Below are the principles.

Report scope (G4-17, G4-20)

Presenting performance outcomes for 2016, this report embraces the all activities by business groups in Thailand under BCP but excludes those by its subsidiaries and other related companies. Only energy and greenhouse gas (GHG) emission, highly valued by Bangchak, of subsidiaries where we hold over 20%* in equity, are covered, namely

- Bangchak Green Net Co., Ltd. (BGN)
- Bangchak Biofuel Co., Ltd. (BBF)
- BCPG Pcl (BCPG) and Bangchak Solar Energy Co.,Ltd. (BSE)
- Ubon Bio Ethanol Co., Ltd. (UBE).

The reported safety data for injury rates and total of waste by type represent the performance at office areas and the refinery (Sukhumvit 64) only, due to our key operation areas. This was the first year in which the report was done by gender; the number of hours spent by student trainees was also included and biogenic CO₂ emission report data from subsidiaries. (G4-23)

In addition, Bangchak made changes to its data on an employee absentee rate: recalculation in aggregate of employee annual sick leave, water use per production: recalculation in aggregate the production on barrel oil equivalent (BOE) and non-hazardous waste treatment methods for removed concrete from reuse, as reported in 2015, to land reclamation for greater clarity about its reuse (G4-22)

Assurance of this report

The key contents of the report were reviewed by high-level executives of each business group (G4-48) / department to ensure complete and accurate responses to stakeholders. In addition, for credible and transparent reports guided by GRI G4, Bangchak organized report certification and that of KPIs by a third party well-versed in certification and independent assurance in the field of oil and gas business as detailed in the certification of assurance on page 127-128.

This was the first year in which Bangchak had extended its businesses for a healthy and robust future, involving renewable energy, oil trading, transportation, and marketing. After their formation / M&As, Bangchak prepares to transfer the guidelines for sustainable business development to these subsidiaries and associates and to have more extensive and complete scope for reporting social and environmental data for each company in 2017.

For further information, please direct your queries or recommendations to (G4-31)

Sustainability Development Department Bangchak Petroleum Public Company Limited

E-mail: chongprode@bangchak.co.th, telephone 0-2335-4608-9.

*Exception applies to the reporting of data for newly founded companies or mergers and acquisitions (M&As) of businesses that have been in operation for less than two years. For 2017, Bangchak has planned to extend data collection from subsidiaries concerning the environment (water consumption, pollution emission, waste water, waste management) and social data (safety) in a more complete manner, as shown in the "Companies under the scope of this report" on page 116 (G4-23).

Companies under the scope of this report

No.	Company	% equity	Production	Energy	GHG	Water use	Waste water	Air Emission	Waste	Safety
1	Bangchak Petroleum Plc		/	/	/	/	/	/	/	/
Refining business										
1	BCP Trading Pte. Ltd.	100								
2	Bongkot Marine Service Co., Ltd.	30	NR	NR	NR	NR	NR	NR	NR	NR
3	Fuel Pipeline Transportation Co., Ltd.	4.95	NR	NR	NR	NR	NR	NR	NR	NR
Marketing business										
1	Bangchak Retail Co., Ltd.	100								
2	Bangchak Green Net Co., Ltd.	49	NR	/	/	NR	NR	NR	NR	NR
3	Oam Suk Social Enterprise Co., Ltd.	40	NR	NR	NR	NR	NR	NR	NR	NR
Power generation / renewable energy business										
1	BCPG Plc	70.35								
2	Bangchak Solar Energy Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
3	Bangchak Solar Energy (Chaiyaphum 1) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
4	Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
5	Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
6	Bangchak Solar Energy (Buriram 1) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
7	Bangchak Solar Energy (Buriram) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
8	• Huang Ming Japan Co., Ltd.	100								
9	Bangchak Solar Energy (Prachinburi) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
10	• BSE Energy Holdings Pte Ltd.	100								
11	• BCPG Japan Corporation Ltd.	100								
12	• BCPG Engineering Co., Ltd.	100								
13	BCPG Investment Holding Pte Ltd.	100								
14	• Greenergy Holdings Pte Ltd.	100								
15	• Greenergy Power Pte Ltd.	100								
16	BCPG Biopower 1 Co., Ltd.	100								
17	BCPG Biopower 2 Co., Ltd.	100								
Biofuel business										
1	Bangchak Biofuel Co., Ltd.	70	/	/	/	x	x	x	x	x
2	Ubon Bio Ethanol Co., Ltd.	21.28	/	/	/	x	x	x	x	x
3	• Ubon Agricultural Energy Co., Ltd.		NR	NR	NR	NR	NR	NR	NR	NR
4	• Ubon Biogas Co., Ltd.		NR	NR	NR	NR	NR	NR	NR	NR
5	• NP Bio Energy Co., Ltd.		NR	NR	NR	NR	NR	NR	NR	NR
6	Bangchak Bioethanol (Chachoengsao) Co., Ltd.	85								
Oil and gas exploration										
1	BCP Energy International Pte Ltd.	100	NR	NR	NR	NR	NR	NR	NR	NR
2	Nido Petroleum Co., Ltd.	96.98								
3	Nido Management Pty Ltd.	100								
4	Nido Petroleum Philippines Co., Ltd.	100								
5	Nido Petroleum Indonesia Holding Ltd.	100								
Other businesses										
1	BCP Innovation Pte. Ltd.	100	NR	NR	NR	NR	NR	NR	NR	NR
2	Lithium Americas Corp.	6.73	NR	NR	NR	NR	NR	NR	NR	NR
3	• Minera Exar S.A		NR	NR	NR	NR	NR	NR	NR	NR
4	• Lithium Nevada Corp.		NR	NR	NR	NR	NR	NR	NR	NR
5	• Hectatone Inc.		NR	NR	NR	NR	NR	NR	NR	NR

Newly formed company / M&As that have operated domestically for under two years or newly formed company / M&As that have operated abroad for under three years
 Office buildings with no need for environmental and safety data collection
 / = Data displayed in the report X = Data not collected Non-relevant (NR) means data with no business significance or overall impact on Bangchak
 "Subsidiary" means over 50% equity held by Bangchak
 "Associate" means 20-50% equity held by Bangchak
 Other businesses

UN SDGs and Target



	SDG	Goals and Targets	Targets
Environment	SDG 6	Ensure availability and sustainable management of water and sanitation for all	
		Target 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater, and increasing recycling and safe reuse globally	6.3 6.4 6.6
		Target 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity, and substantially reduce the number of people suffering from water scarcity	
		Target 6.6 By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	
	SDG 7	Ensure access to affordable, reliable, sustainable, and modern energy for all	
		Target 7.2 Increase substantially the share of renewable energy in the global energy mix by 2030	7.2
		Target 7.3 Double the global rate of improvement in energy efficiency by 2030	7.3
	SDG 12	Ensure sustainable consumption and production patterns	
		Target 12.2 By 2030 achieve sustainable management and efficient use of natural resources	12.2
		Target 12.4 By 2020 achieve environmentally sound management of chemicals and all wastes throughout their life cycle in accordance with agreed international frameworks and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment	12.4
		Target 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse	12.5
	SDG 13	Take urgent action to combat climate change and its impacts	
		Target 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries	13.1 13.3
Target 13.3 Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning			
สังคม	SDG 4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	
		Target 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1 4.4 4.7
		Target 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	
		Target 4.7 By 2030 ensure all learners acquire knowledge and skills needed to promote sustainable development, including among others through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and of culture's contribution to sustainable development Make cities and human settlements inclusive, safe, resilient and sustainable	
	SDG 11	Target 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums	11.1
เศรษฐกิจ	SDG 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.5
	Target 8.5 By 2030 achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value		
	SDG 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
	Target 9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, particularly developing countries, including by 2030 encouraging innovation and increasing the number of R&D workers per one million people and public and private R&D spending	9.5	
ธรรมาภิบาล	SDG 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
	Target 16.5 : Substantially reduce corruption and bribery in all its forms	16.5	

GRI Content Index



GENERAL STANDARD DISCLOSURES		Page Number (or Link)	External Assurance
------------------------------	--	-----------------------	--------------------

STRATEGY AND ANALYSIS

G4-1	CEO Statement	4-5	
G4-2	Descriptive of key impacts, risks and opportunities	39-45	

ORGANIZATIONAL PROFILE

G4-3	Name of the organization.	6	
G4-4	Primary brands, products, and services.	6-7	
G4-5	Location of the organization's headquarters.	6	
G4-6	Number of countries where the organization operates.	6-7	
G4-7	Nature of ownership and legal form.	8	
G4-8	Markets served.	6	
G4-9	Scale of the organization.	6	
G4-10	Employee by categories.	112	
G4-11	Percentage of total employees covered by collective bargaining agreements.	92	
G4-12	The organization's supply chain.	6-7/ 50-51	
G4-13	Significant changes during the reporting period	5/ 26	
G4-14	Precautionary approach or principle.	12	
G4-15	Externally developed economic, environmental and social initiatives.	12, 22, 40	
G4-16	Memberships of associations.	11-13/ 37/ 62/ 74	

IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES

G4-17	Organization's consolidated financial statements	48/ 109	Yes
G4-18	Process for defining the report content and the aspect boundaries.	22	Yes
G4-19	Material aspect identified.	24	Yes
G4-20	Material aspect boundary within the organization.	24	Yes
G4-21	Material aspect boundary outside the organization	24	Yes
G4-22	The effect of any restatements of information.	115	Yes
G4-23	The significant changes from previous reporting periods.	115	Yes

STAKEHOLDER ENGAGEMENT

G4-24	List of stakeholder groups engaged by the organization.	14/ 16-21	Yes
G4-25	Identification and selection of stakeholders	14	Yes
G4-26	The organization's approach to stakeholder engagement	16-21	Yes
G4-27	Stakeholders' topics and concerns	16-21	Yes

REPORT PROFILE

G4-28	Reporting period	115	
G4-29	Date of most recent previous report	115	
G4-30	Reporting cycle	115	
G4-31	Contact point for questions	115	
G4-32	GRI Content Index	118-124	
G4-33	External assurance for the report	127-128	

GENERAL STANDARD DISCLOSURES		Page Number (or Link)	External Assurance			
GOVERNANCE						
G4-34	The governance structure	8				
G4-35	Process for delegating authority	8				
G4-36	A position with responsibility for sustainability	11				
G4-38	Composition of highest governance body	8				
G4-40	Nomination and selection process for the highest governance body	36				
G4-41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed	37				
G4-42	Highest governance body's role in setting purpose, values and strategy	11/ 13				
G4-44	Processes for evaluation of the highest governance body's performance	11				
G4-45	The highest governance body's role in identification and management of risk and opportunities	39				
G4-48	The highest committee or position reviews and approves sustainability report	115				
G4-49	The process for communicating critical concerns	14-15				
ETHICS AND INTEGRITY						
G4-56	The organization's values, principles, standards and norms.	12-13				
SPECIFIC STANDARD DISCLOSURES						
Sdgs & Gri Specific Standard Disclosures	Page Number (or Link)	Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	External Assurance	
SDG 1 : End poverty in all its forms everywhere						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Procurement Practices <i>SDG 1 - Economic Inclusion</i>	50-51				
G4-EC9	Proportion of spending on local suppliers.	109				
SDG 2 : End hunger, achieve food security, and improved nutrition and promote sustainable agriculture						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Economic Performance	48				
G4-EC1	Direct economic value generated and distributed <i>SDG 2 - Infrastructure Investment</i>	109				
SDG 3 : Ensure healthy lives and promote well-being for all at all ages						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Emissions	61/ 66-67				
G4-EN15	Direct GHG emissions (SCOPE 1) <i>SDG 3 - Air Quality</i>	110			Yes	
G4-EN16	Indirect GHG emissions (SCOPE 2) <i>SDG 3 - Air Quality</i>	110			Yes	
G4-EN21 OGSS	NOx,SOx, And other significant air emissions <i>SDG 3 - Air Quality</i>	111	SO ₂ from acid flare and other VOC emissions apart from Fugitive VOCs emission	The information is currently unavailable	The data will be available in 2020	Yes
G4-OG6	Volume of flared and vented hydrocarbon <i>SDG 3 - Air quality</i>	111	Volume of continuously flared hydrocarbon Volume of vented hydrocarbon	The information is currently unavailable The information is not applicable	BCP is planning to install instrument for capture gas flared at plant 4, 2 and 3 in 2018, 2020 respectively	

SDG & GRI Specific Standard Disclosures	Page Number (or Link)	Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	External Assurance	
SDG 3 : Ensure healthy lives and promote well-being for all at all ages						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Effluent and waste	64				
G4-EN22	Total water discharge by quality and destination <i>SDG 3 - Water quality</i>	65				
G4-DMA	Effluent and waste	68				
G4-EN23	Total weight of waste by type and disposal method <i>SDG 3 - Waste</i>	111			Yes	
G4-EN24	Total number and volume of significant spills <i>SDG 3 - Spills</i>	112				
G4-DMA	Occupational Health and Safety	84-86				
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days and absenteeism <i>SDG 3 - Occupational Health and Safety</i>	114	Contractor: Absence rate	The information is currently unavailable	The data will be available in 2020	Yes
SDG 4 : Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Training and Education	92-95				
G4-LA9	Average hours of training per year per employee <i>SDG 4: Employee training & Education</i>	113			Yes	
SDG 5 : Achieve gender equality and empower all women						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Employment	89-100				
G4-LA1	Total number and rates of new employee hires and employee turnover <i>SDG 5 : Gender equity</i>	112-113				
G4-DMA	Training and Education	92-95				
G4-LA9	Average hours of training per year per employee <i>SDG 5 : Gender equity</i>	113			Yes	
SDG 6 : Ensure availability and sustainable management of water and sanitation for all						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Water	62				
G4-EN8	Total water withdrawal by source <i>SDG 6 - Sustainable water withdrawals</i>	62	Water Withdrawal from river in case of fire drills	The information is currently unavailable	The data will be available in 2018	Yes
G4-EN10	Percentage and total volume of water recycled and reused <i>SDG 6 - Water efficiency - Water recycling & reuse</i>	63			Yes	
G4-DMA	Effluent and waste	64				
G4-EN22	Total water discharge by quality and destination <i>SDG 6 - Water quality - Water-related ecosystem and biodiversity</i>	65				

Fully Reported Partially Reported

Green text BCP indicator Italic text *SDG Mapping linkage to disclosure*

SDG & GRI Specific Standard Disclosures	Page Number (or Link)	Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	External Assurance
SDG 6 : Ensure availability and sustainable management of water and sanitation for all					
MATERIAL ASPECT & GRI INDICATOR					
G4-DMA	Effluent and waste	68			
G4-EN23	Total weight of waste by type and disposal method <i>SDG 6 - Waste</i>	111			Yes
G4-EN24	Total number and volume of significant spills <i>SDG 6 - Spills</i>	112			
SDG 7 : Ensure access to affordable, reliable, sustainable and modern energy for all					
MATERIAL ASPECT & GRI INDICATOR					
G4-DMA	Energy	59			
G4-EN3 OGSS	Energy consumption within the organization <i>SDG 7 - Energy efficiency</i>	110			Yes
G4-EN5	Energy intensity <i>SDG 7 - Energy efficiency</i>	110			
SDG 8 : Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all					
MATERIAL ASPECT & GRI INDICATOR					
G4-10	Employee by categories. <i>SDG 8 - Employment</i>	112			
G4-DMA	Occupational Health and Safety	84-86			
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days and absenteeism <i>SDG 8 - Occupational Health and Safety</i>	114	Contractor: Absence rate	The information is currently unavailable	The data will be available in 2020 Yes
G4-DMA	Emergency Preparedness	84-86/ 102			
G4-DMA	Labor Management Relations	89			
	Best Employer Score by Aon Hewitt	113			
G4-DMA	Training and Education	92-95			
G4-LA9	Average hours of training per year per employee <i>SDG 8 : Employee training & Education</i>	113			Yes
G4-DMA	Sustainable Supplier Development	50-51			
	Number of suppliers the were self-assessed using SCOC criteria	112			
G4-DMA	Efficiency of supplier contract management	78-80			
	Percentage of efficiency in supplier contract management	80			
SDG 9 : Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation					
MATERIAL ASPECT & GRI INDICATOR					
G4-DMA	Overall	81			
G4-EN31	Total environmental protection expenditures and investment type <i>SDG 9 - Environmental investments - Reserch & Development</i>	81			

SDG & GRI Specific Standard Disclosures	Page Number (or Link)	Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	External Assurance
SDG 10 : Reduce inequality within and among countries					
-					
SDG 11 : Make cities and human settlements inclusive, safe, resilient and sustainable					
MATERIAL ASPECT & GRI INDICATOR					
G4-DMA	Transport	78-80			
G4-EN30	Significant environmental impacts of transporting products. <i>SDG 11 - Sustainable transportation</i>	79			
G4-DMA	Local communities	101-108			
G4-SO1	Local community engagement, impact assessments and development programs	102			
SDG 12 : Ensure sustainable consumption and production patterns					
MATERIAL ASPECT & GRI INDICATOR					
G4-EN10	Percentage and total volume of water recycled and reused <i>SDG 12 - Water efficiency</i>	63			Yes
G4-DMA	Emissions	61/66-67			
G4-EN15	Direct GHG emissions (SCOPE 1) <i>SDG 12 - Air Quality</i>	110			Yes
G4-EN16	Indirect GHG emissions (SCOPE 2) <i>SDG 12 - Air Quality</i>	110			Yes
G4-EN21 OGSS	NOx, SOx, And other significant air emissions <i>SDG 12 - Air Quality</i>	111	SO2 from acid flare and other VOC emissions apart from Fugitive VOCs emission	The information is currently unavailable	The data will be available in 2020
G4-OG6	Volume of flared and vented hydrocarbon <i>SDG 12 - Air quality</i>	111	Volume of continuously flared hydrocarbon Volume of vented hydrocarbon	The information is currently unavailable The information is not applicable	BCP is planning to install instrument for capture gas flared at plant 4, 2 and 3 in 2018, 2020 respectively
G4-DMA	Effluent and waste	68			
G4-EN23	Total weight of waste by type and disposal method <i>SDG 12 - Waste</i>	111			Yes
G4-EN24	Total number and volume of significant spills <i>SDG 12 - Spills</i>	112			
G4-DMA	Transport	78-80			
G4-EN30	Significant environmental impacts of transporting products. <i>SDG 12 - Transport</i>	79			
G4-DMA	Overall	81			
G4-EN31	Total environmental protection expenditures and investment type <i>SDG 12 - Environmental investments</i>	81			

SDG & GRI Specific Standard Disclosures	Page Number (or Link)	Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	External Assurance	
SDG 12 : Ensure sustainable consumption and production patterns						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Product and Service Labelling	69-77				
G4-PR5	Results of surveys measuring customer satisfaction	114				
SDG 13 : Take urgent action to combat climate change and its impact						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Energy	59				
G4-EN3	Energy consumption within the organization <i>SDG 13 - Energy efficiency</i>	110			Yes	
G4-DMA	Emissions	61/66-67				
G4-EN15	Direct GHG emissions (SCOPE 1) <i>SDG 13 - GHG Emissions</i>	110			Yes	
G4-EN16	Indirect GHG emissions (SCOPE 2) <i>SDG 13 - GHG Emissions</i>	110			Yes	
G4-DMA	Transport	78-80				
G4-EN30	Significant environmental impacts of transporting products.	79				
G4-DMA	Overall	81				
G4-EN31	Total environmental protection expenditures and investment type <i>SDG 13 - Environmental Investments</i>	81				
SDG 14 : Conserve and sustainability use the oceans, seas and marine resource for sustainable development						
MATERIAL ASPECT & GRI INDICATOR						
G4-DMA	Emissions	61/66-67				
G4-EN15	Direct GHG emissions (SCOPE 1) <i>SDG 14 - Ocean acidification</i>	110				
G4-EN16	Indirect GHG emissions (SCOPE 2) <i>SDG 14 - Ocean acidification</i>	110				
G4-EN21 OGSS	NO _x ,SO _x , And other significant air emissions <i>SDG 14 - Ocean acidification</i>	111	SO ₂ from acid flare and other VOC emissions apart from Fugitive VOCs emission	The information is currently unavailable	The data will be available in 2020	Yes
G4-DMA	Effluent and waste	64				
G4-EN22	Total water discharge by quality and destination <i>SDG 14 - Water discharge to oceans</i>	65				
G4-EN24	Total number and volume of significant spills <i>SDG 14 - Spills</i>	112				

SDG & GRI Specific Standard Disclosures	Page Number (or Link)	Identified Omission(s)	Reason(s) for Omission(s)	Explanation for Omission(s)	External Assurance
---	-----------------------	------------------------	---------------------------	-----------------------------	--------------------

SDG 15 : Protect, restore and promote sustainable use of terrestrial ecosystem, sustainably manage forestes, combat desertification, and halt and reserve land degradation and halt biodiversity loss

MATERIAL ASPECT & GRI INDICATOR

G4-EN15	Direct GHG emissions (SCOPE 1) <i>SDG 15 - Forest degradation</i>	110				Yes
G4-EN16	Indirect GHG emissions (SCOPE 2) <i>SDG 15 - Forest degradation</i>	110				Yes
G4-EN21 OGSS	NOx,SOx, And other significant air emissions <i>SDG 15 - Forest degradation</i>	111	SO ₂ from acid flare and other VOC emissions apart form Fugitive VOCs emission	The information is currently unavailable	The data will be available in 2020	Yes
G4-DMA	Overall	81				
G4-EN31	Total environmental protection expenditures and investment type <i>SDG 13 - Environmental investment</i>	81				





SDG 16 : Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, combat desertification, and halt and reserve land degradation and halt biodiversity loss




MATERIAL ASPECT & GRI INDICATOR

G4-34	The governance structure <i>SDG 16 - Grievance mechanism - Inclusive decision making</i>	8				
G4-41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed <i>SDG 16 - Effective, accountable and transparent governance</i>	37				
G4-45	The highest governance body's role indenfication and management of risk and opportunities <i>SDG 16 - Inclusive decision making</i>	39				
G4-56	The organization's values, principles, standards and norms <i>SDG 16 - Ethical and lawful behavior</i>	12-13				
G4-DMA	Compliance	36/ 64/ 66				
G4-EN29	Monetary valueof significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations <i>SDG 16 - Compliance with law and regulations</i>	112				
G4-DMA	Anti-corruption	37-38				
G4-SO4	Communication and training on anti-corruption policies and procedures <i>SDG 16 - Anti-corruption</i>	38	Percentage of supplier by category	The information is currently unavailable	The data will be available in 2017	
G4-DMA	Marketing Communications	87				
G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concernig marketing communications <i>SDG 16 - Compliance with law and regulations</i>	114				

SDG 17 : Strengthen the mean of implementation and revitalize the global partnership for sustainable development

Bangchak GC Advanced COP – Self Assessment

Bangchak GC Advanced COP – Self Assessment	Bangchak GC Advanced COP – Self Assessment	Bangchak Approach	Disclose
Scope: Implementing the Ten Principles into Strategies & Operations	 Strategy, Governance and Engagement		
	1. The COP describes mainstreaming into corporate functions and business units	<ul style="list-style-type: none"> Bangchak and Sustainability Sustainability Strategy 	11-13 26-33
	2. The COP describes value chain implementation	<ul style="list-style-type: none"> About Bangchak Supply Chain Management 	6-7 50-51 78-80
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights Principle 2 : Businesses should make sure that they are not complicit in human rights abuses	 Human rights		
	3. The COP describes robust commitments, strategies or policies in the area of human rights	<ul style="list-style-type: none"> Bangchak and Sustainability/ Sustainability Policy Employee Stewardship 	11-11 89-100
	4. The COP describes effective management systems to integrate the human rights principles		
	5. The COP describes effective monitoring and evaluation mechanisms of human rights integration		
Principle 3 : Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining Principle 4: The elimination of all forms of forced and compulsory labour. Principle 5: The effective abolition of child labour Principle 6: The elimination of discrimination in respect of employment and occupation	 Labour		
	6. The COP describes robust commitments, strategies or policies in the area of labour	<ul style="list-style-type: none"> Bangchak and Sustainability / Sustainability Policy Stakeholder Engagement (Employee) Safety & Occupational Health Employee Stewardship 	11-13 14-16 84-86 89-100
	7. The COP describes effective management systems to integrate the labour principles		
	8. The COP describes effective monitoring and evaluation mechanisms of labour principles integration		
Principle 7: Businesses should support a precautionary approach to environmental challenges Principle 8: Businesses should undertake initiatives to promote greater environmental responsibility Principle 9: Businesses should encourage the development and diffusion of environmentally friendly technologies	 Environment		
	9. The COP describes robust commitments, strategies or policies in the area of environmental stewardship	<ul style="list-style-type: none"> Bangchak and Sustainability / Sustainability Policy Environment Performance Sustainable Product and Service Eco Efficiency Environmental Cost Accounting 	11-13 58 69-77 80 81 110-112
	10. The COP describes effective management systems to integrate the environmental principles		
	11. The COP describes effective monitoring and evaluation mechanisms for environmental stewardship		

Bangchak GC Advanced COP – Self Assessment	Bangchak GC Advanced COP – Self Assessment	Bangchak Approach	Disclose
<p>Principle 10: Businesses should work against corruption in all its forms, including extortion and briber</p>	 Anticorruption		
	<p>12. The COP describes robust commitments, strategies or policies in the area of anticorruption</p>	<ul style="list-style-type: none"> • Bangchak and Sustainability / Sustainability Policy 	<p>13</p>
	<p>13. The COP describes effective management systems to integrate the anti-corruption principle</p>	<ul style="list-style-type: none"> • Corporate Governance • Anti-Corruption • Supply Chain Management 	<p>36 37-38 50-51</p>
	<p>14. The COP describes effective monitoring and evaluation mechanisms for the integration of anti-corruption</p>		
<p>Scope: Taking Action in Support of Broader UN Goals and Issues</p>	 UN Goals and Issues		
	<p>15. The COP describes core business contributions to UN goals and issues</p>	<ul style="list-style-type: none"> • Bangchak and Sustainability / Principle and conceptual framework of sustainability 	<p>11-13 123</p>
	<p>16. The COP describes strategic social investments and philanthropy</p>	<ul style="list-style-type: none"> • Community & Social Engagement 	<p>101-108</p>
	<p>17. The COP describes advocacy and public policy engagement</p>	<ul style="list-style-type: none"> • Bangchak and Sustainability / Sustainability Policy 	<p>13</p>
<p>Scope: Corporate Sustainability Governance and Leadership</p>	 Governance		
	<p>19. The COP describes CEO commitment and leadership)</p>	<ul style="list-style-type: none"> • Letter from President and CEO • Principle and conceptual framework of sustainability • Sustainability Strategy 	<p>4-5 11-13 26-33</p>
	<p>20. The COP describes Board adoption and oversight</p>	<ul style="list-style-type: none"> • Bangchak and Sustainability / Sustainability Corporate Structure • Corporate Governance 	<p>11 36</p>
<p>21. The COP describes stakeholder engagement</p>	<ul style="list-style-type: none"> • Bangchak and its stakeholders 	<p>14-21</p>	



LRQA Assurance Statement

Relating to the Bangchak Petroleum Public Company Limited's Sustainability Report for the calendar year 2016

This Assurance Statement has been prepared for the Bangchak Petroleum Public Company Limited in accordance with our contract but is intended for the readers of this Report.

Terms of Engagement

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by the Bangchak Petroleum Public Company Limited (BCP) to provide independent assurance on its Sustainability Report 2016 ("the report") against the assurance criteria below to a limited level of assurance at the materiality of the professional judgement of the verifier using LRQA's verification approach. LRQA's verification approach is based on current best practise and uses the principles of AA1000AS (2008) - inclusivity, materiality, responsiveness and reliability of performance data and processes defined in ISAE3000.

Our assurance engagement covered Sustainability Report 2016 of BCP and its business groups in Thailand under its operational control ⁽¹⁾ and specifically the following requirements:

- Confirming that the report is in accordance with:
 - GRI G4's Sustainability Reporting Guidelines and core option
 - GRI G4 Oil & Gas Sector Disclosure
- Evaluating the reliability of data and information for only the selected indicators below:
 - Environmental: energy consumption within the organization (G4-EN3) ⁽²⁾, total water withdrawn by source (G4-EN8), percentage and total volume of water recycled and reused (G4-EN10), direct GHG emissions (G4-EN15) ⁽²⁾, energy indirect GHG emissions (G4-EN16) ⁽²⁾, NOx, SOx, and other significant air emissions (VOC) (G4-EN21), total weight of waste by type and disposal method (G4-EN23) ⁽²⁾
 - Social: type and rate of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender (G4-LA6) ⁽³⁾, average hours of training per year by gender, and by employee category (G4-LA9).

Notes:

- (1) Excludes subsidiaries and related companies in Thailand and overseas unless stated otherwise.
- (2) Also includes BCP subsidiaries and related companies in Thailand, where BCP holds over 20% in equity, except mergers and acquisitions (M&As) that have been in operation for less than two years.
- (3) Limited to a BCP refinery and office areas at Sukhumvit Soi 64 only.

LRQA's responsibility is only to BCP. LRQA disclaims any liability or responsibility to others as explained in the end footnote. BCP's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of BCP.

LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that BCP has not:

- Met the requirements above
- Disclosed reliable performance data and information as no errors or omissions were detected within the selected indicators
- Covered all the issues that are important to the stakeholders and readers of this report.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites.

LRQA's Approach

LRQA's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing BCP's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this by interviewing BCP employees who engage directly with stakeholder groups as well as reviewing documents and associated records.
- Reviewing BCP's process for identifying and determining material issues to confirm that the right issues were included in their report. We did this by benchmarking reports written by BCP and its peers to ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to evaluate whether BCP makes informed business decisions that may create opportunities that contribute towards sustainable development.



- Auditing BCP's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, and systems. We also spoke with those key people responsible for compiling the data and drafting the report.
- Visiting BCP's refinery and office located at Sukhumvit 64 to sample evidence for the selected indicators to confirm their reliability. LRQA did not verify the data back to its original sources, nor did it assess the accuracy and completeness of the data reported by individual locations.

Observations

Further observations and findings, made during the assurance engagement, are:

- **Stakeholder inclusivity:**
We are not aware of any key stakeholder groups that have been excluded from BCP's stakeholder engagement process. BCP has maintained open dialogue with all of its stakeholders. The Report content, as well as BCP's visions for addressing sustainability development, has then been informed by the views and expectations of these stakeholders.
- **Materiality:**
We are not aware of any material issues concerning BCP's sustainability performance that have been excluded from the report. It should be noted that BCP has established extensive criteria for determining which issue/aspect is material and that these criteria are not biased to the BCP's management.
- **Responsiveness:**
BCP has processes for responding to concerns from various stakeholder groups. We believe that these communication processes are effective in explaining BCP's aim in contributing towards sustainable development. However, we believe that future reports should expand its reporting scope of other performance indicators to its subsidiaries in Thailand and overseas to further demonstrate its responsiveness to and perception of stakeholder at a broader level.
- **Reliability:**
Data management systems are considered to be properly defined for the data and information collection and calculation associated with the selected indicators. We believe that a more periodic implementation of internal verification covering all subsidiaries will further improve the reliability of its data and information.

LRQA's competence and independence

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

LRQA has not provided any kind of services except this sustainability report verification to BCP. The verification assessments, is the only work undertaken by LRQA for BCP and as such does not compromise our independence or impartiality.

Signed

Paveena Hengsrirawat
LRQA Lead Verifier

Dated: 25 February 2017

On behalf of Lloyd's Register Quality Assurance Ltd.
Lloyd's Register International (Thailand) Limited
22nd Floor, Sirinrat Building, 3388/78 Rama IV Road
Klongton, Klongtoey, Bangkok 10110 THAILAND

LRQA reference: BGK6046193

Lloyd's Register Group Limited, its affiliates and subsidiaries, including Lloyd's Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

The English version of this Assurance Statement is the only valid version. Lloyd's Register Group Limited assumes no responsibility for versions translated into other languages.

This Assurance Statement is only valid when published with the Report to which it refers. It may only be reproduced in its entirety.

Copyright © Lloyd's Register Quality Assurance Limited, 2016. A member of the Lloyd's Register Group.



The Bangchak Petroleum Public Company Limited
2098 M Tower Building 8th Floor, Sukhumvit Road, Bangchak
Phrakhanong, Bangkok 10260
Tel. +662 335 8888 Fax. +662 335 8000
www.bangchak.co.th