



Greenovate
our Tomorrow



Integrated Sustainability Report 2019

Bangchak Corporation Public Company Limited



Vision :

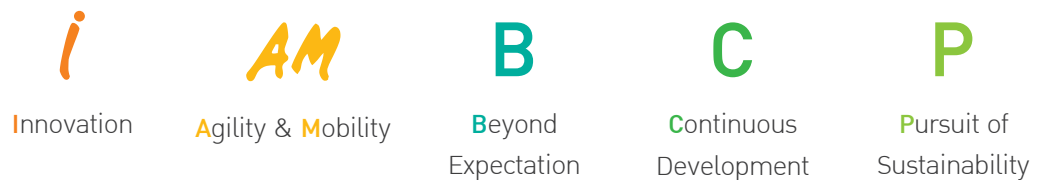
To be the Leading Asian Greenovative Group, founded on Good Corporate Governance, through Inclusiveness and Sustainability

Mission :

Bangchak 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 organization, learning culture and happy workplace.

Core Values :



Corporate Culture : Sustainable Innovative Business Development in Harmony with the Environment and Society

Employee Culture : To be virtuous, Knowledgeable, and Contributive to others

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And Creating Values for Society



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About this Report

Report Content

Bangchak Corporation Public Company Limited has prepared a Sustainability Report to disclose the company's annual sustainability performance (Disclosure 102-52) for the 15th year. This year, the company has prepared an Integrated Sustainability Report, which integrates inputs that the company invested in its business activities to deliver the outputs and outcomes to the company and its stakeholders. The reporting period of this report is from January 1 to December 31, 2019 (Disclosure 102-50). This report has been prepared in accordance with the GRI Standards: Core option (Disclosure 102-54) and the Oil & Gas Sector Supplement (OGSS) as well as the United Nations Global Compact : Advance Level. In addition, the company integrates Sustainable Development Goals (SDGs) into the corporate strategy and business operations of the organization in order to demonstrate the commitment towards the SDGs adopted by the company as well as the needs and expectations of various groups of stakeholders.

Reporting Boundary (Disclosure 102-45, Disclosure 102-46, Disclosure 103-1)

This report discloses 2019 performance data under Bangchak Corporation Public Company Limited (BCP) operating in Thailand. The scope excludes subsidiaries and joint venture companies, except for energy and GHG emission performance data. These data cover our subsidiaries that Bangchak has over 42% ownership (exclude new companies / merger and acquisition companies that operate in Thailand less than 2 years). Therefore, energy and GHG performance data have been changed from the previous year. The subsidiaries within the reporting boundaries are as follows : (Disclosure 102-49)

1. Bangchak Green Net Company Limited (BGN)
2. Bangchak Retail Company Limited (BCR)
3. BCPG Public Company Limited (BCPG)
4. Bangchak Solar Energy Company Limited (BSE)
5. BBGI Public Company Limited (BBGI)
6. Bangchak Biofuel Company Limited (BBF)
7. Bangchak Bioethanol (Chachoengsao) Company Limited (BBE)
8. KSL Green Innovation Public Company Limited (KGI-Nam Phong and KGI-Bo Phloi)

Water withdrawal data covers Bangchak's office and refinery located in Sukhumvit 64 and Bangchak's head office at M Tower. In addition, the company has expanded the reporting boundary of water withdrawal to include water withdrawal data at the office in the area of 30 Rais (Disclosure 102-49). For data regarding water recycled and reused, the company has updated the data by including new water reuse initiative from water footprint which has been conducted since 2018 to cover all water reuse data of the company. This has resulted in slight changes in water withdrawal and water recycled and reused (Disclosure 102-48). Air emissions, significant oil and chemical spills, and waste management data were only for the operations of Bangchak's office and the refinery at Sukhumvit 64 as it is the important operating site of the company.

For occupational health and safety data, the company has applied GRI 403: 2018 by reporting on data of the office and refinery located in Sukhumvit 64 and M Tower Headquarters only. Beside the aforementioned changes, there was no change in relation to the organization or any supply chains in the year 2019. (Disclosure 102-10)

Report Assurance (Disclosure 102-53)

This report has been reviewed by executives from each business unit and functions (Disclosure 102-32) to ensure the completeness, accuracy and cover stakeholders' expectation. In addition, the report is subjected to an independence third party, who has a professional experience and provides confidence to our business performances in oil and gas industry, leading to gain credibility and transparency aligned with GRI Standards. Details are shown in the Auditor's Report in pages 161-163

Contact Information

For more information or suggestion, please contact

Corporate Sustainability Development and Standards

Bangchak Corporation Public Company Limited

E-mail: nintira@bangchak.co.th, Phone +66 2335 4383

Companies within reporting boundary (Disclosure 102-45, Disclosure 102-46, Disclosure 103-1)

No.	Company	% equity	Production	Energy	GHGs	Water use	Waste water	Air Emission	Waste	Safety
1	Bangchak Corporation Plc.	100	/	/	/	/	/	/	/	/
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	NR	/	/	NR	NR	NR	NR	NR
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
Green-Power Business										
1	BCPG Plc.	70.04								
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 (Buriram) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
5	Huang Ming Japan Co., Ltd.	100								
6	Bangchak Solar Energy (Buriram 1) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
7	Bangchak Solar Energy (Nakhonratchasima) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
8	Bangchak Solar Energy (Prachinburi) Co., Ltd.	100	/	/	/	x	x	NR	NR	NR
9	• BSE Energy Holdings Pte Ltd.	100								
10	• BCPG Japan Corporation Ltd.	100								
11	• BCPG Engineering Co., Ltd.	100								
12	BCPG Investment Holding Pte Ltd.	100								
13	• Greenenergy Holdings Pte Ltd.	100								
14	• Greenenergy Power Pte Ltd.	100								
15	• BCPG Wind Cooperatief U.A.	100								
16	• Petro Wind Energy Inc.	40								
17	Thai Digital Energy Development Co., Ltd.	100								
18	BCPG Biopower 2 Company Limited	100								
19	Lom Ligor Co., Ltd.	100								
20	Star Energy Group Holdings Pte Ltd.	33.33								
21	Impact Energy Asia Development Limited	45								
Bio-Based Product Business										
1	BBGI Plc.	60	NR	/	/	x	x	NR	NR	NR
2	KSL Green Innovation Plc.	100	/	/	/	x	x	x	x	x
3	Bangchak Bioethanol (Chachoengsao) Co., Ltd.	85	/	/	/	x	x	x	x	x
4	Bangchak Biofuel Co., Ltd.	70	/	/	/	x	x	x	x	x
5	Ubon Bio Ethanol Plc.	21.28								
6	• Ubon Agricultural Energy Co., Ltd.	100								
7	• Ubon Biogas Co., Ltd.	100								
8	• NP Bio Energy Co., Ltd.	100								
Natural Resource Business and Business Development										
Exploration and Product Business										
1	BCP Energy International Pte. Ltd.	100	NR	NR	NR	NR	NR	NR	NR	NR
2	Nido Petroleum Pty Ltd.	100								
3	• Nido Petroleum Indonesia (Holding) Pty Ltd.	100								
4	• Nido Petroleum Indonesia (Gurita) Pty Ltd.	100								
5	• Nido Petroleum Indonesia (Cakalang) Pty Ltd.	100								
6	• Nido Petroleum Indonesia (Baronang) Pty Ltd.	100								
7	Nido Petroleum Philippines Pty Ltd.	100								
8	• Nido Production (Holding) Pty Ltd	100								
9	BCPR Co., Ltd.	100	NR	NR	NR	NR	NR	NR	NR	NR
10	• BCPR Pte. Ltd.	100								
11	• OKEA AS	46.62								
Innovation Business										
12	BCP Innovation Pte. Ltd.	100	NR	NR	NR	NR	NR	NR	NR	NR
13	Lithium Americas Corp.	15.77								
14	• Minera Exar S.A	50								
15	• Lithium Nevada Corp.	100								
16	• Rheo Minerals Inc.	100								
17	Bonumose LLC.	5.45								
18	Enevate Corporation	1.15								
19	BCV Bio Based Co., Ltd	100								
20	BCV Energy Co., Ltd	100								
21	BCV Innovation Co., Ltd	100								
22	BCV Partnership Co., Ltd.	100								
23	Bangchak Ventures Pte. Ltd.	100								

New companies/ Merger and Acquisition Companies that operate within in Thailand less than 2 years, New companies/ Merger and Acquisition Companies that operate outside Thailand less than 3 years. The companies that operate in Thailand will report KPIs after have operated. The companies that operate outside Thailand will report KPIs after they have operated for 3 years. (Disclosure 103-1)

Office building, did not collect environmental and safety data Non Relevance (NR) Data was not significant to business and did not provide impact to Bangchak's overall performance.
/ Data was disclosed in the report. X Data was not collected.

The font color indicates the status of the company.

Blue: Subsidiaries with Bangchak holding $\geq 42\%$ shares

Green: Joint venture means Bangchak holds 20-42% shares

Orange: Other companies



Message from the President and CEO

(Disclosure 102-14)

The year 2019 was a challenging year for Bangkok's business operations resulting from the fluctuations in oil price of the global market, where the oil business was in a downward trajectory following slowing global economy. As a result, the performance of the entire refinery industry had decreased since 2018, continuing until 2019.


With the 3S Business Strategy (Security, Stability, Sustainability) and 4G Sustainability Strategy (Green Business, Green Production, Greenovative Experience, Green Society), the company could overcome such period. Though Bangkok Group's performance in terms of revenue and net profit decreased, the Marketing Business Group had a 7% increase in oil sales volume in retail market, and the company's cumulative market share of 2019 was at 16%. Green Power Business had a 24% increase in total electricity sales volume. Bio-Based Products Business had an increase in B100 and ethanol production. An associated company under Natural Resources Business, OKEA ASA had production and sales nearly as planned, and it had an Initial Public Offering (IPO) and being listed on Norwegian Stock Exchange.

35 Years

We still adhere to our corporate culture to "develop sustainable innovative business in harmony with the environment and society"

1. Green Business:

Investing and creating value for the company sustainably and responsibly by investing in the green power business. This business is good for the environment and be prepared for impacts of changes arising from Mega Trends that may occur in the future. The company has a target to be a low carbon company.

 **Green electricity** Our subsidiary BCPG increased its installed capacity from solar power plants, wind power plants and geothermal power plants, locally and abroad, to a hydropower plant project in Laos PDR with total installed capacity of 69 MW. Its total installed capacity of renewable energy is then at 404 MW.

✔ **Bio-Based Product Business** our subsidiary BBGI had a 13 percent increase in B100 production volume and a 30 percent increase in Ethanol production volume, from capacity expansion of the 2 plants in Kanchanaburi and Khon Kaen, and from the BBE plant's efficiency improvement. The company plans to find opportunities to expand investment in the bio-based product business through fundraising in the stock market in 2020, to strengthen the group as the largest manufacturer and distributor of biofuels in Thailand.

✔ **Bangchak Initiative and Innovation Center (BiIC)** The objective is to create a Green Ecosystem to drive innovation, focusing on green energy and bio-based. In 2019, the company had investments in Enevate Corporation, USA - a reputable startup company of which specializes in vehicle lithium battery production technology and in Bonumose, a company specializes in the production of healthy sugar. The technology is considered high potential, adding value to agricultural products, and add value to the company's bio-based business.

2. Green Production:

Focusing on raising the operation level that is environmental friendly and safety by using resources efficiently, especially water and energy resources. Bangchak Refinery had reached its average crude run at the highest rate of 123.5 KBD during the past September. Bangchak was the first company in Thailand that received the ISO 50001:2018 certification, reflecting its commitment in building energy management capacity to international standards. The company has managed and invested for energy conservation under the Rocket Project, resulting in less energy consumption in production units and better than the target. Energy Intensity Index was also better than the target.

In addition, an Enclosed Ground Flare project, caring for the environment around the refinery and is environmentally friendly under a modern green refinery concept, expects to be completed in early 2020.

For the use of water resources, six Bangchak's products earned certification for their water footprints through the Water Footprint of Products Program. Bangchak was the first oil

refinery in Thailand that have been certified by the program for its efficient and cost-reducing water management process. As the company still continued to reduce water usage and wastewater to the public, in the year 2019 the refinery could reduce water consumption by up to 31% of total water use.

3. Greenovative Experience:

Focusing on creating green experiences and innovations. Bangchak Greenovative Experience supports the modern way of life of Thai people, in which everyone can live in a sustainable way, such as

✔ **Greenovative Product** : Provide green experience and innovation. In the year 2019, the company pushed the sales of B20 diesel in the first quarter and started selling B10 diesel in June, which was good for the environment and helped support palm oil farmers. In addition, at the end of 2019 to the beginning of 2020, which was the period when Thailand faced PM 2.5 problem, the company has helped to alleviate PM 2.5 issue in Bangkok by adjusting the quality of diesel sold in Bangkok to Euro 5 standards to help reduce the impact of air pollution from PM 2.5. In addition, the company had developed a feature "Your Tree" in the Bangchak Mobile Application that displays the amount of CO₂ reduction when customers refuel biofuel products, in order to persuade customers to use alternative energy that will help reduce climate change impacts.

✔ **Greenovative Service Station** : Develop unique service stations by bringing innovation for environmental management, together with the 4Rs process (Renewable, Recycle, Reuse, Reduce), such as the Green Community Energy Management System (GEMS) project at Bangchak Srinakarin service station. This service station can produce electricity from solar energy for the use in shop buildings within the service station, helping in electricity cost reduction and supporting future electricity trading. The system consists of a solar rooftop on the canopy, energy storage system (lithium-ion battery) and the electricity trading platform (auction exchange) using blockchain technology developed by Thai entrepreneurs.

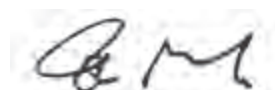
4. Green Society:

The company has hosted an annual environmental seminar to disseminate knowledge about innovation and technology to mitigate climate change issues. In 2019, we hosted seminar "Synthetic Biology: World Changing Science" Forum, including an exhibition of information and products from the SynBio Innovation. Bringing innovations to living organisms is the integration of knowledge in biology, technology and engineering together, in order to solve global resource problems and develop new things, reduce the use of raw materials from natural resources, reduce production processes, reduce waste generation and disposal, reduce environmental impacts, and reduce the cost in production process. It is a disruptive technology or technology which is a tool for designing a sustainable future. The company announced the establishment of SynBio Academy with public and private partners from both local and abroad, aiming to support the development of a bio-innovation business in Thailand through training, meetings, and data providing.

The company considers worthwhile and sustainable use of natural resources, therefore, innovations have been adopted in accordance with the circular economy guidelines, to reduce plastic waste in our Bangchak Group's business. We have invited Thai people to join the project "Waste Reduction at Sources with Bangchak" by encouraging customers to bring their own personal cup to buy a drink at Inthanin Coffee Shop. While all Inthanin cups are biodegradable and drinking lids, which no need for straws. in which we could replace more than 60 million ordinary plastic cups to biodegradable cups. Another ongoing project is "Caps for Seedling" in which the company has collaborated with the Royal Forest Department, to recycle used Inthanin biodegradable glasses to grow saplings instead of plastic seedling bags.










The company also has invited customers to bring in used PET plastic bottles to join the "Rak Pansuk" project organized with business partners. The used PET plastic bottles are recycled into fibers and used to produce shirts, bags and hats for public use. The company has delivered more than 600,000 used PET plastic bottles for recycling, with the goal to reduce at least 10 million bottles per year. In addition, the company has a project "Greenovative Lube Packaging" in which used gallon containers for Bangchak lubricants are processed into post-consumer recycled resin (PCR), which is then utilized as a raw material in the manufacturing of quality recycled gallon containers. The Greenovative Lube Packaging Project not only makes use of alternative materials but also reduces the amount of waste and potential negative environmental impacts created by improper disposal of these containers – in line with the concept of circular economy. The company sets a target of reducing at least 1 million gallon containers waste per year.

On the occasion that Bangchak is entering the 36th year of its business operations, we aim to be a leading green energy company in the region, using innovation for sustainable business development in harmony with the environment and society. Our performance in the year 2019 on three dimensions of economy, society and environment, will ensure that our 3S Business Strategy and 4G Sustainability Strategy can lead the company to environmentally and socially sustainable directions in business development, good return for shareholders and value creation for our stakeholders which is the DNA of Bangchak people.



(Chaiwat Kovavisarach)
President and Chief Executive Officer

About Bangchak

	Company name :	Bangchak Corporation Public Company Limited (Disclosure 102-1)
	Stock Market Name :	BCP
	Business type :	Petroleum and Renewable Energy
	Business activities :	Bangchak Corporation Public Company Limited is in the petroleum and renewable energy business. The five core businesses include refinery and trading business, marketing business, bio-based product business, green power business and natural resources business. The company invests in the core businesses domestically and internationally with the aim to create energy stability for the nation, to drive business with innovation and to ensure business continuity and sustainability for both the organization and Thai society. (Disclosure 102-2)
	Date of establishment :	8 November 1984
	Headquarters :	2098 M Tower, 8 th Floor, Sukhumvit Road, Phra Khanong Tai, Phra Khanong, Bangkok 10260, Thailand (Disclosure 102-3)
	Chief Executive Officer :	Mr. Chaiwat Kovavisarach President and Chief Executive Officer
	Paid-Up registered capital :	THB 1,376,923,157
	Number of permanent employees :	1,251 employees (Disclosure 102-7)

Membership of associations :
(Disclosure 102-13)



Global Compact
Network Thailand





Refinery and Trading Business Group



Marketing Business Group



Green Power Business



Bio-based Product Business



Natural Resources and Business Development Group

**Norway****Natural Resources and Business Development Group**

Exploration and Production Business:
3 production concession sites and 2
developing concession sites

**Canada****Natural Resources and Business Development Group**

Innovation Business
Lithium Mining Business

**United States of America****Natural Resources and Business Development Group**

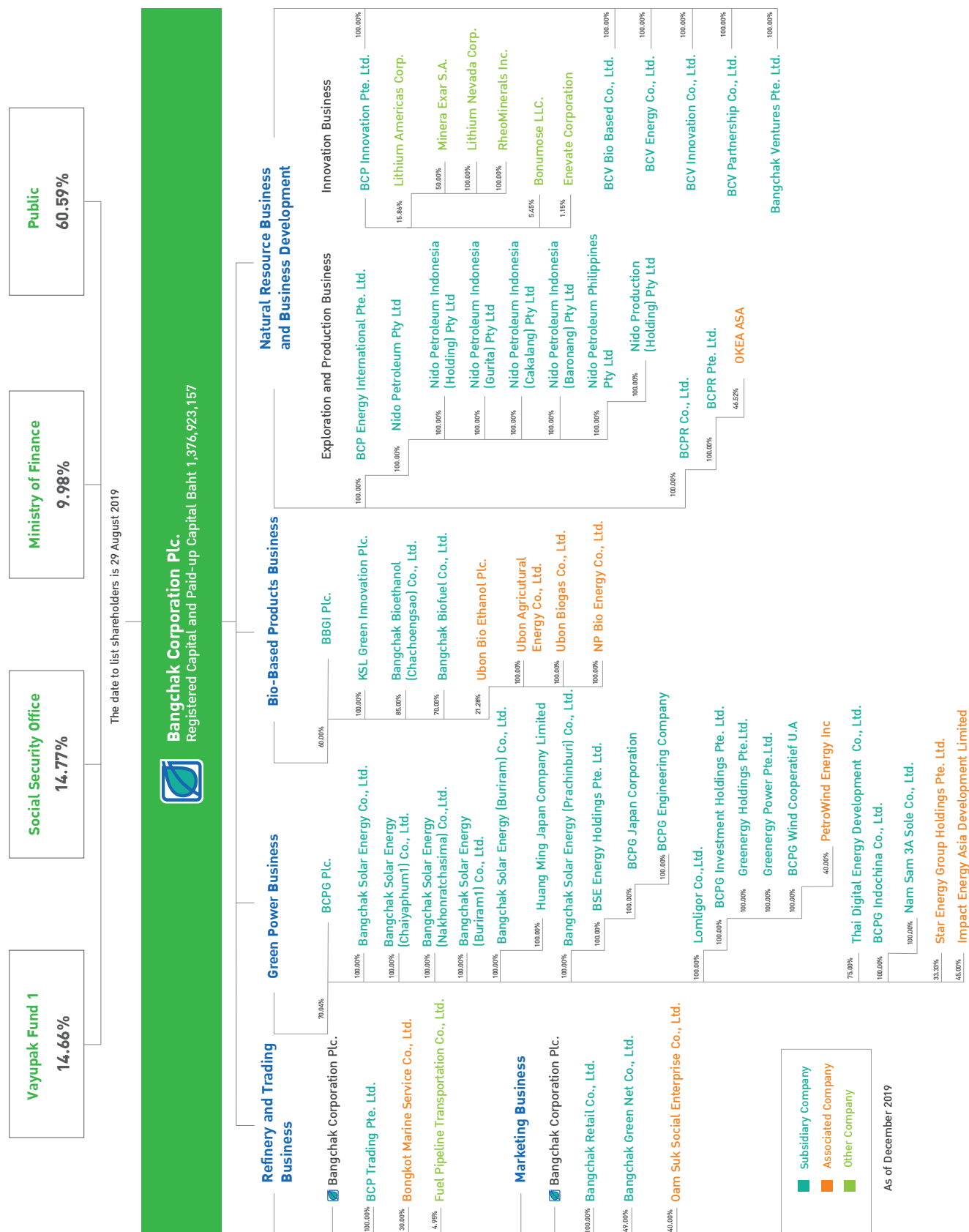
Innovation Business
Lithium Mining Business: 1 operating site
and 1 developing concession site

**Argentina****Natural Resources and Business Development Group**

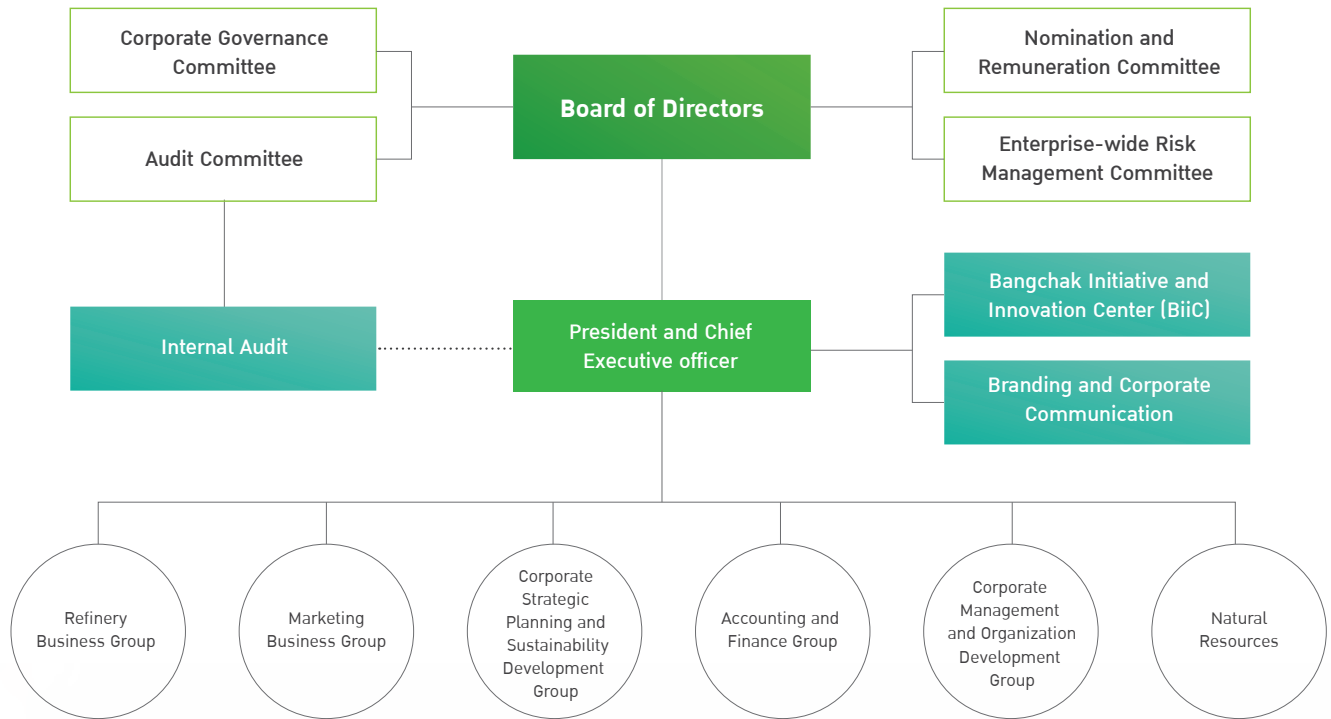
Innovation Business
Lithium Mining Business:
1 under-construction concession site

Bangchak operates its refinery and trading businesses, marketing businesses, bio-based products businesses, green power businesses, and natural resources and business developing businesses around 11 countries, which are Thailand, Lao PDR, Cambodia, Philippines, Indonesia, Singapore, Japan, Norway, Canada, Argentina, and the United States of America (Disclosure 102-4)

Shareholding Structure (Disclosure 102-5)



Management Structure (Disclosure 102-18, Disclosure 102-20, Disclosure 102-22, Disclosure 102-23)



Value Chain (Disclosure 102-9)

Natural Resources and Business Development Group

explores and produces petroleum from oil fields which are well studied in terms of feasibility, environmental impacts and new resource innovation business, such as the lithium mining business. This is to increase competitiveness for sustainable business growth and to diversify business risks.

Green Power Business

produces electricity from renewable energy to respond to the increase in global energy consumption and reduce climate change impacts. In addition, green power business can create stability of incomes.

Refinery and Trading Business Group

Bangchak refinery is a complex refinery which refines crude oil to produce standardized finished oil products and increase value added through effective refining units and oil trading network.



BCPR Pte. Ltd.
OKEA ASA



Lithium Americas Corp.
Minera Exar S.A.
Lithium Nevada Corp.
RheoMinerals Inc.

BCPG Plc.
Bangchak Solar
Energy Co. Ltd.



Bangchak Corporation Plc.
BCP Trading Pte. Ltd.
Bongkot Marine Services Co., Ltd
Fuel Pipeline Transportation Co., Ltd.

Upstream Businesses

Complete mix of assets which are producing assets and development opportunities and attractive exploration prospects

Marketing Business Group

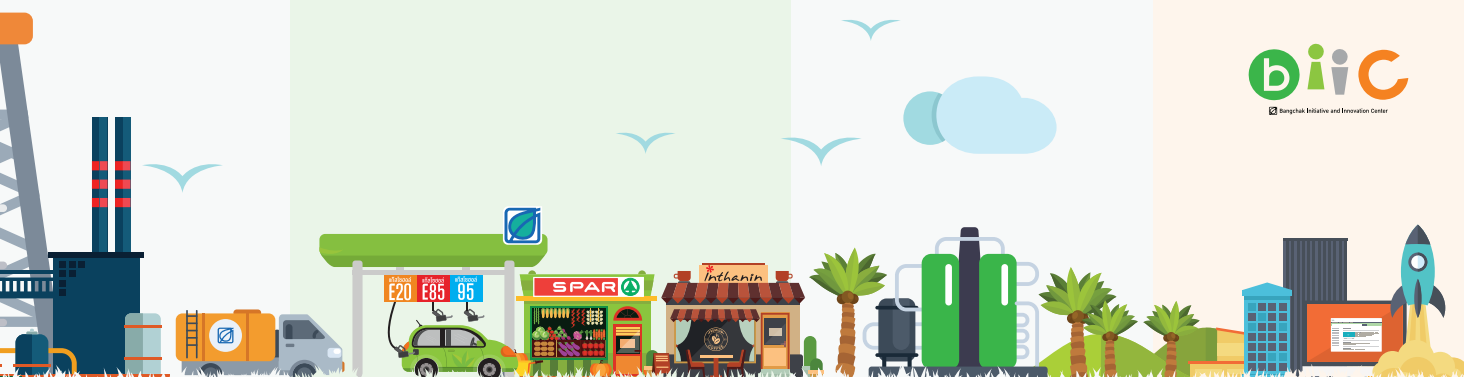
responds to needs of customers and stakeholders by selling oil products which are environmentally friendly through modern service stations located in the strategic areas throughout Thailand. In addition, non-oil businesses are integrated to respond to lifestyle of customers to create sustainable and stable returns.

Bio-based Product Business

produces biodiesel and ethanol which are the significance of renewable energy in reducing trade deficit arising from imported fuels, thus enhancing national energy security and distribute stable incomes to farmers.

Business Development and Innovation Business

researches and develops innovative products and clean energy through the use of innovation and technology in supporting and developing Bangchak's businesses.



Bangchak Corporation Plc.
Bangchak Retail Co., Ltd
Bangchak Green Net Co., Ltd

BBGI Plc.
Bangchak Biofuel Co., Ltd.
Bangchak Bioethanol
(Chachoengsao) Co., Ltd.
KSL Green Innovation Plc.

Bonumose LLC.
Enevate Corporation

Downstream Businesses

Refinery and Marketing Businesses are the main source of overall earnings. The synchronization of benefits and the integrated business model allow for the optimization of profits.

Business Structure

Key Inputs



Financial Capital

- Total liabilities : 68,973 million THB
- Total equity : 58,815 million THB
- Operating expenses : 180,257 million THB
- Investment in subsidiaries : 13,536 million THB



Manufactured Capital

- Property, buildings and equipment : 52,584 million THB
- Total assets : 127,788 million THB
- Investment in 3Es projects and Closed Ground Flare projects
- Strategic Sourcing



Natural Capital

- Raw materials used in Refinery
 - Renewable material: 459,665 tons
 - Non-renewable material: 6,468,825 tons
- Water withdrawal : 2.69 million m³
- Energy consumption : 13,282 TJ



Human Capital

- Total workforce : 1,251 employees
- Total employee training hours : 56,449 hours
- Investment in employee training and development : 44.5 million THB



Social and Relationship Capital

- Community and social development and philanthropy : 98 million THB
- Total volunteering hours of employees : 15,583 hours
- 238 community relation activities
- Green procurement and green label



Intellectual Capital

- Established Bangchak Initiative and Innovation Center (BiIC) for supporting business innovation
- Adjusted work processes to reduce time use and increase efficiency
- Increased knowledge for work improvement and budgets through QCC projects
- Business Process Redesign (BPR) projects
- New business development through design thinking
- Rocket projects

Business Activities

Vision



Missions

- Bring disruptive Greenovation to customers
- Emphasize inclusiveness and sustainability
- Be a trusted partner and value creator
- Promote sustainable social development

Core values



Corporate culture

Sustainable Innovative Business Development in Harmony with the Environment and Society

Employee culture

To be virtuous, Knowledgeable, and Contributive to others

Investment in business that foster sustainable values



Refinery and trading business group



Green power business



Natural resources and business development group



Marketing business group



Bio-based product business



Investment in startups, innovations and green energy

Sustainable procurement and production



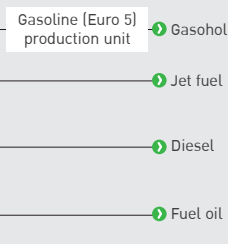
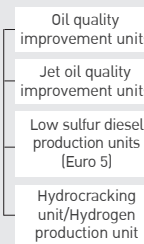
Crude oil



Ethanol & B100



Refinery



- Use natural gas instead of fuel oil in the refining process
- Increase efficiency of refining process through 3Es and YES-R Projects
- Implement safety standard in accordance with ISO 45001 and DuPont's Process Safety Management (PSM)
- Implement environmental management system in accordance with ISO 14001 and conduct carbon footprint and water footprint of products
- Water and waste management through 3Rs principles

Sale and responsibility of products and services



- Sell finished oil products through over 1,200 Bangchak's service stations
- 589 standard service stations
- 612 community service stations (collaboration with agricultural cooperatives)



All oil products of Bangchak contain biofuel which is good for engines and environmentally friendly.

- Gasohol 95, 91, E20 and E85
- Euro 5 diesel B10 and B20



- 600 branches of Inthanin coffee shops
- 46 branches of SPAR convenience stores



Energy management service station is a pioneer project of electricity generated from solar rooftop and electricity trading through blockchain technology

Community and social development

Bangchak conducts community and social development continuously, dividing into 2 levels

Communities around Bangchak Refinery: 8 areas of CSR activities

- Safety
- Economy
- Education
- Sports
- Quality of life
- Environment
- Relationship and cultures
- Public benefits

National level

- Implement Circular Economy in business operations, emphasizing on worthwhile resources, materials and products uses by using innovation and transformation processes following Reduction, Reuse and Recycling principles
- Reduce climate change impacts
- Promote Green Economy for economic development of communities

Outputs

Outcomes for Bangchak

Outcomes for stakeholders



Products

- Average refined oil capacity : 112,600 Barrels/day or equal to 94% of total production capacity
- 1,201 Bangchak service stations in Thailand
- Environmentally friendly oil products : E10, E20, E85, B10, B20
- Lube with a longer change interval



Waste generated from production processes

- Total waste generated : 5,984 tons
- Waste to landfill : 15 tons



Other by-products

- Scope 1 and Scope 2 GHG emissions : 1.06 million tCO₂e
- Wastewater : 0.88 million m³
- Water recycled and water quality improvement from production processes

- Revenues from sales and services : 190,489 million THB
- Net Profit : 2,488 million THB
- EDITDA : 8,709 million THB
- 5% increase in sale volume of the marketing business
- Net Promoter Score (NPS) increased from 71.5 in 2018 to 76.1 in 2019
- Accumulated market share at 16.0%
- Bangchak service stations maintained joint 1st placement of NPS score for 3 consecutive years

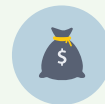
- Total GRM : \$ 4.55 per barrel
- Market share of Bangchak service station increased continuously. The 2019 accumulated market share was 16% with the highest market share at 16.5% in September
- Cost saving from strategic sourcing procurement : 380 million THB
- Percentage of supplier satisfaction to procurement officers : 90.2% (Excellence level)

- Total GHG emission (Scope 1 and Scope 2) reduced by 5.4% compared with base year 2015
- Reduce new water withdrawal by using 3Rs (Reduce, Reuse and Recycle) by 1.2 million m³

- Human Capital Return On Investment (HC ROI) : 74.78
- Employee turnover rate : 5.36%
- Employee engagement score : 62%

- Percentage of community satisfaction to community relation activities : 97%
- Percentage of Community Engagement Score 83.2%
- Numbers of environmentally friendly products and Green label products : 40 products

- Registered Intellectual Property : 2 IPs
- Received 300% tax exemption from 7 Research and Development projects
- 180 million THB of cost saving from conducting Business Process Redesign projects



Financial Capital

- Market Capitalization : 38,554 million THB
- Profit per share : 0.72 THB per share
- Dividend payment : 0.80 THB per share
- Rate of dividend payout ratio : 68%
- Tax payment to government and local authorities : 258 million THB



Manufactural Capital

- The increase in safety performance in production processes
- Percentage of user satisfaction to supplier operation was 84% (good level)



Natural Capital

- Reduced 232,146 tCO₂e GHG emissions from using Bangchak oil products. This was reduced by 7.74% from 2018.
- Reduced tap water withdrawal for production process equivalent to water consumption of 3,185 households
- Euro 5 oil products help reduce 2.5 micron Particulate Matter (PM 2.5) issue



Human Capital

- Average training hours of employees: 45.12 hours/person/year
- Employee benefits : 1,892.89 million THB
- Total Recordable Injury Rate (TRIR) of employees : 0 and TRIR of contractors : 1.06 person/1 million working hours



Social and Relationship Capital

- Social investment : 22.72 million THB including:
 - Community group : Development budget 59.77% and donation budget 12.89%
 - Family group: Development budget 5.02%
 - School group: Development budget 13.19% and donation budget 5.72%
 - Condominium group: Development budget 3.41%
- 52,640 people benefited from community relation activities of Bangchak
- Social Return on Investment to investment of water management project to alleviate drought : 3.9 : 1
- Social Return on Investment to investment from the Read and Write with Ease Project: 1:1.19
- Social Return on Investment to investment from the Used Cooking Oil for Biodiesel project: 1:0.50








Intellectual Capital

- Established Community of Practices (CoP) as a tool for knowledge management for employees who work in the same jobs or for employees who are interested in the same topics. The CoPs aim to overcome issues through meetings which encourage members to propose ideas under friendly atmosphere. In addition, external experts are invited for sharing knowledge





Bangchak at a glance in 2019



Corporate Governance

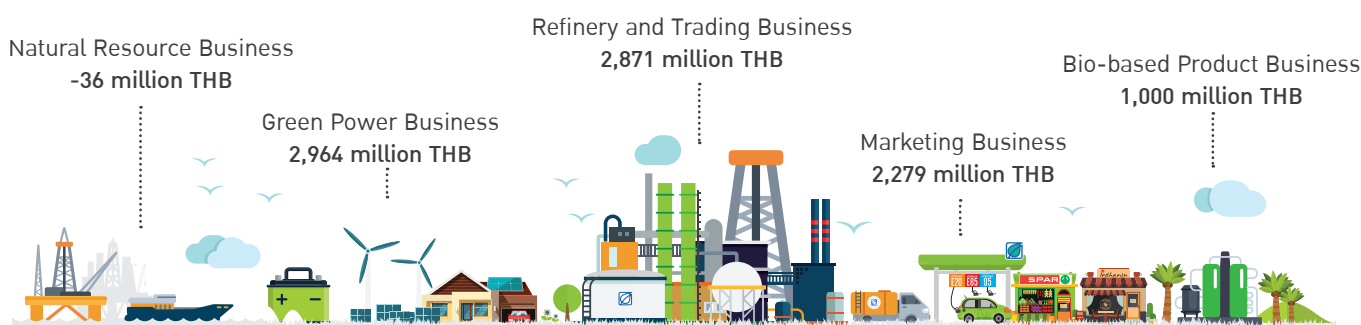
<p>The 16th revision of Corporate Governance Policy</p>	<p>Re-certificated for the membership of CAC (Thailand's Private Sector Collective Action Coalition against Corruption)</p>	<p>Encourage more than 10 suppliers to be certified with CAC</p>	<p>NO Gift Policy for 6 consecutive years</p> 
	<p>Percentage of executives and employees acknowledging the anti-corruption policy and passing the test</p> 	<p>Percentage of notification of the online Conflict of Interest through the e-HR system</p> <p>100%</p> 	<p>Number of Corruption Incidents</p> <p>0 case</p> 

Economic Growth

<p>Revenue from Selling of Goods and services</p> <p>190,489 Million THB</p> 	<p>Net profit</p> <p>2,488 Million THB</p> 	<p>Dividend payment per share</p> <p>0.80 THB/share</p> 
		<p>EBITDA</p> <p>8,709 Million THB</p> 
		<p>Cost saving from the Business Process Redesign (BPR)</p> <p>180 million THB</p>

EBITDA By business groups

Others
-369 million THB



<p>Bangchak Supplier Code of Conduct (BCP-SCOC)</p> <p>53 critical tier 1 suppliers Acknowledged the SCOC</p> <p>24 critical tier 1 suppliers Assessed the SCOC</p>	<p>Cost savings from strategic sourcing procurement</p> <p>380 million THB</p>	<p>Percentage of tier 1 suppliers assessed sustainability risks</p> <p>100%</p>
<ul style="list-style-type: none"> Numbers of tier 1 suppliers: 979 Numbers of critical tier 1 suppliers: 53 Numbers of critical non-tier 1 suppliers: 101 		<p>Percentage of critical non-tier 1 suppliers assessed sustainability risks:</p> <p>100%</p>

In Harmony with the Environment

Total Greenhouse Gas (GHG) Emissions

(Equity share approach)

1.06

Million tCO₂ePercentage of GHG emissions by business
(Equity share approach)Refinery and Trading
Business: **85.8%**Bio-based Product
Business: **13.3%**Green Power
Business: **0.1%**Marketing Business:
0.9%

Net energy consumption

14,513

Terajoules

Energy Intensity Index
(Refinery Business)

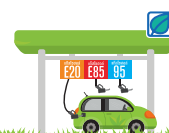
EII = 97.9

Total water
withdrawal2.69
million m³Water recycled
& reused1.21
million m³equal to
31.01%
of total water
consumptionWater
discharged0.88 million m³Percentage of waste
managed with

3Rs

99%
of total wasteNumber of significant
oil and chemical
spills
(more than 100
Barrels)0
case

Environmentally friendly products

Green Product
[Low Carbon Product]Green Power Business
[Avoid Carbon Product]Numbers of
accidents
from product
transportation
(financial loss
more than
1 million THB/
accident)2
cases

Greenovative Experience

SPAR

46
branches

Inthanin

600
branches589 Bangchak
service stations612 Community
service stations

Creating Values for Society



Safety

Numbers of accidents with
Loss Workday Case (LWC)

- Employees: **0**
- Contractors: **2**

Total Recordable Injury Rate
(TRIR)

(persons/1 million working hours)

Employees



male

female

0

0

Contractors



male

female

1.06

0



Customers

Customer satisfaction

86.6%

NPS Score

1st Ranking (Joint)

Employees



The Best Employer Score

56%

Employee Engagement
Score

62%

Average Training Hour
(hours/person/year)

45.12



Employment of disabled

13 persons

(Maintain)



Society

Voluntary hours of employees

15,583 hours

equal to 4.30 million THB



Circular Economy

Send 600,000 plastic
water bottles for
recycling for plastic
fiber in order to produce
clothes, hats and bags
for the public benefit

Bai Mai Pun Suk

Foundation

Social Return On
Investment (SROI) from
Read and Write with
Ease Project

1:1.19

Social Return Value per amount invested

Bangchak Way in the Sufficiency Economy Philosophy

Bangchak has graciously embraced the principles of Sufficiency Economy Philosophy (SEP) of His Majesty the King Maha Bhumibol Adulyadej Maharajababopit into business. Adherence to the principles of the middle path, precaution, moderation, reasonableness, and self-immunity, with knowledge and morality as conditions allows the company to have sustainable business. The ability to adapt to the changing business landscape while continuing to create values to the organization, stakeholders and the society is an important hallmark of sufficiency economy principles.

In addition, the company uses Sufficiency Economy principles as the framework for achieving sustainable development goals in the world (SDGs) that the company is committed to balance the costs and resources of economic, environmental and social operations by applying the principles of reasonableness and immunity.



Knowledge Conditions
<ul style="list-style-type: none"> Moving toward a learning organization by managing knowledge and using the core competencies of the organization Promoting employee engagement Encouraging knowledge sharing and transferring to society

Moral Conditions
<ul style="list-style-type: none"> Selecting personnel who always think about the benefits of other people Cultivating awareness of the benefits to the community / society to all employees Promoting corporate governance and anti-corruption Promoting ways of doing business in the light of the economy



Balance
Benefits and values
to stakeholders



Stability
Able to compete
and adjust quickly



Sustainability
Grow in a
sustainable way

Bangchak and Sustainability (Disclosure 102-16)

Bangchak is committed to responding to the global Sustainability Development Goals (SDGs) and considers criteria for organizational sustainability assessment inclusive of economic, environmental and social dimensions as well as the needs and expectations of stakeholders in search of good opportunities to improve its work processes and to operate businesses in all aspects of sustainability according to the SDGs and the guidelines of international standard of sustainable development practices. With such the practice and consideration, Bangchak could cope with changes in global situations and emerging risks with immunity.

The company operates businesses in the aspect of sustainability through the corporate sustainability management structure in 3 levels which are as follows: (Disclosure 102-19, Disclosure 102-20, Disclosure 102-22)

Policy Level

Sustainability Policy Committee : SPC (Disclosure 102-26)

Sets direction, policy and corporate strategies for sustainable business development for Bangchak and its subsidiaries in response to SDGs, guidelines of corporate sustainability assessments as well as needs and expectations of the stakeholders

Management Level

Sustainability Management Committee : SMC

Implements the policies and responds to the targets set by the Policy Level, including evaluation and reporting sustainability progress to the Policy Levels

Structural Level

Sub - Sustainability Management Committee : Sub SMC

Responds to the SDGs, particularly the nine goals that the company has determined in order of importance and consistency with the business. The proceeding should also address and respond to issues of Thai society and global sustainability trends. The committee is consisting of four sub-committees as follows:



Sub SMC –
Climate Change



Sub SMC –
Water Management



Sub SMC – Society and
Inclusive Development



Sub SMC-Education
and Human Resource
Development

Integrating Sustainable Development Goals (The SDGs Integration)

The company has integrated sustainable development goals (SDGs) into its business, focusing on the proceedings in response to the nine main goals related to its business operations and the competency of the company. It also realizes the circumstance of social problems and world's important sustainability trends and, as a result, operates the business through

	SDGs	2020 Targets	Strategies	Work Plans
CORE		<ul style="list-style-type: none"> Refinery Energy Usage Index(EII) = 96.0 Expand production capacity of the renewable energy business 	<ul style="list-style-type: none"> Develop energy efficiency of the refinery business Expand production capacity of the renewable energy business 	<ul style="list-style-type: none"> Carry out energy efficiency improvement projects (YES-R & Rocket Projects) Proceed to expand electricity generating capacity from solar energy, wind power, geothermal energy and hydropower, including expansion of production capacity of biofuels from biodiesel and bio-ethanol
		<ul style="list-style-type: none"> Compensation for greenhouse gas emissions with carbon offset not less than 60% 	<ul style="list-style-type: none"> Offset greenhouse gas emissions with carbon offset from the renewable energy business Prepare greenhouse gas emissions accounting 	<ul style="list-style-type: none"> Compensate greenhouse gas emissions with carbon offset from the renewable energy business
		<ul style="list-style-type: none"> Reduce the use of distilled water by 15% (compared to base year 2015) Number of farmers participating in the sustainable water management project : 30 persons 	<ul style="list-style-type: none"> Improve the efficiency of water consumption in the production process Improve quality of wastewater 	<ul style="list-style-type: none"> Increase production capacity of the RO-Recycle Unit Change cooling Tower Conduct water footprint to find hotspots for improvement
		<ul style="list-style-type: none"> There is no waste to landfill (Zero Waste to Landfill) in the company and companies in the group Promote the procurement of environmentally friendly products / services and there are a total of 20 environmentally friendly products / services. 	<ul style="list-style-type: none"> Industrial waste management with 3Rs and Zero Waste to Landfill 	<ul style="list-style-type: none"> Waste and industrial waste management with 3Rs principles Develop a prototype service station for innovation and the environment Use environmentally friendly materials / products Waste management using the Circular Economy Business Model
ADDITIONAL		<ul style="list-style-type: none"> Receive an "excellent" rating from the Corporate Governance Report of Thai Listed Companies (CGR). Ranked TOP 30 of the ASEAN Corporate Governance Scorecard (ACGS) project 	<ul style="list-style-type: none"> Combat all forms of corruption and be a role model of corporate governance (CG) organization 	<ul style="list-style-type: none"> Educate and support companies in the group and business partners to participate in the Anti-Corruption Program and receive CAC certification
		<ul style="list-style-type: none"> Hiring 13 disabled persons to work as employees of the company 	<ul style="list-style-type: none"> Employment with value, equitable and covering all groups of people 	<ul style="list-style-type: none"> Hire the disabled to work with the company
SUPPLEMENTARY		<ul style="list-style-type: none"> 800 elementary school students participate in the Read and Write with Ease Project 	<ul style="list-style-type: none"> Participate in improving the quality of education of Thai youth at the elementary level 	<ul style="list-style-type: none"> Carry out the project to solve problems of illiteracy, can't read or write, of elementary school students
		<ul style="list-style-type: none"> Number of research : 12 topics Number of Intellectual Property : 3 IPs 	<ul style="list-style-type: none"> Promote research and innovation to enhance the competitiveness of the industry 	<ul style="list-style-type: none"> In-house R&D Establish collaboration in research development with research institutes, universities, and external agencies
		<ul style="list-style-type: none"> Build 11 safe communities Establish 2 groups of community enterprises, extend network and initiate business model 	<ul style="list-style-type: none"> Build strong, livable and safe communities. 	<ul style="list-style-type: none"> Build a safe community from emergency drills and evacuation drills in case of emergencies / disasters Establish community enterprises to create jobs, generate income in communities around the workplace

Note:

- SDG's goals are sorted according to the importance of the company's response operations.
- Core / Additional / Supplementary is the priority level of the SDGs target that the company focuses on Determined using business performance criteria Industry attention and national policy
- Power generation capacity from renewable energy is the power generation capacity under the Power Purchase Agreement (PPA)

sustainability management structure of the organization at each level. With a passion to achieve in sustainable development, the company has set goals, strategies and plans to react differently depending on the goal of the matter. Together with it, the company has prepared for progress monitoring on SDGs and reporting to the corporate Sustainability Policy Committee (SPC) every quarter. This is to ensure that the operations of the company are consistent and meet with the targets in response to SDGs.

2019 Results / Status	Value Creation	
	To the company	To environment and society
<ul style="list-style-type: none"> • EI = 97.9 (as targeted) • Electricity generation from solar cells, total 153.7 MW • Electricity generation from wind energy, total 23.37 MW • Electricity generation business from geothermal energy 157.5 MW • Electricity generating business from water power 69 MW • Biodiesel business 1,000,000 liters per day • Bio-ethanol business, totaling 1,000,000 liters per day 	<ul style="list-style-type: none"> • Energy efficiency • Reduce energy costs and expenses • Increase business income stability • Support government policies and increase the proportion of renewable energy usage 	<ul style="list-style-type: none"> • Increase the proportion of renewable energy in the country • Reduce the impact of climate change from greenhouse gas emissions
<ul style="list-style-type: none"> • Carbon offset from renewable energy business : 75.5% of greenhouse gas emissions 	<ul style="list-style-type: none"> • Prevent and reduce the impact of natural disasters that may affect the company's business operations • Expand renewable energy business 	<ul style="list-style-type: none"> • Reduce environmental impact and prevent global temperature not to rise above 2 °C
<ul style="list-style-type: none"> • Reducing the amount of water used in the refinery by 6.3% from the base year 2015 (including the cumulative volume of reducing water used in the refinery from 2016 - 2019 compared to the base year 2015 is 17.9%) • Number of farmers participating in the project : 18 farmers 	<ul style="list-style-type: none"> • Use water in the production process efficiently • Sufficient water for using in the production process • Reduce costs and expenditure of water withdrawal and consumption • Purchase agricultural products from farmers to be recognized as products in the company's SPAR mini marts • Promote good image of the company 	<ul style="list-style-type: none"> • Communities are not affected by water withdrawal and consumption of the company. • Solve flood problems, sustainable drought having sufficient water for agriculture, in Pasak Basin area • Increase agricultural areas, forest areas and the amount of water that can be stored in the Pasak River Basin
<ul style="list-style-type: none"> • Expand Zero Waste to Landfill operations to companies in the group • 55 environmentally friendly products and services 	<ul style="list-style-type: none"> • Reduce cost of resources and waste management • Create value to waste and increase utilization • Promote good image of the company 	<ul style="list-style-type: none"> • Reduce the occurrence of waste and greenhouse gases • Disseminate and create environmental sustainability for society
<ul style="list-style-type: none"> • CGR score: 98% • Awarded with TOP 60 ASEAN PLCs considered from the evaluation of Project (ACGS) 	<ul style="list-style-type: none"> • Transparency in business operations and good relationship between anti-corruption networks • Promote good image and sustainability of the company 	<ul style="list-style-type: none"> • Reduce corruption issues in society
<ul style="list-style-type: none"> • Hired 13 disabled to work as employees of the company (as targeted since 2018) 	<ul style="list-style-type: none"> • Support the government policy on employment of the disabled according to Article 33 	<ul style="list-style-type: none"> • Promote professional equality for society
<ul style="list-style-type: none"> • 891 youths from 7 schools participated in the project (as targeted) 	<ul style="list-style-type: none"> • Participate in social development according to the mission of the company • Promote good image of the company 	<ul style="list-style-type: none"> • Elementary school students are solved of the literacy problems, inability to read or write • Improve the quality of education for Thai youth
<ul style="list-style-type: none"> • Number of research : 11 topics • Number of Intellectual Property : 2 IPs 	<ul style="list-style-type: none"> • Create a culture of innovative thinking for employees • Innovation and / or new products to increase business opportunities • Create research partners 	<ul style="list-style-type: none"> • Promote scientific and technological research for national development
<ul style="list-style-type: none"> • Built 10 safe communities. • Number of community enterprise : 1 group 	<ul style="list-style-type: none"> • Strengthen good relationship and confidence in the operations of the company for the community 	<ul style="list-style-type: none"> • Development of the well-being of the community in terms of occupation, environment and safety

The Principles and Frameworks of Sustainability (Disclosure 102-16)

In addition to the Philosophy of Sufficient Economy and the Sustainable Development Goals (SDGs) that Bangchak has adopted into its business operations, the company has taken into consideration the guidelines, criteria and international standard of sustainability and social responsibility as follows: UN Global Compact (UNGC), Dow Jones Sustainability Indexes (DJSI), Thailand Quality Awards (TQA), International Organization for Standardization (ISO), and expectation from stakeholders, to determine the sustainable business development in harmony with environment and society dimensions as well as the sub-policies for business operations and work process improvement throughout the supply chain. Monitoring and reporting in accordance with GRI Sustainability Reporting Standards are also in place.

The company has revised the policy of sustainable business development in harmony with environmental and social dimensions by including key issues related to sustainability throughout the supply chain into it. This new policy is currently used as good practice for business operation and to help reduce risks of the organization and the emerging risks of the company and companies in the Group. Including in the new policy are sustainability issues in eight goals as the followings:

1. Corporate governance
2. Fair business operating practices
3. Human rights and employment for developing sustainable economy
4. Management of energy, climate, water and waste
5. Responsible production & service together with the promotion of sustainable society
6. Investment in businesses that generate returns, focusing on sustainable innovation and clean energy businesses
7. Comprehensive assessments of sustainability for new businesses
8. Participation in community and social development through the development of education and the promotion of social innovation

(Further study of the policy is able to access at <http://www.bangchak.co.th>)

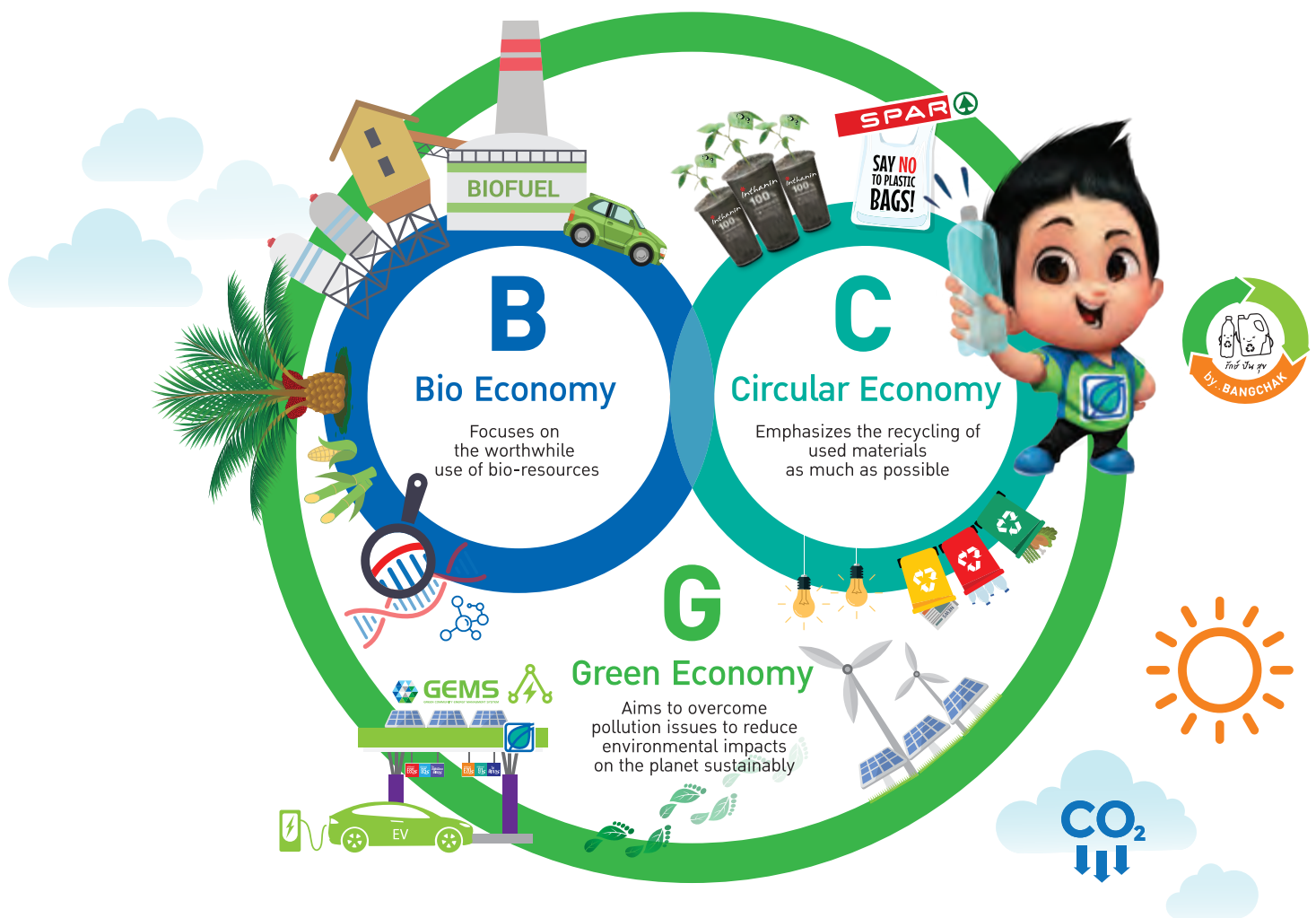
Furthermore, the company has operated its business under BCG Economy Model which is in consistence with the Sufficient Economy Philosophy, National Economic and Social Development Frameworks, comprising of three key economies: Bio-economy focusing on the productive use of biological resources through the utilization of technology and innovation to transform agricultural products to high valued biological products, Circular Economy emphasizing the worthwhile use of resources, raw materials and products, and the Green Economy focusing on environment resolutions and reducing sustainable impacts. The model has been taken into its thoughts for the operation of business with high profit, value and sustainability for the company and stakeholders.



Economic, Environmental and Social Situations

2019 is another year that Thailand and the world had to face with drastic changes and fluctuations in economy, environment and society such as:

Politics and Government Policy: In 2019, Thailand held a general election for members of the House of Representatives. This election was positive to business sector and investment as it increased confidence of foreign investors to Thailand. The energy policy as well as the government development projects was clearly seen. The company therefore determined to develop and invest in the projects related to economic model leading to sustainable development, consisting of three key economies; Bio-Economy, Circular Economy and Green Economy



Economy: From the forecast of the financial and investment institution, it was pointed out that the overall picture of the global economy was likely to grow at a slower pace because of the risk in 3 important issues which are 1) the US-China trade war and conflicts 2) the geopolitical problems, especially Brexit and the conflicts in the Middle East 3) the problems and vulnerability, only those countries that are at risk in the next period. For the Thai economy, the Thai GDP growth in 2019 was reduced to 2.6% due to external factors, causing the export to slow down quickly. The above causes affect the economy on the oil industry, both domestically and internationally. However, the company has adjusted to be in line with the changing world situation with corporate strategy and business risk management to create security, stability and sustainability for the company.

For energy situations, the average oil price tends to decrease due to excess supply in the market while demand was likely to slow down. However, Thailand has promoted the bio-fuel and bio-chemical industry as one of the 12 S-curve industrial groups in the EEC project, aiming to develop into a "Bio-economy" in which Thailand is ready with a reserve of agricultural raw materials and expected to be strong throughout the supply chain, from upstream to downstream. With such the outlook, the company chose to run the biological product business and expand production capacity of bio-diesel from palm oil and bio-ethanol from cassava which is used to produce biofuels. In addition, the company aimed to create bio-products with high economic value from agricultural products by using technology and innovation in the production process.

Environment: Environment is a vital important issue and today the world is paying high attention climate change. According to the COP 25 meeting, the world is undergoing a full critical stage of climate emergency which is "the point of no return". There are increasing calls for the international all sectors to increase their target to reduce greenhouse gas emission as well as a discussion on the adaptation calculation tools. The discussion also mentioned about mutual benefits of climate change adaptation to suit the situation of each country. The company in oil industry with greenhouse gas emissions is aware of this problem and determined to improve efficiency of energy consumption of the refinery. Application of technology and green energy in production process as well as the expansion of renewable energy business in response to the climate change problem, especially the impact from PM2.5 dust, a major problem in Bangkok and its vicinity as the indicator is exceeding the standards, are also actions taken by this industrial group.

The problem of PM2.5 dust is like the haze problem occurring in various provinces, especially the northern region of Thailand. Both problems are now becoming routine matters occurring continuously every year. The responsible Office has taken steps to prevent and solve dust problems, dividing into three

stages, urgent, medium and long-term. Until the situation returns to normal, the company will accelerate the use of diesel fuel Euro 5 standard. Meanwhile, the company has developed and distributed finished oil products certified by Euro 5 in two types, namely Gasoline Hall E20S and Hi-Premium Diesel S to help reduce air pollution and PM2.5 dust from combustion in the engine.

Drought Crisis: Drought crisis is another problem that most Thai people are concerned. Since Thailand is an agricultural country, lack of water will definitely contribute serious impact to agriculture. Farmers will not be able to do farming; agricultural produces will be damaged causing the farmers to have lower income. The price of agricultural produces may be high, affecting the livelihood of farmers and Thai society. The company therefore continuously runs a water management project based on the sufficiency economy philosophy with members of agricultural cooperatives and farmers in communities to alleviate water shortage problems, increase forest area and improve the well-being of farmers in Pa Sak River Basin and nearby areas.

Plastic Waste: Environmental problem that Thai people are much concerned by global trends is the management of all plastic waste that cannot be recycled. In 2019, Thailand launched a number of campaigns to use environmentally-friendly materials instead of plastic while the mall operators, shopping centers, supermarkets and convenience stores nationwide stop giving plastic bags. For the problem of plastic waste in marine waste, innovation was brought into use for the elimination of plastic waste moving towards the circular economy. As for Bangchak, the company managed to launch a campaign to use cloth bags and stop using plastic bag in all SPAR convenience stores of the company. Bio degradable cups as well as a new design of the drinking lid without using a straw were also introduced in "Inthanin" coffee shops in order to reduce the plastic waste and emphasize its commitment of being an Eco Brand that is friendly to environment.



Bangchak and Stakeholders

Stakeholder engagement (Disclosure 102-46)

From the company's vision of "Evolving Greenovation – To be the Leading Asian Greenovation Group, founded on Good Corporate governance, through Inclusiveness and Sustainability" Stakeholder engagement is an important matter that the company has consistently implemented in accordance with the vision. Incorporating the information gained from conducting stakeholder engagement into strategic planning of the company is the way of doing it in addition to the framework and other strategic planning tools, such as business environment scanning, BIG Data, scenario assessment, and intelligent risks from risk assessment in order to respond to the needs and expectations of all stakeholder groups. It is also to be able to create a balance between profit and values in doing business for all stakeholders and to build good relationships as well as confidence between the company and the stakeholders.

Stakeholders Engagement Processes

1. Stakeholder identification and prioritization by considering the 3 following criteria (Disclosure 102-42)
 - ✔ What groups of stakeholders are involved with the company's business operations?
 - ✔ Whether the company creates sustainability impacts to any groups of stakeholders?
 - ✔ Whether groups of stakeholders have influence to the company?
2. Working with stakeholders, there are important steps as follows:
 - ✔ Specify responsible divisions/departments for the stakeholder groups
 - ✔ Determining a systematic method to survey the needs and expectations of stakeholders and the operating frequency of the survey
 - ✔ Gathering information about the needs and expectations of stakeholders
3. Analysis and selection of materiality
 - ✔ Considering the importance of the issues concerning needs and expectations of the stakeholders in accordance with the context related to the impact, risk, opportunity and conformity with the organization's policies and goals, including the importance to stakeholders and to the organization
4. Results Processing
 - ✔ Proposing the analysis results to the Corporate Sustainability Policy Committee (SPC) in order to determine the direction of the sustainability operations and to create organizational strategies

The company has classified the 9 groups of stakeholders, including employees, suppliers/business partners, customers, shareholders, society and the community, media, creditors, government agencies and competitors (Disclosure 102-40) and has different ways to address to their needs and expectations.

Stakeholder Engagement Framework and Performance

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
Employees * The company employs full-time and full-time contracts only. No temporary employment (Part Time) including no employment Self-employed and there is no change in seasonal manpower 	1. Engagement Ambassador 2. The activity of the Chief Executive Officer meeting with employees (CEO Town Hall) 3. Voices followed by the Chief Executive Officer 4. HR site visit 5. Activities through the employee clubs 6. Health promotion activities "Step counting project" 7. Employee Committee 8. HR communication Internal news 9. Employee engagement survey	1. Career paths 2. Talent and personnel management 3. Process, system, and work process 4. Compliments and rewards (pay & contribution) 5. Top management giving value	1. Communicated the growth path through focus group of the Sub MDC of each business to make understanding about the growth among supervisors in order to help them plan the growth path for their subordinates and to allow employees to plan their own development through the system 2. Expanded the use of 360 degree assessment system, from VP level up to Senior Manager level up 3. Improved management practices to be in line with business changes and communication for employees to understand the principles of performance evaluation 4. Organized employee appreciation activities such as providing certificates to appreciate employees through various events, including reviewing compensation systems
Near distance Communities (within a radius of 1.5 kms. around the refinery) 	1. Community relations staff and community visit 2. Community relations activities 3. Channels for communication and taking petition/ complaints. 4. Direct line (telephone) 5. PR signage 6. Public Announcement 7. LINE application 8. Brochure / pamphlet /leaflet 9. Community relations activity evaluation 10. Need & community engagement assessment by 3 rd Party	1. continuing Safe business operations 2. Notification to communities in advance of the company's activity 3. Participation in community relations activities related to <ul style="list-style-type: none"> Quality of life improvement Promotion of economy and community income Environment development in communities 	1. Added activities for the check-up of safety equipment in communities 2. Rushed to communities right after the notification 3. Encouraged more people to join in community relations activities of Bangchak 4. Re-designed and added community relations activities to match with community needs, focusing on the income generation activities 5. Supported and participated in community activities 6. Increased educational supports to the youth in communities, such as scholarship, tutoring for university entrance
Community and Society in near distance: Schools 	1. Community relations staff and community visit 2. Community relations activities 3. Need & Engagement Assessment of schools by 3 rd party	1. Educational development and potential development of school personnel 2. Technology supports 3. Knowledge provision on emergency cases	1. Organized Bangchak Scholarship Project 2. Organized 7 HABITS Lighthouse School Project 3. Organized "Reading & Writing is Easy Project", Project Citizen and BCP Environmental Learning Project 4. Opened for public and study visits to Bangchak refinery 5. Provided IT equipment 6. Organized fire drills together with schools 7. Provided firefighting equipment and fire extinguishers
Community and Society in near distance: Family Groups (Single House) 	1. Community relations staff 2. Community relations activities 3. Bai Mai family mini journal / leaflet 4. Facebook of Bangchak Bai Mai Family 5. Need and engagement assessment of the Family Group by 3 rd party	1. Activities related to quality of life improvement and public services (voluntary public activities) 2. Notification to communities in advance of the company's activities 3. Check and maintenance of mechanical tools and equipment to ensure effectiveness in use	1. Organized the "One Family" activity regularly 2. Communicated through new channels, such as Facebook of Bangchak Bai Mai Family
Community and Society in near distance: Condominiums 	1. Community relations staff 2. Community activities / emergency plan rehearsal 3. Bai Mai mini-journal/leaflet 4. Line: Bangchak neighboring condos 5. Need & engagement assessment of condo group by 3 rd party	1. Knowledge and understanding about the prevention of environmental impacts and the safety issues of the company 2. Opportunities for people in communities to work with Bangchak	1. Organized fire drill 2. Opened for public visit 3. Organized activities in promotion of knowledge sharing for people living in the neighboring condos, such as a study visit on the operations of sufficiency economy, environment and investment 4. Communicated via group line: Bangchak Neighboring Condos

Font color showing frequency of engagement approaches with stakeholders (Disclosure 103-43)

- Regularly / Consistently / monthly
- Quarterly
- Annually




2019 Targets	2019 Results	Next Year Plan
<ol style="list-style-type: none"> 1. staff turnover rate is less or equal Oil and Gas industry turnover rate in Thailand 2. Keep the engagement score not lower than before (69%) 	<ol style="list-style-type: none"> 1. Average resignation rate of 5.63% (compared to the target of no more than 4.00% and 2018 at 3.71%) 2. The average adjustment rate increased by 7.4% (compared to 2.9% in the year 2018 with a better trend) 3. Employees participating in the employee engagement survey decreased slightly to 98.95% (in 2018, joined at 99.84%), the engagement score reduced to 62% 4. For issues and expectations the results can be displayed as follows : <ul style="list-style-type: none"> • Career opportunities decreased by 17%, equivalent to 47% • Talent and personnel management decreased by 23%, representing 38% • Work process / system and procedure equal to the previous year, representing 57% • Compliments and rewards for Pay & Contribution decreased by 4% resulted in 46%, top management giving values decreased by 23% resulted in 45% 	<ol style="list-style-type: none"> 1. Engage leaders of each business group and be role models in implementing the engagement improvement plan. 2. Increase job rotation rate to be higher than 5% 3. Increase informal communication channels between employees and high level executives including the manager level, acting as the interlock chain 4. Study the guidelines for giving incentives that are consistent with the various recognition tasks 5. Improve work processes to be more automation and using more IT systems to increase efficiency and reduce employee workload
<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 95% 2. Result of community engagement at 80% 	<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 98% 2. Result of community engagement at 83.2% 	<ol style="list-style-type: none"> 1. Build relationship and developing potential of community leaders 2. Participate in an effort to improve environment in community 3. Develop potential of people in communities / promoting the establishment of professional group 4. Provide educational supports for the youth in communities, to let them have better opportunities in furthering their study in university 5. Promote opportunities for the youth in communities to show their potential
<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 95% 2. Result of community engagement at 80% 	<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 98% 2. Result of community engagement at 83.2% 	<ol style="list-style-type: none"> 1. Develop environment in schools and providing knowledge on environment to teachers and students 2. Increase teacher and student relations activities, especially on Bangchak refinery, production process and safety measures of the refinery 3. Develop healthy activities in accordance with the context of school
<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 95% 2. Result of community engagement at 80% 	<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 98% 2. Result of community engagement at 83.2% 	<ol style="list-style-type: none"> 1. Adjust activities to respond better to the needs and expectations of the target groups 2. Encourage for voluntary services for the benefits of better society and environment 3. Develop communication channel to better cover the target groups 4. Organize activities continuously
<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 95% 2. Result of community engagement at 80% 	<ol style="list-style-type: none"> 1. Result of satisfaction assessment regarding participation in community relations activities at 98% 2. Result of community engagement at 83.2% 	<ol style="list-style-type: none"> 1. Develop communication channel like the online in order to access more the target groups 2. Develop variety of safety activities and adding activities related to health promotion to match with the needs of the target groups

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
Community and Society in far distance: The Youth 	<ol style="list-style-type: none"> 1. Survey and meeting with executives/ Education Committee/ parents and students 2. Organizing learning activities to solve the problem of literacy and activities related to agricultural businesses 3. Organizing business contest project and social-action online project by opting social, economic and environment issues to initiate work plan 	<ol style="list-style-type: none"> 1. Taking part in the initiation of learning process, focusing on learner-center through innovation initiatives program 2. Organizing activities continuously considering the learning subjects 3. Uplifting academic quality for schools better than the evaluation standards of their head office 	<ol style="list-style-type: none"> 1. Organized a contest for G Impact Project Click to flip the Nation to encourage the Youth to submit their innovation proposal for the contest 2. Cooperated with the agricultural cooperatives and service station dealers to organize activities related to Partnership School Model 3. Took a lead in integrating agro-business into schools so as to provide a chance for the students to get real practice in school
Community and Society in far distance: Farmers 	<ol style="list-style-type: none"> 1. Follow up meeting, community visit and regular training for farmers in community 	<ol style="list-style-type: none"> 1. Knowledge and opportunity in occupational development in order to get stable income, remove debts and to live a better life 2. Support of tools and equipment / workforce in community development 	<ol style="list-style-type: none"> 1. "Pansook Farmer" worked with Agricultural Cooperatives in organizing training / farmer development, providing fund for improving ways of farming, and promoting activity to mobilize resources and labor to help develop the community
Suppliers (contractors/ logistic providers) 	<ol style="list-style-type: none"> 1. Annual Supplier seminar 2. Monthly Performance Meeting 3. Satisfaction, need & expectation survey 4. Supplier site visit 	<ol style="list-style-type: none"> 1. Speed of purchasing / procurement process 2. Digital Transformation 	<ol style="list-style-type: none"> 1. Installed a system to forward call to staff's mobile when not available at desk 2. Notified trade partners to e-mail their doubts or questions in case they could not get into telephone line 3. Sent out bidding system manual to trade partners who are new to the system 4. Notified result of the bidding through automatic reply mailing system (automatic thank you letter)
Truck transportation suppliers 	<ol style="list-style-type: none"> 1. Organizing annual seminar with transportation suppliers 2. Organizing monthly KPI meeting with transportation suppliers 3. Organizing joint community relation activities 	<ol style="list-style-type: none"> 1. Growing together with sustainability and stability and having long-term contract. Extension of contract is commonly based on the performance of the transportation suppliers 2. Mutual understanding and agreement on work contents 3. Having income and profit in the deal 4. Happiness at work 	<ol style="list-style-type: none"> 1. Extended contractor's contract from 5 years to 5 +3 years (+3 years is considered on a yearly basis and based on the performance) 2. Communicated and exchanged contents of the contract, such as total of reserved trucks and the adjustment made in the meeting 3. Increased accumulated transportation trips from the Backhaul project to the contractor
Marine transportation suppliers 	<ol style="list-style-type: none"> 1. Tanker Management and Self-Assessment (TMSA) 2. Seminar with marine transportation suppliers 3. KPI and fleet management assessment 	<ol style="list-style-type: none"> 1. Proper and fair income from transportation deal 2. Improvement, joint development of management system 3. No accident, no oil spill during the course of transportation 4. Reducing oil loss during the course of transportation 5. Reducing number of times that vessels got damaged to the condition that is not possible to provide oil transportation services 6. Paying transportation bills by the due date 	<ol style="list-style-type: none"> 1. Jointly evaluated performance of ship companies by TMSA system to check on the standard of their management and to examine the safety of transporting vessels in accordance with international safety management 2. Developed transportation management system by monitoring the transportation through CCTV and the 24-hour GPS system
Raw materials suppliers 	<ol style="list-style-type: none"> 1. Meeting to communicate about work and solve problem together 2. Regular discussion 	<ol style="list-style-type: none"> 1. Getting proper return that is fair to the quality of product and service 2. Fair and transparent procurement 3. Consistent procurement 4. Paying bills on time (by the due date) 5. Sustainable business cooperation 6. Flexible and smooth operation for the reception of raw materials 7. Management of receiving-distributing of oil according to plan / time, completely done as scheduled 8. Advanced notification in case of any delay in receiving-distributing goods 9. Accurate and complete financial document regarding receiving-paying 	<ol style="list-style-type: none"> 1. Gave feedback to suppliers in crude oil procurement process / able to solve problem faster
Service stations business partners (BGN) 	<ol style="list-style-type: none"> 1. Marketing representative 2. Group meeting on a monthly or quarterly basis 3. BCP Link system 4. Customer service section and Customer Relation Management Division 5. Non-oil Business Development and Retail Partnership Department 	<ol style="list-style-type: none"> 1. Better performance 2. Supporting and supervising the standard of practices for service stations to ensure their readiness for competition 3. Efficient repair of equipment 4. Sales promotion program and high impact advertisement 5. High quality product development 6. The on-time, complete, no loss oil delivery service 	<ol style="list-style-type: none"> 1. Improved the operator's potentials for better business performance as follows: <ul style="list-style-type: none"> • Service station managers brainstorming to plan for customer problem solving • Organizing training for station manager and campaign for service warm up before taking shift • Installing Automation Point of Sale in service stations


2019 Targets	2019 Results	Next Year Plan
<ol style="list-style-type: none"> Organized youth development activities in 20 Pracharat schools Organized a contest for G Impact Project of youth level to promote the production of goods and services 	<ol style="list-style-type: none"> Students benefited from the Project accounting more than 5,000 persons 12 teams of more than 3,700 students proposed their projects for the contest Set up the new Partnership school 4 schools 	<ol style="list-style-type: none"> Proceed with the on-going projects or expanding operating areas Conduct environmental and social impact assessments for projects
<ol style="list-style-type: none"> Expanded the model of "Pansook Farmer" to a wider area 	<ol style="list-style-type: none"> Expanding the area of work for "Pansook Farmer" to 12 cases of more than 27 rai From SROI assessment, it was found that the value of impact on investment proportion is 3.93:1 baht 	<ol style="list-style-type: none"> Expand operating areas and developing the projects further by applying new agricultural technology
<ol style="list-style-type: none"> Working or coordinating with buyers at 80% Convenient contact with the company at 80% 	<ol style="list-style-type: none"> Working or coordinating with buyers at 87.34% Convenient contact with the company at 79.71% 	<ol style="list-style-type: none"> Improve bidding manuals Study other supporting procurement systems Provide message communication service to buyers for suppliers whereby a contract employees can inform buyers to call back their suppliers quickly
<ol style="list-style-type: none"> Building confidence in the mind of transportation suppliers to invest for more trucks and improving efficiency of the transportation Making understanding and working together Building relations as long-term partners 	<ol style="list-style-type: none"> Backhaul Project can increased accumulated transportation trips from 900 trips in 2018 to 1,300 accumulated trips in 2019, saving transportation cost by 6 million THB Total numbers of transportation by semi-trailers increased from 35% to 39% 	<ol style="list-style-type: none"> Increase total number of transportation and saving cost for the suppliers Use IT to increase efficiency at work Add equipment to prevent dozing off in transporting trucks
<ol style="list-style-type: none"> Controlling quantity of oil loss during the course of transportation by the targets as follows: <ul style="list-style-type: none"> Product Transportation Loss < 0.32% on B/L Product Delivery BSK Loss < 0.17% on B/L Product Delivery BSR Loss < 0.30% on B/L Number of times in the occurrence of oil spills is zero. Number of accident occurred during the course of transportation is zero 	<ol style="list-style-type: none"> Controlling the loss of oil during the course of transportation as follows: <ul style="list-style-type: none"> Product Transportation Loss 0.20% on B/L Product Delivery BSK Loss 0.13% on B/L Product Delivery BSR Loss 0.22% on B/L Number of incident causing oil spills is zero Number of accident from oil transportation is zero 	<ol style="list-style-type: none"> Rehearse emergency plan in case of oil spills at FSU KPI evaluation of every vessel in the fleet Prepare a joint report on the Terminal Feedback every month in order to examine the readiness of safety machine & equipment, including the readiness of operation on marine transportation Prepare Sire Inspection Report of all vessels in fleet
<ol style="list-style-type: none"> Enhancing relationship as long-term suppliers 	<ol style="list-style-type: none"> Having good relationship with more suppliers Able to keep supply of crude oil for the company continuously 	<ol style="list-style-type: none"> Organize a monthly meeting once a month to discuss about work and problem solving Meet and discuss to keep relationship Exchange information about procurement planning with suppliers in order to feed in necessary information for crude basket expansion and to allow the company to have more chance for procurement of new raw materials
<ol style="list-style-type: none"> Market share in refined oil through service station increased by 16% Reduced gap on NPS Score from leaders to less than 2.5% Retail volume increased to 360 million liter per month Mystery Shopper score is excellent, standing better than 90% 	<ol style="list-style-type: none"> Maintaining market share as number 2 leader (with 16.0% from the year 2018) at 15.6% NPS Score rose to 76.1% from 71.5% in last year Mystery Shopper score for BGN was at excellent score of 97.5% 	<ol style="list-style-type: none"> Develop high quality products matching with customers' demands Provide supports to uplift service standard of the service stations through award recognition programs in a kind of good image, cash or annual award Expand service stations for B10 continuously Develop products of high market value Expand service stations for BGN in potential locations

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
	6. "Bangchak is bright" Project		<ul style="list-style-type: none"> Refreshing gas station project for COCO type (Company Own Company Operate) to boost up sale volume Developed more variety of non-oil businesses in order to generate revenue for business operators / entrepreneurs. By the year 2019, there were additional 51 stores and 74 Kiosk. "Bangchak is bright" Project motivated people to keep quality of services "Service beyond expectation" Project delivered to service staff Organized ongoing sales promotions to boost up sales in different group of customers, such as card members project and launching of high quality product projects Organized activity in promotion of high margin product to address customers' demands, such as premium diesel, diesel B20 Improved quality of life of the employees at service station through the project of vegetable planting at service station whereby staff can use vegetable from the project for cooking or distributing to customers Applied AOS system (Automatic Order System) as a reference to the use of orders in warehouse management system
Service stations business partners (Dealers) 	<ol style="list-style-type: none"> Marketing representative Monthly / quarterly small group meetings BCP Link system Customer service section and Customer Relation Management Division Non-oil Business Development and Retail Partnership Department Bangchak Sod Sai Project (Bangchak is bright Project) 	<ol style="list-style-type: none"> Business performance improvement Supporting and supervising service station standards to be ready for competition Promotional programs and high impact advertisement Supervision and consultation from marketing representatives and related work sections Expanding the non-oil business to meet the needs of more customers. Training to provide knowledge of business and service operations Oil delivery service that is on time, completely with no loss 	<ol style="list-style-type: none"> Improved the potential of dealers in order to improve the performance as follows: <ul style="list-style-type: none"> "Empower Dealer" project whereby the service station dealers can group up to work together on the plan for sales volume and station image. Awards are given to the group that achieves target as planned. "Smart P&L" project that allows dealers to learn about the income statement compared to the company's benchmark and see whether the service station's income and expenses are appropriate or not Installed Automation Point Of Sale and prepared a manual of the EDC POS system for the service stations to help the administration at the dispenser more streamlined. Supporting and supervising the standard of practices for service stations to ensure their readiness for competition as follows: <ul style="list-style-type: none"> Increased frequency of Mobile Training and front office staff training Organized staff activities in front of the yard, "Service Warm Up" campaign before taking shift in order for employees to review service tasks and information that must be communicated to customers Developed sales tools for service stations, such as BCP Prepaid Card, for service stations to offer to small corporate customers who want to control costs but cannot extend credit lines Organized ongoing sales promotions to boost up sales in different group of customers, such as card members project and launching of high quality product projects Developed various group of partners, such as The 1st to expand the member base Trained staff to sell special grade oil efficiently Developed more variety of non-oil businesses in order to generate revenue for dealers, by the year 2019 there were 51 additional stores and 74 Kiosks Offered returns to motivate dealers to keep good image of the business Developed an oil transportation truck tracking system so customers can track and prevent fraud in shipping

2019 Targets	2019 Results	Next Year Plan
		<ol style="list-style-type: none"> Expand non-oil business in service station to cover more customers and increase revenue Develop order systems, transportation, and various systems to facilitate convenience Provide safety knowledge and care for environment
<ol style="list-style-type: none"> Market share of refined oil through service stations increased to 16% Reduced NPS Score from leaders to less than 2.5% The Mystery Shopper score was excellent by more than 75% 	<ol style="list-style-type: none"> Maintained market share as No. 2 leader at 16.0% standing at 15.6% in 2018 NPS Score increased to 76.1% from 71.5% Mystery Shopper Dealer score was at excellent score of 81.1% 	<ol style="list-style-type: none"> Develop high quality product matching with customer need / demand Provide support to uplift service standard of the service stations through award recognition program in a kind of good image, cash or annual award Expand service stations for B10 continuously Develop product of high market value Support investment in new service stations Expand non-oil business in service station to cover more customers and increase revenue Develop order systems, transportation, and various systems to facilitate convenience Drive "Empower Dealer" project to create Best Practices Sharing

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
Cooperative service stations business partners (COOP) 	<ol style="list-style-type: none"> 1. Marketing representative 2. Monthly / quarterly small group meetings 3. Quality assurance and network improvement, customer experience management 4. BCP Link system 5. Customer service section and Customer Relationship Management Division 6. Non-oil Business Development and Retail Partnership Department 7. Bangchak Sod Sai Project ("Bangchak is bright" Project) 8. Annual meeting of the Cooperatives 9. COOP Development Committee (COOP DC) 	<ol style="list-style-type: none"> 1. Improved operating results 2. Supporting and supervising the standard of practice for service station to ensure their readiness for competition, focusing more on marketing 3. Close coordination and supervision from the company 4. Expansion of non-oil businesses to meet the needs of more customers. 5. An efficient service station management system and fraud prevention 6. Participation in the company's contest to improve the image and sales volume of service stations 	<ol style="list-style-type: none"> 1. Developed the potential of COOP in order to improve the business performance as follows: <ul style="list-style-type: none"> • Organized "Smart P&L" training for COOP to learn about the income statement in order to compare with the standard criteria of the company • Installed Automation Point Of Sale and prepared a manual for the EDC POS system of the service station to help the administration at the dispenser more streamlined • Increased the amount of oil products sold in the service stations to address the needs of customers • Supporting budgets for service station improvements through the COOP Turn Pro project 2. Provided knowledge to service station through BGN's Coaching 3. Supported and supervised the standard of practices for service stations to ensure their readiness for competition as follows: <ul style="list-style-type: none"> • Increased frequency of Mobile Training activities, staff training in front of the yard • Organized staff activities in front of the yard and "Service Warm Up" campaign before taking the shift, in order for employees to review service tasks and information that must be communicated to customers 4. Organized ongoing sales promotions to boost up sales in different group of customers, such as Bangchak member card project and launching of high quality product projects 5. Offered returns to motivate dealers to keep good image 6. Developed an oil transportation truck tracking system so customers can track and prevent fraud in shipping 7. Gave away member's agriculture product suffered from falling price to customers, such as rice instead of drinking water for customers buying fuel at the service station 8. "Our Service Stations...Our Life", the project that COOP initiated to support hospital community in every liter sold
Service stations business partners (Tenants) 	<ol style="list-style-type: none"> 1. Meeting with partners (brands) every quarter to inquire / follow up and present information 2. Discussion how to solve problems together within / outside the organization 3. Widely open for business negotiations to find new partners 4. Creating more channels to search for new location for service stations 	<ol style="list-style-type: none"> 1. Location in the community area as desired by the target group 2. There is enough parking space 3. There is a mini-mart to retrieve traffic 4. Having average oil sales of no less than 600,000 liters per month 5. There is a space to install pole sign for major stores 	<ol style="list-style-type: none"> 1. Quarterly meeting with tenants 2. Tested the parking system to solve the problem of insufficient parking space 3. Searched for new partners to develop additional mini-marts 4. Designed communication / advertisement signage / boards for shops in service stations
General Customers 	<ol style="list-style-type: none"> 1. Customer Survey 2. Dealer Feedback & Focus Group 3. COOP DC 4. Marketing Representatives 5. CRM Data Base 6. Customer complaints 7. Mystery Shopper and Good Image Reward 	<ol style="list-style-type: none"> 1. Brand Image of service stations 2. Staff deliver fast service 3. Quality of shops, convenience stores and coffee shops in service stations 4. Service staff delivers service politely 5. Sufficient and clean restrooms 6. Location of service stations 7. A variety of restaurant, beverage shop and other stores in service stations (NPS) 8. Promotion of oil filling and stores 	<ol style="list-style-type: none"> 1. Extended 50 Bangchak service stations from standard to lacking location nationwide 2. Used technologies to facilitate convenience for customers 3. Developed more Non-oil business 4. Improved systems of SPAR mini-marts, Inthanin coffee shop and "Inthanin the Grocery" 5. Increased benefits and privileges of BCP Club Card by <ul style="list-style-type: none"> • Development of membership card system • Development of data base system for customer analysis and Push Notification 6. Developed new products to serve the needs of customer such as Bangchak Hi-Diesel B20 S and Hi-Diesel S B10

2019 Targets	2019 Results	Next Year Plan
<ol style="list-style-type: none"> 1. Market share of refined oil through service stations increased to 16% 2. Reduce gap of the NPS Score difference from leaders to less than 2.5% 	<ol style="list-style-type: none"> 1. Bangchak maintained the second largest market share of 16.0% (market share in 2018 was at 15.6%) 2. NPS Score increased to 76.1% from 71.5% 3. Mystery Shopper COOP score was excellent at 92% 	<ol style="list-style-type: none"> 1. Drive for the sale of B10 2. Develop knowledge and understanding of the service gas station management continuously 3. Support COOP Turn Pro Project 4. Find more partners to help develop the COOP for more revenue 5. Support COOP activities 6. Develop order systems, transportation, and various systems to facilitate convenience.
<ol style="list-style-type: none"> 1. Satisfying partners with regular information updating 2. Testing the parking system at Bangchak Service Station, Phatthanakan Branch, which is the first branch to measure and prepare for further expansion 3. Getting Family Mart as a new partner 4. Testing communication signage for additional businesses at Bangchak Service Station, Phahon Yothin Branch, Km. 38 	<ol style="list-style-type: none"> 1. Engaged 213 business partners more than set target at 200 cases 2. Opened the first branch of Family Mart at Bangchak Service Station, Khon Kaen Province 3. Installed advertisement signage for additional businesses at Bangchak Service Station, Phahon Yothin Km. 38 	<ol style="list-style-type: none"> 1. Plan to expand branches with many brands at a time 2. Put more branches to the parking management system / developing a new parking management model (reduce human use) 3. Add Family Mart branches into Bangchak Service Station 4. Improve the design of signage / board to suit with the area environment and legal regulations.
<ol style="list-style-type: none"> 1. Market share of refined oil through service station increased to 16.0% 2. Reduce the NPS Score from leaders to less than 2.5% 	<ol style="list-style-type: none"> 1. Sales of retail markets expand by 7.1% while total market expanded by approximately 4.3% 2. Maintaining market share at No.2 or equal to 16.0% from the year 2018 at 15.6% 3. Expanded 42 standard service stations, 6 COOP service stations, 3 SPAR shops, 111 Inthanin coffee shops 4. Developed additional businesses in service stations by adding 213 stores 5. Market share of B20 at 33.2% and ranked No.1 6. Sales of E20 Gasohol fuel increased by 6% compared to the same period in the last year 7. NPS Score increased by 76.1% from 71.5% 	<ol style="list-style-type: none"> 1. Expand B10 diesel service and launch Hi-Diesel S B10 2. Expand 60 standard service stations in the potential areas. 3. Develop quality of products continuously. 4. Encourage traders to create customer experience such as organic vegetable planting in the service stations, Road Side Assistant, Lost and Found, etc. 5. Develop standard of service works and improve service stations continuously. 6. Extend customer base by developing privilege to maintain customers in the long run. 7. Collaborate with business alliance to extend customer base continuously. 8. Set up sales promotion continuously.

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
			<ul style="list-style-type: none"> 7. Created new experience of services through <ul style="list-style-type: none"> • Vegetable plantation at the service stations, a free giving vegetable for staff and customers • Road Side Assistants to assist customers when running out of battery or changing tire. • Lost and Found at Bangchak service stations 8. Developed a concept of Unique Design Service Station 9. Customer participation in sharing activities for society: <ul style="list-style-type: none"> • "Tra Kra Boon" project new feature for encouraging members to donate their reward points for 16 charitable organizations for organizations • "Refuel and Sharing Kindness" project: supporting community products or oversupply agricultural products and distribute to customers • Green Coffee Shop: reducing the use of plastic straw, bag, foam and using bio-degradable plastic packaging instead 10. Set up measures to control quality of products and services <ul style="list-style-type: none"> • Mystery Shopper approach to control service standard and image • Mobile Lab Test approach to control oil quality 11. Improved method for application of membership card by opening an on-line application system whereby a person can use only ID card with the EDC machine to apply for it. This option is faster, more convenient and retrieves correct data of the member 12. Improved speed and accuracy of payment by using EDC machine linking with POS system. The system will draw automatically retrieve refueling data from the dispenser, reducing errors, fraud doing and is traceable 13. Prepare frequently asked questions from complaints from customers
Farmer Customers 	<ul style="list-style-type: none"> 1. Customer Survey 2. Dealer feedback & Focus Group 3. COOP DC 4. Sale Representative 5. CRM Data Base 6. Customer Complaints 7. Mystery Shopper approach and Image Reward 	<ul style="list-style-type: none"> 1. Product cost reduction for farmers and cooperative members 2. New marketing opportunities for farmers and cooperative members 3. Convenient location to access services 4. Cooperatives have dividends paid to members 5. Quality of fuel 6. Appropriate design of service stations such as easy entry and exit, sufficient parking area, etc. 	<ul style="list-style-type: none"> 1. Expanded 50 COOP service stations in lacking areas 2. Set up a COOP Bonding project 3. Increased sales volume via membership card by <ul style="list-style-type: none"> • Developed membership card system • Developed data base to analyze customer and develop Push Notification 4. Developed new products such as Bangchak HI-Diesel B20 S and Hi-Diesel S B10 5. Refreshed service stations 6. Organized activities for farmer customers to join in social sharing: <ul style="list-style-type: none"> • "Tra Kra Boon" project new feature for encouraging members to donate their reward points for 16 charitable organizations for organizations • "Refuel and Sharing Kindness" project: helping farmers by buying community products and oversupply agriculture products for free giving to customers • Green Coffee Shop: reducing the use of plastic straw, bag, foam and using degraded plastic packaging instead. 7. Set up measures to control quality of products and services <ul style="list-style-type: none"> • Mystery Shopper approach to control service standard and image • Mobile Lab Test to examine quality of oil 8. Prepared frequently asked questions by customers (Q&A) for front yard staff, for example, collection of points and conditions of Bangchak membership card, to reduce complaints from customers 9. Happy Farmer cards in 360 service stations

2019 Targets	2019 Results	Next Year Plan
		<ul style="list-style-type: none"> 9. Use technologies to leverage services such as mobile application 10. Increase non-oil business in service stations to cover the needs of customers 11. Support customer assistance in unusual situation such as supporting sales of good value fuels-B10, B20 and E20 to reduce customer costs
<ul style="list-style-type: none"> 1. Market share of refined oil in service stations increased by 16.0% 2. Reduce the NPS Score from leader to less than 2.5% 	<ul style="list-style-type: none"> 1. Sales of retail market expanded by 7.1% while the total marketing expanded by 4.3% 2. Maintained market share at No.2 or equal to 16.0% from the year 2018 at 15.6% 3. Expand 42 standard service stations, 6 COOP service stations, 3 SPAR shops, 111 Inthanin coffee shops 4. Develop additional businesses in service stations by adding 213 stores 5. Market share of B20 is 33.2% and ranked No.1 6. Sales of E20 Gasohol fuel increased by 6% compared to the same period in the last year 7. NPS Score increased by 76.1% from 71.5% 	<ul style="list-style-type: none"> 1. Extend B10 service stations and launch a new HI-Diesel S B10 2. Promote the distribution of petrol produced from renewable energy to support the price of palm, sugarcane and cassava 3. Extend 60 standard service stations in potential locations 4. Develop quality products continuously 5. Encourage traders to create customer experience in projects such as organic vegetable planting near service stations, Road Side Assistance, Lost and Found 6. Develop standard of services and improving service stations continuously 7. Expand Bangkok customer base by developing privileges to attract and maintain customer in the long run 8. Collaborate continuously with business alliance to extend customer base 9. Organize regular sale promotion 10. Increase non-oil businesses in service stations to cover customer needs 11. Support agricultural processed products to be used for sales promotions 12. Support measures to help customers in an unusual situation, for instance, driving for the distribution of valued fuels such as B10, B20 to reduce costs for customers

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
Industrial Customers 	<ol style="list-style-type: none"> Marketing representatives Technical service engineers Booth activities with government sector and various associations Satisfaction Assessment Form Customer complaints 	<ol style="list-style-type: none"> Quality of products and convenience ordering system 	<ol style="list-style-type: none"> Included B10 S and B20 S as alternative products for customers looking for product at cost but still in a quality suitable for the use Cooperated with government sector to promote B20 fuel during the seminar on energy management system in transportation sector of each region Increased the distribution of oil by ships Expanded a fuel distribution terminal at Phichit province Usability testing of B10 S and B20 S to increase customer confidence Used electronic invoice in support of the government policy regarding Thailand 4.0 whereby customers can receive tax invoice faster, check product items and pay easily with QR code on tickets. Furthermore, document will not be lost. Opened a virtual account to facilitate customers transferring money via bank services Provided ID card for CBD term customers to prevent the transfer of money to wrong account Lent out oil and lubricant dispenser equipment to customers
Lube Customers 	<ol style="list-style-type: none"> Marketing representatives/ Outsource Sales Dealer meeting Training Technical engineer Satisfaction surveys Customer complaints 	<ol style="list-style-type: none"> Product quality and convenience of ordering system 	<ol style="list-style-type: none"> Developed potentials of marketing representative through on-line training programs Training for wholesaler team Updated information on website to present current products with easy understanding Provided transformer oil for customers in needs Developed specialty lubricant products and industrial lubricants having longer life and more durable than other general products Tested used oil and provided cleaning services for cutting fluid oil storage tanks Increased the number of an outsource sales to have close contact with customers Increase sales channels through on-line services Created brand awareness through on-line media such as Facebook, Line and website at www.bangchaklubricants.com Developed new packaging to reduce plastic waste Expanded distribution channel of lubricants for marine vessels Provided depot service for lubricants Continuously organized sales promotion in order to reach end users
Central and Local Government Agencies 	<ol style="list-style-type: none"> Meeting, informing, explaining and discussing Participating in government projects Visiting government operations 	<ol style="list-style-type: none"> Legal compliance and better than legal requirements Social and environment responsibility and sustainable living with communities Good security and environmental management system Cooperation in providing accurate and rapid information Support government projects. Open opportunity for stakeholders to share their opinions 	<ol style="list-style-type: none"> Conducted business in compliance with law and regulations related to good and transparent business practices Audited operations of each function in the company in accordance with legal assessment and SHEE Audit Explained and presented accurate information to government agencies within specified period Classified stakeholders into group to seek and respond to their expectations, including regular participation in community development Controlled quality of environment to be better than standard and legal requirements Set up proactive security and environment system by using PSM, Carbon Footprint, Water Footprint, 3Rs in operational process Supported and cooperated with government sector to promote environmentally friendly projects

2019 Targets	2019 Results	Next Year Plan
1. Market Leader of B20	1. Market share of B20 fuel products 24.3%	1. Increase the sale of IMO to increase more EBITDA 2. Increase the sale of LPG in factories
1. Finish Goods , more than 4.0 million liters per month	1. Finish Goods 3.34 million liters per month	1. Hire more outsource sales 2. Improve collecting samples of lubricant oil 3. Produce new products 4. Provide more recommendations for used lubricant management
1. Government agencies allowed continuous operations as requested by the company 2. Control air quality to meet standard without complaints from communities	1. Allowed by government agencies to continuously conduct activities or projects as requested 2. No complaints from communities about air pollution	1. Invite government officer to visit business and exchange ideas of development

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	Responses by the company in 2019
Major Shareholders, Funds, Institutions, and Minor Shareholders 	<ol style="list-style-type: none"> 1. Annual General Meeting 2. IR Activity such as Analyst meeting/ Roadshow/ Site visit/ Company visit/ Conference call/ SET Opportunity Day 3. Consultation meeting, talking or inquiring to answer question, listen to suggestions through meetings, e-mail and website 4. IR Website / IR material such as MD&A, updating information on website both business information and quarterly operational results, including interview of executive's perspectives 5. Data disclosure through stock market 	<ol style="list-style-type: none"> 1. To see good business performance with secured and steady growth 2. Have clear goals and directions of the company for expanding future business and invest in business providing appropriate return 3. Dividend payment of the company is in satisfactory level and regular payment 4. Conducting business in accordance with sustainable development guideline (Sustainability) 5. Progress of projects as planned 6. Higher returns (Capital Gain) 	<ol style="list-style-type: none"> 1. Dividend payment to shareholders was appropriate to the performance and company's policy. Rate of payment was in the same direction as other companies in the same industry 2. Organized more meetings for executives to meet major shareholders, institutional investors and minor shareholders 3. In case there are concerns from investors, increase frequency of the investor meetings by organizing roadshows, both domestically and internationally, participating in conference or events such as analyst meeting in every quarter to give confidence to investors 4. Improved the investor relations website to be up-to-date with complete information, easy to access. Also, improved online communication through Chatbot program, to be more accurate and comprehensive 5. Prepared factsheet/ company profile to be used as primary information for shareholders and investors to know about performance of the company 6. Communicated recommendations and inquiries received from shareholders to management executives
Media 	<ol style="list-style-type: none"> 1. Press conference and press release to continuously update the company movements 2. Visit mass media in special occasions 3. Set up special interview of executives in each division in occasions as mass media's request 4. New contents for on-line media, and new message receivers 	<ol style="list-style-type: none"> 1. Updated information about the performance of business, the overall picture of energy business, including growth plan and expansion of related business 2. Exclusive interview with top management executives in addition to the routine press conference in order to get the insights for special scoop, not the general for all 3. Chances to hear top executives presenting their business vision, to gain trust in the news contents and motivate media to follow up the news issues 	<ol style="list-style-type: none"> 1. Set up regular press conference and press release 2. Respond to media needs in issues to be useful to the company and public 3. Supported mass media's public activities for public as well as media's anniversary to enhance relationship to each other 4. Visited media in energy business on a regular basis and joined in their events as possible
Creditors (Financial institution and Debenture Holders) 	<ol style="list-style-type: none"> 1. Analyst meeting 2. Meeting at the company office and at meeting or seminar of financial institute 	<ol style="list-style-type: none"> 1. Followed the terms of the loan agreement 2. Provided information of the company as requested by the bank 3. Opportunity to use financial services of the bank and being good partners to each other 	<ol style="list-style-type: none"> 1. Strictly complying with the conditions of the loan and debenture agreements 2. Strictly complying with the rules of financial institutions issued by government agencies 3. Responded quickly to the inquiries from credit analyst with true and correct information
Competitors (other energy and oil trading companies) 	<ol style="list-style-type: none"> 1. Follow up on market performance and information from the Department of Energy Business 2. Study competitors' information through financial reports and present to relevant parties 3. Cooperate and collaborate with competitors in matters requested by government agency for cooperation 4. Follow up marketing activities and movements 5. Provide marketing information that is not affecting competitors 	<ol style="list-style-type: none"> 1. Operate business with transparency under fair trade and competition 	<ol style="list-style-type: none"> 1. Continuously operated business under competition and free trade mechanisms

2019 Targets	2019 Results	Next Year Plan
<ol style="list-style-type: none"> 1. Receive IR reward 2. Invited to the Roadshow 3. Be assessed for the organization of activities for small investors at good-excellent level 	<ol style="list-style-type: none"> 1. Received Asian Excellence Recognition Awards 2019 : <ul style="list-style-type: none"> • Asia's Best CEO (Investor Relations) • Asia's Best CFO (Investor Relations) • Best Investor Relations Company (Thailand) • Best Investor Relations Professional (Thailand) 2. Joined the roadshows organized by Stock Exchange in Thailand (SET), both in Thailand and overseas 3. Result of Assessment regarding satisfaction for information and service provided to an annual visit of the minor shareholders stood at 97%. Most of the appraisers rated with good to excellent level. 4. TSR Avg. 3-yrs: -1.18% (FY2017-2019) 	<ol style="list-style-type: none"> 1. Ensure the participation in roadshows organized by SET 2. Improve activity to enhance investor relations with minor investors to be more in line with their needs, including the activity to promote understanding of company's business 3. Join in the contests or events and applying for more awards 4. Continuously communicate comments, recommendations and questions received from investors to management
<ol style="list-style-type: none"> 1. Value of news disseminated through publication and on-line media is 550 million THB 	<ol style="list-style-type: none"> 1. Value of news disseminated through print media is 588 million THB 	<ol style="list-style-type: none"> 1. Promote activities to enhance relationship with media 2. Promote activities to enhance skills and knowledge necessary for media based on friendship relations and benefits to media friends 3. Add more databases for non-Thai media working in Thailand and the Asian region, including the preparation of English news release in parallel with Thai version to help them understand the company's business better
<ol style="list-style-type: none"> 1. Assessment of overall response to financial institution, providing loan to be at high level 2. The result of evaluation of compliance with loan conditions, providing information and other cooperation is at high to very high level 	<ol style="list-style-type: none"> 1. Responding to the needs of financial institution given loan at average high 2. Complying with conditions of loan agreement, provision of information and other cooperation at high to very high level 	<ol style="list-style-type: none"> 1. Find opportunity to access complete financial services with financial institution and update to new financial innovations
<ol style="list-style-type: none"> 1. No complaints or negative news when competing with competitors 2. No complaints from competitors regarding unfair trading practices 	<ol style="list-style-type: none"> 1. No complaints or negative news when competing with competitors 2. No complaints from competitors regarding unfair trading practices 	<ol style="list-style-type: none"> 1. Operate business continuously under competition and free trade mechanisms

Key Sustainability Issues

Bangchak operates its business to ensure business sustainability, while being responsive to stakeholders and creating values to the society and the environment. We identified key sustainability issues through a materiality analysis process that takes into account stakeholders' needs and expectations and business considerations.

Materiality analysis processes

1. Identification of key sustainability issues for Bangchak and stakeholders

Key sustainability issues which have potential impacts on sustainability are compiled and reconciled from both internal and external factors that may impact on the corporate sustainability in the areas of economy, environment and society.

- ✔ Internal factors (targets and business plans) were derived from the executive brainstorming workshop as well as sustainability issues and enterprise risks with potential short-term and long-term impacts.
- ✔ External factors (global sustainability trends and expectations of stakeholders) comprise of global trends, SDGs, DJSI, UNGC, Thailand National Economic and Social Development Plan and stakeholders' needs and expectations which were derived from stakeholder engagement using various systematic surveys and engagement methods based on suitability for each stakeholder groups. Meetings with divisions/departments which were responsible for stakeholder groups were also included.

2. Prioritization

The prioritization of key sustainability issues was conducted using correlation and conformance between the set of key sustainability issues, which were significant to the business and stakeholders, and GRI indicators in accordance with the GRI Standard. In 2019, a total of 120 issues were categorized into 25 topics and mapped in the Materiality Matrix with two distinctive considerations:

2.1 Horizontal axis : considers key sustainability issues which have significant impacts, opportunities and risks on Bangchak by considering short-term and long terms impacts.

2.2 Vertical axis : considers key sustainability issues which are significant to stakeholders by considering impacts and significance, which may occur from the decision-making of the company on stakeholders

3. Validation

Results of materiality analysis have been endorsed by the Sustainability Policy Committee (SPC) (Disclosure 102-32, Disclosure 102-33). This year the issue raised by customers with respect to expectations on products and services have been addressed in more details. The materiality analysis included global sustainability trends of the energy industry and the issue has driven Bangchak to double our efforts to innovate and grow our green energy and bio-based businesses. We have set a structure to respond to stakeholders' topics following four levels of importance and appropriateness which are: Initiative Base, Strategic Focus, Mission Driven, and Sustainability Leader. In addition, indicators were developed to evaluate results at corporate, divisions, and initiative levels. Indicators have also been integrated into employees' and management's performance evaluation in appropriate proportions (Disclosure 102-28) to foster a culture of sustainability. In 2019, the materiality assessment results are as follows:

Materiality Matrix Analysis



Economic (11 topics)

- Sustainable financial growth
- Legal compliance
- 3.1 Oil quality and development/ 3.2 Service quality and development/ 3.3 Anti-corruption
- Risk management
- Supply chain management
- Non-oil variety
- Oil loss
- S/S convenience
- Investor relation

Environmental (6 topics)

- ✓ 1. Energy consumption
- ✓ 2. Climate change
- ✓ 3. Water management
- ✓ 4. Spills
- ✓ 5. Air emissions
- ✓ 6. Waste management






Social (8 topics)

- ✓ 1. Occupational health and safety
2. Community involvement and development
3. Talent attraction and retention
4. Career path
5. Human rights
6. Social development
7. Human capital development
8. Fair operating practices

Materiality (Disclosure 102-47)

Dimension	Materiality		Impacts		Significance
			Internal	External	
Economic	Sustainable Financial Growth	Mission Driven	• BCP	• Shareholders	Maintain business growth, distribute income to stakeholders, and ensure operational reliability
	Legal Compliance	Mission Driven	• BCP	• Suppliers • Government sectors • Communities and society	Maintain strict compliance with relevant laws and regulations to ensure business continuity
	Oil Quality and Development	Strategic Focus Mission Driven	• BCP • BGN	• Suppliers • Customers	Improve customer satisfaction and brand loyalty through Greenovative Experience
	Service Quality and Development	Strategic Focus	• BCP • BGN	• Suppliers • Customers	Improve customer satisfaction and brand loyalty through Greenovative Experience
	Anti-Corruption	Mission Driven	• BCP	• Suppliers	Fairly distribute contracts to suppliers to build confidence and equitability
	Risk Management	Mission Driven	• BCP	• Shareholders	Plan and manage business uncertainty systematically
	Supply Chain Management	Sustainability Leader	• BCP	• Suppliers	Capability building for critical suppliers to improve safety and quality in line with sustainable business development and SDG 12
	Non-Oil Variety	Strategic Focus	• BCP • BCR	• Suppliers • Customers	Improve customer satisfaction and brand loyalty through Greenovative Experience
	Oil Loss	Strategic Focus	• BCP	• Suppliers	Improve customer satisfaction and brand loyalty through Greenovative Experience
	S/S Convenience	Strategic Focus Mission Driven	• BCP • BGN	• Customers	Improve customer satisfaction and brand loyalty through Greenovative Experience
	Investor Relation	Mission Driven	• BCP	• Shareholders • Media	Build confidence for investors and shareholders
Environmental	Energy Consumption	Sustainability Leader	• BCP	• Government sectors • Communities and society	To achieve the corporate target of energy efficiency in response to SDG 7 and SDG 12
	Climate Change	Strategic Focus	• BCP • BCPG • BBF • BBE • KSL • BGN • BCR	• Government sectors • Communities and society	To achieve the corporate target of becoming a low carbon company and supporting the global temperature control to not increase more than 2 degree Celsius in response to SDG 7 and SDG 13

GRI Topics		Topic Specific Disclosure	Reporting Content	Pages
GRI 201: Economic Performance (2016)	201-1	Direct economic value generated and distributed (2016)	<ul style="list-style-type: none"> • Revenues and Expenses • Economic Performance 	60 144
GRI 307: Environmental Compliance (2016)	307-1	Non-compliance with environmental laws and regulation (2016)	<ul style="list-style-type: none"> • Corporate Governance • Anti-Corruption 	61-62 63-64
GRI 419: Socioeconomic Compliance (2016)	419-1	Non-compliance with laws and regulations in the social and economic area (2016)	<ul style="list-style-type: none"> • Supply Chain Management • Environmental Performance 	72-76 145-148
	DMA :	Specify on time payment in compliance with the contract	<ul style="list-style-type: none"> • Social Performance 	149-152
Product and Service Development	BCP Indicator:	Net Promoter Score (NPS)/ Customer satisfaction	<ul style="list-style-type: none"> • Sustainable Product and Service Development 	94-100
Product and Service Development	BCP Indicator:	Number of service stations that have been updated	<ul style="list-style-type: none"> • Sustainable Product and Service Development 	94-100
GRI 205: Anti-Corruption (2016)	205-2	Communication and training about anti-corruption policies and procedure (2016)	<ul style="list-style-type: none"> • Anti-Corruption 	63-64
Risk Management	BCP Indicator:	KRIs do not exceed acceptable levels	<ul style="list-style-type: none"> • Corporate Risk Management 	65-69
GRI 204 : Procurement Practice (2016)	204-1	Proportion of spending on local suppliers (2016)	<ul style="list-style-type: none"> • Supply Chain Management • Economic Performance 	72-76 144
GRI 308 Supplier Environmental Assessment (2016)	308-2	Negative environmental impacts in the supply chain and actions taken (2016)		
GRI 414 Supplier Social Assessment (2016)	414-2	Negative social impacts in the supply chain and actions taken (2016)		
Sustainable Supplier Development	BCP Indicator:	Management of time to procure packaging in an effective manner		
Product and Service Development	BCP Indicator:	Net Promoter Score (NPS)/ Customer satisfaction	<ul style="list-style-type: none"> • Sustainable Product and Service Development 	94-100
	BCP Indicator:	Percentage of retail market share		
Product and Service Transportation	BCP Indicator :	Percentage of service station customers who are satisfied with products and services/ number of complaint related to late delivery/ product losses	<ul style="list-style-type: none"> • Bangchak and Stakeholders • Product Transportation 	32-33 101-104
Product and Service Development	BCP Indicator:	Net Promoter Score (NPS)/ Customer satisfaction	<ul style="list-style-type: none"> • Sustainable Product and Service Development 	94-100
	BCP Indicator:	Average oil sale volume		
GRI 201: Economic Performance (2016)	201-1	Direct economic value generated and distributed (2016)	<ul style="list-style-type: none"> • Revenues and Expenses • Economic Performance 	60 144
GRI 302: Energy (2016)	302-1	Energy consumption within the organization (2016)	<ul style="list-style-type: none"> • Energy Consumption • Environmental Performance 	83-84 145
GRI 305: Emissions (2016)	305-1	Direct (Scope 1) GHG emissions (2016)	<ul style="list-style-type: none"> • Climate Change 	85-86
Product transportation	305-2	Energy indirect (Scope 2) GHG emissions (2016)	<ul style="list-style-type: none"> • Environmental Performance 	146
	BCP Indicator:	Significant environmental impacts of transporting products		

Dimension	Materiality	Impacts		Significance
		Internal	External	
Environmental	Water Management	  • BCP	• Government sectors • Communities and society	Better management of water consumption by conducting Water Footprint assessment with external organizations
	Air Emissions	 • BCP	• Government sectors • Communities and society	Quality of air emissions better than regulatory limits
	Spills	 • BCP	• Suppliers	Oil spill prevention
	Waste Management	 • BCP	• Government sectors • Communities and society	Waste management in compliance with laws and regulations by using the 3Rs principle
Social	Occupational Health and Safety	 • BCP	• Suppliers • Government sectors • Communities and society	Zero incidents that may impact the well-being and properties of employees, contractors, and local communities causing broad complaints
	Community Involvement and Development	 • BCP	• Government sectors • Communities and society	Create value to the society and communities around the refinery
	Talent Attraction and Retention	 • BCP		Develop talent groups of employees to be ready for their career growth with the company and promote high performance culture
	Career Path	 • BCP		Develop career paths for technical and general career tracks to promote employees' loyalty to the organization
	Human Rights	 • BCP		Conduct Human Rights Due Diligence for the systematic prevention and management
	Social Development	 • BCP	• Government sectors • Communities and society	Develop society at national level to overcome social issues and improve quality of life for Thai people
	Human Capital Development	 • BCP		Develop competency of employees to drive business to achieve the corporate targets
	Fair Operating Practices	 • BCP	• Competitors	Conduct businesses with transparency

Levels of stakeholder responsive work plans

Initiative Base

Initiative base is the operations of responsible divisions to design projects/activities conforming to, but not related to business processes. The initiative base has short-term targets, and its results are measured once.

Strategic Focus

Operation or business process improvement efforts to corporate vision/strategy that require collaboration among multiple functions to achieve medium-term goal and impacts on the value chain.

GRI Topics	Topic Specific Disclosure		Reporting Content	Pages
GRI 303: Water (2016)	303-1	Water withdrawal by source (2016)	• Water Management	87-88
	303-3	Water recycled and reused (2016)	• Environmental Performance	147
GRI 305: Emissions (2016)	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions (2016)	• Air Emissions • Environmental Performance	91-92 147
GRI 306: Effluents and Waste (2016)	306-3	Significant spills (2016)	• Oil and Chemical Spills • Environmental Performance	90 148
	306-2 306-3	Waste by type and disposal method (2016) Significant spills (2016)	• Waste and Unused Material Management • Environmental Performance	93 148
GRI 403: Occupational Health and Safety (2018)	403-9	Work-related injuries (2018)	• Occupational Health and Safety	110-115
			• Social Performance	151-152
GRI 413: Local Communities (2016)	413-1	Operations with local community engagement, impact assessments, and development programs (2016)	• Community and Social Development	133-143
Labor Management Relations	BCP Indicator:	Best Employer Score by Kincentric	• Employee Stewardship	122-132
GRI 401: Employment (2016)	401-1	New employee hires and employee turnover (2016)	• Employee Stewardship	122-132
GRI 412: Human Rights Assessment (2016)	412-1	Operations that have been subject to human rights reviews or impact assessments (2016)	• Human Rights	119-121
GRI 201: Economic Performance (2016) Social Development	201-1	Direct economic value generated and distributed (2016)	• Community and Social Development • Economic Performance	133-143 144
	BCP Indicator:	Social Return On Investment		
GRI 404: Training and Education (2016)	404-1:	Average hours of training per year per employee (2016)	• Employee Stewardship	122-132
			• Social Performance	151
GRI 205: Anti-Corruption (2016)	205-3	Confirmed incidents of corruption and action taken (2016)	• Anti-Corruption	63-64

Mission Driven

The same structure as the Executive Committee in line with business direction and goals with aim to create a competitive advantage in order to create values to the organization and stakeholders. Goals are integrated into the entire organization.

Sustainability Leader

Business processes that are self-sustain, well managed, and recognized as industry leader. Goals are set long-term and values are created for the organization, stakeholders as well as the wider environment and society.

Sustainability Strategy

Bangchak is committed to developing sustainable business innovation in harmony with the environment and society through the 3S (Security, Stability & Sustainability) corporate strategy. The company has also adopted the Sufficiency Economy Philosophy into business operations to create the balance between “profits” and “values” while operating business for the benefit of environment and society. The 3S strategy is in line with the “Evolving Greenovation” vision aiming to create green innovation for society in accordance with the concept of “Greenovate Our Tomorrow”. The company and its subsidiaries have adopted the 3S strategy to create security, stability, and sustainability for their companies and to respond to global changes, sustainability trends and directions, including needs and expectations of all stakeholder groups.

S1**Security**

Building Energy Security for the Country

Focusing on the building of energy security for the country through the joint operation of business strategy consisting of refinery and trading business, marketing business, natural resource business and bio-based product business in procuring, producing and distributing oil together with biofuels to meet the demands of the business and people. Despite the introduction and the market growth of the electric vehicles (EV cars), the fossil fuel businesses are necessary for the national energy demands and they are growing continuously.

S2**Stability**

Managing Portfolio to Grow and Spread Risks to Business with Consistent Returns

Focusing on the investment in businesses with consistent incomes and returns with low risks from external factors, both in Thailand and overseas, such as the green power businesses which have stable income through the management of production chain in other businesses to cope with business fluctuations.

S3**Sustainability**

Developing Business and Extending Core Businesses to Grow and Be Sustainable

This strategy is relating to business development of extended businesses that supports or create new opportunity for core businesses to grow in a sustainable way and to get ready for disruptive technology, emerging risks and changes in the future, such as the lithium battery business to prepare for the growth of EV cars or the development of high value bio-based products, including bio-plastics and bio-materials. The company also embraces innovation that is contributing to environment and society from Bangchak Initiative and Innovation Center (BiiC), an institute seeking for an investment with the startup as well as cooperation with external parties on R&D activities, to find an opportunity to continuously expand green energy businesses and bio-based businesses domestically and internationally. However, the company still employs the 4 Green sustainability strategy as the framework for business operations and investments for corporate sustainability.

4 GREEN Strategy

1. Green Business



Focusing on the investment in new business, extension of the existing energy business in and innovations that are environmentally friendly in order to add more profits and values to the business in a sustainable way. This is not only to increase proportion of revenue from new business, but also good for the environment as it brings about various kinds of green initiatives to develop business operations. Samples of these initiatives are such as the high value biological products made from agricultural products based on bio-technology innovations extended from the original bio-fuel business, i.e. bio-plastic, bio food, bio cosmetic ingredient. Moreover, the company places importance to green energy business and energy management through the Institute of Innovation and Business Incubation (BiiC), as a way leading to the emerging of startup business that can be developed further for the company's business.

2. Green Production



Emphasizing the improvement of production process and operations that are environmentally friendly and the enhancement of safety operation by using resources efficiently, especially water and energy resources. Having in place, the environment and energy management systems in compliance with ISO 14001 and ISO 50001, respectively, including the occupational health and safety management system (ISO 45001) as well as the Process Safety Management (PSM) to raise the level of safety management.

3. Greenovative Experience



Focusing on the creation of new experience and new green innovation to support the modern lifestyle of Thai people in which everyone can live a sustainable life the environment and society, including:

- **Greenovative Product** emphasizing the product quality development to and environmentally friendly products. At present, the company is producing and distributing quality oil that meets Euro 4 standards, including 2 types of oils according to Euro 5 standards: Gasohol E20 S and Hi-Premium Diesel S (Premium Grade Diesel), designed to suit the new engines and help reduce dust from combustion. In addition, the company has developed and distributed a special grade diesel, namely Hi-Diesel B20 S for distribution to transporting truck customers and Hi-Diesel S B10 diesel fuel that is good for the environment and supports palm oil growers. For the non-oil business, Bangchak is the leader in using 100% bio-degradable. Inthanin coffee cup and the strawless lid can reduce the use of plastic straw and these two items are currently the standard practice for Inthanin coffee shops in all branches. Greenovative Service Station has developed a new architecture for service stations with unique and outstanding designs through the 4Rs process, namely renewable, recycle, reuse and reduce. Some of the examples are installing Solar Roof Top in Bangchak Srinakarin service station to produce solar cell power, bidding for a purchase of power with blockchain technology which is a green community energy management system (GEMS), the expansion of the EV Charger branch, saving water by using rain and used water to water plants, the use of energy-saving equipment, increasing shady green spaces and installing amenities, such as bathroom designs that respond to the elderly and disabled society, installing the automatic air inflator to has developed a new architecture for service stations with unique and outstanding designs through the stepping towards "The Most Admired Brand".
- **Greenovative Mind** is all about the application of technology and IT system to process customer data for the improvement of service works and service delivery to be fast and efficient, the development of member database system, the installation of Point of Sale Automation in service stations in addition to the development of application systems to facilitate various groups of users, i. e. the installation of application BCP Link and the Auto Ordering System: AOS for the group of dealers, the installation of mobile application for the group of general customers and the development of Mobile Application System to support basic operations in response to customer needs and to increase the use of benefits from BCP GreenMiles card.
- **Greenovative Communities** is an idea to create an experience that allows customers to be a part of helping society, environment and maintaining good culture, such as giving oversupply agricultural products to service users or distributing products that are environmentally friendly, hiring the disabled, developing the "BCP Road-Side Assistant" project to provide basic assistance for motorists who need help at Bangchak service stations, such as battery towing, changing spare tires. Another kind of good experience is to develop the project on a plot of organic vegetable at the service stations to improve the quality of life for service staff. In addition, the surplus products can be given to customers.

4. Green Society



is one of the key strategies that the company continuously performed with environmental care participation in improving the quality of lives and well-being of Thai society through projects that promote better society as a whole by introducing the late King's Sufficiency Economy Philosophy and innovation aiming to expand operations and results to various groups of stakeholders in society. It also expects to create changes and help develop the country in various dimensions in response to the United Nations Sustainable Development Goals (SDGs). Including into it, is the communication on "Sustainable Happiness" that the organization can share with stakeholders in the society through various kinds of projects, either the CSR in Process, or CSR after Process or CSR as Process, under the operation of Bai Mai Pan Suk Foundation.

Progress in Sustainable Development and Business

Strategy 1: Focusing on the investment and value creation to the sustainable and responsible business (Green Business)

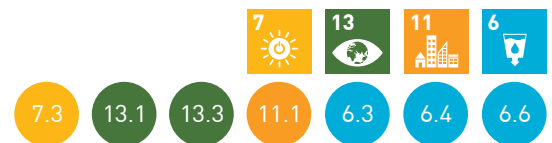


Plans	Results	Targets Y 2024 ⁽¹⁾
1.1 Developing electricity generation businesses from solar power, wind power, geothermal and hydropower, and expanding the businesses to be an Asian renewable energy producer	<ul style="list-style-type: none"> Generated and distributed power from renewable and clean energy, domestically and internationally, totaling 404.0 megawatts, consisting of <ul style="list-style-type: none"> Solar cells project in Thailand: generated 139.0 megawatts (including roof-top installation and all of which have been produced) Solar cells project in Japan: generated 14.7 Megawatts. Ligor wind power project in Nakhon Si Thammarat province, with a capacity of 8.97 megawatts, has been operating since April 2019. Wind power plant project in Philippines : generated 14.4 MW (in proportion to shareholding) Geothermal power project in Indonesia: operating capacity of 157.5 MW (according to the shareholding proportion) Investment in water power project in Chiang Khwang Lao People's Democratic Republic with a generating capacity of 69 megawatts, to start in September 2019. <p>Remark: Capacity is the power generating capacity under the Power Purchase Agreement (PPA).</p>	<ul style="list-style-type: none"> Expanding: focusing on the growth of the company's core business by expanding a large-scale power plant business through organic growth and the acquisition of inorganic growth projects Extending: extending business in support of the new direction of energy business in the future by penetrating into a new business but still related to the core business of the company such as Digital energy, Energy storage, LNG to Power etc. Enhancing: developing and enhancing the existing power plants, including work processes in the organization for maximum efficiency. Evaluating: managing assets of the company through a regular monitoring of its performance and having consideration on the portfolios to ensure satisfactory returns.
1.2 Developing the bio-fuel business and expanding the high value bio-based product businesses	<ul style="list-style-type: none"> Operated bio-based product business through BBGI Company Limited with a total production capacity of more than 2,000,000 million liters per day, consisting of : <ul style="list-style-type: none"> Bio-diesel production unit: increasing production capacity from 930,000 liters per day to 1,000,000 liters per day with a project to improve production efficiency and a project to build a glycerin refinery, All these operations pushed an average capacity utilization rate of 90% to Bangchak Bio-fuel Co. Ltd. Ethanol production unit using cassava : consisting of Bangchak Bio Ethanol Company Limited with a capacity of 150,000 liters / day and an average utilization rate of 95% combined with Ubon Bio Ethanol Co., Ltd. with a capacity of 400,000 liters / day and an average utilization rate of 85% to 550,000 liters / day. Ethanol production unit using molasses : consisting of KGI-BP project, which has expanded production capacity from 200,000 liters per day to 300,000 liters per day and has an average utilization rate of 99%. Ethanol production unit using molasses : consisting of KGI-NP project with a production capacity of 150,000 liters / day and an average utilization rate of 98% Prepared for production and distribution of B100 products in accordance with government policies to promote the use of bio-diesel (B100), both B20 and B10 diesel, to support future demand Prepared for investment opportunities through fundraising on the Stock Exchange of Thailand by 2020 Screened high value bio-product business that can be developed commercially such as Bio Plastic / Bio Food / Cosmetic ingredient etc. Provided strategic areas for establishing a Bio Complex to support the expansion of high value biotech products in the future 	<ul style="list-style-type: none"> Developing a bio-business by establishing Bio-Complex in order to expand the bio-fuel business into a high value bio product that increases business opportunities as well as promoting research and development of commercial energy crops such as sugarcane, cassava, palm oil and algae, which help increase the amount and value of agricultural products for farmers
1.3 Innovative business development to add more value and opportunities to business	<ul style="list-style-type: none"> The company established BCP Innovation Pte. Ltd. in Singapore in order to conduct business related to innovation abroad. At present, BCP Innovation Pte. Ltd. has the 2nd shareholding in Lithium Americas Corporation, the upstream business of the battery business. Currently, the first phase of lithium production capacity has been increased from 25,000 tons per year to 40,000 tons per year, including the right to off-take in 2021 to 6,000 tons per year, increasing from right to off-take 2,500 tons per in Y2018. 	<ul style="list-style-type: none"> Expanding investment in lithium mining business to increase production capacity and the rights to off-take, including finding a partnership and establishing a battery factory in Thailand

- Note
- 1) Setting operational goals for Y2020/Y2024. The company has adjusted the presentation into 2 periods in consistent with the 5-year long-term strategic planning cycle and SDG.
 - 2) ★ Refers to the organizational sustainability performance in consistent with the performance evaluation of the Chief Executive Officer and the President in 2019. (Disclosure 102-28)

Plans	Results	Targets Y 2024 ^[1]
	<ul style="list-style-type: none"> Bangchak Innovation and Initiative Center (BiiC) established Corporate Venture Capital (CVC) to invest in the startup through International Incubation and In-house Pitching, with an investment of \$ 8 million in bio-technology and through the clean energy business of \$ 9 million by investing in a Thai energy startup company. ★ Having academic cooperation and developing projects with agencies and universities such as Mahidol University (MU), Chulalongkorn University (CU), King Mongkut's University of Technology Thonburi (KMUTT), Rajamangala University of Technology Phra Nakhon (RMUTP), Office of the Promotion Committee Science, Research and Innovation (SorBorSor.), Thailand Institute of Scientific and Technological Research (TISTR), Asian Institute of Technology (AIT) etc. 	<ul style="list-style-type: none"> Investing in business innovation / incubator and startup by focusing on green energy innovations such as energy storage and bio based- innovations that are beneficial to society and the environment

Strategy 2: Focusing on the improvement of environment and safety management (Green Production)



Plans	Results	Targets Y 2024
2.1 Investing in the renewable energy businesses (Same as 1.1-1.2)	<ul style="list-style-type: none"> Same as 1.1 - 1.2 Defined the organization's success indicators for carbon offset by the carbon offset of the company and the companies in the group which is tied to the key performance indicators of senior management. By the year 2019, the company could reduce the amount of greenhouse gas emissions by carbon offsets from the green power business compared to the baseline in 2015, by 800,000 tons of carbon dioxide equivalent and reduce greenhouse gas emissions from the production unit by 52,000 tons of carbon dioxide equivalent. ★ 	<ul style="list-style-type: none"> Carbon Offset from the green power business of the companies in the group, aiming to become a Carbon Neutral Company by Y2030
2.2 Improving efficiency and stability of energy consumption in production	<ul style="list-style-type: none"> Generated power and steam from Combined Cycle Power Plant Unit 3 (GTG3), size 12 MW, to replace the boiler, saving the company from the use of fuel oil and continuously improved production stability. Operated the YES-R + project to develop Yield Energy Efficiency Safety and Reliability to be stable and sustainable and to reduce productivity loss Implemented a refinery energy efficiency improvement project with an Energy Intensity Index (EII) equal to 97.9 in 2019 Operating the construction of 3Es as planned <ul style="list-style-type: none"> Continuous Catalyst Regeneration Unit (CCR) Improvement of distillation units for higher efficiency (Debottlenecking) 	<ul style="list-style-type: none"> Implementation of the YES-R + project to improve the yield, energy efficiency, safety and reliability to be stable and sustainable in order to successfully reduce the loss of productivity Proceeding with the construction of 3E as planned Continuous Catalyst Regeneration Unit (CCR) completed in 2020 Improvement of distillation unit for higher efficiency (Debottlenecking) completed in 2020
2.3 Increasing the efficiency of tap water usage in the production process by water reduction, reuse and recycled	<ul style="list-style-type: none"> Reduced the use of tap water by 3% (compared to the baseline in Y2015) Improved efficiency of water consumption per production unit to 56.8 the cubic meter / thousand barrel equivalent 	<ul style="list-style-type: none"> Reducing water usage by 15% (compared to the baseline in 2015) (Y2020 target) Improving the efficiency of water consumption per production unit to 54 cubic meters / thousand barrels equivalent (target Y2020)
2.4 Conducting Water Footprint in support of water management throughout the product life cycle	<ul style="list-style-type: none"> Continued to study the water management in the refinery by applying the Water Footprint of products in collaboration with experts from King Mongkut's University of Technology Thonburi. This is to maximize the efficiency of water management per product. 	<ul style="list-style-type: none"> Proceeding on the study of water management in the refinery by the Water Footprint of products
2.5 Laying the foundation for Process Safety Management (PSM) in the workplace and expanding the scope of security promotion on the Occupational Health and Environment to cover the surrounding communities	<ul style="list-style-type: none"> Established the PSM Governance Committee (PSM GC) to support and operate work assignments Developed safety management systems for all processes according to the Process Safety Management System (PSM) in 3 cases as planned. These cases included the change management in the production process, Technology And Management of Change Technology-Facilities: MOC-T, F and Pre-Startup Safety Review (PSSR) Conducted activities and rehearsed safety plans to prepare for emergencies with the surrounding communities. The practices of virtual evacuation plans in the communities around the refinery with cooperation between the company, Phra Khanong District Office and Phra Khanong Fire Station were conducted. In the year 2019, the company was able to rehearse the emergency plans and evacuation for a total of 2 communities 	<ul style="list-style-type: none"> Developing safety activities to continuously build trust and commitment among stakeholders of the organization Developing security management systems (PSM) in all 14 elements until becoming a culture of the company. Also, developing software systems to support. Having safe communities from emergency and evacuation drills in the event of emergencies and disasters in 11 locations (11 safe communities as a target in 2020)

Plans	Results	Targets Y 2024
	<ul style="list-style-type: none"> There were no wide spread incidents affecting the community in 2019. Monitored air quality online, including air emission from the vent, work area and atmosphere around the refinery to ensure better quality than legal requirements. There was no complaint on air pollution. Bangchak Bio-ethanol Company Limited could managed waste by 3Rs principles in 83% of total waste while Bangchak Bio-fuel Company could do it by 78% of total waste. 	<ul style="list-style-type: none"> There is no widespread incidents affecting the community in each year. Zero complaint related to air pollution each year Encouraging subsidiaries to implement 3Rs waste management principles and receiving the 3Rs Awards together with the Zero Waste to Landfill Awards

Strategy 3: Focusing on creating new experiences and green innovations (Greenovative Experience)



Plans	Results	Targets Y 2024
3.1 Developing service station that are responding to customer centric with the new concept/image and the development of additional service to deliver new experiences to customers service development and additional businesses to deliver new experiences to customers	<p>Greenovative Product</p> <ul style="list-style-type: none"> Made available 2 types of Euro 5 standard oil (higher than the requirements of the Department of Energy Business), namely Gasohol E20 S and Hi-Premium Diesel S (Premium Diesel) designed to be suitable for new engines and help reduce dust from combustion. Developed and distributed Hi-Diesel B20 S special grade diesel fuel for distribution to the transportation truck customers and Hi-Diesel S B10 diesel fuel which is good for the environment and supports palm oil growers. Upgraded service quality to the highest satisfaction for customers and stepped up to becoming number 1 in the minds of users from the Customer Satisfaction Index based on the Net Promoter Score (NPS) assessment this year. ★ <p>Greenovative Service Station</p> <ul style="list-style-type: none"> Applied technology and information systems to develop services for customer information management, fast and efficient service, member database system and to complete the installation of point of sale automation in service stations Developed an application system that facilitates the use of various customer groups such as business operating groups (dealer groups) Developed BCP Link Application System, Auto Ordering System (AOS), a system for general customers Developed Mobile Application Systems that support basic operations according to customer needs Improved the use of Bangchak GreenMiles' card benefits through the analysis of customer behavior data Signed a cooperation agreement with the Provincial Electricity Authority to expand the EV charging points at Bangchak service stations 	<ul style="list-style-type: none"> Increasing market share by more than 18 percent Maintaining the 1st place in the Net Promoter Score (NPS) Aim to be the "Most Admired Brand" Not less than 62 branches nationwide

Strategy 4: Developing businesses/activities for environmental and social benefits (Green Society)



Plans	Results	Targets Y 2024
4.1 Developing social activities and business that benefit the society and the environment at the same time	<ul style="list-style-type: none"> Improved the quality of life of community people, economically, socially and environmentally, to promote a healthy community, livable and sustainable in the areas around Bangchak refinery on all 8 aspects, with activities organized with community groups, family group, school groups and condominium groups. These activities contributed benefits to over 51,445 participants. Community engagement reflected in 83.2%. Developed more service stations with 13 agricultural cooperatives Improved potential community gas stations and upgraded service levels through the community gas station development program. Used Smart P&L system as a tool for community gas station operators to compare their performance Conducted COOP Coaching in 40 locations, and COOP Turn pro in 1 location "Click ..to flip the nation" project Promoted product development through innovation and trial sale through online technology 	<ul style="list-style-type: none"> Assessing friendliness, helpfulness, safety, and community engagement to the company of 85%, encouraging the establishment of at least 3 groups of social enterprises to generate income to the community. Continuously developing service stations with agricultural cooperatives Upgrading community service to be more of competitive services

Plans	Results	Targets Y 2024
	<ul style="list-style-type: none"> Increased the value of agricultural products by buying bananas from farmers in the northeast region, northern and central to make "Happy Banana" as a gift giving to customers visiting Bangchak service stations Extended the sustainability network to partners with sales contracts less than US \$ 500,000 by disseminating the Supplier Code of Conduct (SCOC) and having suppliers assess themselves according to the code of ethics, amounting 11 cases 	<ul style="list-style-type: none"> Promoting the development of quality product from farmers to sell in SPAR convenience stores for domestic market and exportation. Also, including them continuously as promotional product in Bangchak service stations every year All suppliers responding to adherence to the Code of Conduct and participating in the self-assessment according to the code of ethics
4.2 Developing social activities that are more responsive to national problems	<p>Took part in solving the plastic waste problem with innovations in the circular economy</p> <ul style="list-style-type: none"> Encouraged customers to use private glass/cup for their beverage, getting 5 baht discount Changed the Inthanin cup into a bio-cup and changed to a drinking lid to reduce straw. The used Bio-cups were taken for reuse in the seedling cup project which was the collaborative project between Bangchak and the Royal Forest Department. The project aimed to reduce the use of black bags in seedling culture Passed PET drinking water bottles, donations from customers, to Indorama company to make recycled fibers for further made into shirts, hats, bags, products and be given to the public by recycling of 600,000 PET bottles Recycled cans of engine oil into plastic pellets for reuse <p>Helped farmers on the adaptation and mitigation to alleviate climate change problems with the late King's Sufficiency Economy Philosophy</p> <ul style="list-style-type: none"> Water management using the model of "Pansuk Farmers". Farmers practicing the natural agriculture principles can design and improve the area for water management in farming plots of agricultural cooperative group members in Saraburi, Lop Buri, Uthai Thani and Suphanburi. The area covers 12 rai. Developed the prototype area in prevention of soil erosion, known as "Stop Soil Erosion, Save Our Future", in the agricultural areas on sloping mountains. The development was done in collaboration with the Department of Land Development, The Pid Thong Lang Phra Institution for Activities Promotion and Development the Royal Forest Department and the Natural Agricultural Foundation Network. The company was finally able to do a prototype area in prevention of soil erosion by applying natural farming principles such as laying terrace rice fields, planting vetiver grass, planting the 5-level forest, laying natural weir and to promote the use of natural fertilizers in the 5 plots of the prototype area, covering 20 rai at Kaen Makrud Sub-district, Ban Rai District of Uthai Thani Province In collaboration with the Meechai Pattana Foundation and Agricultural Cooperatives, promoted the introduction of agricultural innovations to schools in the Partnership School program Young Innovative Farmer : This program aims to encourage the use of innovation in cultivation among students who are children of the member farmers of the agricultural cooperatives so that they will have basic knowledge in modern agriculture, saving water through a simple dripping system, growing plants in water or in the sand, tissue cultivation for the agriculture, etc. Organized seminars on environmental topics to share knowledge to people in preparation for global warming mitigation in the future. The recommendations included the application of innovations that are in line with the BCG Model economy concept, the utilization of natural resources worthily and sustainably, such as biological economy, circular economy and the green economy. Organized the seminar on the topic of SynBio Forum:Bio-innovation science changing the world <ul style="list-style-type: none"> Took part in solving the problem of literacy of Thai children by developing education for Thai youth. Helped the illiterate (unable to read or write) of 891 students and supported 20 of Pracharat School for future education (Connex ED) schools with more than 5,000 students 	<ul style="list-style-type: none"> Changing the Inthanin cup to 15-20 million bio-plastic cups per year and get ready to reduce the use of plastic straw Number of farmers in sustainable agricultural areas (Which has been designed and improved for water management) no less than 30 persons Preparing prototype area in prevention of soil erosion in agricultural areas on slope hills in Kaen Makrut Sub-district, Ban Rai District of Uthai Thani Province Supporting the expansion of Meechai Pattana school, especially in the application of innovation to agriculture work. This is to allow the opportunity for students to have real practice in school continuously. Expanding the support for Meechai Pattana school to the 4 Partnership school network in 2019 Organizing the seminar once a year for no less than 300 participants Helping the youth to be able to read and write (to become literate) no less than 800 people / year.

Sustainability Situation Outlook

2020 Global Economic Situation and Trends

According to an International Monetary Fund (IMF) forecast issued in January 2020, this year's global economy will grow around 3.3% versus 2.9% last year, under a brighter outlook of the initial phase of the trade agreement between the U.S. and China and subdued anxiety over a No-Deal Brexit. However, there remain negative factors from geopolitical challenges, especially the outbreak of a new strain of coronavirus (Covid-19) in China (the world's second largest economy) in early 2020, which is spreading fast to many countries worldwide. This virus may inhibit the global economic recovery previously forecast by IMF.

Meanwhile, the Asia-Pacific economic expansion remains decelerated due to the trade war effects, rampant epidemic, protracted protests in Hong Kong, which caused the economy to shrink, and the sluggish growth of the Chinese economy due to the epidemic and trade barriers that mainly affected domestic consumption and exports. ASEAN economies are projected to remain flat. In short, the recovery in world trade volumes is still subjected to these negative factors, particularly the COVID-19.

For Thailand, there are still many negative factors, for example the Covid-19 outbreak in China and numerous infected patients in many countries including Thailand. This has affected the tourism sector, the export sector, employment and household income. Delays in the national budget for the year 2020, drought and a sporadic rainy season have hurt the agricultural sector with a high level of household debts, not to mention the PM 2.5 problem (dust particles smaller than 2.5 microns), which has inhibited the Thai economy. below expectations. A private-sector projection in March 2020 put GDP growth for Thailand in 2020 at 1.5-2%. All these factors contribute to an inflation forecast this year of 0.5-0.8%. The rampant spread of Covid-19 has wielded severe economic impacts on the economy, possibly lowering the headline inflation from the previous estimate

Oil Price Situation

International Energy Agency (IEA) forecast that the global crude oil demand will surge 1.2 million barrels per day in 2020 from 1.0 million barrels per day in 2019 and 1.1 million barrels per day in 2018. However, due to the current spread of Covid-19, significant impacts are being felt on the global economy and oil demand, which in turn stunt industrial activities and travel. In short, crude oil demand this year may fall short of projected levels. Oil production from non-OPEC countries is likely to increase to 2.1 million barrels per day in 2020. When compared with 2019, the increased production from the US is expected to expand to 1.1 million barrels per day. In 2020, as crude oil export pipelines and new infrastructure begin to operate at full capacity, the production capacity of shale oil from the US would increase. In addition, production technology efficiency assists the US in lowering their production costs and enable production despite low oil market prices. All these factors may cause the world oil market to face a glut. The price of Dubai crude in 2020 will be expected to move to USD50-60 per barrel. The sluggish demand pressures oil prices due to concerns over economic recession, the US - China trade war, and a new strain of coronavirus (Covid-19) outbreak that may continue to spread throughout China, the world's second largest oil user. Such outbreak may impact both tourism and oil demand. Oil supply is expected to increase from non-OPEC countries, especially crude oil supply from the US as a result of the crude oil export pipelines and new infrastructure, which are starting to operate at full capacity. However, the oil price has been rising due to conflicts between Iran and the US, causing unrest in the Middle East, the world's largest crude oil producers, while OPEC and its allies continued reducing oil production and stabilizing its prices.

Gross Refining Margin Outlook

It is expected that, by 2020, the Gross Refining Margin (GRM) of hydrocracking refineries in Singapore will decline slightly from 2019 with lower expected demand for refined petroleum products due to concerns about the recession caused by the trade war between the US and China. Although progress has been made to resolve this dispute, the outbreak of Covid-19 may hurt tourism and oil demand. However, the change the properties of marine fuels to limit sulfur values at up to 0.5% may increase GRMs in Asia.

Competition in the Oil Industry in Thailand

Severe competition in the oil industry in Thailand in 2020 is expected, continuing from the previous year. The Covid-19 outbreak may hurt tourism and oil demand. In addition, many companies have increased service stations, with a modern image to include new services for consumers' convenience by incorporating non-oil businesses to increase choices for consumers and continually increase competitiveness.



Economic Growth

Net Profit

2,488
million THB



Dividend

0.80
THB/share



Total Revenue from selling of goods and services

190,489
million THB

EBITDA
8,709 million THB



Percentage of accumulated market share



Net Promoter Score [NPS]

 **76.1**





Revenues (Disclosure 201-1)

In 2019, Bangchak and its subsidiaries generated revenue from sales of products and service of refinery and trading business, marketing business, green power business, bio-based product business and natural resource business totaling 190,489 million THB which decreased 1% compared with year 2018. The Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) was 8,709 million THB which decreased by 15% compared to year 2018. The net profit was 2,488 million THB which was the net profit attributable to owners of the parent for 1,732 million THB. This was due to the fluctuation in oil price of the global market, where the oil business is in downward trajectory following slowing global due to the trade war between the US and China. The Dubai crude price in 2019 averaged at 63.51 \$/BBL, a decline of 6.14 \$/BBL or 10% compared to previous year. This has led to performance from 2018 to 2019 of the refinery industry, including the company's, to decline. However, the refinery business had 2,871 million THB in EBITDA, and had the 2019 average production rate at 112,600 barrels/day. In addition, the refinery business had a historic high rate of 123,500 barrels/day during the past September.

Expenses

In 2019, Bangchak group had the decrease in the operating cost by 337 million THB due to the marketing cost which was the result of the decrease in average oil prices.

Other expenses of the company included social and community development and philanthropy in terms of goods and monetary donations approximately 99 million THB.

In 2019, employee wages and benefits expenses increased from 2018 because of the change in provision for retirement benefits and past service cost of the Labor Protection Act amended on April 5th, 2019. The amendment include a requirement that an employee who is terminated after having been employed by the same employer for an uninterrupted period for 20 years or more, receives severance payment of 400 days of wages at the most recent rate. Therefore, the group recognized the provision for retirement benefits and past service cost in consolidated and separate financial statements increased by an amount of 140 million THB and 133 million THB respectively. Interests and bond expenses increased from the previous year approximately 280 million THB. The payment of taxes to the government and local authorities were 258 million THB. In 2019, Bangchak and its subsidiaries issued 1,760 million THB in dividend back to our shareholders.

Corporate Governance

Corporate governance has always been a cornerstone of business operations right from its inception. The company has defined a written Corporate Governance policy (Disclosure 102-16) since 2003, as a result of a workshop among all employees who worked together in setting guidelines for the operations of directors, executives and employees, including subsidiaries. The Board of Directors assigned a Corporate Governance Committee to review the policy on an annual basis. In 2019, the company revised its policy (Revision 16) concerning the notification of a wish to trade the company's securities by at least one day ahead of such trading in compliance with the regulations of ASEAN CG Scorecard and CG Report of Thai Listed Companies (CG Report). The company also engaged an external auditor to assess the Board of Directors's performance in compliance with a number of benchmarks such as the sustainability index of the organization (DJSI), the principles of good corporate governance for listed companies (CG Code) and the rotation of external auditors according to law.



Policy Revisions	Determined Commitment	Sharing Perspectives
<ul style="list-style-type: none"> Adding duties of directors and management executives regarding the notification of intention to trade the company's securities. This is to be reported to the Audit Committee meeting in every quarter. Adding, the Board of Directors may provide external consultants to help determine the guidelines and make recommendations on the board's performance evaluation for at least every three years Amendment of the External Auditor Rotation to comply with the Notification of the Capital Market Supervisory Board No. Thaw Jaw 75/2561 	<ul style="list-style-type: none"> Included the topic of Corporate Governance in the Newcomer Discovering Program for new employee orientation All employees to accomplish the annual Corporate Governance Policy Test via "WeShare" – KM Online system, including reporting of "Conflict of Interest" through the human resource portal Organized the 15th annual CG Day to promote understanding of and cultivate awareness of the CG Policy by inviting employees of Bangchak Group to join the "CG's GOT TALENT" show, embracing the communication of Bangchak CG's six fundamental principles called ARTEVE (Accountability, Responsibility, Transparency, Equitable treatment, Vision to create long-term value, and Ethics). Joining the judging panel were Dr. Mana Nimitmongkol, General Secretary, Anti-Corruption Organization of Thailand and Admiral Sucheep Whoungmaitree, Bangchak director Cascaded the "No Gift Policy" for the New Year and other occasions to employees and related parties in the company and companies in Bangchak Group 	<ul style="list-style-type: none"> Experience sharing on the Corporate Governance and Anti-Corruption with external agencies such as TOT Public Company Limited and participants of a development course, namely "Development of Senior Executives" for the Parliament civil servants of the King Prajadhipok's Institute, etc. Organized the annual Suppliers' Seminar for introducing the "Suppliers' Conduct For Sustainable Business Development" to support suppliers to join the Thai Private Sector Collective Action Coalition Against Corruption (CAC) (details appear in the Anti-Corruption chapter on page 63-64). (Disclosure 205-2)



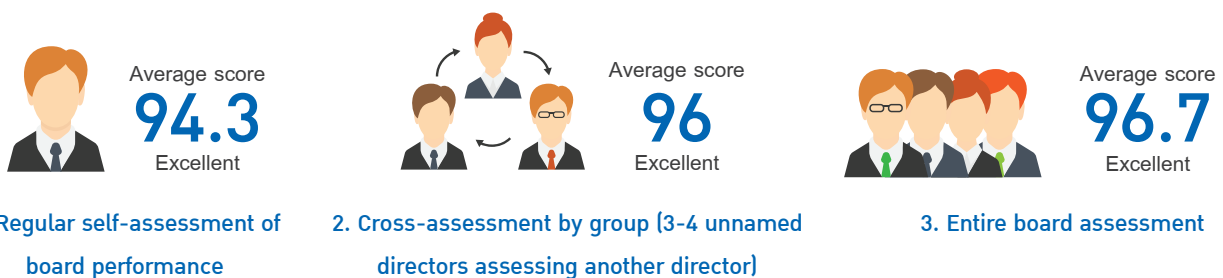
Board of Directors

The Board of Directors consists of 15 members, 9 of which are independent directors and 1 female. The Board Diversity has skills that are in line with the company's business strategy through the implementation of the Skills Table (Board Skills Matrix) and a variety of educational background, experience, without prejudice. Details of the biography of directors appear in the Annual Report under the heading "Board of Directors".

Board Skills Matrix

Name/Specific Expertise	Oil business	Retail business	Energy business	International business	Accounting and finance	Management	Compliance	Organizational development and innovation	Society, environment, and safety	Risk and crisis management
1. Mr. Pichai Chunhavajira	X	X	X	X	X	X		X	X	X
2. Mr. Surin Chiravisit	X	X	X			X	X	X	X	X
3. Mr. Suthep Wongvorazathe	X	X	X	X	X	X				X
4. Gen. Vitch Devahasdin						X	X	X	X	X
5. Adm. Sucheep Whoungmaitree						X	X	X	X	X
6. Pol.Lt.Gen Chaiwat Chotima	X	X	X			X			X	X
7. Lt.Gen. Thammanoon Withee						X	X	X	X	X
8. Mrs. Prisana Prahmkhasuk	X		X		X	X		X		X
9. Mr. Teerapong Wongsiawilas						X	X	X		X
10. Dr. Porametea Vimolsiri			X	X	X	X		X	X	X
11. Mr. Suthi Sukosol						X		X	X	X
12. Mr. Prasong Poontaneat	X	X	X		X	X	X	X		X
13. Dr. Anuchit Anuchitanukul		X		X	X	X		X		X
14. Dr. Prasert Sinsukprasert	X	X	X			X				X
15. Mr. Chaiwat Kovavisarach	X	X	X	X	X	X		X	X	X
Total	8	8	9	5	7	15	6	12	9	15

The Board of Directors are subject to an annual Performance Evaluation. This was set in place in order to increase accountability of the members and help them further improve the business. There are three forms of evaluation



There is also a sub-committee assessment by a separate committee. Details appear in the annual report titled Management Structure.

Anti-Corruption

Bangchak has been one of the first 22 companies who have been certified as a member of the CAC: Thai Private Sector Collective Action against Corruption program since 2013 and has continuously been practicing its anti-corruption policy ever since. The certification was renewed for the second time in the year 2019 (3 - year renewal cycle) as the company has policies and procedures to combat corruption in accordance with the rules specified.



In addition, the company was one of the five companies honored with the CAC Change Agent Award. This Award was given in recognition of the vital supports that the company has extended to private sector in setting up a good system and anti-corruption measures and that the company has joined in the CAC program which is in a way to build up supply chain and expand business networks that are transparent and free from corruption. The company took an opportunity to invite business partners to engage in the announcement of intention under the CAC SME Certification Program. This year, more than 10 companies joined in the 10th CAC National Conference Day.



Anti-Corruption Targets



1. All executives and employees of the Bangchak Group acknowledge the anti-corruption policy and use it as a framework for business operation.



2. Encourage business partners to participate and become certified members of the CAC within the year 2024

Communication and Training about Anti-Corruption Policies and Procedures

In this regard, the company has demonstrated its commitment to fight against corruption as follows: (Disclosure 205-2)

- The company uses “WeShare”, the online learning platform, to communicate with the executives and employees. One can access into the line for learning and taking test on the corporate good governance policy. This way of communication helps the employees understand better about the policy and learn more effectively.
- The 2019 Corporate Governance (CG) Day activity was arranged for the 15th year to promote proper understanding and mindset associated with the CG policy. All employees of Bangchak Group were invited to participate in talent performances under the “CG’s GOT TALENT” theme to promote the main communication of six principles of the good corporate which are the ARTEVE - Accountability, Responsibility, Transparency, Equitable Treatment, Vision to Create Long Term Value, and Ethics. The CG’s GOT TALENT performances were judged by Dr. Mana Nimitmongkol, the Secretary of Anti-Corruption Organization (Thailand), and Adm. Sucheep Whoungmaitree, an independent director.
- The annual supplier seminar and the communication of Bangchak – Supplier Code of Conduct (SCOC) for sustainable business development were conducted to enhance the importance and mutual benefits for suppliers to collaboratively create ecosystem which is transparent and free from corruption and bribery. This also includes the anti-corruption intention announcement and certified

CAC members. As a result, Bangchak became one of the five companies receiving the CAC Change Agent Award which was provided for a company conducting businesses with transparency throughout the supply chain.

🟢 Action to Combat Anti-Corruption:

- Cascade the "No Gift Policy" during festive seasons and other occasions to employees, subsidiaries and concerned external parties in order to reinforce the determination of the company in establishing good norms and fair deals in doing business with all relevant parties
- Do not receive all gifts at any opportunities, and do not take or provide any entertainment and any expenses which are not necessary or not proper to government officers or business partners. If gifts received are highly valuable, employees have to refuse to take them and report to their supervisors.
- Donate goods and money for charity. The donation cannot be used as an excuse for the corruption. The donation for charity requires clear related documents and comply with the company's rules.
- Be politically neutral and have no guideline for providing political aids for any political parties directly and indirectly.

🟢 **BCP Supply Chain and Collective Action Against Corruption (CAC)** : Organizing annual supplier seminars for the 6th consecutive year in order to encourage suppliers to become a CAC certified partner and as a member. Since 2018, the Company has provided benefits to suppliers who are certified CAC as follows:

- ✓ Get more score of 1 - 2% on the technical points
- ✓ In case of having more of the lowest prices, CAC certified suppliers/partners are to be selected.

Policy acceptance to practice and learn until passing the test
(Disclosure 205-2)



Policy Acceptance
100 %



Knowledge Testing
100 %

Online notification of Conflict of Interest through e-HR system
(Disclosure 102-25)



Complaints associated with Anti-Corruption
(Disclosure 205-3)



0
2019

0	0	0
2018	2017	2016

2019

- Obtained the CAC Change Agent Award due to the encouragement for more than 10 suppliers to be certified with the CAC
- The number of corruption incidents was zero.

2020

- Communicate and support subsidiaries and Critical Suppliers to continuously participate in CAC and CAC-SME. (Declaration)
- Emphasize DOs & DON'Ts best practices for directors, executives, and employees

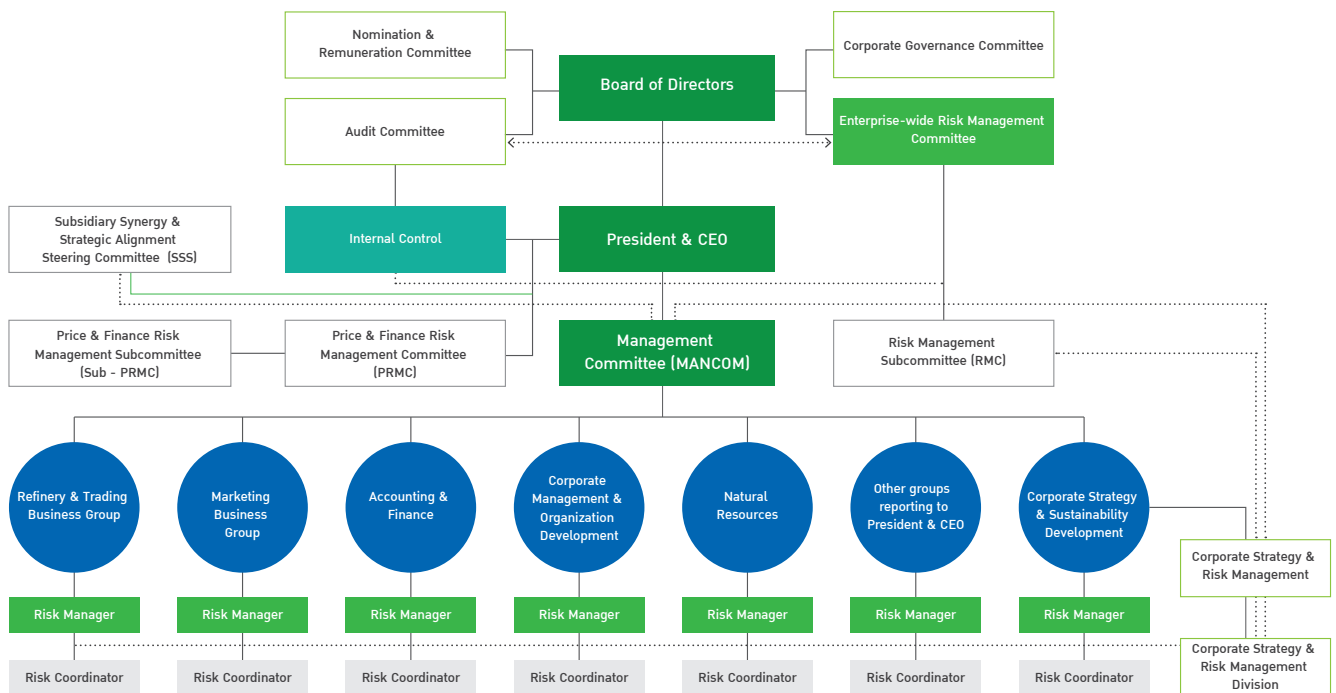
2024

- Continuously communicate and support subsidiaries and Critical Suppliers to enter the CAC and CAC-SME certification process (Certification)



Corporate Risk Management

It has been over 15 years that Bangchak has applied the risk management framework in the organization. The international standards COSO ERM and ISO 31000 are adopted and used to define the management guidelines in order to prevent and reduce risks that may cause the company from not achieving the set objectives. (Disclosure 102-11) This is to ensure our stakeholders that the company will be able to operate business in a rapidly changing environment today. By that, the management, employees of all levels and joint venture companies are involved and take an active role in the implementation of standard risk management systems. Risk management is particularly done following the strategic planning process, policy on the sustainable business development in harmony with environment, social and governance (ESG). The Corporate Risk Management Committee oversees the entire implementation of risk management to ensure the achievement of shared business targets by the following risk management structure:



Remarks

Risk Manager – vice president / designated person

Risk Coordinator – assigned by Senior Executive Vice President / Executive Vice President

Reporting line
 — Functional
 - - - Risk Communication

Risk Management Performance

In the year 2019, the world economy significantly declined, affecting Thailand's economy causing a downturn in the production and household consumption sectors. The value of baht, crude oil and prices of agricultural products fluctuated the whole year. However, the company has prepared a risk management plan for the entire organization, including joint venture companies in order to reduce impact on the business. A close monitoring was pursued to follow up overall impact and to control risks in an acceptable level while also planning to support the overall changes.




In order to ensure continuity and sustainability of operations, the company has also taken into consideration Mega Trend and Global Risk, including business environment factors that are expected to change and affect business operations for management of medium to long-term risks, Risk consideration include industrial business competitions, economic conditions, consumer behavior, environment and climate change, technology advancements and innovations like renewable energy technology and energy storage, advancement of electric vehicles, biological technology, government policies, this also covers the stakeholder's needs and expectations that were collected and analyzed for impact and trend for long-term risk management together with the organization's strategic plan to achieve mutual sustainability.

The company formed the risk framework to properly assess and prepare the risk management plans, consisting 1) corporate Risk Management 2) Risk Management for Investment Projects and 3) Business Continuity Management. The progress of each operation is as follows:


1. Corporate Risk Management

Corporate risk management is the assessment of key risks considering both internal and external factors, the future trends that may affect the short, medium and long-term organizational goals, including the sensitive analysis of various factors covering strategic, operational, financial and reputation risks. To know about the impact of risks, the company kept close monitoring the opportunities of risk occurrence through key risk indicators (KRIs). The company also prepared additional risk management plans to reduce possible impact on the business goals. In 2019, the company assessed key risks in accordance with the corporate strategic plans and sustainable business development in harmony with environmental, social and governance consideration which can be summarized as follows:



Economic Risks (Disclosure 102-29)

Risk Issues	Risk Mitigation Measures
<p>1. Risks arising from the fluctuation of oil prices and production of raw materials prices</p> <p>Cause</p> <p>The impact of oil prices in world market caused by the slowdown of global economy and currency fluctuations</p> <p>Impact on the company</p> <p>The fluctuations of oil and raw materials prices can highly affect the revenue stability of the petroleum business and other business groups</p> 	<p>The company therefore has a risk management plan to deal with fluctuations in oil prices and raw material prices, both short and long term :</p> <ul style="list-style-type: none"> • Provide oil price tracking for crude oil and refined oil and regularly develop new price risk management tools. There are both Subcommittee and Price and Financial Risk Management Committee who consider and decide risk prevention options and report directly to the company's board of directors. • Diversify risk from fluctuations in agricultural raw material prices through investment in the biological products business of BBGI Public Company Limited. It increases the competitiveness of the business of production and distribution of biofuels, biodiesel and ethanol. It aims to expand the business of high value Bioproducts in the future too and create more value for the business
<p>2. Risks of raw material and supply chain management</p> <p>Cause</p> <p>In the year 2019, tighter global supply due to geopolitical risk affected raw material and supply chain management (Geopolitics) Demand for high-sulfur fuel oil has dropped continuously even before the new regulation from the International Maritime Organization (IMO) came into effect on January 1, 2020, and the fluctuation of agricultural production quantity which is used as raw material for fuel.</p> <p>Impact on the company</p> <p>This may affect business continuity due to the availability of raw materials for production and delayed delivery for distribution.</p> 	<p>The company has prepared the risk management for the business partners to be able to operate continuously as follows:</p> <ul style="list-style-type: none"> • Procuring quality crude oil that is suitable for the production process and provides good GRM to add value to the business • Preparing a long-term contract for the purchase of crude oil from both foreign and domestic suppliers • Reserving and procuring raw materials for production of biofuels from production sources that are at a reasonable and competitive price • Assessing the risk of supplier adequacy by grouping suppliers such as group of raw materials, product and high value services suppliers. Also, assessing risks that may cause economic, social and environmental impact on the company and suppliers
<p>3. Risks from fluctuations in exchange rates and interest rates</p> <p>Cause</p> <p>Throughout the year 2019, the exchange rate fluctuated due to the uncertainty of financial policy, international trade policy, the announcement of Federal Reserve (FED) to cut interest rate three times, and the exit of UK from the EU (no-deal Brexit).</p> <p>Impact to the company</p> <p>Affect the financial costs and the company's net profit.</p> 	<p>The company has a plan to manage the risk of exchange rate and interest rate continuously as follows:</p> <ul style="list-style-type: none"> • Managing income and expenses in foreign currencies as for the natural hedge • Having Price and Financial Risk Management Committee to follow up closely the financial market trends and to consider an execution of risk management on foreign exchange and interest rate. This is to ensure that the operation is in line with the company's business goals

Social Risks (Disclosure 102-29)



Risk Issues	Risk Mitigation
<p>1. Operational risks that may affect communities and society</p> <p>Cause Economic development, urban expansion and communities surrounding the refinery</p> <p>Impact on the company Confidence of communities and society towards Bangchak's business</p> 	<p>The company has implemented additional measures as follows</p> <ul style="list-style-type: none"> • Developing occupational health and safety systems according to ISO 45001 standards. The company has been ISO 45001 certified since May 2019. • Carrying out the construction of an enclosed ground flare project to reduce the impact of light and noise on the community. Construction will be completed in 2020 • Providing a boat to remove oil spills. The modern, high-performance Sri Tharak 8 boat can store 30,000 liters of oil per hour and work fast because of its Side Collecting Boom with built-in Belt Skimmer. • Preventing oil spills in the river by using a crude and refined oil tanker with a double hull to enclose the 2-layer oil storage crust while operating and with the improved port safety technology in accordance with the standards of Oil Company International Marine Forum. • Using the Process Safety Management System related to the refining process at all stages • Installing air quality meter online and sending results to automatic monitoring display around the refinery and to the nearby areas to build public confidence. • Organizing activities to raise awareness about safety. Installing communication and warning systems in the area and inviting community representatives to join emergency drills. • The Corporate Risk Management Committee is responsible for monitoring potential risks in the communities caused by the operation of joint venture companies in every site throughout the year

Environmental Risks (Disclosure 102-29)

Risk Issues	Risk Mitigation
<p>1. The risk of climate change and the environment</p> <p>Cause The impact of climate change is becoming more serious. Various countries are taking measures to delay the rise of earth's temperature not to exceed 1.5-2 °C by reducing greenhouse gas emissions.</p> <p>Impact on the company The company must take responsibility in finding measures or innovation to control or reduce greenhouse gas emissions from business processes. The company should also comply with the related government's rules and regulations, domestically and internationally.</p> 	<p>The company has the following measures</p> <ul style="list-style-type: none"> • Setting goals for the management of this issue and including the reduction of greenhouse gas emissions in the corporate KPIs • Investing for the establishment of the Continuous Catalyst Regeneration Unit to increase the efficiency of the oil refining process and to reduce energy consumption, scheduling for an operation in 2020 • Using natural gas, which is green energy, as the primary fuel in the oil refining process and in the generation of power and steam of the co-generation plant • Investing for the improvement of the production unit with a budget of 7,000-8,000 million baht for EURO 5 standard fuel products with a sulfur value not exceeding 10 ppm. The construction will be completed by 2024. • Focusing on the distribution of renewable energy that is environmentally friendly. In 2019, the production and distribution of high-diesel B20 S helped reduce pollution from combustion and dust because there is the mixture of biodiesel B100, an environmentally friendly green energy. • Expanding investment in power generation from (renewable) green power, such as solar energy, wind energy, hydro power and geothermal energy, domestically and internationally through the investment of BCPG Public Company Limited. It can now help reduce carbon dioxide emissions in the atmosphere from power generation by up to 645,399 tons / year or the equivalent of forest area in the amount of 474,558 rai.
<p>2. Risks from water scarcity and water quality</p> <p>Cause Water is important to every form of life but climate change affects the volume of rain. Cutting woods and increasing population are also factors causing limited water supply for agriculture, industry, utility and consumption.</p> <p>Impact on the company From the site inspection with the Aqueduct Water Risk Atlas of the World Resources institute, it is found that the refinery business is located in areas with moderate to high water risk due to the risk of quality and quantity of water that may affect the water used in Production process. Higher cost of water may also be a risk arising from regulatory changes and price structure. Conflicts with stakeholders in the use of water resources (Stakeholder conflict) may be possible too.</p> 	<p>The company's production process management to reduce the use of water resources is as follows</p> <ul style="list-style-type: none"> • Monitoring of possible risks from climate change, including <ul style="list-style-type: none"> - Drought situation - finding reserved source of water in case of emergency - Flood situation - preventing flooding in risky areas - Monitoring water levels in Chao Phraya River which may also affect oil transportation • Reducing the amount of water in production. Approximately 50,650 cubic meters was reduced in 2019 through the quality improvement process of tap water such as the Micro-Filtration system, the Reverse Osmosis System and the electro De-ionization System. • Reusing of slightly contaminated condensate water and treated water passing through the quality improvement of Reverse Osmosis System in the amount of 525,179 cubic meters, equal to saving clean water for 3,185 households.

Risk Issues	Risk Mitigation
	<ul style="list-style-type: none"> In the year 2019, the company is the first oil refinery in Thailand certified for water management by the Water Footprint of 6 products from the Institute of Water and Environment for Sustainability by The Federation of Thai Industries Encouraging affiliates to reduce the use of water in the production process and to reuse water from the production process. In addition, there is a project to dig raw water wells to reserve water for use in the factory area

Emerging Risk (Disclosure 102-29)

Risk Issues	Risk Mitigation Measures
<p>1. Risk from Information Security/Cybersecurity</p> <p>Cause</p> <p>Due to today's competition and business development, it is necessary to rely on the use of modern technology and data links. Through the internet all the time.</p> <p>Impact on the company</p> <p>If a cyber threat occurs it may cause business interruption and affect the reputation of the company. If the company is not prepared to use technology, it might reduce the efficiency in competition, production and service.</p> 	<p>The company has taken steps to reduce the risk as follows</p> <ul style="list-style-type: none"> In the year 2019, the Enterprise-wide Risk Management Committee regarded risk management in the event of a business system interruption from cyber attacks as an important issue and established a close monitoring of risk indicators through Security System Alert continuously. In the year 2019, the company received the certification of ISO 27001 continuously, covering the Distributed Control System and the Refinery Cyber Security System to prevent cyber attacks against the company's distillation systems. Established measures to prevent the risk of personal data protection under the "Personal Data Protection Act 2562", the determination of solutions and prevention in the event that personal data is used incorrectly or may cause damage to the company. In the year 2019, digital technology was used to increase efficiency in various tasks as follows: <ul style="list-style-type: none"> Robotic Process Automation was used to check supplier's status, service station maintenance planning, and to issue product sales documents Planned for predictive maintenance by connecting the equipment usage data to the processing system Technology analytics was used to analyze behavior and design services that address the needs of consumers and increase service satisfaction.
<p>2. Risk from changes in energy innovation</p> <p>Cause</p> <p>The rapidly changing energy innovation of the world as well as government measures in various countries and consumer awareness of the environment</p> <p>Impact on the company</p> <p>It is a business opportunity. The company therefore aims to develop the potential and expand the business with green innovation in energy to support the energy business in the future.</p> 	<p>The company has analyzed, evaluated risks and identified opportunities from advances in energy innovation by proceeding as follows:</p> <ul style="list-style-type: none"> invested in lithium mining through Lithium Americas Corp. to support the growth of renewable energy that requires batteries, including electric vehicles. Established Bangchak Initiative and Innovation Center (BiIC) to create a Green Ecosystem to drive innovation of green energy and bio-based.

2. Risk Management of Investment Projects

Besides the consideration of consistency of the organization's strategic direction and the return of the business, risk management of investment projects is an important and essential part of the business operations. Therefore, every investment project must have a clear systematic risk analysis in each project timeline as follows:

- ✓ Development Phase Risk
- ✓ Construction Phase Risk
- ✓ Operation Phase Risk, including operational risk, financial risk, tax risk which is depending on tax policy of the invested country, business and reputation risks
- ✓ Natural Disaster Risk

In the year 2019, the Corporate Risk Management Committee approved and monitored the progress of the risk management plan of the investment project through the subsidiary by purchasing additional shares of OKEA AS ("OKEA"), which operates, develops, and produces petroleum in the country, resulting in liquidity to expand and develop petroleum production in the future.

3. Business Continuity Management (BCM)

To build confidence that the company will be able to continue operating despite the crisis, the company has adopted and applied a business continuity management system. As a result, the company has been certified with business continuity management certification ISO 22301: 2012 covering the headquarters Bangchak Oil Refinery and Bangchak Oil Distribution Center Central business office and Bang Pa-in oil distribution center since 2013 for the sixth consecutive year.

4. Promoting a culture of risk management within the organization and companies within the group

The company promotes a culture of risk management in the organization and extends it to companies in the group by allowing all departments in the Bangchak Group of Companies to create a risk plan every year. In 2019, the company revised the crisis management plan and the business continuity management plan for the entire organization including identifying indicators and reviewing the resources used for management every year. In addition, the company has rehearsed business continuity management plans and emergency response plans in the event of a cargo ship crashing into the harbor. The rehearsal covered the communication between executives and staff involved together with the participation and observation of external agencies such as the Department of Energy Business Pollution Control Department, Port Department of Port Authority of Thailand Phra Khanong District and Office Environmental Conservation Association of the Oil Industry Group Bang Nam Phueng community, etc., The outcome of the practice was taken to improve the company's operating procedures so as to create more effective business continuity management system, and to build confidence that in the event of a crisis, the company will be able to manage the incident and conduct the business continuously.

In the year 2019, the company received three awards from Thailand's Greenhouse Gas Management Organization, the three awards were:

1. Carbon Footprint of Product (CFP) Award
2. Award of greenhouse gas reduction in accordance with the refinery target of 2% under the Voluntary Emission Reduction Program in accordance with Thailand Voluntary Emission Reduction Program (T-VER) for 3 years
3. Carbon Footprint Reduction (CFR) Label Award from the study of the development of an eco-efficiency management system for sustainable environmental refinery business development management



Change Management

Bangchak has always been committed to the effective change management. To align with our vision, the company has established 3 main ways to handle and prepare for changes:

Business Process
Redesign (BPR)
development







Health assessment and
enhancement of the
organization
(Organization Health Index: OHI)

Promoting work behavior
in accordance with the
new corporate values
i AM BCP
(Value Transformation)

Organizational Change and Development Department is responsible for planning, coordination, providing recommendations, monitoring and reporting the progress, the opportunities and various operational barriers directly to management executives.

2019 Performance

The BPR focused on process improvements in order to maximize efficiency, reduce costs, and better meet the needs of our customers. As a result, the company added values to the business with more than 180 million THB in 2019. Important projects which were successful include:

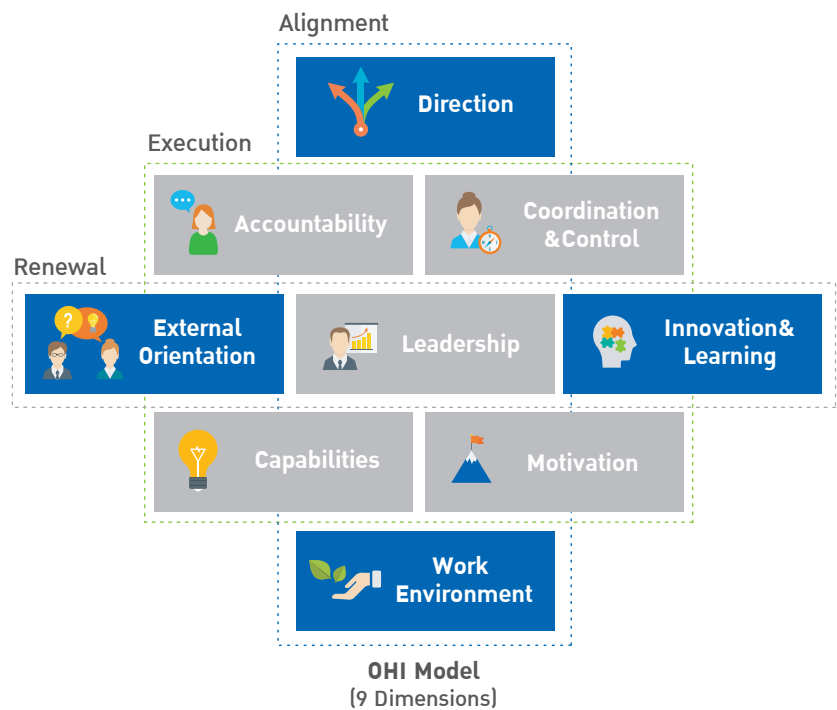
					
The improvement project of oil transportation process of high margin product in the Southern Region of Thailand. This project reduced oil transportation cost by	The approval process improvement project for oil discharges at the floating oil depot in lieu of a land transfer at Si Chang oil depot. The project reduced the cost of oil transportation at the onshore depot by	The improvement project of procurement process of main equipment for Bangchak service stations. This project reduced the cost of equipment procurement by	The project to improve the efficiency of the diesel sulfur removal unit increased the value of the product by	The project to improve Fleet Management at Bangchak Oil Terminal reduced the cost of transportation of oil by	The improvement project of warehouse management reduced the cost of warehouse management by
62.1 million THB	30.8 million THB	23.1 million THB	20.1 million THB	16.5 million THB	15.1 million THB

In addition, the company has set a target to create added value and reduce expenses from BPR projects of over 1,000 million THB in 2023. Furthermore, the company set the corporate strategy and business direction from year 2019 onwards to link the operational plans with the corporate innovation development in order to support knowledge exchange and operational resources. This includes plans to bring Value Stream Mapping (VSM) tools and Lean & Six Sigma in order to improve work efficiency.

Organizational Health Assessment and Enhancements

The company used the organizational health Index (OHI) from McKinsey & Company (Thailand) Co., Ltd. to assess the synergy competency within the organization which can lead to a better business performance. In 2019, the OHI assessment was started with the refinery business group. The results of the assessment were subsequently used for improvement plan for gap close through crossed-functional working group as the Transformation Office (TO: Health).

In 2020, the company plans to expand the OHI assessment to other business groups. The goal is to adjust the OHI rating score from the 3rd Quartile to the 2nd Quartile by 2023.



Drive New Organizational Values to Improve Work Behavior The company is continuously instilling the core value **i AM BCP** by supporting work behavior that is consistent with the goals and vision of the organization. It also promotes a positive attitude towards working together in order to become a collaborative organization from the top down. Five (5) - level strategies are set for implementation as follows:

Ask Sponsor to do Different	Visible the Recognition & Reinforcement	Leverage the Sub Culture & Build the Momentum	Substantial the Change & Reducing the Activity	Committed Change agent & Sponsor (Leader) for the long Hual Skilled Change Agent
is to call for cooperation from organization leaders and department leaders to do different things. It's a strategy that is easy to do and very effective. Having leaders do different things which are better than before in a way that employees can see is a clear and fast turning point. This strategy was run through the BCP Townhall and BEx Talk in 2019.	is to clearly reflect the corporate values in tangible ways of action, communication, rewards and recognition. In 2019, the company encouraged 5 employees to take a stage of BEx Talk to share their good stories and beliefs to inspire other employees.	starts with departments that have the values in consistent with the new values and running from one unit to another, choosing the ones that have high potential to succeed. That is to inspire others with the evidence of real team transformation. In 2019, this strategy was run through in the New Meeting Practice with IT department.	is to plan for a change to the new way of work - "Way of Working Together". By this, the company shall be more intentional in driving the culture to be viewed as just an activity otherwise it will miss the point of truly affecting the culture.	Culture change leaders must commit to long-term changes to develop more skilled Change Agents by developing them through meetings, seminars and change agent lunch by monthly.

In 2019, the company conducted a survey on perceptions and practices on corporate values. The survey showed that the perception level and practice of corporate values has been improving (better in result and trends). The average score was at 51.6% in 2018 and increased to 57.0% in 2019. This reflects the success of **i AM BCP** core value initiative for changing efforts from senior executives to employees of all levels to improve working behavior in consistent with the goals and vision of the organization.

Supply Chain Management

Supply chain management is an important sustainable business strategy resulting in effective procurement in terms of quality goods and services and procurement timing associated with economical values in terms of budgets and resource used. Bangchak implements sustainability risk management for supply chain, strategic procurement, and green procurement for our supply chain management. In addition, corporate governance, anti-corruption, labor practice, safety and environment and social development participation are implemented in our supply chain management.

Strategy 2019



Develop competency of suppliers using Supplier Code of Conduct (SCOC) and sustainability risk assessments



Develop the Approved Vendor List (AVL) for significant working groups to promote relationship between suppliers and Bangchak and to evaluate potentials of suppliers



Promote good understanding and improve procurement processes of the Bangchak Group to pursue excellence in procurement following international standards

Supplier Risk Management

Bangchak has set up Bangchak's Supplier Code of Conduct (SCOC) for Sustainable Business Development focusing on environmental, social and governance (ESG) practices for suppliers. Suppliers are encouraged to follow the SCOC by conducting SCOC self assessment which has 5 categories as the following:

- ✔ Business ethics
- ✔ Labor Practice and Human Rights
- ✔ Safety and Occupational Health
- ✔ Environment
- ✔ Participation in community development

Bangchak has conducted a preliminary SCOC assessment for sustainable business development with our suppliers since 2016. The aim of the assessment was to encourage 100% of critical tier 1 suppliers to accept and participate in the performance evaluation in accordance with the SCOC Assessment by the year 2020. It was apparent that every critical suppliers or 100% accepted the company's invitation to join in the SCOC assessment this year. Meanwhile, 24 suppliers or 45.3% out of all suppliers completed the SCOC assessment.

The Process of Supply Chain Risk Assessment

Critical Supplier Analysis

Criteria

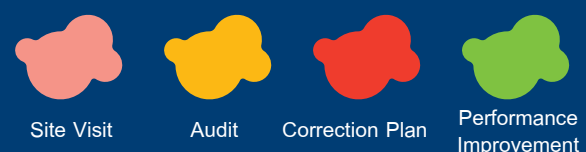
- High spending (based on supplier groups)
- Suppliers providing significant raw materials, products and services to business processes of the company
- Non or difficult to replace suppliers

Sustainability Risk Assessment in the Supply Chain with all suppliers



Risk ranking based on impacts and probability of occurrence
(Critical/High/Medium/Low)

Risk Mitigation (Critical and High Risks)



In addition, Bangchak has analyzed the sustainability risks in the supply chain. (3 years evaluation cycle) covering raw material suppliers, transportation suppliers and product and service groups. The assessment starts from the analysis of critical suppliers and assessment of possible sustainability risks that may affect the company on economic, social and environmental areas. The value of the contracts with aspects in addition to contract size. Suppliers with high and critical level of sustainability risks would assign risk mitigation approaches and risk monitoring by site visits by the company to provide consultation and recommendation associated with assessment results of suppliers. This is also a way to enhance relationship between the company and suppliers.



In 2019, Bangchak completed the analysis of 53 critical supplier representing 5.4% of the total suppliers. Furthermore, the company has 57.6% share of the total procurement spent with this group of critical suppliers from the total of 979 suppliers. The sustainability risk assessment was applied to 100% of our suppliers. The sustainability assessment showed critical-high risks of 5 suppliers (equal to 0.5% of total suppliers) in economic risk of higher costs of raw materials / poor quality of raw materials / delay delivery of goods and services / contract breaking, social risk of complaint by the community due to improper operations and environment risk of chemical and oil spills. The company has put in place diversified risk mitigation measures to prevent and reduce any impacts that may occur from these risks (100%) without any termination. (Disclosure 308-2, Disclosure 414-2)

In 2019, with the encouragement of the company, 100% of the suppliers with critical and high risks took corrective actions to lower the risks within one year. The company also conducted risk monitoring and site visits in accordance with risk assessment processes for 11 suppliers representing 20.8% of all critical suppliers. (Disclosure 403-7)

Moreover, Bangchak has extended the implementation of sustainability risk analysis throughout the supply chain to include critical non-tier 1 suppliers. The objective of this effort was to encourage our critical tier 1 suppliers to take action in the analysis of their critical suppliers and to assess sustainability risks that may occur or affect the critical tier 1 suppliers. The target was set at 100% by 2020 through the same process as Bangchak.

In 2019, 100% of critical tier 1 suppliers completed sustainability risk assessment of their supply chain according to the aforementioned process. The result showed that there were 101 critical non-tier 1 suppliers. These suppliers did not do business with Bangchak directly. 22 critical non-tier 1 suppliers (equal to 21.8% of critical non-tier 1 suppliers) had critical and high risk level in of economic risk, social risk and environmental risk with 20, 6 and 7 suppliers, representing 19.8%, 5.9% and 6.9% respectively.

Bangchak also held seminars to receive suppliers' feedbacks and suggestions to collaborate on process improvement. In addition, the company took the opportunity to explain about the company's operating guidelines and share the knowledge of the company's procurement practices to promote better understanding of the mission of Bangchak.

2019 Results from Supply Chain Management

Total number of suppliers	Number	Share of total procurement spent (%)
Total 1 suppliers	979	100%
Critical tier 1 suppliers	53	57.6%
Critical non-tier 1 suppliers	101	-

Sustainability risk assessment – Tier 1 suppliers	Number	Percentage	2019 Targets
Tier 1 suppliers	979	100%	100%
Critical–high sustainability risk suppliers	5	0.5%	
Critical–high sustainability risk suppliers in term of			
• Economic risks	5	0.5%	
• Social risks	5	0.5%	
• Environmental risks	5	0.5%	

Sustainability risk assessment – Critical non-tier 1 suppliers	Number	Percentage	2019 Targets
Critical non-tier 1 Suppliers	101	100%	100%
Critical–high sustainability risk suppliers	22	21.8%	
Critical–high sustainability risk suppliers in term of			
• Economic risks	20	19.8%	
• Social risks	6	5.9%	
• Environmental risks	7	6.9%	

Sustainability risk monitoring of critical suppliers	Number	Percentage
Total critical suppliers (Critical tier 1 suppliers and critical non-tier 1 suppliers)	154	100%
Critical-high sustainability risk suppliers	27	17.5%

Critical–high risk management measure	Percentage
Percentage of critical suppliers having corrective action plans	100%
Percentage of critical suppliers with corrective action plans which have improved their ESG performance completely following the plans	100%

Indicators	2019	2021 Target
Percentage of critical suppliers who accepted BCP supplier code of conduct (SCOC) assessment invitation	100% (53 suppliers)	100%
Percentage of critical suppliers who achieved the BCP supplier code of conduct (SCOC) assessment	45.3% (24 suppliers)	100%
Percentage of sustainability risk assessment of tier 1 suppliers	100% (979 suppliers)	100%
Percentage of sustainability risk assessment of critical non-tier 1 suppliers	100% (101 suppliers)	100%

Besides sustainable supply chain management, the company has developed and improved the procurement operations of goods and services by using technology and adjusting work process to reduce cost, shorten the time of procurement and increase satisfaction of suppliers and users. The important actions taken on this are as follows:

Develop procurement processes for the Bangchak Group through strategic procurement

Bangchak analyzed products, service, vendors and service providers in accordance with UNTAD WTO by using risk analysis for products and service which is in line with the Five Force Model. The data obtained were used to analyze points of improvement to define strategies for work processes, products and services. The following actions were taken based on the results of analysis:

1. Standardization

The use of special products from sole source distributor can pose risks to the company. Therefore, Bangchak analyzed current used products to check if alternative products and suppliers can be used to facilitate competitiveness in terms of prices in the market. This increases the bargaining power of the company among suppliers.

2. Procurement of goods from alternative countries

Bangchak has considered the procurement of equipment and spare parts used in the refinery from countries with low-cost products. However, this move though does not undermine the quality and standard of the products. This is to open the opportunity for competition and cost reduction in the procurement of products

3. Digital Transformation in Procurement:

Bangchak has used E-catalog technology to reduce administrative costs, which in effect can reduce the procurement and payment processes. Also, it is more convenient, fast and traceable for users as they can order products of their choices through the online channel. At present, E-Catalog has been used with office supplies and is extending to other group of products in the future.

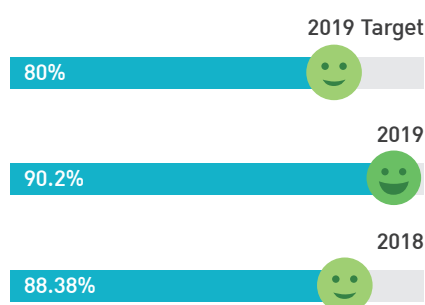
4. Prepare Approved Vendor List (AVL)

Bangchak has prepared Approve Vendor List (AVL) for significant working groups which were construction group, equipment group and the IT group. The groups assessed their potential suppliers based on evaluation criteria of each group. This is to promote good relationship with suppliers and reinforce confidence in the quality of suppliers to users.

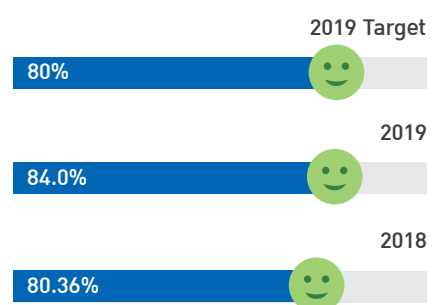
Results from strategic procurement

Indicator

Percentage of supplier satisfaction on the performance of the procurement officers



Percentage of user satisfaction on the operations of suppliers



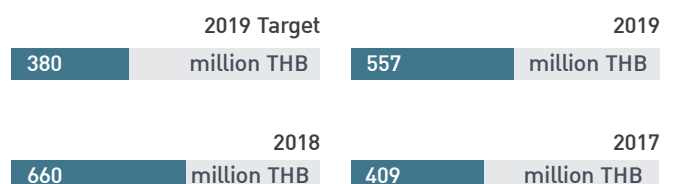
Indicator



Average duration of procurement / employment (days)



Cost saving (million THB)



Procurement of Environmentally Friendly Products and Services

In addition to Bangchak's Green Procurement Policy for the procurement of environmentally friendly products and services, the company gives the importance to the procurement of product and services from local suppliers (Thai suppliers) through the local supplier procurement guideline. The company has created a list of environmentally friendly products to promote environmental recognition in procurement practices and national economy.

As Bangchak has refinery located in Bangkok and service stations located throughout Thailand, the 2019 proportion of spending on local supplier was 98%, which was also determined to use environmentally friendly products. In addition to this, the company encouraged local products and services which include agricultural and community products.

Number of Listed Environmentally Friendly Products



2020 Targets



Percentage of suppliers who accept and participate in the "Bangchak Suppliers Code of Conduct (SCOC)": 100 %.



Reduce the procurement costs through effective cost management to be at least 5% of the annual budget.



Promote the procurement of 40 environmentally friendly products and services (Green Procurement)



Develop and manage relationship with suppliers by hosting a supplier seminar at least 1 time per year.

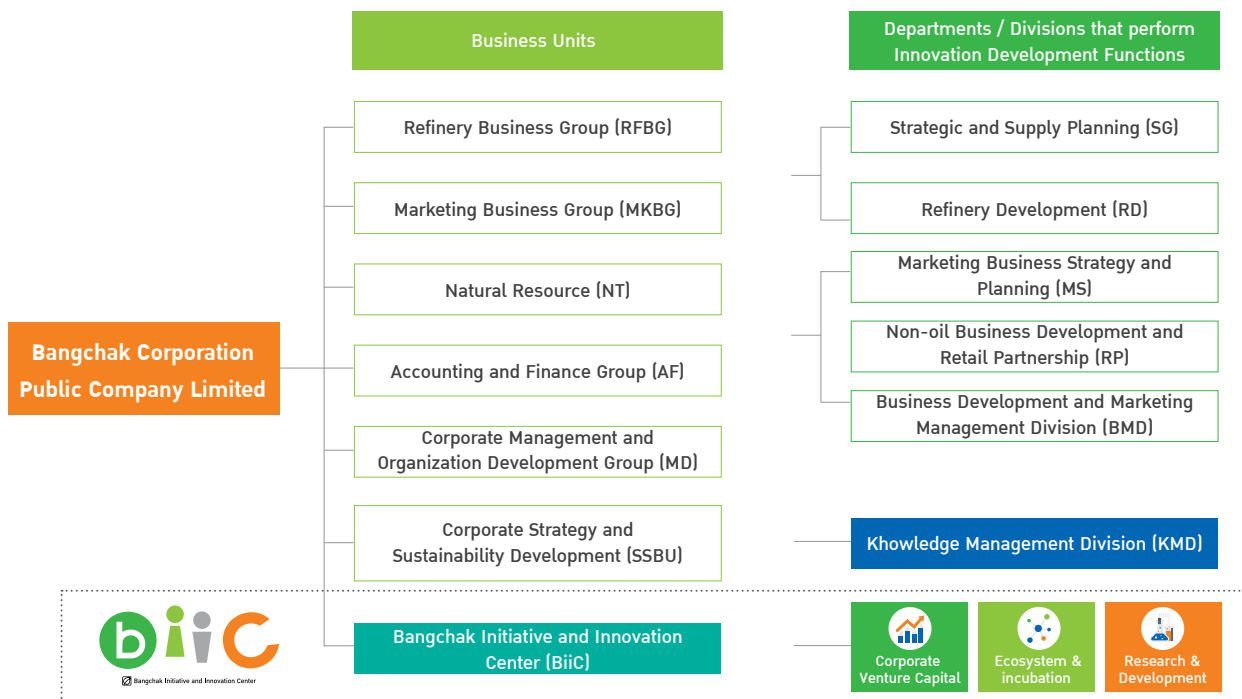
Innovation Management

Innovation is an indispensable and integral part of the Bangchak business development and execution, driving forward competitive advantage and corporate sustainability guided by the Evolving Greenovation vision and **i AM BCP** core values. A dedicated management structure was set up to promote an atmosphere of learning and creative innovation ranging from process enhancement, product development, and new businesses opportunities throughout the organization, from individual employees, business groups, to corporate wide endeavors.

Innovation Management Structure to Promote Innovation Development

- Bangchak established department/divisions dedicated to innovation development of the Company's core business, through scrutinizing existing businesses for opportunities to create added value through projects and initiatives in line with the annual strategic planning process.

Innovation Structure



Bangchak Initiative and Innovation Center (BiiC)

Bangchak Initiative and Innovation Center (BiiC) explores opportunities for collaboration with various partners to develop business innovation that will generate new income and profit in the fields of Green Energy and Bio-based Technology. BiiC is divided into three groups, as follows.

- Research & Development**
Collaborate and fund research institutes and universities for joint research and development of innovation products in the field of green technology and bio-based including getting Intellectual Property protection.
- Corporate Venture Capital (CVC)**
Invest in global innovative and disruptive startups to create new strategic partnerships and business opportunities for Bangchak group.
- Ecosystem and Incubation (E&I)**
Create an ecosystem to support innovation through network collaboration and incubate the growth of internal and external startups to create new customer experiences, increase revenue and efficiency for Bangchak businesses.

Targets

Invest in R&D projects and startup projects as targets



Number of projects that have been approved for investment in research projects and startup business



Number of innovation awards

2019 Performance

In order to allow the development of business innovation to definitely occur in a short time, the company has started using open innovation to enhance the work that is to use ideas both from inside and open innovation by collaborating with Academic Partnerships, government, private sectors and startups domestically and internationally.

2019 Results

Research and Development Group

- ✔ Received 2 Intellectual Property registrations from the Department of Intellectual Property
- ✔ Licensed in the production of food supplements from the Food and Drug Administration
- ✔ Exempt from 300% income tax from 7 technology research and development projects from National Science and Technology Development Agency(NSTDA) and Revenue Department
- ✔ 1 project received 50% research fund from Thailand Research Fund (TRF)
- ✔ Developing formwork oil for concrete formwork

Technology and Network Division (Corporate Venture Capital)

- ✔ There were investments on 3 kinds of business, the investment in the startup (met target), in the healthy sugar company and in companies related to lithium battery production technology.



Innovation Awards Wining in 2019

- Thailand Energy Award from GEMS
- ASEAN Energy Award (International) from GEMS Project
- SET Award: Best Innovative Company Award from GEMS Project

Bangchak also received the “Prime Minister Industrial Award” and “Thailand Corporate Excellence Award (Innovation Excellence Category-Distinguished) - TMA)” recognizing Bangchak's innovative potential and achievements enhancing its competitive advantage and business growth.



GEMS: Green Community Energy Management System @ Bangchak Service Station Srinakarin Branch



BiiC was recognized with the following awards from GEMS (Green Community Energy Management System) - a Bangchak service station that produces green energy for tenant buildings in the community, reducing energy cost and supporting future energy trading mechanism through an auction exchange based on Blockchain technology.



In Harmony with the Environment

Net ENERGY CONSUMPTION



14,513
Terajoules

Total GHG emissions

1.06

million ton CO₂ equivalent



Total Water Withdrawal

2.69

million cubic meters

Water reduced, reused & recycled

1.21

million cubic meters



Waste management

3Rs



99%
of total
waste





Operational Eco-Efficiency

In 2019, the refinery business had an average refining capacity of 112,600 barrels per day, representing 94% of the total refining capacity. As it is apparent that climate change issues and the shortage of natural resources all over the world are becoming critical problems today, Bangchak determined to emphasize the efficient use of natural resources in its production process, the highest production capacity but the least waste and pollutions. The company has also adopted the environmental management system into use. The system is in accordance with ISO 14001: 2015 regarding the use of natural resources and pollution control to drive for continuous development under proactive policies in compliance with the Green Industry Level 5: Green Network, which is the highest level of green industry from the Department of Industrial Works. This of standard practice enforces the business operations of the company, especially on the environmental issues. The company has also

extended and promoted environmental management practices to all stakeholders throughout the supply chain, communities and consumers in order to become a green network. This too, demonstrated the company's commitment to environmental development which is becoming the corporate culture in doing business with social responsibility today. (Disclosure102-12)

Furthermore, the company has a plan to invest in digital technology and modern information technology systems which will be used to increase the efficiency and stability of the production process and to develop people capability, such as the installation of simulation system for controlling important refining processes for the training and review of Operator Training (OTS). This modern IT system has been used in production data since 2018.

Eco-Efficiency

Bangchak realizes the importance of balancing economic growth and environmental impact in pursuing for sustainable development and determined to uses eco-efficiency as an indicator. By which, the company uses earnings before interest, tax, depreciation and amortization (EBITDA) to reflect economic growth and uses the amount of GHG emission which is an important environmental aspect of the petroleum industry to reflect the environmental impacts. A high eco-efficiency value indicates high efficiency production and low environmental impacts.

It was found that the eco-efficiency decreased in 2019 when compared to the year 2018. This can be the result of chain effects from the downturn of global oil business affected by the global economic slowdown throughout the year 2019. The incident pressed down the performance of oil refinery industry and the business of the company. However, the amount of carbon dioxide equivalent in this year was lower than the previous year. This reflected the company's strong intention in running its business with low environmental impacts.



Eco-Efficiency
(Thousand THB / tCO₂e)



Note: EBITDA and carbon dioxide equivalent (scope 1 and 2) of the refinery and market businesses

Energy Consumption

Energy is an essential input driving businesses and the production process of various industries. However, energy consumption contributes to climate change impacts from greenhouse gas (GHG) emissions. Global businesses are aware of this fact and determined to set up their target for sustainable development in alignment with SDG 7 & SDG 13 to help reduce the adverse impacts of energy consumption and GHG emissions.

Bangchak has recognized the importance and impacts of energy consumption in business operations and taken into consideration the establishment of energy management system in accordance with ISO 50001 for the refinery business and oil distribution terminal since 2014. In 2019, the company was the first company in Thailand certified by ISO 50001: 2018. This proves the true commitment of the company and its capability in energy management in line with international standards and to be the foundation for sustainable growth in the future.



To achieve continuous efficiency of energy conservation, the company has set targets and created refinery development plans. The targets are set into short-term, medium-term and long-term targets of energy efficiency. Development plans of each period are as follows:

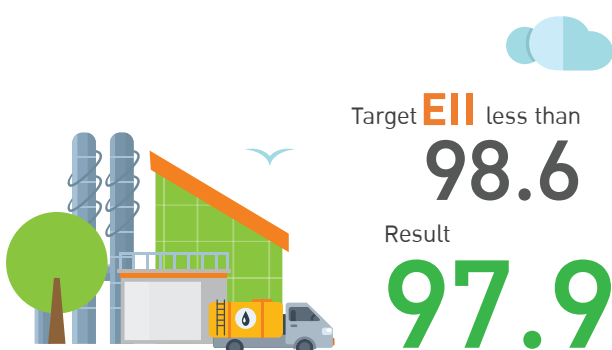
Short-term plan:	Set energy consumption targets and develop effectiveness of existing energy management systems
Medium-term plan:	Develop YES-R projects to improve yield optimization, energy efficiency, safety excellence and the reliability of the refinery enhancement.
Long-term plan:	Invest in long-term projects which reduce energy consumption significantly called "Efficiency, Energy and Environment Improvement Project" (3Es Project)

The company is also aware of the rapidly changes in technologies and innovations and decided to adopt artificial intelligence (AI) into use for refinery development as a leading and modern company.

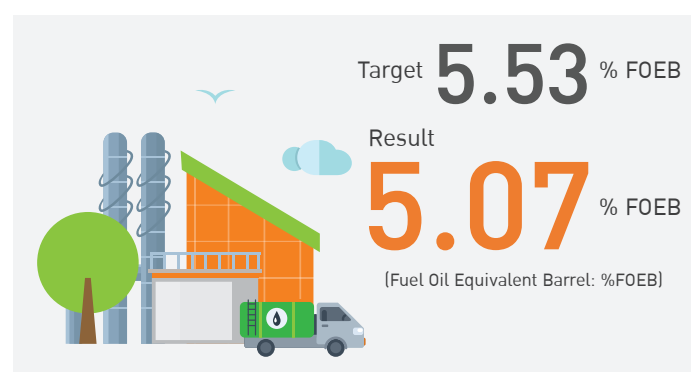
2019 Energy Efficiency Target

The company set a target of energy consumption for the refinery by using Energy Intensity Index (EII), the international indicator for energy consumption, as the guideline. The EII can be used to compare with other oil refineries which have similar capacity. Another target of achievement was the percentage of energy consumption within the production unit of fuel oil equivalent production (Fuel Oil Equivalent Barrel: % FOEB). In 2019, the target of EII was less than 98.6 and % FOEB at 5.53%.

Energy Intensity Index (EII)



Energy consumption in the production unit



2019 Performance

In 2019, Bangchak was able to manage and invest in the projects for energy conservation under the “Rocket Project” which facilitates collaborative studies between Bangchak and expert consultants from overseas to develop the company's projects on energy efficiency. The projects initiated in 2019 are as followings:



Project to reduce power production at the TG-3 steam generator



Project to reduce the steam utilization ratio to the oil quality improvement unit (DGO-HDSU)



Project to change the insulation of high pressure steam pipelines to reduce heat loss



Project for Utility Optimization (UO) system



Project to reduce steam usage by reducing pressure at the Naphtha separation tower, distillation unit, sequence 2 and 3



Project using the Power Management System (PMS)

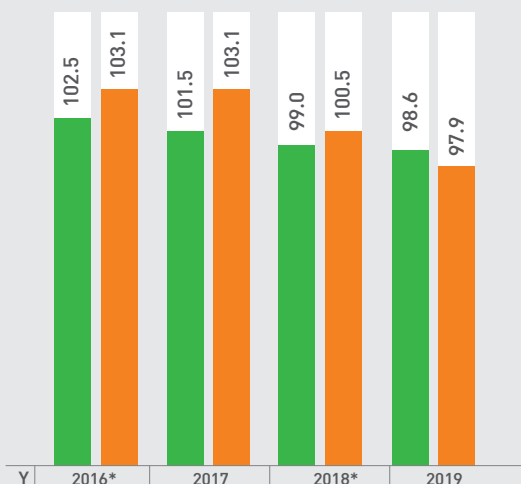


Project to reduce the use of high pressure steam by reducing the pressure of the refining plants No. 2 and 3.

The completion of the development project in 2019 resulted in energy consumption at 5.07% FOEB better than the target at 5.53% FOEB and the Energy Consumption Index at (EII) is 97.9, better than the target of the year 2019 at 98.6.

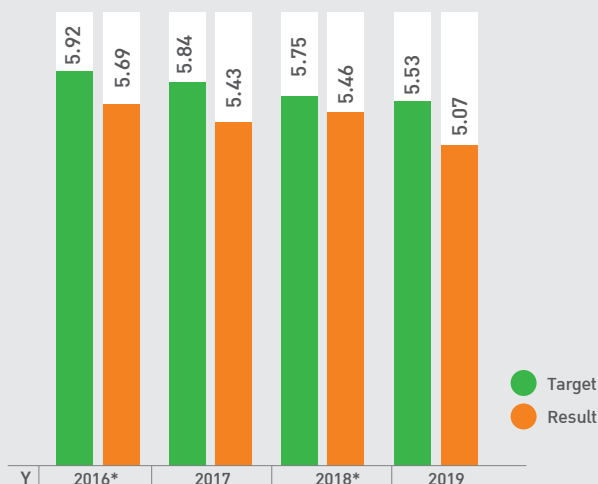
Results of the Refinery Business

Energy Intensity Index (EII)
(Disclosure 302-3)



*There is major annual maintenance

Energy used within the production unit
(Percentage of energy equivalent to fuel oil per
Production capacity: % FOEB)



Future Plans

To ensure continuous improvement of energy efficiency, achieve the goal of being the leader in the energy industry and be sustainable in both the environment and the society, Bangchak plans to establish a partnership with COSMO Oil Refinery from Japan. This partnership is an exchange of technology and experience so we can use it as a guideline in formulating new projects for the future. In addition to the project that has been implemented in 2019 and plans to complete in 2020, the company is committed to developing the energy use of the refinery to become a refinery with rating Energy level 1 according to international standards (Solomon Energy Intensity Index).

Climate Change

Climate change issue has been caused by the GHG emissions from the industrial production process, particularly from the energy consumption and transportation where fossil fuels are used. It is a serious sustainability issue and a global risk that affects all facets of the society covering quality of life, environments, assets and business operations.

Bangchak is aware of the issues and impacts of climate change. The company has established proactive guidelines for operations to monitor significant GHG emissions through the Life Cycle Assessment (LCA) to find significant GHG

emission sources and reduce GHG emissions at their sources. Furthermore, the company sets GHGs reduction targets from energy efficiency projects and carbon offsets target from green power businesses of Bangchak Group as KPIs for the Chief Executive Officer and the President. This is to show strong commitment in keeping the average global temperature not to rise over 2 degree Celsius and to respond to the SDG 13.

Strategy



Use clean energy in the production process



Conduct Carbon Footprint of products



Increase energy efficiency



Expand investment in renewable and clean energy businesses in order to become a carbon neutral company

2019 Targets



Carbon offsets from the green power business by 700,00 tons of carbon dioxide equivalent/year



Scope 1 GHG emissions target: 1,078,426 tCO₂e, and scope 2 GHG emissions target: 11,344 tCO₂e

2019 Performance

The Bangchak Group released scope 1 and scope 2 GHG emission totaling 1,059,890 tCO₂e (scope 1 GHG emissions: 994,988 tCO₂e (Disclosure 305-1) and scope 2 GHG emissions: 64,902 tCO₂e (Disclosure 305-2)) based on equity share approach from refinery and trading businesses, marketing businesses, bio-based product businesses, and green power businesses. The total GHG emissions of Bangchak Group decreased by 5.4% compared to the baseline year 2015.

The Refinery and Trading Business emitted total GHG emissions at 909,042 tCO₂e. This amount of GHG emissions decreased from 2015 base year by 16.15% due to the improvement of co-generation power plant unit 1 and 2 (GTG-1,2) which reduced the use of electricity from Metropolitan Electricity Authority (MEA) and resulted in the reduction of scope 2 GHG emissions




For carbon offsets from investment in the green power business of BCPG Public Company Limited, the company can offset 800,000 tCO₂e. This achieves the carbon offset target of year 2019.

In addition, Bangchak received 3 honorable awards in 2019. These awards were given to honor entrepreneurs and various sectors that are good examples of managing and reducing domestic GHG emissions by Thailand Greenhouse Gas Management Organization (Public Company). The given awards were as follows:

1. Carbon Footprint of Product Award (CFP)
2. The greenhouse gas reduction target of 2% of refinery targets under the Thailand Voluntary Emission Reduction Program (T-VER)
3. Carbon Footprint Reduction (CFR) Label Award from the study of the development of an eco-efficiency management

Future Plans

In the year 2020, the company plans to conduct the major turnaround. This is a good opportunity to invest in various projects in order to reduce energy consumption resulting to the reduction of GHG emissions. The planned projects are as follow:

 <p>Project to clean the heat exchanger before entering the refinery's stove and using anti-calc agent at the heat exchanger.</p>	 <p>Project to increase heat exchange equipment before entering the furnace of the distillation unit, sequence 2 and 3</p>	 <p>Project to increase the heat exchanger before entering the furnace of the Oil Quality Improvement Unit (DGO-HDSU)</p>
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Reducing the power consumption at the stove of the unit above will result in energy efficiency and reduction of GHG emissions. The company has plans to invest in clean energy business. With the aim to be a company with low carbon footprint (Low Carbon Company), the company has implemented a project to produce carbon footprint in conjunction with the National Metal and Materials Technology Center (MTEC), National Institute of Science and Technology (NSTDA) to assess the efficiency of greenhouse gas emissions in the production process. The project has been going on since 2017 and has been certified carbon product label with the Thailand Greenhouse Gas Management Organization in 2018.

Water Consumption

Currently, Thailand and other parts of the world are facing water related issues, such as flooding, drought, poor water quality, inadequate supply, and stakeholder conflicts caused by water withdrawal and consumption. Water management and sanitation is set as the SDG 6 aiming to ensure adequate water supply and sustainable water management for everyone. Bangchak, as one in the energy industry consuming high quantity of water, recognizes the importance of water management as well as the increase in efficiency improvement of water consumption. Therefore, the company set targets for the reduction and control of new water withdrawal, including water management through the use of innovative tools and technology. In addition, the company uses Water Stress Index (WSI) of 25 Watersheds level in Thailand and the world class WSI(1) to assess the water scarcity footprint of the company's products. The WSI from water resources that the company used is tap water, which was brought to consideration in the assessment. The 2019 average of WSI from Chao Praya River Basin was 0.339 or at the moderate stress. Moreover, the company has begun to review guidelines for evaluating water-related risks with tools, such as Water Scarcity Footprint in accordance with the ISO14046 guidelines. As regard to the cooperation with external organizations to solve the issues of water consumption, the company also formed a Community of Practice (CoP) to share experiences and discuss water issues through CoP Knowledge Sharing with external organizations to find proactive ways to overcome water issues and to reduce impacts on the nation from water consumption.

Strategies



Use the 3Rs (Reduce, Reuse & Recycle) principle to increase efficiency of water reduction, water reuse and water recycling



Water management with innovative tools and technologies

2019 Targets



Use water efficiently to control the new water intake in the production process with no more than 56.6 cubic meters per thousand barrels equivalent to the production unit



Reducing water withdrawal by 15%, equivalent to base year 2015

2019 Performance

Bangchak used 2.47 million cubic meters of tap water from the Metropolitan Waterworks Authority and 27,667 cubic meters of groundwater as a part of the management plan to reduce the use of tap water during the drought. The company also used 195,187 cubic meter of river water from Chao Phraya River as reserved water for tank maintenance, testing fire extinguisher equipment and annual rehearsal of emergency plan. In 2019, the company withdrew water totaling 2.69 million cubic meters (Disclosure 303-1), equivalent to 0.065 cubic meters per barrel of oil produced. This was an increase from last year at 0.0027 cubic meters per barrel equivalent to oil production. The overall water volume had increased because of the use of ground water. Furthermore, the number of oil tanks for maintenance increased compared to the previous years. The company was able to discharge 1.66 million cubic meters into surface water. The amount of water used for the production process is 1.03 million cubic meters or 24.9 cubic meters per thousand barrels of oil equivalent.

However, the company continues to implement the 3Rs continuously to reduce water consumption and to reduce wastewater to the public. These measures helped reduce the total water consumption by 1.21 million cubic meters or 31.01 % of total water use. The implementation was done through the following projects (Disclosure 303-3):

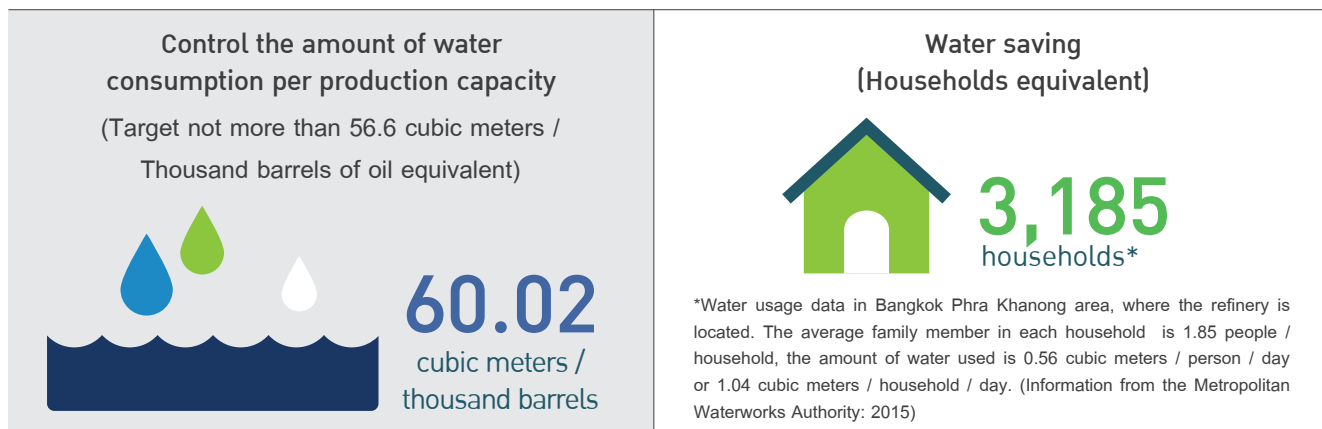


Bangchak is the first refinery in Thailand to receive the Water Footprint of Products certificates.

⁽¹⁾ Based on the WSI database of Pfister et al. (2009)

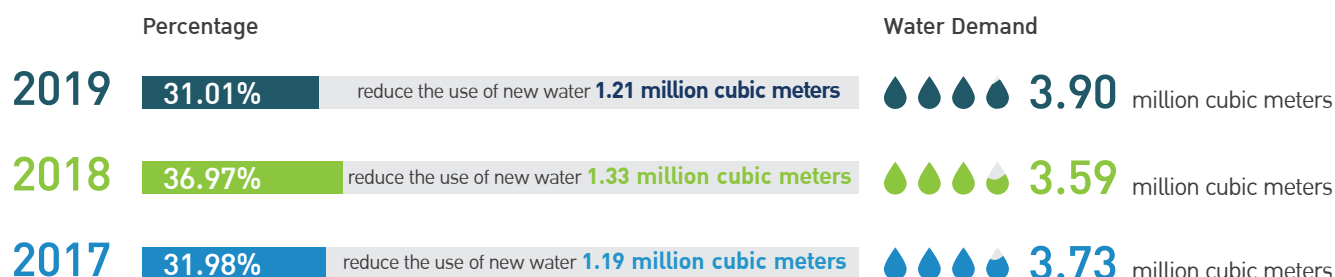
No.	2019 Action Plans	Results
Water Reduction		
1	Use the process to improve the quality of tap water by micron level fine filtering system. (Micro-filtration System) and Reverse Osmosis System together with water quality units with Reverse Osmosis System and Electro De- Ionization System) to improve raw water quality before entering into the demineralized water production system. (Demineralization System) at the Power Plant.	Reduced water consumption by 50,650 cubic meters / year * (1.30% of total water demand and 1,223 cubic meters per million barrels of oil equivalent)
Water Reuse		
2	Use good quality condensate water from the production process instead of water for steam boilers	Reduced water consumption by 546,122 cubic meters / year (14.01% of total water demand and 13,183 cubic meters per million barrels of oil equivalent)
3	Take the Stripped Water from the Sour Water Stripping Unit and the Stripping Steam wastewater of the 3rd distillation unit instead of water supply in the salt removal unit from crude oil (Desalter)	Reduced water consumption by 87,317 cubic meters / year (2.24% of total water demand and 2,108 cubic meters per million barrels of oil equivalent)
Water Recycle		
4	Use slightly contaminated condensate water from the refining unit plant 4 to improve the quality of condensate water for the reuse in Boiler Feed Water	Reduced water consumption by 353,038 cubic meters / year (9.05% of total water demand and 8,522 cubic meters per million barrels of oil equivalent)
5	Improve the quality of treated water from the wastewater treatment unit through the micro-filtration system and reverse osmosis system which are the very fine filtering systems to micro level for the reuse in cooling process	Reduced water consumption by 172,141 cubic meters / year (4.41% of total water demand and 4,155 cubic meters per million barrels of oil equivalent)

Success Indicators



Percentage of new water usage reduction compared to water demand in that year

(Percentage and amount of water that can be reduced)



*Compared to baseline year 2015 from reusing condensate water in boilers and the 4 refinery unit plus treated water from oil treatment unit using RO, and include treated water from wastewater treatment units using RO for cooling towers

Wastewater Management

Water is very vital for all kinds of living organisms and is a source of origin for many species of aquatic animals and plants. Water is also useful in agriculture, households and industry. The petroleum business of Bangchak needs water in the production process too. With such facts, the company believes it is important to minimize water pollution and it should take responsibility to reduce most impacts on natural sources

The company has managed to establish a highly efficient water treatment system. This has resulted to a higher-than-standard quality of water based on the standards of the Department of Manufacturing. There was also a reduction in the wastewater volume caused by recycling system. The water treatment process consists of three parts, namely the physicochemical treatment process, biological treatment process and final treatment process. The main function of the physicochemical treatment system is to reduce the contamination of oil and heavy metals while the biological treatment system is to reduce dissolved organic in order to ensure the proper quality of water before being taken into recycle system.

The company places great importance on water pollution management and determined to continuously develop the water treatment system in order to effectively manage the wastewater quality more effectively as designed and to increase stability of the system. In the year 2019, the company has implemented the wastewater treating unit improvement with a budget of 25 million baht. The project consists of the following:

- ✔ Installation of a waste water feed rate control system at the physical chemical treatment system. This improvement helps achieve better consistency of the water flow
- ✔ Installation of additional sludge preparation systems at the DAF and TPI units to ensure constant concentration of polymer chemicals
- ✔ Installation automatic wastewater pH control systems and nutrient replenishment systems at the OFP unit to ensure continuous and accurate pH control

The company has also implemented the WWTU Improvement Project (Phase II) to revise the manuals for operators and provide training for monitoring systems for unusual incidents.

In addition, the company sends water samples for regular analysis to the Department of Industrial Works and internationally certified ISO/IEC 17025. There are also dedicated personnel like the pollution controller to closely supervise the treatment system. There are also dedicated operators in the production and equipment maintenance department. With all these measures, the public can be confident about the quality of waste water to the environment.

Furthermore, the company has also installed a special tool or equipment (COD Online) that shows real time results to the Manufacturing Department and the surrounding communities. In 2019, the company discharged 882,898 m³ of water to the environment

2021 Targets



The water pollution treatment system team operators have enough knowledge and skills to systematically manage the treatment unit.

- Actual operations have no misalignments to the ISO system based on the inspection done on work and operating procedures.
- All workers must be trained on the "Operator Program for Water Pollution Treatment Systems"
- 90% passing score in related courses. Test scores for comprehension after training higher than 90% of any relevant courses



Full automation of the water treatment system.

Strategy



Knowledge building : Promote knowledge for agencies related to wastewater treatment systems



Building Method : Prepare concrete practices for operators of water pollution treatment systems



Equipment building : Build and improve equipment to be able to automate work efficiently.

Oil and Chemical Spill Management

Bangchak is aware of the risks and adverse impacts of oil and chemical spills from the business operations which were our materiality topics. Therefore, Bangchak prioritizes safety in every business operation and environment protection in every business activity to prevent oil and chemical spills affecting society and environment throughout the value chain: from crude oil transportation to our refinery, from oil product transportation to our oil depot and terminals, and from service stations to our customers. The company determines to prevent and reduce potential risks of oil and chemical spills through fast and effective oil and chemical spill management if the incident occurs. Consequently, measures and action plans are implemented in the following ways:

- ✔ Select oil tanker ships with strict inspection system and evaluation of oil tankers based on standard used in the oil industry.
- ✔ Establish prevention and emergency plans in case of oil spills and conduct an annual emergency drill.
- ✔ Prepare emergency equipment and oil removal equipment, and give opportunities for communities to observe in order to build trust with the communities
- ✔ Continuously develop personnel who are responsible for emergency response team by joining training and drills conducted by government agencies and other experts in the industry.
- ✔ Develop and improve safety and management systems and tools in alignment with the Oil Company International Marine Forum (OCIMF), such as the improvement of fire suppression systems at the port and the installation of additional CCTV systems.
- ✔ Design oil tanks, pipelines and install equipment following international standards,
- ✔ Establish clear work processes and ensure employees are properly trained.
- ✔ Follow plans for a system and equipment inspection (PM) at appropriate times.

- ✔ Identify and assess potential risk points of spills (LOPC) in each area. This includes establishing prevention, management of risk and monitoring effectiveness of the systems in place through regular inspection. This should also cover regular analysis, improvement and preventive control of the production process.

Bangchak also regularly reports any incident or results in work operations to the safety operation committee. The Enterprise Risk Management Committee also submits a monthly report on the monitoring of the risk and operations assessments. This shows that the company highly value the importance of the quality and safety management in the operations. Because of these measures, Bangchak has no significant oil and chemical spills. This has increased the confidence on safety and quality of the community surrounding our refinery and port



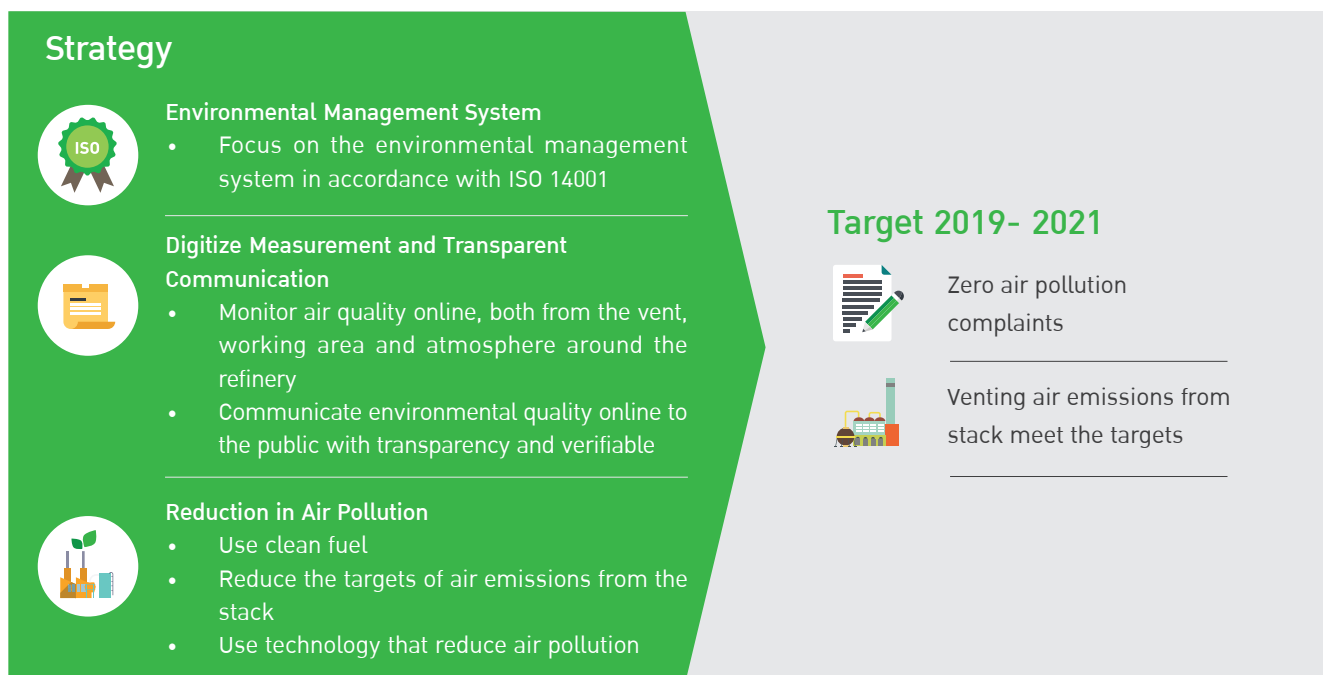
In the year 2019, with the efforts to build confidence in safe operations and environmental care for the communities in the Chao Phraya River Basin, the company provided an oil skimmer boat called "Sri thararak 8". This oil skimmer boat can store up to 10,000 liters of oil stains at the port of the Bangchak refinery. With this system in place, Bangchak is ready to manage oil spills and in strict compliance with the Environmental Industry Association of the Oil Industry Environmental Safety Group Association (IESG) and is available to respond to other eventualities like flooding.

Number of significant oil and chemical spills (more than 100 Barrels / incident)



Air Emissions Management

Air pollution is an important environmental issue for the energy industry since it is harmful to human health and affect quality of life of people in the society. This is especially relevant nowadays on the issue of particulate matter with 2.5 micron in size (PM 2.5) which has become a serious environmental issue in Thailand. Therefore, Bangchak takes careful steps to monitor and control the quality of air emissions emitted to the environment in order to prevent and mitigate impacts on employees, contractors working at Bangchak refinery, communities and environment around the Bangchak refinery and other operating sites of the company. However, condominiums are being increased and they are getting closer to Bangchak refinery. Therefore, to maintain our sustainability, Bangchak has set strategies and targets associated with air emission controls.



2019 Performance

Bangchak conducted environmental management system in accordance with the international standard ISO 14001. The company also reduced air emission targets to align with the proactive environmental management policy (Disclosure 102-16). The company monitors air quality regularly and continuously through the use of online digitized monitoring equipment at the vent and in the other working areas surrounding the refinery. There is also a periodic air quality monitoring by a third party, as well as a daily measurement of fugitive volatile organic compounds (fugitive VOCs) from the equipment. In addition, the company focuses on the use of clean fuels for production such as fuel gas and natural gas to control pollution from the start of the process. As a result, the air quality from the vent is significantly better than the minimum standard (Emission Standard). Because of strict compliance on air pollution management in 2019, there was no complaint on air pollution from the communities

Key Operations

Environmental Management System

Received ISO 14001 international certification for the 22nd year

Digitize Measurement and Transparent Communication

Installed CEMs that measure air pollution from the vents HRSG1 and HRSG2 separately, instead of using them together. The company has also changed the CEMs Analyzer to achieve more accuracy.

Reduction in Air Pollution

1. Use of natural gas fuels continuously
2. Adjustment of the targets of pollution emission from the vent to be lesser than what is in the proactive environmental management policy
3. Building of the Enclosed Ground Flare which will be complete in 2020, Upon completion, Bangchak Refinery would have one more set of Enclosed Ground Flare in addition to the current combustion chamber of elevated flare type. This allows to accommodate the excess gas that is discharged from the production process in the event that the refinery startup,

shutdown and in emergency cases. This is very important project to help reinforce the proactive measures to prevent any impact to the communities covering noise, light and the environment.

Results

Certified by
ISO14001
for the 22nd year



Air quality
measured by the
third Party
is within the
standard

Control Fugitive Release VOC_s

Every measurement point shall not exceed 200 ppm.



2019
2.5 tons

2018
2.5 tons

The law requires not more than 500 ppm

the new Enclosed Ground Flare Progress

2019 Under construction

2018 Detailed design completed



Air pollution Complaints

(Target = 0 case)



0 case
2019

Operation Plan in 2020

In addition to the aforementioned air pollution control, the company manages the quality of air emissions continuously. The operation plan in 2020 will be the change the burner of auxiliary boiler unit 1 to increase combustion efficiency, reduce dust ventilation and enhance air pollution management. Also, the company is going to commission the new enclosed ground flare.



Waste and Unused Materials Management

Bangchak recognizes the important of waste management and conducts waste management practices rigorously to comply with waste-related regulations. The company adheres to the 3R waste management principles, which are Reduction, Reuse and Recycle of waste following local and international guidelines of waste management to mitigate environmental impacts from waste disposal. Our corporate target is to pursue the Zero Waste to Landfills for waste generated from production processes, except nickel and cadmium battery waste due to the limitation of waste management technology. The company focuses on waste disposal minimization and considers waste management approaches in order to make good use of waste.

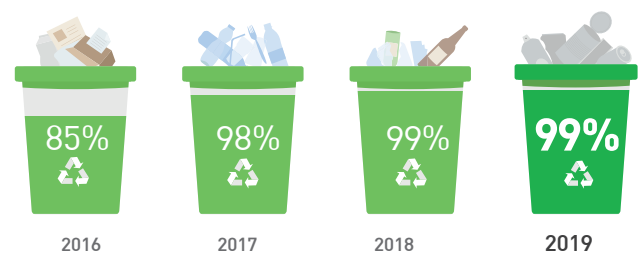


2019 Performance

Amounts of waste generation by type



Percentage of waste management in accordance with 3Rs of the total waste volume



By using 3Rs waste management principles, Bangchak could make the use of waste for 99% of the total waste generated. However, nickel and cadmium battery wastes are sent for landfill disposal due to the limitation of technology and management approach in Thailand.

The amount of waste disposed by waste incineration without energy recovery (excluding recycling or reused or energy recovery) was 15.36 tons (waste incineration and landfill)

2025 Targets



The amount of waste sent to landfill disposal is **0**
(Zero Waste to Landfills)



The amount of waste sent to waste incineration without energy recovery (excluding recycling or reused or incineration for energy recovery): **0 ton**



Waste generation intensity reduces by **3%** from business as usual within FY 2025 compared with base year 2015

Sustainable Product and Service Development

Bangchak Corporation Public Company Ltd. aims to build its business to develop better quality of life of the Thai society and environment, innovation and new business opportunities, A few examples; the cooperative oil service station which was developed from an exchange of oil and rice project, the Bangchak membership card as the first Thailand petrol member card. It has also continuously developed high quality renewable energy example, development of first of euro 5 standard for 20 Gasohol in Asia, the first Green S Revolution Gasohol using fuel technology for DIG gasoline engine in Thailand, the first special efficient grade of B20 gasoline with more additives. About the innovation technology, the company has the mobile application to provide more access to customer experience. This initiative has also developed a systematic way of customer information management that is a key to marketing strategy

For social contribution, the company has driven many projects to increase customer base and social stakeholder engagement. For example, purchasing agricultural OTOP products to give as promotional gifts for customers at service stations. "Ruk Pun Suk" project Circular Economy Philosophy in order to support sustainable recycling of plastic bottles and the "Growing of Vegetables at the Service Stations" project that starts from the concerns for employee health to become a service of appreciation to customers. The knowledge gained from this project was shared to public. The "Road Side Assistance" project to primarily assist car user such as wheel changing, battery jump-starting, etc.

Bangchak emphasizes its management on responding to customer and stake holder needs. It, therefore, focuses on the following:



Product Quality
& Development



Service Quality
& Development



Non-oil
varieties



S/S
Convenience

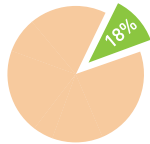
A number of initiatives to drive this include creating positive customer experience, continuous building of relationships, developing business transactions, and development of non-oil products based on customer needs. All these are in collaboration with business partners and customers through marketing initiatives and activities in the service stations in the year 2019.

The company aims to be the "Most Admired Brand" for service stations. To achieve this, the company has considered implementing research-based initiatives on addressing customers' needs and expectations. At the top of the priority are quality and fast services, convenient, decent-sized location of service station. variety of non-oil business such as convenient stores, restaurants with quality food products, with sufficient restrooms. All these points were considered in the strategy on how to be the "Most Admired Brand".

Long-term Goals for 2024



To be the "Most Admired Brand" of gas station with Net Promoter Score as performance indicator.



Stimulate the continuous increase of sales in service stations with market share at >18%



Develop service works, service stations and non-oil business under a theme of Evolving Greenovative Experience to support ways of life of Thai new generation with participation of sustainable environment protection.



Extend 250 service stations nationwide with the increasing of more 80 standard service stations (from current 589 standard service stations).



Develop and leverage community service stations to standard service stations.



Develop high quality and environment-friendly fuel products conforming to automobile technology.



Develop acceptable brands and quality lubricant products.



Deliver good experience of service works in service stations through special standard service works to customers.



Develop non-oil business and additional services in service stations in response to the needs of consumers.



Develop Bangchak's membership card as "the Best Loyalty Program" for customers.

Strategies

According to a recent survey and evaluation of customer expectation and needs, it is found that **good and faster services and convenient and sufficient location of service station, many variety of non-oil business such as restaurant, convenient store, including sufficient clean rest rooms for customers and quality of products**, are the materiality of customer's interest and expectation. The company then set its strategies, plans and targets to create "To be the Most Admires Brand of service station. According to a recent survey and evaluation of customer expectation and needs, it is found that good and faster services and convenient and sufficient location of service station, many variety of non-oil business such as restaurant, convenient store, including sufficient clean rest rooms for customers and quality of products, are first priority factors of customer's interest and expectation. The company then set its strategies, plans and targets to create "To be the Most Admires Brand of service station.

To be The Most Admired Brand

Customer Centric

Evolving Greenovative Experience



Products

Develop and deliver high quality products responding to customer needs and environment friendly



Service Stations

Develop service stations, and create innovation and non-oil business responding to customer needs



Mind

Develop standard of faster service works utilizing innovation to develop excellent management process



Communities

Create participation among customers and stake holders to social and environment protection

The Operations and Innovation Development in the year 2019

Development of Products, Services and Experience under a theme of "Evolving Greenovative Experience"

Green Products : Delivery of quality products to response customer needs.

- ✔ To be a sole petrol dealer with standard certification of Euro 5 in products, especially the E20 S Gasohol and Hi-Premium Diesel S. These products have lower amount of Sulphur than other standard Euro 4. This product is a fuel designed for a new type of standard Euro 5 working with high efficiency. Gasohol and Hi-Premium Diesel S. These products have lower amount of Sulphur than other standard Euro 4. This product is a fuel designed for a new type of standard Euro 5 working with high efficiency.
- ✔ Develop the first special B20 diesel with Green S technology in Thailand called Bangchak HI-Diesel B20 S, the first company in Thailand to develop this product, by adding S Super Booster additive substance to increase Cetane level and help accelerate full efficiency of engine. S Super Purifier technology is designed to clean injector, protect engine and reduce erosion available for economy



diesel engine users who need high quality diesel oil cost. It also help palm farmer in the duration of oversupply, lower price of crude palm oil, support government policy, reduce cost of transportation during high price of oil and air pollution.

- ✔ Develop HI-DieselS B10 a special grade product by adding additive substance and using S Super Booster technology to increase Cetane and use S Super Purifier technology for diesel engine user who needs high quality petrol ,low cost and environmentally friendly diesel oil,



but automobile engine do not support the use of special grade of B10 diesel. The development also supports the government policy, in helping palm farmers, and reducing transportation cost of customers and problems of air pollution.

- ✔ Stimulate the distribution of renewable energy to reduce CO₂ continuously comparing with regular fuel through increasing of service stations distributing E20 form 866 stations to 896 stations. Increase service station distributing E85 from 446 stations to 450 stations, increase 594 service stations of B20 and 30 service stations of B10. The company is able to distribute B20 petrol with the first market sharing or at 33.2% and maintain its market sharing of B20 and E85 in service stations with the second position or at 17.5% and 42.2% respectively. Its sales per E85 service station is at the first place.
- ✔ Develop the international standard of lubrication certified by ISO 9001 of quality management and ISO/TS16949 of management system for automobile industry, international quality management for procurement, product development, distribution and after sale service management for excellence of quality and efficiency of organization.
- ✔ Develop technology to protect engine or Respoplex technology for new formula of FURiO lubricant which is tested by racing car team at Le Mont, France to confirm that it is able to protect automobile engine and continuous 24 hours driving.

Greenovative Service Stations : Develop service stations by leveraging technologies and innovations.

- ✔ Improve the images of 24 service stations on key streets to be modern and competitive in quality and services (renovate, bright&clean, refresh)
- ✔ Extend networks of customer through Fleet Card and Pre-paid Card to increase sales in service stations
- ✔ Cooperate with Thailand environment Institute (TEI) to develop criteria of service station design under a theme of "Inno-Green Station" with unique architectural designs in addressing environment, innovation, safety and quality of customer's life
- ✔ Use Overhead Type of payment machine for urban service stations with limited space but still improve customer convenience in selecting oil filling without being concerning if the oil tank lid is on the right or left side of the vehicle. This is the case in the Sukhumvit 62 service station
- ✔ Develop Flagship Service Station on key streets in tourist provinces by using an idea of Greenovative Service Station and Unique Theme Design. The customer will get a variety of experience in each area
- ✔ Expand non-oil business in service stations for customer's convenience such as increasing 600 coffee shops of Inthanin Brand, 15 Yok Lor Coffee house and 46 SPAR shops.
- ✔ Manage space in service stations with highest benefit with new business model to have a complete cycle of business such as Food Kiosk, Food Truck, restaurant, laundry, goods delivery service and automatic vending machine, etc.



Greenovative Mind : Develop service works with caring, technology, and information system to create management system, customer information base and faster efficient service works, for example:

- ✔ Develop standard of service works in service stations located in key areas to have a readiness of hardware (POS, automatic tire inflator) with faster service and standard of restroom cleaning for customer satisfaction.
- ✔ Leverage service experience through a project of "Lost and Found at Bangchak" to cultivate conscious mind among staff in collecting customer's belongings such as wallet, necklace, mobile phone. The staff will contact and return things to customer. Another project is Road Side Assistant to help car users in tire change, battery jump starting, etc.
- ✔ Control standard of service with service audit process using random mystery shopper approach.
- ✔ Develop an Application BCP Link to facilitate traders with rapid access to key data such as Auto Ordering System: AOS and efficiently operation of the Smart P&L system (a data base system for evaluating the efficiency of service station management).
- ✔ Develop an advanced membership card system in Digitized Loyalty Program by developing a new Bangchak Mobile Application under the theme "Beyond the High Attention" with new features such as personalization customer alerts for easy access to the privileges (updating easy access to points collecting and reward exchanging), Push Notification, birthday promotion for members, alliance shops, Same Price Benefit and member's environment protection-Your Trees, Merit Basket for donating rewarding points to charity organizations all the time.



Greenovative Communities : More than being a service station, customer can get involved and experience activities that benefit in social, environment and culture aspects:

- ✔ "Refuel and sharing kindness" a project that gives an opportunity of participation to customers to participate in social assistance through different means. For example, in 2019, service stations bought banana from communities and processed it to be crispy paprika banana snack and distributed to customers of Bangchak service stations
- ✔ "Employing People with Disabilities and the Elderly" Project, a project to help these people build their dignity and achieve a better quality of life by supporting the products they produced.
- ✔ "Growing Vegetable at the Service Station" Project, a project in cooperation with Bangchak Greennet, Ltd. where empty areas behind the service stations are planted with vegetables. The products are sold to the employees at lower prices. If there are excess, they are distributed to customers. They also shared this best practice to the schools around to sell grown vegetables at service stations.
- ✔ "Ruk Pun Suk" project (conservation, sharing, happiness), this project is developed under cooperation with SCG and Indorama Venture to reduce the amount of waste. The customers are encouraged to bring PET water bottles and lubricate oil gallon to recycling process using innovative reforming process under the circular economy.
- ✔ "Lod Lok Lae X Ruk Pun Suk" project (reducing a mess of the world and sharing happiness) a joint project with Tourism Authority of Thailand to reduce and recycle garbage by reforming PET bottles to be a sculpture of gooseberry turtle mother and child at Jom Thien Beach. The objective is to communicate and campaign for

environment protection and encourage consumers to join in activities promoted at 262 service stations.

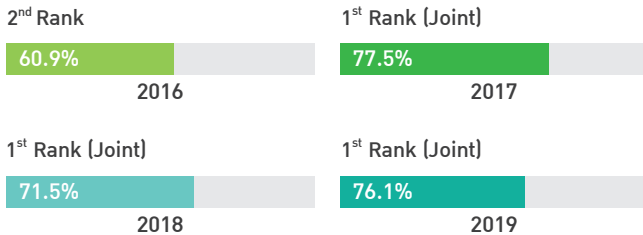
- ✔ "Green Non-Oil" , a project to confirm the strength of ECO Brand. The project encourages the Inthanin Coffee Shop as a "Green Coffee Shop" to use bio-degradable packaging (lid and cup) produced from 100% plants as well as using ready to drink strawless lid. The customers will get benefit if they bring their coffee cups replacing plastic cups. A convenient store, SPAR also set up a world protection campaign to reduce the use of plastic bags among new generation to protect the society and the environment.
- ✔ "Thai Culture Promotion" Project, a project aims to create experience and campaign the significance of Thai customs such as encouraging staffs to dress with Thai costumes in seasons. This happens during special sales promotions during Songkran, where a Buddha image was prepared for those who want to splash water or to give during Loy Krathong festival.
- ✔ "Lost and Found at Bangchak service station" Project, a project that aims to make good impression and trust of customers. The project cultivates a conscious mind and honesty among its employees to care and return the customers belongings lost in the service stations. So far, the employees returned lost and found belongings to 157 customers increasing from previous year at 2.9 folds.
- ✔ "Bangchak Membership Card Sharing Kindness for Endless Giving" Project, a project with an objective to promote participation of members in society assistance. The customers are able to donate their reward points received from oil filling coupling with adding money donated by Bangchak to charitable organizations, for example, Princess Mother's Medical Volunteer Foundation, Ramathobodi Foundation, Thai Red Cross, etc.



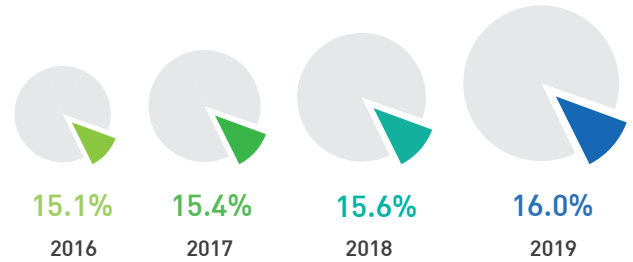
Results

To date, Bangchark service station has maintained its first position from the Net Promotor Score (NPS) since 2017-2019 (data collected by interviewing 2,000 customers nationwide and conducted by research company (outside)).

NPS Score

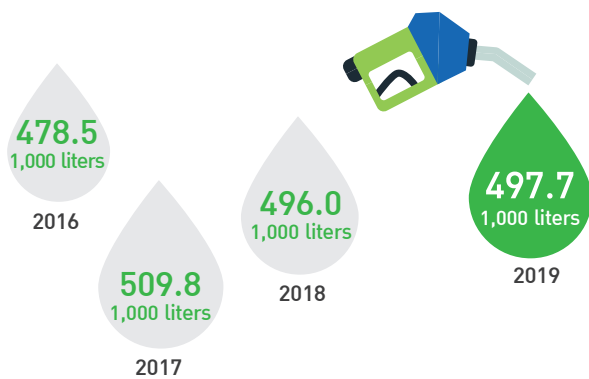


Market Share of Retails



Average Sales

1,000 liters/month/standard service station



Service Station Expansion

(Numbers of service stations)



Amount of decreasing Carbon dioxide from oil filling with Bangchark membership card

(unit: Ton CO₂ equivalent)



Impact Valuation

Positive and negative impact valuation on society and environment from marketing business

Impacts	Business activities	FY2019 Output	Relevant stakeholders
<ul style="list-style-type: none"> Alleviated dust/particulate matter issues Mitigated climate change issue 	<ul style="list-style-type: none"> Developed and sold B20 and B10 diesel Conducted sale promotion of Euro 5 high premium diesel to encourage the use of clean energy 	<ul style="list-style-type: none"> The sale of B20 helped reduce GHG emission approximately 39 million tCO₂e in 2019 Sale volume through service station: +7% Market share increased from 15.6% to 16% 	<ul style="list-style-type: none"> Customers Farmers Government sectors Shareholders
<ul style="list-style-type: none"> Supported farmers 	<ul style="list-style-type: none"> Developed and sold B20 and B10 diesel Conducted sale promotion of high premium diesel Oil refueling and sharing through Imm-Jai banana project 	<ul style="list-style-type: none"> Helped increase price of palm to 6.50-7.60 THB/kg which increased approximately 36%-40% in 2019 Created revenues for farmers who planted banana more than 4,000 households (equal to 4 million THB) 	<ul style="list-style-type: none"> Customers Government sectors
<ul style="list-style-type: none"> Reduced plastic waste 	<ul style="list-style-type: none"> Inthanin bio packaging Rak Pan Suk Project Reducing plastic bags at SPAR minimart project 	<ul style="list-style-type: none"> Rak Pan Suk Project brought 600,000 PET plastic bottles for the recycling process to produce 11,000 hats for cleaning staff of Bangkok Inthanin Bio Packaging helped reduce 237.6 tons of plastic waste 	<ul style="list-style-type: none"> Customers Employees Government sectors
<ul style="list-style-type: none"> Reduced the effluent of used cooking oil to public water sources 	<ul style="list-style-type: none"> Used cooking oil recycling for biodiesel (B100) project Bought used cooking oil from 9 communities, universities and Lak Si District Office 	<ul style="list-style-type: none"> Cost of used cooking oil project 575,833 THB Benefits: 283,831 THB NPV 292,000 THB Social Return on Investment (SROI) : 1:0.50 	<ul style="list-style-type: none"> Communities Universities Government sectors Employees

Product Transportation

In addition to delivering products to customers, service stations and industrial customers in a complete, accurate, punctual and safe condition, through various ways of transporting channels, including pipes, trucks and marine ships, depending on the needs of customers, the company foresees that the improvement of work guidelines of its transportation contractors to be the same standard and practice as the company's will help improve the process standard of product transportation to be more effective. The improvement will also build a strong and sustainable business alliance together. For these reasons, the company determined to establish a "Supplier Code of Conduct" for contractors to adopt it as guideline of practice, leading to sustainable business development. It will help improve work environment to be appropriate too. The transportation process improvement in compliance with the "Supplier Code of Conduct" can be done through seminar, training and relationship enhancement activities, the venues to develop contractors with knowledge helping them to work in the fullest potential.

Goals in 2022



To deliver products by semi-trailers at 45% of the total volume of shipments



To deliver product to customers by the future sales plan (calculating from the future plan to increase service station to 330 locations between the years 2018-2023)



Zero accident in product transportation



Transportation complaints are less than 3.5 issues per one thousand runs

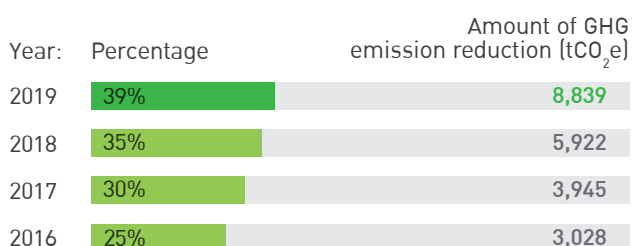


For backhaul project, to make approximately 1,500 trips per year in 2020

Key Success Indicators

The proportion of refined oil transportation by trucks decrease the GHG emissions

(Target: Using semi-trailer increase 2% per year and and decrease the amounts of transportation for reducing greenhouse gas emission.)



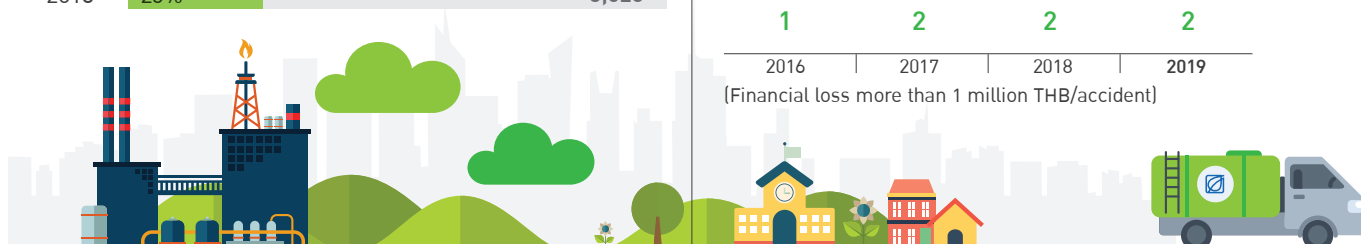
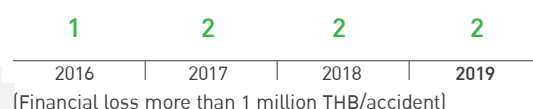
The number of complaints about transportation (complaints/1,000 transportation trips)

(Target: ≤ 3.5 issues per 1,000 transportation trips)



The Accident Record in Transportation*

(Target: Zero accident)



Strategy



Making efficient plan for oil transportation considering cost, time and highest level of safety

Project to Increase Proportion of Oil Transportation by Semi-Trailer

The company manages transportation vehicles by changing from 2 single trucks to a semi-trailer (40,000 liters load). This change helps reduce not only the cost of transportation but also the GHG emissions per unit of oil. It also reduces chance for accident. The company is driving this project through the following measures:

- ✔ New service stations are designed and built to support the delivery of semi-trailers.
- ✔ Driving for the delivery to Green Net's service station which is a station invested and managed by Bangchak Green Net Co. Ltd., a subsidiary company of Bangchak. Through this plan, delivery by semi-trailer will be the most option, either in the form of one trailer going to one or two stations with combined order. This method is known as a Multi- Drop, to increase transportation opportunity with semi-trailer.
- ✔ Granting discounts to other types of service stations, such as service stations of agricultural co-operatives and dealer service stations, especially oil transportation using large vehicle (semi-trailer).

These measures help increase the proportion of transportation with semi-trailer from the last year and achieved target as planned. It was reported that the



proportion increased by 4% (35% of using semi-trailer in 2018 to 39% in 2019), transportation cost reduced more than 50 million THB in 2019, GHG emission reduced by 8,839 tCO₂e, number of accident lowered down from the number of runs and shorter distance



Backhaul Project

In general, transportation of oil products to service stations or industrial customers usually causes a loss of business opportunity from running an empty truck back to the oil depot. So, the company decided to continuously run the Backhaul Project by loading ethanol from the manufacturer on the same running route to the company for the use as raw materials for production process in the refinery. This is to prevent business loss of opportunity from running empty truck on the way back. This year, the company managed to run more than 1,200 trips from Backhaul Project, reducing transportation cost for raw materials by over 5 million THB.

B20 Diesel Fuel Distribution Project from Bang Pa-In Depot and Surat Thani Depot

As B20 diesel fuel is available for distribution only at Bangchak depot which is located at Bangchak Refinery, Phra Khanong, Bangkok, but the delivery of this product is to go to service stations nationwide, the long distance of delivery to service stations in the north, the northeastern and the south maybe a cause to risk for accident during the course of delivery. The cost of delivery maybe increased and service station may have to place order long time in advance. For all these reasons, the company decided to extend the distribution of B20 diesel fuel to Bang-Pra-In Depot and Surat-Thani Depot.





The Development of Professional Driver



The company has organized the professional driver training program by adding knowledge about driving safely measures, correct fire-fighting, operations within the terminal, using the TMS system and data management through SAP to create confidence and professionalism for all drivers. As a result, the drivers are able to control the quality of transportation to be more efficient and good for dealer service station.

The implementation of key strategy has resulted in outstanding performance, that is, the company is able to efficiently manage the transportation contract of every contractor. (Average of 80%)



Development of Transportation Technology to be Modern and Efficient

Innovation Development

Smart Transportation

Smart transportation is a project to improve the current transportation management system (TMS). Presently, the company can track the transportation plan, driver behavior, speed and time of driving, by using CCTV and GPS system installed in oil tanker trucks. The said information will be sent directly to the control room where there are staff on duty 24 hours to tracking the transportations through the notification system to prevent accidents and fraud doing. In addition, the company has developed a data link from the closed-circuit camera in the truck via application on the smart phone, helping the service station dealers track the transportation in real-time information (in images) and check location of the truck since leaving the oil depot. Furthermore, it helps all parties learn about status of transportation at the same time, ensuring transparency in the tracking inspection, customer satisfaction and reduction of transportation complaints.

This year, the company has increased stricter measures by planning to install the equipment to prevent drivers from dozing off in the trucks and develop the TMS to be able to plan for the use of semi-trailers by pairing up the service stations that have a demand for oil at the same time, but their single order is not



enough to get a delivery from the semi-trailer. In this case, a "Multiple Drop" can serve the purpose, increasing an opportunity for delivery by heavy truck.



Development of Auto Ordering System (AOS) and Online Complaint System (E-Complaint)

Auto Ordering System (AOS): In order to efficiently receive oil orders from service stations and be able to plan for a timely transportation, the company has developed an automatic oil ordering system for dealers. The service station can calculate oil sales and the amount of oil remaining in the tank each day, create automatic oil orders and deliver to the company regularly and to service stations operated by Bangchak Green Net Co., Ltd. of more than 200 stations nationwide, allowing service stations to manage sufficient oil reserves for sales together with transportation plans and vehicle volumes more efficiently.

Online complaint system (E-Complaint): The company has developed an online complaint system which would enable the company to track the problem solving process and close the complaint effectively. In addition, this online complaint system is now linking to the transportation payment system through SAP system to enable the company to calculate the automatic fines in case the transportation contractors receive complaint on the incident affecting the company's image. This is one of the measures to help maintain transportation service standards as there is a clear penalty for the offense.



Future Plans



Installing equipment to prevent drivers from dozing off in oil tanker trucks to reduce chance of doze off and serious accident during the course of transportation



Expanding oil delivery service from Phichitr depot (in Pichitr province) to cover more service stations in the Northern region and to help shorten delivery distance, increase customer satisfaction and lower accident opportunity

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 of it has been constantly transferred to students and other interested agencies.

Total environmental cost in 2019 decreased from 2018 by approximately THB 384.90 million (-0.37% YoY) mainly due to Material Cost of Product Output which was lower by THB 373.98 million, with respect to the crude cost which declined by 11% from last year. Nonetheless, the company decided to increase the crude run from 102.39 KBD in 2018 to 112.62

KBD in 2019. Material Costs of Non-Product Outputs was lower by THB 43.29 million, in accordance with the decrease of products that were below quality standard.

Waste and Emission Control Costs along with Prevention and Other Environmental Management Costs increased by THB 32.37 million, primarily from depreciation of the pollution control equipment increased by THB 33.73 million, monitoring and measurement cost increased by THB 7.26 million, and effluent treatment cost increased by THB 2.08 million. On the other hand, environmental equipment maintenance cost and waste disposal cost decreased by THB 4.00 million, and THB 6.92 million, respectively.

Benefits from by-products and waste recycling increased by THB 2.75 Million (+17.59% YoY), mostly due to the amount of sellable liquid sulfur which increased.

(Unit : million THB)

Environmental Cost Accounting	Y2017	Y2018	Y2019
Material costs of product outputs			
Crude feed	80,433.78	89,862.78	89,112.83
Ethanol	7,648.60	7,562.06	7,127.70
Bio-Diesel (B100)	4,607.19	4,000.11	4,308.22
Bio-Diesel (B100)-Premium	28.37	42.62	36.36
Bio-Diesel (B100)-HI PURE TYPE2	-	-	582.10
Used cooking oil	6.37	1.48	0.76
Chemicals	162.45	168.07	171.83
Process water	26.52	20.82	28.35
Process energy	2,068.72	1,893.77	1,809.57
Material costs of non-product outputs			
Slop oil	81.68	100.36	57.60
Oil sludge from crude/fuel oil tanks	-	-	-
Effluent	11.20	11.38	10.93
Excess chemicals from neutralizing pond	0.31	0.13	0.11
Low-quality sulfur	-	0.07	-
Waste and emission control costs			
Environmental equipment maintenance	26.65	28.29	24.29
Depreciation of pollution control equipment	233.90	267.28	301.02
Effluent treatment	8.15	7.63	9.71
Waste disposal	10.48	12.27	5.35
Environmental fees and taxes	N.A.	N.A.	N.A.
Fines	-	-	-
Prevention and other environmental management costs			
Monitoring and measurement	10.20	7.68	14.94
Depreciation of waste storage area	0.13	0.11	0.03
Management system operation	2.57	1.59	1.89
Environmental equipment maintenance	0.04	-	0.01
Benefits of by-products and recycling			
Liquid sulfur	(10.63)	(9.86)	(14.19)
Glycerine	(0.16)	(0.05)	0.00
Iron and aluminum scrap	(1.47)	(5.70)	(4.17)
Paper	-	-	-





Bangchak & Sustainable Happiness




And Creating Values for Society

Safety

Total Recordable Injuries Case (TRIC)

	Male	Female
 Employees	0	0
 Contractors	5	0

Total Recordable Injury Rate (TRIR)

	Male	Female
 Employee	0	0
 Contractos	1.06	0

Customer Relationship and Responsibility Management

Percentage of Customer satisfaction associated with Bangchak's responses to complaints and suggestions

90%

Human Rights Due Diligence (HRDD)

Percentage of human rights risk assessment

Employees	100%
Subsidiaries	100%
Suppliers	100%

Percentage of human right risk identified

Employees	0%
Subsidiaries	0%
Suppliers	0%

Employee Stewardship



Total number of employees
1,251 persons



Promotion rate
15.2%



Best Employer Score
56%



Employee Engagement Score
62%

Community and Society Development

Voluntary working hours of employees for

CSR activities

15,583 hours

Equal to 4.3 million THB

Percentage of CSR activity satisfaction



Social Return On Investment (SR0I) of Water Management for Mitigating Drought Project

SR0I 3.9 : 1

Social Return On Investment (SR0I) of Used Cooking Oil Project

SR0I 0.50 : 1





สืบสาน รักษา และต่อยอด ศาสตร์ของพระราชา



Occupational Health & Safety

Occupational Health, Safety and Security are the most important aspects of the petroleum business and its stakeholders, particularly employees, suppliers/contractors, and communities and society. Because of this, Bangchak has set in place a Safety, Security, Occupational Health, Environment, and Energy (SHEE) Policy which requires employees and contractors to perform safety

duties and responsibilities for themselves and their colleagues in compliance with safety regulations and standards. For safety management, the company has SHEE management structure and safety management system - ISO 45001. In addition, Process Safety Management (PSM) has been implemented as the foundation of safety management system (Disclosure 403-1)

Target:



Full compliance with safety-related laws and regulations



Zero Work-Related Illness of employees and workers



No significant oil and chemical spills to the environment



Zero occurrence of leakage of Tier 1 flammable substances or chemicals from main containers or production processes leading to serious impacts in accordance with API 754.

Occupational Health and Safety Management Guidelines

The implementation of SHEE management systems, ISO 45001 and the PSM has brought improvement in the safety performance of Bangchak. The company continuously facilitates activities that promote safety both inside and outside the work area, which is known as Safety 24 hours. The Safety 24 hours programs encourages employees in all levels, including contractors to increase safety awareness and knowledge on safety practices and develop personal accountability. Below are a number of initiatives to promote internal safety:

- ✔ Safety Culture Transformation instills the safety mindset among employees through several activities, such as Line Walk of executives in operating areas to show the importance of safety awareness for workers, and Field Risk Assessment (FRA) which assigns employees to seek for hazards and risks in order to conduct proactive prevention.
- ✔ Securely fastened the safety helmet strap promotion
- ✔ Regular monthly meeting and inspection with safety officers of suppliers.

For external safety promotion, activities, which has been conducted continuously are safe driving promotion of employees by encouraging the use of helmet when riding a motorcycle and by promoting the use of safety belt before driving.

From conducting safety operations and activities continuously, Bangchak achieved safety target of 2,350,000 safety hours-person without Lost Time Injury and Occupational Illness.

Work-related Hazards Identification, Risk Assessment, and Incident Investigation (Disclosure 403-2)

For Routine activities, Bangchak has procedures of hazard identification and risk assessment include improvement opportunity identification through "What if" and "HAZOP" measures covering activities operated by employees and contractors. These measures determined hazard, risk, and improvement opportunity identifications and assessments for all procedures to eliminate hazard and minimize risks by using "The Hierarchy of Control" method at acceptable levels and to review this process at least one time a year or any changes occur and to review this process at least one time a year or any changes occur. For Non-Routine activities, such as changes in operating procedures or equipment, changes in workers or work flow, results of surveillance of work environment and worker health including exposure monitoring hazardous situation and comprehensive risk assessment using the JSA (Job Safety Analysis) in all work process is strictly required. Covered in the control and preventive measures are compliance on work permit, requirement to have a regular Safety Talk among employees before the start

of a work day and the compliance checks on safety rules at work to enhance effectiveness of the process. Engineers and supervisor and above go through development programs on risk assessment procedures relevant to their work. After assessing risks and controlling measures, level up all results and recommendation must be compiled for the management team to review and sign off to. Everyone has a duty to review and monitor implementation of the recommendations to control risks continuously.

The risk assessment results showed that work-related hazards causing or contributed to high-consequence work related injuries and work-related incidents with low probability of causing high-consequence injuries including fire, chemical spills, equipment falling. The company has determined appropriate preventive and control measures on these incidents including levels of control. A safety design process was set in place which includes risk assessments, a safety management system and simplicity. In addition, the company providing Personal Protective Equipment (PPE) to employees and contractors.

As an additional precautionary measure, there is a reporting mechanism where employees and the workers can notify a Safety Observation Report. Its report showing unsafe acts and unsafe conditions. Unsafe act and conditions are those behaviors and conditions that can disrupt effective workflow

of operations. Unsafe act is a violation by omission of your duty as an employee or partner. Work-related hazard and hazardous condition should be reported to the Supervisor of the work area without any reprisal or punishment. Also, there is the right of workers to refuse or stop unsafe or unhealthy work until all issues have been resolved and resume operation safely. The aforementioned practices were established in order to develop employees to be proactive on safety issues, minimize safety risk and ultimately promote a safety culture of the company.

Investigation Process of Work-related risk and incident

The report and investigation process of work-related risks and incidents are very vital in safety management system. The objective of such the process is to find the root cause and set up measures to control or prevent the incidents to reoccur. Bangchak has set the systematic mechanism reporting to record unsafe act, unsafe condition incident and near-miss incident. When an incident happens, the person involved or a witness writes a report to the area manager within 24 hours. A working team will be formed to investigate the incident in order to find root causes of the incident and determine Corrective actions by using the "Why Tree Analysis" as a tool. There are periodic checks to confirm alignment with the measures in place. The lessons learned from the incident will be captured and shared to the employees in different channels of communication.



Occupational Health Services (Disclosure 403-3)

Prevention and management of occupational health of employees and contractors is extremely important in the operations of Bangchak. The area of refinery of the company needs the most attention since the work environment may cause harm to health of employees and workers. Because of this, the company uses proactive occupational health processes by providing a Health Risk Assessment covering all areas of the refinery. This process is initiated to determine the proper measures for risk management including assessments and action steps to mitigate risks and to protect the health of employees and workers. The risk assessment includes the regular surveillance of the work environment covering light, noise, heat and chemicals. The assessment results are compared against the safety standards. If the assessment result exceed safety standards, the company will design and improve working areas to have safe working conditions, and the company will conduct improvement plan and systematic

monitoring of the implementation. The company also provides safety officers and occupational health doctors to provide pieces of advice and recommendations to employees and contractors on occupational health issues.

Bangchak has provided employees and contractors health services as follows:

- ✔ Employee health check from the start, during and when finishing employment
- ✔ Employees undergo annual general check-up, including occupational risk factors. Occupational health experts are hired to determine check-up with special focus on risk factors. The team analyzes the test results based on internal and external factors in the workplace. If employees are found to be ill, they are advised to visit a doctor and receive ongoing health care. The company will also provide additional health checks recommended according to age. Some of these are prostate, pancreatic and gastrointestinal cancer examination as part of the employee health program.
- ✔ Monitoring of operational procedures in line with international standards and set clear criteria of people at occupational risk within 3 levels - low, medium and large.
- ✔ Providing contractor occupational health measures, such as preparing work areas, procedures, prevention equipment, and promoting knowledge
- ✔ Providing medical emergency drills for the company's support team. The hospital supports to staff are in an agreement on flexible yet efficient practices.
- ✔ Hiring a medical professional in health assessment and improving the general health examination as well as the special program for employees with high-risk health.
- ✔ Initiating "Exercising Idol Project" to drive health awareness among employees. The program highlights 3 important areas that employees should work on to achieve health and be illness-free - physical body, nutrition and mind.

From contractors, the company requires all contractors to undergo health check based on identified risk factors. This includes health examination, analysis, follow-up and consultation. Those who have abnormal results must immediately visit a doctor and receive ongoing care. After the diagnosis and treatment, reports are submitted to Bangchak supervisor and safety representative



Participation, Consultation and Communication on Occupational Health and Safety (Disclosure 403-4)

The company has appointed the Safety and Occupational Health Committee as the official working group in accordance with the regulation to facilitate the collaboration between management representatives and employee representatives on safety, occupational health and work environment operations. The committee members should have members at least 50% coming from representatives of operations staff. The operations staff group elects the representative from each department. The team will have a regular monthly meeting each representative to share the information they get from their departments, updates on progress or operations and presentation of future plans. In 2019, the company revised their safety manual. There was a review on the procurement process and standards of Personal Protective Equipment, specifically PPE in relation with the job risk level. That year, the senior management also had a review of the company's safety performance.

In working with the contractors, Bangchak conducts regular communication sessions and monthly inspections of work areas together with safety officers. These monthly activities are a venue to exchange information on safety and occupational health operations. In 2019, the requirements for the contractors were revised to achieve better level of hygiene and occupational safety compliance. As an example, contractors who repeatedly violate safety rules will receive a warning. They will have an opportunity to propose corrective solutions and solve the problem together with the team. Further violations will lead to statutory offense. Contractors are included in the activities that promote safety inside and outside work; example is the 24-hour Safety. Together with the other employees, the company aims for the contractors to develop the same level of sense of responsibility and knowledge about safety practices. (OGSS : Emergency Preparedness)

Internal safety promotion activities

- ✔ SHEE Excellence Day activities exhibits multimedia of knowledge instructional materials on safety issues, practices and information. Examples include videos on using PPE, Q & A sessions and games on safety practices.
- ✔ Continuously driving safety awareness through various communication channels like Microsoft Outlook, Safety Radio Channel creatively broadcasting information and reminders for the employees to strictly apply rules of safety. They sometimes feature games to reinforce information.



Occupational Health and Safety Training (Disclosure 403-5)

Bangchak arranges safety and occupational health training for all employees and contractors before starting work. In addition, there are guidelines for the identification of training in occupational health and safety, prevention and fire prevention including the level of necessity for employees and contractors according to their job position. With the objective to develop knowledge, ability and behavior on safety practices, the company includes these in the training plan which covers delivery, evaluation of the results and documentation of training records. Part of the agenda is the prevention and management of hazards in the workplace.

Promoting health among workers (Disclosure 403-6)

Bangchak provides health services and supports workers to access medical services even for cases which are not related to work.

- ✔ Providing primary care to employees and contractors who get sick. Medical staff are available during working hours. There is a full time staff nurse available during the work week and part time doctors visiting on a regular basis. This service is free of charge.
- ✔ Providing annual health check-up service and flu vaccine for employees.

Furthermore, the company provides a variety of health promotion programs that help employees improve their health. These programs are non-direct work related, purely for health purposes and voluntary as the following:



- ✔ “Fit Your Fat Off” project,” as a mechanism for employees to be aware of health care issues. A campaign that drives 3 important areas of health - physical, nutrition and mind was initiated with the purpose is to reduce sickness among employees and promote good mindset about healthcare to reduce NCD's.
- ✔ “235 Days - 2,235 million steps” project - "This step for children" is a health promotion initiative where in every 10,000 steps participant get to walk can be exchanged to 4 THB donation to schools nationwide.
- ✔ Fight for Fit: Do it yourself "DIY" project for employees to decide their own activities according to their personal preferences and abilities. The goal was to reduce body fat and increase muscle mass.
- ✔ Providing healthy food supply for dinner to employees everyday throughout the year.

In addition, the company provides support for places and exercise equipment such as fitness centers at the Bangchak Refinery Office Building and M Tower Headquarters Building.



Performance

From safety management for employees and contractors, Bangchak monitored the following safety indicators: Injury Frequency Rate (IFR), Injury Severity Rate (ISR), Total Recordable Injury Rate (TRIR) and High-consequence work-related injuries rate of employees and contractors.

Occupational Illness Frequency Rate (OIFR) of workers is zero

Safety Performance	2017		2018		2019	
	Male	Female	Male	Female	Male	Female
Injury Frequency Rate (IFR)						
• Employees	0	0	0.55	0	0	0
• Contractors	0	0	0.71	0	0.42	0
Injury Severity Rate (ISR)						
• Employees	0	0	7.75	0	0	0
• Contractors	0	0	9.18	0	1.27	0
Total Recordable Injury Rate (TRIR)						
• Employees	0.74	0	1.66	0	0	0
• Contractors	0	0	1.41	0	1.06	0
High-consequence work-related injuries rate*						
• Employees	N/A	N/A	N/A	N/A	0	0
• Contractors	N/A	N/A	N/A	N/A	0	0

* High compensation to employees who got injured because of work accidents and not allowed to go back to work for 6 months.

As a result of all the safety initiatives, the company has improved its performance significantly for Injury Frequency Rate (IFR), Injury Severity Rate (ISR), Total Recordable Injury Rate (TRIR) and High-consequence work-related injury rate of employees and workers. For the incidents reported, the company did its part in investigating root causes and brought lesson learned to prevent the same occurrence. In addition, the company set long-term and short-term improvement plans, conducted monitoring process, and communicate result and progresses to related parties. Also the company has conducted personal safety activities to facilitate sustainable

safety culture. In 2019, the main type of work-related injury were material crash and cutting by sharp objects



Safety in the Production Process

Bangchak has operated safety management in accordance with the Process Safety Management (PSM) system and has established the PSM Governance Committee (PSM GC) with continuous work plans since 2015 and set safety values such as the 3E referring to:

- ✔ **E**veryone goes home safely everyday
- ✔ **E**nvironment and Asset are protected
- ✔ **E**fficient and Reliable Operation



On-going Projects since 2015 include:

- ✔ Felt Leadership (FL) program, presence and acting as a leader in safety
- ✔ Field Risk Assessment (FRA) raising awareness and understanding of workers about potential hazards In order to bring appropriate prevention before the incident
- ✔ Establishment of safety standards including LOTO (Lock Out Tag Out), LB (Line Break), HW (Hot Work) standards
- ✔ Produce Process Safety Information (PSI) as a collection of basic knowledge and necessary for hazard identification in the production process
- ✔ Process Hazard Analysis (PHA) is a tool to analyze hazards that exist in the production process. It also helps in finding solution and prevention.
- ✔ Incident Investigation (II) is a procedure to analyze what really happened in an incident and use the information to define protection measures in a systematic way.

- ✔ Management of Change Technology-Facilities: MOC-T, F is a process for managing change in production processes to be safe through an efficient management system. To ensure that the changes occurred are evaluated, professionals in those area will review, analyze and communicate with operators to help prevent recurrence.
- ✔ A Pre-Startup Safety Review (PSSR) is a review of equipment and operations related to the production process to ensure safely before starting the production process, after a production shutdown and during major maintenance. This will help reduce the effects of the dangers that may occur from the beginning of the production process.

In 2019, Bangchak initiated two new elements of PSM and provided trainings for responsible persons to conduct the operation. The two new element included:

- ✔ Emergency Planning & Response (EP & R)
- ✔ Management of Change Personnel (MOC-P)

By year 2021, Bangchak has a plan to conduct additional elements of PSM to complete 14 element as the followings:

- ✔ Mechanical Integrity (MI) is the inspection of equipment to check effectiveness and control hazards which may occur during the use of equipment. The MI include the maintenance of equipment and tools following designed objectives on its readiness for use.
- ✔ Quality Assurance (QA) is the inspection to confirm that equipment and machines in production processes are installed in accordance with the design and readiness for use.
- ✔ Contractor Safety Management (CSM)
- ✔ Training and Performance (T&P)
- ✔ Safety Auditing (SA)

2019 Performance

Bangchak was able to achieve the set Process Safety goals. The leak of flammable substances from the container or production process with serious impacts (Tier 1 and 2) in accordance with the requirements of API 754 was reported to be zero.

Relationship Management and Customer Responsibility

The company has both proactive and reactive relationship management with various customer groups, as per our Marketing Business Group Strategy on Customer Focused and Customer Centric. It means responding to the needs of customers whether End Users, Service Station Dealers, Service Station Dealers operated by Cooperative (CO-OP) as well as Industrial Group Customers to develop a strong sense of loyalty between the company and the customers. The aim is to be the Most Admired Brand to enhance customer experience through product quality, service stations and service operations while increasing work process efficiency.



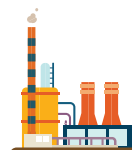
End User



Dealer



COOP



Industrial Group

Long-term Goals 2020-2024

The company aims to be the First brand of choice (The Most Admired Brand) by year 2024 as a way of thanking our customers for their loyalty. Our Customer Feedback Process brings input of customer expectations, which will be used for our planning of innovation as well as technology for products and servicing at service stations, complying with a concept of social and environmental friendly. To gain more market insights on the **"Evolving Greenovative Experience"**, the company has used the international standard survey called Net Promoter Score (NPS). It is an index of measuring engagement through word of mouth and Customer Satisfaction. The company will use the information, needs and expectations of consumers for determining the strategy continuously.

Performance in 2019

Development of two-way communication mechanism between customers and the company	Development of systems and technology to support relationship	Relationship management to maintain current customers and obtain new ones
The Consumers <ul style="list-style-type: none"> Continuously develop for 3rd year on customer contact channels both by phone and other online media : <ul style="list-style-type: none"> Call Center 1651 Facebook Website Email Line Official Line@ Live Chat Bangchak Mobile Application Net Listening Software, a system to search for information when customers mention the name of the organization through social media 	The Consumers <ul style="list-style-type: none"> Develop a system to be able to support a new group of customers who have made CRM to get special privileges from refueling at Bangchak service stations. Installed the Point of Sale Automation system of the service station. To be able to register the membership card at the service station Continued for the 2nd year. Develop "Your Tree" system in Mobile Application which calculate for individual customer when he/she refueling at Bangchak service stations, how much one can reduce carbon dioxide CO₂ emission and equivalent to how many trees being planted . 	The Consumers <ul style="list-style-type: none"> New Bangchak Card members receive extra points by registering for Green Miles membership card. Current members can also avail of extra points once he/she updating one's database. Bangchak Card members can donate points to charities each year. Donation can also be made through Bangchak Mobile Application. Campaign "How much it is up, you get it back" Bangchak will give more points for cardholders who refuel on the first day of the oil price increases. The difference in the fuel price will be refunded to members in the form of reward points or points in the membership card.

Development of two-way communication mechanism between customers and the company	Development of systems and technology to support relationship	Relationship management to maintain current customers and obtain new ones
<p>Service Station Operators and Inthanin Coffee Shop Operators</p> <ul style="list-style-type: none"> Fuel Ordering Channels to allow dealers to be able to place fuel order through the 24-hour Call Center. Orders can also be made via Web Ordering and Mobile Application Automatic sound recording system and the database of all orders being made. Enhanced the capability of Customer Call Center to be able to receive orders for raw materials used in Inthanin Coffee Shop. Created a Line Group for operators for two-way communication with customers. <p>3. Feedback Mechanism</p> <ul style="list-style-type: none"> Developed Mobile Survey system to get immediate feedback from Bangchak cardholders after availing of oil or non-oil services, making it possible to know the level of customer experience. Assess customers' satisfaction and develop reports which include complaints, inquiries, compliments, promotional and advertising information, as well as suggestions. The report is distributed to all relevant functions to improve service quality. Conduct Annual Market Research Conduct Focus Groups to find out customers' needs and satisfaction levels Document cases where customers provide positive feedbacks and award workers who provided good services, creating morale and encouragement. Conducting an Online Satisfaction Survey on satisfaction level and expectations of industrial customers Random surveys via TT mobile phones that are randomized for Operators and Industrial Customers who made orders, in order to assess satisfaction after using the service. 	<ul style="list-style-type: none"> Develop Chat Bot system to support consumer inquiries via mobile application Analyze customer data on customers' behavior and amount of fuel filling, and do segmentation for a better planning on customer needs& response. Develop Push Notification system to create Personalized Marketing and offer benefits that fit to different customers. <p>Service Station Operators and Inthanin Coffee Shop Operators</p> <ul style="list-style-type: none"> Added an Order Placing System to receive orders for raw materials used at Inthanin Coffee Shops Develop CRM systems by phone to collect data of incoming calls, allowing employees to immediately know which customers contacted. <p>Industrial Customers</p> <ul style="list-style-type: none"> Develop Prepaid Card System for small-sized Industrial Customers, facilitating fuel cost control and no limit requirement similar to Fleet Card system. Develop Fuel Usage Reporting System for customers' cost monitoring. 	<ul style="list-style-type: none"> Membership points can be exchanged into various food and beverage products of Bangchak Groups and partners through Bangchak Mobile Application. This includes products for the elderly. Promotional products on festivals such as giving away plants on Father's Day, giving away Community Products to help farmers, Sweepstakes coupons, promo coupons, Inthanin discount coupons and Lubricants Promotion. Give special privileges to card members like travel insurance, 24 hour roadside assistance, free vehicle inspection depending on seasonal holidays. This has been running for 3 years. Playing games via Facebook and Line Official Any damages incurred from the services are rightfully compensated. Encourage cardholders to join environmental campaigns. <p>Provision of Additional Benefits</p> <ul style="list-style-type: none"> Expand customer base by giving discounts to cardholders of SCG, AIS Serenade, The1Card when refilling fuel at Bangchak gas stations. Initiate projects to help reduce the use of plastic bags like giving away eco-bags at our SPAR convenient shops and Inthanin Coffee shops. Birthday privileges for Bangchak cardholders like extra 50 points to redeem for special discounts in any of our outlets (Inthanin, SPAR, Wash Pro and Green Wash Car Service Centers (choose one)) <p>Service Station Operator Group / C00P Service Stations</p> <ul style="list-style-type: none"> Enhance business management capability for dealers through our Triple M management course. Develop the Professional Franchise Scheme System for more efficient service station management. Provide personnel development to improve their knowledge on products, servicing, promotion& communications, for correct information conveying to customers. Develop the CO-OP Turn Pro Program for CO-OP service stations that have potential and readiness, having full functions and value added services. <p>Industrial Customers</p> <ul style="list-style-type: none"> Provide knowledge in various areas such as products / emergency plan training / after sales service / equipment support / Schedule Machine maintenance.

It has been 3 years that the company has developed a Mobile Application system to support the customer service process and it has gained more and more interest from our customers. This online channel has been used to redeem points for movie tickets, food and beverages as well as products from various store partners. The customers can use their points for charity donation via this application. Mobile Application will calculate for individual customer when he/she refueling at Bangchak service stations, how much one can reduce carbon dioxide CO₂ emission and equivalent to how many trees being planted.

The company has projects to continuously develop and improve servicing through Mobile Application:

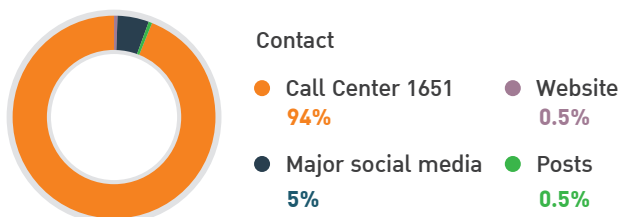
1. To assess satisfaction level of customers who use services at Service Stations and Inthanin Coffee Shops.
2. To use “chatBots” for immediate respond and suggestions/answers giving to customer inquiries.

Bangchak has a Policy on Environmental Conservation using campaigns such as:

1. Campaign to reduce the use of plastic bags by giving away cloth bags when buying products at SPAR stores or Inthanin.

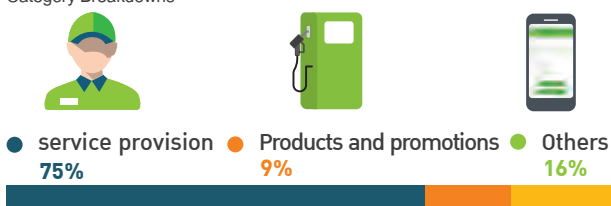


Receiving complaints and suggestions



Total number of 2,458 cases

Category Breakdowns



2. Campaign of recycle used PET Bottle to be textile fibers for hats, etc. Customers has brought used PET plastic bottles, which had been recycled as textile fiber for hats. Bangchak then delivered hats to government officers and Bangkok Metropolitan Authority's road cleaning staffs.



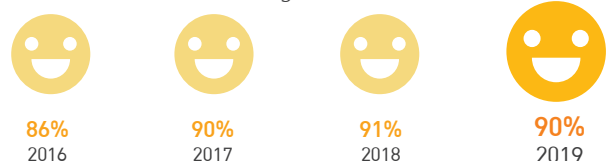
3. Campaign on Father's Day. Giving plants to customers who come to refuel at the service stations on Father's Day and giving away of seeds to customers who buy Inthanin drinks.

Bangchak continues to develop the servicing process and innovation from the Voice of Customer Committee (VOCC) and determine it as an effective Work Success Indicator to response customer satisfaction.

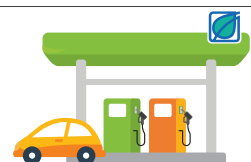
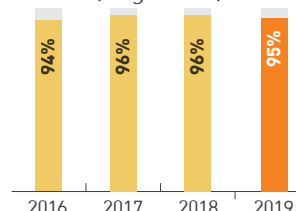
In the year 2019, the Call Center received an award for individual category: Admin Support by TCCTA (Thai Contact Center Trade Association). The Redemptorist Foundation for People with Disabilities (Phra Mahadhai) gave a plaque to honor the act in providing employment to disable person.

Results

Satisfaction with response to complaint and suggestion (target 90%)

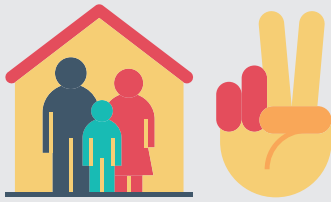


Assess the return of service (target 95%)



There was no significant legal violation on marketing communications (Disclosure 417-3)

Human Rights Due Diligence Process



1

Step 1
Prepare and announce Human Rights Policy as a commitment (Policy commitment)

2

Step 2
Conduct Human Rights Due Diligence

Prepare human right due diligence checklists and assessments

3

Step 3
Conduct Human Rights Due Diligence Impact Assessment

consult with internal and external stakeholders and organizations to define vulnerable groups, aspects, risks, channels of complaints, and human right risk mitigation from impacts of business activities

4

Step 4
Set remedies for the event of human rights violation (assess to remedies). This includes risk assessment and indicator selection

use stakeholder engagement process when needed

5

Step 5
Monitor human right due diligence performance

report to executives and disclose publicly

Human Rights Due Diligence

Human rights has always been important to all sectors of the society. Bangchak is well aware of how human rights is a vital piece/element in conducting businesses, especially with the complex system of value chain and diverse group of stakeholders. The company aligns with the UN Global Compact, Universal Declaration of Human Right (UDHR), and United Nation Guiding Principles on Business and Human Rights (UNGPs) in fulfilling its business responsibility to comply with human rights. The company set a framework on this by setting guidelines for the Board of Directors, management executives and employees at all levels, for the compliance of everyone.

The company has conducted human rights due diligence in accordance with plans covering ever divisions and departments in the value chain of refinery business group, marketing business group, and suppliers (100% of human rights impact assessments and reviews for 2 business groups and suppliers in Thailand) (Disclosure 412-1)

Furthermore, the company has extend its human rights due diligence processes to its suppliers through Supplier Code of Conduct (SCOC) in labor and human rights section, occupational health and safety section, and environmental section.

Human Rights Risk Assessment

In the year 2019, the company assessed all human rights risks using a checklist of human rights impact assessment in accordance with the Human Rights Due Diligence (HRDD) process. It covered refinery and oil trading business, marketing business, and suppliers



Procurement



Production



Transportation



Marketing



Customers

Performance

Risk Assessment on Human Rights (Disclosure 412-1)

	Employees	Contractors & Tier 1 Suppliers	Subsidiaries
Percentage of risk assessed for the last 3 years	100%	100%	100%
Percentage of cases with identified risks	0%	0%	0%
Percentage of risk identified with measures to reduce impact	0%	0%	0%

From this assessment, it was found that there was no identified human rights risk in the operations of the company. Even then, the company still set guidelines to prevent and reduce human rights risks to identify vulnerable groups. Below is the list of vulnerable groups:

Community Rights

Risk Issue	Guideline to protect and reduce impact on human rights
Environment and safety from the company's activities Impact: <ul style="list-style-type: none"> The right to be protected by law Freedom of expression Rights to good quality of life 	Environmental <ul style="list-style-type: none"> Environmental quality control is better than the standards required by law Communication and Safety <ul style="list-style-type: none"> There is an environmental patrol to check, secure and communicate about the air quality of the communities around the refinery. Communication in advance before maintenance shutdown and resuming operations. There are ways to communicate with communities around the refinery, both in cases of emergencies and normal situations. There are drills rehearsals with the refinery secondary community Provide a venue for the community to voice out concerns, opinions or complaints about the operations of the company. Set up the remedy mechanism for the communities affected by the operations of the company via Call Center. The complainants are to be protected and the information is to be kept confidential.

Contractor rights

Risk Issue	Guidelines to protect and reduce impact on human rights
Occupational Health and Safety Impact: <ul style="list-style-type: none"> The right to be protected by law Rights to good quality of life 	Safety <ul style="list-style-type: none"> Comply with the laws regarding safety, occupational health and working environment, including the company's policy on Occupational Health and Safety. Provide training and ensure compliance with work safety regulations Procure basic personal protective equipment appropriate to work risk to preserve occupational health Occupational health <ul style="list-style-type: none"> Arrange annual health check-ups according to risk factors and basic health examination before starting daily work

Employee Rights

Risk Issue	Guideline to protect and reduce impact on human rights
Safety and health of employees at service stations Impact: <ul style="list-style-type: none"> Rights to good quality of life Rights to work 	Safety <ul style="list-style-type: none"> Organize training on oil types using a refueling device, refilling safely and actions to take in case of emergencies Organize training courses for service station controller and LPG service station supervisor Provide vapors and oil spill prevention equipment Manage emergency plan for fire control and evacuation Install security systems in every service station to monitor Occupational health <ul style="list-style-type: none"> Health check-up and drug testing of work station employees

Customer Rights

Risk Issue	Guideline to protect and reduce impact on human rights
Safety and Occupational Health Impact: <ul style="list-style-type: none"> Rights to good quality of life 	Communication and Safety <ul style="list-style-type: none"> Safety signs and communication to raise awareness in service stations There is a process for screening business partners in accordance with legal requirements.
Protection of rights and personal information Impact: <ul style="list-style-type: none"> Rights to equality by law The right to be protected by law Privacy rights 	Protection of customer rights <ul style="list-style-type: none"> There is a mechanism for accepting customer complaints through the Call Center, including operations, checking, solving and tracking complaints. Facilitate the disabled to access goods and services Warranty for the damages from the company's operations to customers when the incident is proven eligible Personal information <ul style="list-style-type: none"> Ask to voluntarily provide personal information to receive special privileges from membership cards. Protect customer's personal information and not distributing it to third parties



Goals in Y2020

- Increase comprehensive awareness of human rights for various departments and related parties
- Complete personal information management in all areas in the refinery and marketing business groups by establishing policies and procedures in keeping personal information. Assign an office responsible for rectifying the misuse of personal information

Collective Bargaining

The company provides an opportunity for communication between executives and employees in collective bargaining of employee benefits through Labor Union of the company that has been registered legally. At present, the Union has members who are the company's employees in 50.4% of the the total employees (Disclosure 102-41). The meeting with management is regularly held, reflecting the company's good will in supporting the rights to work which is in consistent with Universal Declaration of Human Rights (UNGP). Labor Union has the right to appoint an employee committee (currently there are a total of 13 people) in order to develop the welfare and benefits of employees together with management representatives. This allows employees to receive welfare that meets their needs and expectations appropriately. The consultation meetings happen every quarter per legal requirement. In the year 2019, from the review of welfare and benefits according to the needs and expectations of the employees, the company decided to increase the allowances for operational staff in order to support a better quality of life.

Measures for Receiving Complaints and Clues

The company provides channels for reporting complaints regarding human rights. For issues that violate legal ethics both from employees and other interested parties, there is a mechanism to protect employees and those who report the clues by creating a secret database system that can only be accessed by relevant parties. A committee will be established to handle the case. Committee members include representatives from different departments who have no vested interest in the case. Investigation proceeds in line with the regulations and will report results to those who filed the complaint. Channels of receiving complaints and clues are as follows:

- ✓ Information disclosure through Labor Unions or the company's employee committee
- ✓ Hot line 1651
- ✓ Electronic mail to the Internal Audit Department

Results in Y2019

- ✓ The company received no complaint on human rights issues.

Employee Stewardship

Bangchak realizes the rapid changes of global situations associated with the economy, environment and society as well as the changes in technology, that brings in impacts to the business. So, it determined to stand strong on the stewardship and development of employees, as it is believed that these are the most important human capital of the company, and can be developed to drive the organization according to the **i AM BCP** core values. The company also emphasizes the importance of employee retention, talent attraction and retention as well as career development and career path, with the following frameworks, goals and operations:

Employee Stewardship by the BEST Employer Framework

Agility	Engaging Leadership	Talent Focus	Employee Engagement
<ul style="list-style-type: none"> Focusing on a collaborative team capable in handling differences. Be prepared and flexible to change 	<ul style="list-style-type: none"> Leadership development 	<ul style="list-style-type: none"> Compensation management and employee retention Employee development Building good image 	<ul style="list-style-type: none"> Promoting employee engagement 

Goals for Employee Stewardship Y2019 - Y2024

- ✓ The BEST Employer

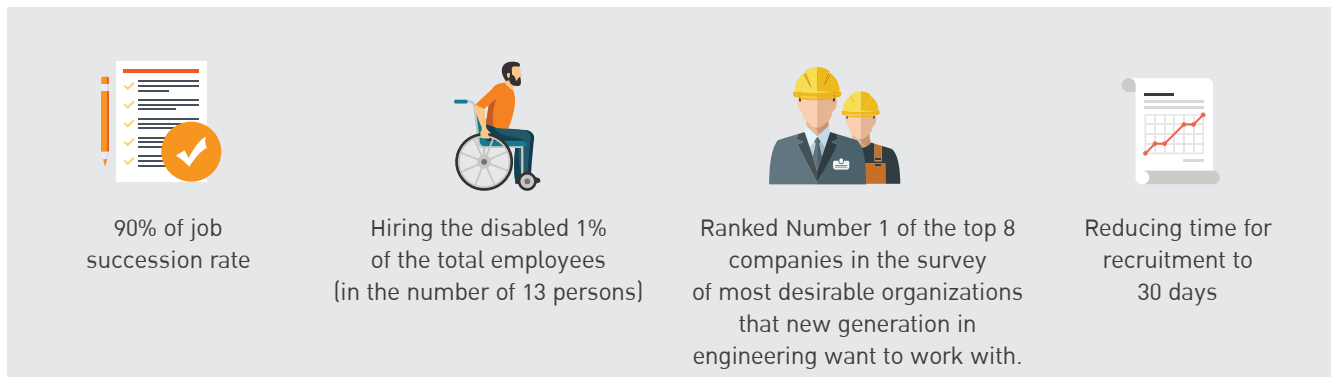
Employee Stewardship Operations

- ✓ The company set a strategic plan on employee stewardship and followed up the employee issues on a regular basis through the Management Development Sub Committee (Sub MDC) of each business group. The company usually gathered employee feedback from the Employee Engagement Survey and screened various issues for discussion before passing them to the Management Development Committee (MDC) for consideration and approval for further improvement and development. Such the monitoring also helps the company handle employee stewardship in each business group and working group in a closer manner and more effective. The samples are such as the issues of manpower planning that well synchronized with the business growth plan, learning and development, job rotation for development, and the promotion of learning for business development.
- ✓ The company has a modern "Smart ME" system ready for digital transformation. It has already extended the "Smart ME" system from Phase 1.1 (HCM, Onboarding, Performance Management, Absence and Integration) to Phase 1.2 (Recruiting, Succession & Career and Competency) to increase efficiency in the recruitment process, succession planning, personnel selection and manpower planning, especially for the key positions.
- ✓ The company has data analytics and an executive dashboard that enable the executives to consider proper employee care to be in line with the business direction quickly. This is an important strategy to drive the company's effectiveness in terms of agility.

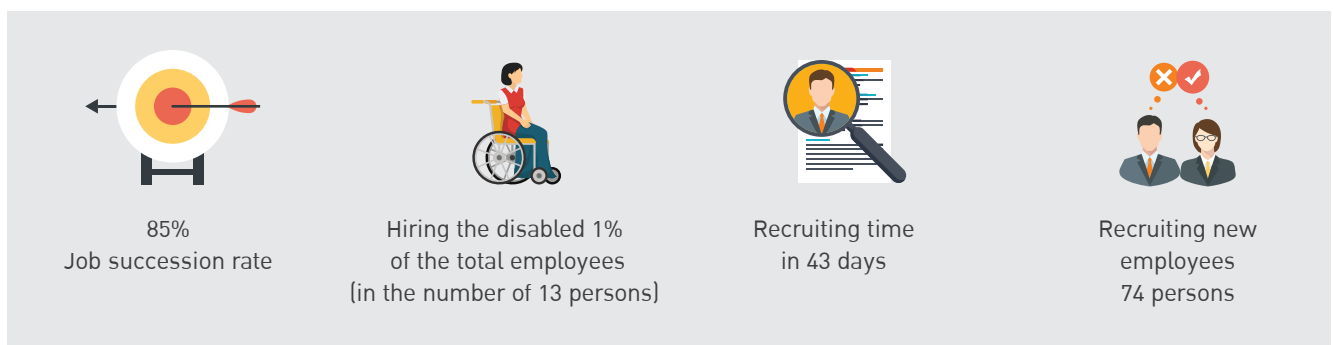
Manpower Planning and Recruitment

With the continuous growth of the company, manpower planning and recruitment of either internal or external personnel is an important task to get ready for an appropriate operation to achieve in the goal and vision of the company. The company aims to search for competent and good personnel with appropriate qualifications, knowledge and capabilities.

Recruitment Targets in Y2024 (Long-term Plan)



Recruitment Goals in Y2019







Strategy	Key Performance in 2019
Manpower and capability planning in line with the company's 3-year strategic plan	<ul style="list-style-type: none"> Proactive recruitment by means of public relations in various universities (Roadshow) and job fair depending on to the target university to comply with the needs and strategic plans of the company for Employer Branding Undergraduate Scholarship Program and high vocational certificate level (Diploma) to prepare young people to be knowledgeable and capable personnel ready to support the company's growth, including companies in the group.
Employment with value and equality, providing opportunities for employment of the disabled to create sustainability for the society	<ul style="list-style-type: none"> Employment of the disabled who have potential to work in appropriate positions, a total of 13 people, in proportion to 1 percent of all employees under Section 33 of the Promotion and Development of the Quality of Life of the Disabled Act 2007, as well as a response to Goal 8 of Sustainable Development Goals (SDGs)
Building good image of the organization through various kinds of online media to attract new generations to know Bangchak and want to work with.	<ul style="list-style-type: none"> The Talent Internship Program was open to accepting internships for both Thai and foreign students studying in Thailand. Whereby the students can participate in the annual internship program, learning experience working with Bangchak that may create an opportunity to work together in the future. In the year 2019, there were 75 Thai and foreign students participated in the project. Expanded channels for building brand image issued to educational, more institutions upcountry, including website development for recruitment the frequency of the public relations via social media such as Facebook / bangchakcareer as a means of reaching out to new generations Explored the needs of job applicants in different generations to design communication channels and public relations contents suitable to their needs and to motivate more people to apply for a job with Bangchak.

Strategy	Key Performance in 2019
	<ul style="list-style-type: none"> The Best Employer survey was conducted by Universum, one of the world's leading research and consulting companies, aiming to get opinion from sample students about the company they want to work with. In this regard, the topics of corporate image and culture, compensation and benefits interesting jobs were included. The survey was conducted through online questionnaire for sampling of 6,301 students during the month of February 2019. It appeared from the survey that Bangchak was ranked as a "company they want to work with" by students studying engineering and business in a better place compared to the result of last year's survey.
Shorten the time for recruitment	<ul style="list-style-type: none"> Extended the "Smart ME" personnel management system to the recruitment and selection system via computer systems and developing the system to cover the new Onboarding Program build up i AM BCP core values and employee engagement with the organization from the beginning of time.

Performance on Recruitment Targets in 2019

Target	2016	2017	2018	2019
Employees (person)	1,196 persons	1,240 persons	1,254 persons	1,251 persons
The ratio of successful employment as planned (Target)	89.50% (85%)	91.80% (85%)	94.44% (85%)	90.72% (85%)
Employment of the disabled/ handicap (Target)	- -	6 persons (13 persons)	13 persons (13 persons)	13 persons (13 persons)
Length of time for recruitment of new employees (Target)	43 days (45 days)	43 days (45 days)	40 days (43 days)	40 days (43 days)
Rate of new employee	121 persons	104 persons	67 persons	74 persons
Good image :				
Top ranking of profession joining the company				
• Engineering		25	12	10
• Business/Commerce		58	39	33

Generations Breakdown of Bangchak Employees

 Baby Boomer 2019: 2.9% 2018: 2%	 Generation Y 2019: 50% 2018: 51%
 Generation X 2019: 43.2% 2018: 44%	 Generation Z 2019: 4% 2018: 3%

Training and Development

The Importance of Employee Development

Bangchak considers human resources as vital importance to the business as each of them is invested with variety of potential costs. Bangchak has prepared a development plan suitable for employees of all levels aiming to improve their capability according to job standard as set. Required competency (job skills and qualifications) of the job in each career is defined and considered together with the potential of the employee (Talent Focus). This is in pursuance with the top goal to be the best employer based on the **i AM BCP** core values. The company also encourages employee to share new ideas, initiating innovations through agile and design thinking process in order to encounter with VUCA World: volatility, uncertainty, complexity and ambiguity.

Employee Development Targets Y2019- Y2024

The company has organized for the evaluation of the employee competency in order to get necessary data for individual development plan which is in line with career path development of the employees. By that, the company has set targets for Y2019-Y2024 as follows:

2019 - 2024 Targets	Indicators	Strategy
<ul style="list-style-type: none"> Increasing people capability according to the competency standards and continuously manage career progress 	Competency gap attained from the Competency Assessment	<ul style="list-style-type: none"> Career Development Guideline IDP : Individual Development Plan) to close competency gap
<ul style="list-style-type: none"> Having succession plan for the management/ executive positions, critical positions and positions in new business 	Number of employees with high potential (Talent) under development plan in each year	<ul style="list-style-type: none"> Succession Plan: Developing the skilled experts and successors by their career path/plan Talent Development: Developing Program for employees with high potential
<ul style="list-style-type: none"> Developing basic courses for employees at each level (Mandatory Program) as well as building leadership in the organization. 	Number of employees who pass Mandatory Program	<ul style="list-style-type: none"> Mandatory Program Model: Developing program for employee of each level to suit with the business growth and leadership development directions of the organization. Technology course/program to keep up with the changing world, focusing on agile learning and design thinking.
<ul style="list-style-type: none"> Developing learning systems through modern technology, easy to access and meet the needs of employees 	<ul style="list-style-type: none"> Number of employees learning through the library system and the e-Library system 	<ul style="list-style-type: none"> Technology & Innovation: Developing application for human resource management systems



Targets and Performance in 2019

Targets	Key Performance in 2019
<ul style="list-style-type: none"> Increase competency level according to the competency standards and manage career advancement 	<ul style="list-style-type: none"> Communicated about competency through Focus Group and HR Visit in 24 sessions (number of participating employees was at 80% of the entire organization) Prepared career development guideline, focusing on the assessment against the competency standards based on skills and characteristics necessary for each profession for 44 work units. The assessment will be used further to initiate the IDP: Individual Development Plan.
<ul style="list-style-type: none"> Succession Plan: Succession plan for executive positions, critical positions and positions in new business 	<ul style="list-style-type: none"> 22 executives passed the Executive Training/ Development Program according to the plan and prepared for positions that required specialized knowledge and expertise.
<ul style="list-style-type: none"> Mandatory Program: develop basic courses for employees of each level as well as leadership development program in the organization 	<ul style="list-style-type: none"> 101 employees passed the course and were prepared for further development according to the organization's core competency.

Training and People Development

The company has developed learning programs and kept on developing employees so they can be professional in what they do, have knowledge and understanding in management, including skills necessary for efficiency improvement and changes. These development programs are as follows:

Employee Development Programs

- ✔ **Career Development Guideline: A Career Development Plan to improve people capability according to job standards and the management of career advancement**

The company has developed a plan for competency development in accordance with job standards by initiating a competency model system since 2018. In the plan, there has been a determination of job family and technical competency required in each career which was designed to match with the operation model of the company. This plan is to be used as the master plan for standard implementation of human resource development in the long run with the goal to let employees know about their diverse career paths as well as the development guidelines to close their competency gap.

- ✔ **Succession Plan: A development plan for the experts and successors by career path**

Besides the development of high potential employees to be ready for succession and the technical competency development at work that requires specific expertise, the company also sees the importance in uplifting some other relevant skills and capability of the employees, especially communication skills capability building and aptitudes. Personal interest of the employees is also included.

- ✔ **Assessment Center**

The company believes these resources will help employees understand and get into their own potential through the tests, assessments and additional courses by analyzing and developing the potential of employees as follows:

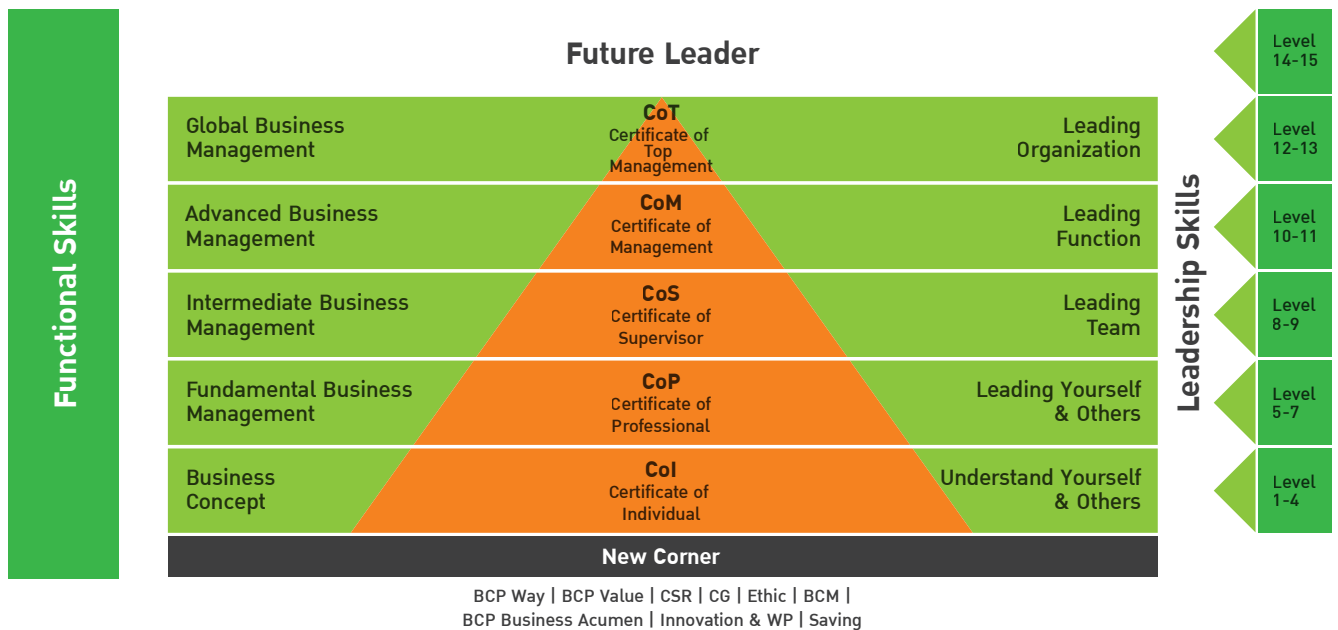
- **DISC Test** : Analytical Tools for Personal Traits and Behavior used to know and understand own characteristics. It also analyzes the differences of others which are useful for developing communication style suitable for people of different characters and socializing each other in the workplace.
- **Strengths Finder Test** : A test to help employees understand the individual talents and their potentials. The result of the test is often used as a basis for strength development and utilization of internal potential so that the employees can work more effectively with their full strength and potential.
- **Transformative English Program** : English Development Program for employees who want to improve their communication ability in English in daily life. It is designed to help change the employees' attitude towards English and encourage them to speak and communicate in English naturally
- **English Test** : The test to assess English proficiency of the employees. The result of the test can be used to apply for learning courses or projects whereby English score is required. This is to increase an opportunity for the employees to improve their capabilities continuously.

- ✔ **Mandatory Program Model: A course to support business growth and leadership in the organization for employee of each level**

The program is mandatory for employee development of all business groups in support of the new VMV (Vision Mission Value) of the organization and of being the "Best Employer" in the future. It is designed on grounds of the information gathered from the employee engagement survey, HR and Thailand 4.0 trends which will be brought about as factors for business administration and human



resources management. This program should enable the employees to handle business growth in a timely and effective manner. It will also respond to the needs and expectations of employees. The program is divided into 5 groups according to the level of employees.



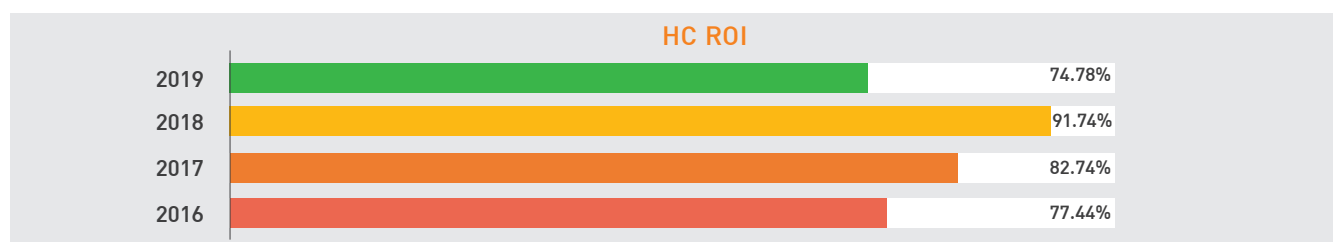
Preparation Program for Organizations in the Disruptive World

- For the year 2019, the company emphasized the new concept of development like agile and design thinking and adopted such the concept into employee development in every training session for the groups of new employee, the employee who will be prepared for upgrading and the talent. The company has invited/selected specialized institutions to teach and coach in the Pitching Project and enhanced their learning experience with site visits. In addition, the company has arranged a trial on lifestyle adjustment through the Program called "Leading in a Disruptive World" in Shenzhen and Hangzhou, China, the cutting-edge country in technology. Shenzhen is compared to the "Silicon Valley of Asia" and emphasizes "innovation and technology" that add more value to manufacturing industry, cashless society and the application of big data in management of all sectors. Executives of Bangchak has joined in the said program and gained new perspective of

work. They also had a chance to experience the business operation of leading companies such as Alibaba and BYD etc. and share such the learning experience together with new thinking techniques with their colleagues in the team so as to inspire them to on work further.

- Encouraging employees to develop their knowledge from internal and external trainings, promoting knowledge management (KM) through "We Share" system, an area whereby employees can exchange and share knowledge about work experience, lessons learned, tips and tricks on work.
- Besides the trainings to develop knowledge in different levels as planned, the company has also arranged for workshops to help improve work efficiency, reduce costs and add more value to core businesses. Application of innovation to the new business development is also promoted.

Human Capital Return on Investment -HC ROI



Positive Business Impact from Employee Development Program

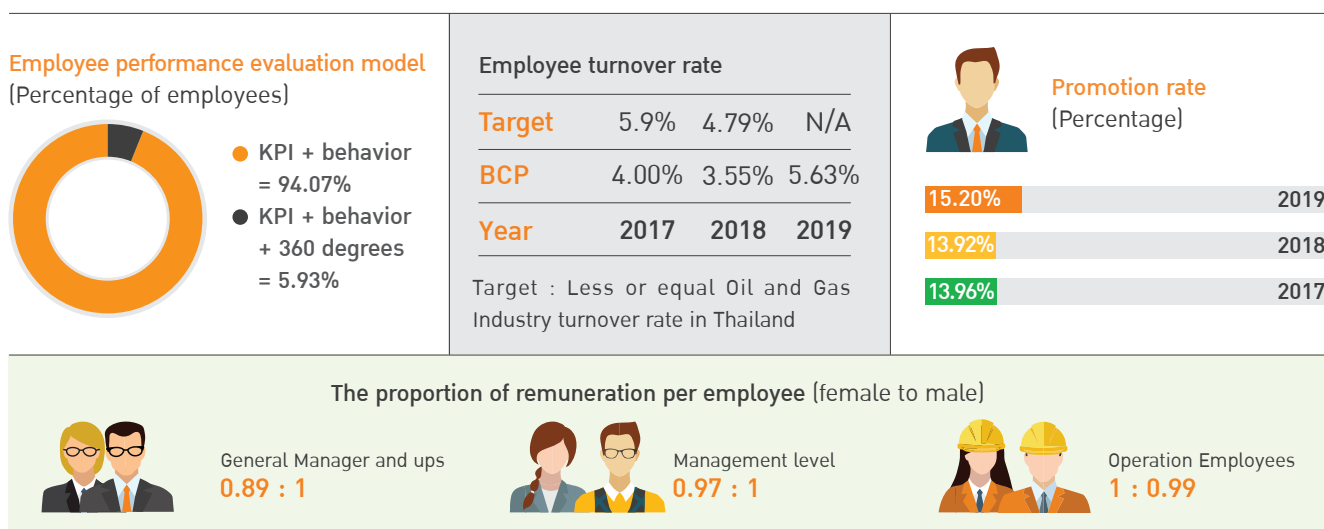
Employee development programs	Benefits to business	Quantitative impact of business benefits	% of FTEs that participated in the programs
Process improvement of oil approval process at oil floating storage in place of onshore transport at Sichang depot	Reduce shipping cost and oil pipeline onshore rental	30 million THB / year	10.58%
Improvement of the Bangchak Depot Fleet Management	Reduce the transportation cost to dealers	16 million THB / year	15.58%
Process improvement of High Margin Product Transportation in the Southern region project	Reduce the transportation cost to dealers	24 million THB / year	8.08%
Improve procurement processes of main equipment in service stations	Reduce procurement costs of oil dispensers and underground storage tank	23 million THB / year	22.40%

Talent Attraction and Retention

The company has to go through a number of processes in order to get one employee to work with, starting from the process of recruitment, selection, interviewing and development. At each stage of processing, the company has to invest resources onto it, both in the form of cash and non-cash. Thus, if there are high rate of turnover, the company will have to face with the loss of resource in recruiting the replacement. On the contrary, if the company can retain the competent employee to the business, they will be key factors to drive for the performance in achievement of the company's vision continuously. For these reasons, the company has to take into account the importance of employee retention and set up target for employee turnover rate every year, not to exceed the industry average.

Goal and Performance in 2019

The company has set a target to control the employee turnover rate not to exceed the 4%



The proportion of remuneration per employee (female to male)

General Manager and ups
0.89 : 1

Management level
0.97 : 1

Operation Employees
1 : 0.99

Key Operations

1. Performance Appraisal and Compensation Management

- Promotion under special criteria (High Potential & Fast Track)

The company will consider past performance along with the potential for growth, the competency in strategic planning, leadership and achievement level after attending Mandatory Courses. It will also consider the promotion under special

criteria for the high potential and fast track. Moreover, the company will plan for employee development in accordance with their career paths.

- **Compensation Management**

Appropriate employee compensation management of each level is another important part for engagement and becoming a high-performance organization in accordance with the best employer guidelines. Each year, the company will conduct a survey of compensation and welfare benchmark between the petroleum industry and the related industry, including the surrounding environment in order to review and improve the compensation criteria. There is an ongoing review and development of compensation scheme and criteria so the company can manage compensation in consistent with the trend of needs from the new generation employees. However, there is no discrimination on gender in determining remuneration and promotion of employee.

The determination of compensation for employees will be done through the annual performance management system cascaded from the organization's goals which is divided into 2 factors namely the personal KPI in the proportion of 50% and the desirable behavior (competency) assessed by direct supervisor in the proportion of 50%. The 360 degree behavioral assessment evaluated by crossed-functional supervisors, peers and under supervisors is also applied to the senior managers and ups. The 360 degree assessment accounts to 6% of the total employees. The survey helps employees get feedback and suggestion for work improvement in addition to the regular assessment evaluated by the direct supervisor. Moreover, the information from the evaluation maybe applied in the development planning more effectively. In 2019, 100% of employees received performance appraisal (target: 100%) (Disclosure 404-3).

As regard to the long-term compensation, the company used to organize the 2-year Employee Joint Investment Program (EJIP) starting from October 1, 2009 to September 30, 2011. By the Program, employees paid 5% of their monthly salaries to buy stock fund while the company contributed 7.5% of the same amount of monthly salary in every month. At present, the company is still studying and considering the long-term compensation that is suitable for the business direction and work environment in the future.

2. Employee Engagement

In 2019, the company studied the distribution of employees by generation to plan for the employee engagement improvement, to be more in line with the group of employees. It was found that employees in Generation Y and Z groups make up 55% of the total employees. The diversity of age ranges was a great challenge for the company to manage and respond to the expectations, attitudes and lifestyles of these employees. It was also important to balance work efficiency and a happy work place in order to increase employee engagement with the organization.

The company usually organizes a survey to hear from employees in every year to get feedback for engagement development. In 2019, the company took a result of the assessment from previous years for improvement analysis and planning as follows:

- **Work Flexibility**

The company has realized the change of technology and the current working environment that motivate people to work in a more flexible environment and to keep balance of their personal lifestyle. Thus, in 2018, it started to adjust the working hours to be more flexible. The company has also applied the Flexible Working Hour system to employees in all business groups (Except shift staff)



Comprehensive Communication

- Focusing on reaching employees to listen to their opinions. By that, HR will organize HR Site Visit to communicate to employees of different lines and levels of their career path/development.
- Communication activities to convey business directions, organization movements and news to employees are conducted continuously through different channels, such as voice calls, intranet systems and outlook systems. Direct communication from the Chief Executive Officer, the President and Senior Executive Vice President organized in the form of Town Hall activities is also included to reinforce an understanding of business directions, unavoidable changes and to inspire them further. By the year 2019, the company organized such the Town Hall activity 3 times in total.
- Building relationships between high-level executives and employees through staff club activities, such as planting trees in green areas in the refinery area, sporting events between executives and employees, etc.
- Proceeding the Engagement Ambassador project from 2018 by selecting employees from each business group to be a representative in engagement activities and to be an agent for policy communication between the company and employees in each business group. The Ambassador also has duties in collecting feedback from small group of employees for top management, preparing activity plans to strengthen employee engagement and to improve the plan according to the factors related to the needs of employees and in accordance with the company's direction which was approved by the Management Development Sub Committee (Sub MDC) of each business group.



Application of Technology at Work

- Supporting digital channels used for fast and diverse communication between operations such as MS-Outlook 365, Skype for Business, WebEx etc.
- Preparing modern supporting systems that are easy to use anywhere, anytime, such as the Smart ME personal management system, EZ-Pay, the procurement system e-Procurement, e-Catering system, Smart Meeting room reservation system and Smart Office central office reservation system etc.

There are 98.95% of employees participating in the survey of employee engagement in the year 2019, reflecting the employee value towards the proposal in personnel development management system of the company. From the survey in 2019, the company gained 62% of the overall engagement score.



Future Plan

In the year 2020, the company will start using flexible benefits and welfare to better cover lifestyle of each generation. This new scheme will include smart casual dressing which was formerly allowed only on Fridays. This year plan, employees will be able to dress smart casual every working day.

Corporate Knowledge Management

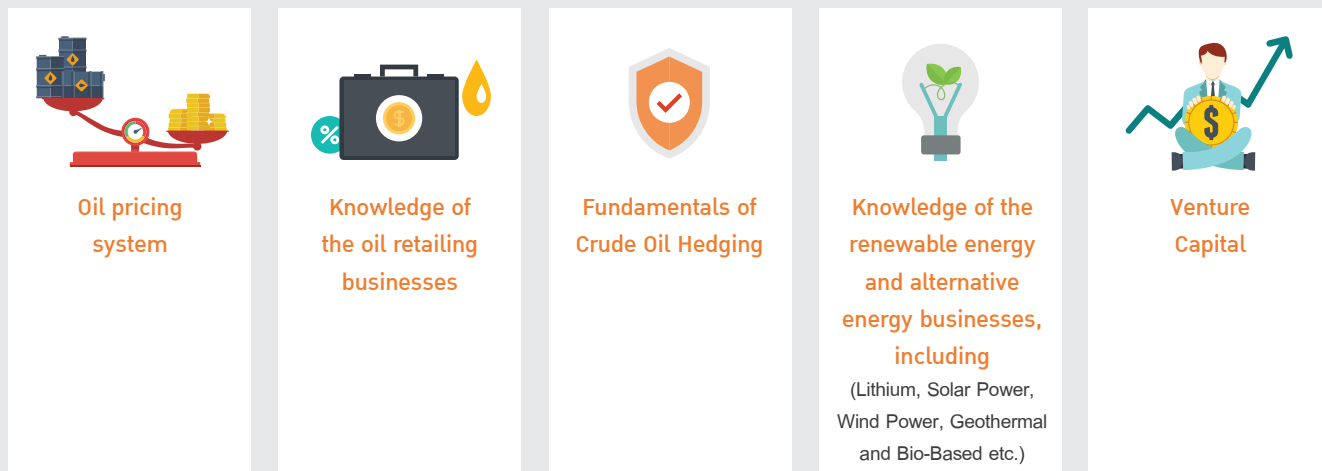
Corporate knowledge management is a strategic process that organizes the important knowledge of business operations of the organization which is regarded as a vital capital of the organization for sustainable growth and development. Bangchak recognizes the importance of CKM and assigned the Office of Internal Controller to be responsible for corporate knowledge management having the BCP Knowledge Management: KM system or known as the "WeShare" system to support the management of corporate knowledge. The "WeShare" system is now under the process of development and will be used to serve the new business directions, corporate strategy and business plan for expansion. The revised system is expected to help organize and analyze key knowledge of the company as well as companies in the groups which will be widely used



in the future to upgrade, extend, exchange and apply such the knowledge to the businesses of the company and companies in the groups. The form of knowledge application will also be adjusted for the use through mobile devices. It is to be easy to use and more modern. Presently, knowledge management in work process is operated through PDCA (Plan-Do-Check-Act) process, including of the planning, executing, evaluating and improving plan continuously. The necessary corporate knowledge is divided into 6 categories as follows:

Key Knowledge	How to collect and transfer	How to transfer
1. Key knowledge for strategic positioning: <ul style="list-style-type: none"> Internal / External factors SWOT analysis Sales / Supply plan 	<ul style="list-style-type: none"> Through crossed-functional team meetings such as marketing planning meeting, management executives meeting or high level management executives meeting (Mancom). Through database of related issues. 	<ul style="list-style-type: none"> Management executives and responsible/concerned staff working on strategic planning
2. Basic knowledge	<ul style="list-style-type: none"> Preparing work instruction and operation manual (WI & OP) Loading files into knowledge management website which is divided into sub-websites by each profession or function Staff presentation of key knowledge useful for everyday operation 	<ul style="list-style-type: none"> Training, On-the-job training Corporate knowledge management system ("WeShare" system : E-learning (Aculearn))
3. Lesson learned from other people.	<ul style="list-style-type: none"> Through the discussions/ meetings after the implementation of projects. Through section/group meetings 	<ul style="list-style-type: none"> Records of the meetings or summary of the important issues
4. Knowledge gained from internal training and external news	<ul style="list-style-type: none"> Core and functional competency trainings 	<ul style="list-style-type: none"> Pretest–Posttest
5. Knowledge from the retirees	<ul style="list-style-type: none"> Getting information from retired staff through the discussion/ interviews and presented papers 	<ul style="list-style-type: none"> Corporate knowledge books Video clips of the interviews Posters to promote internal knowledge management
6. Knowledge from the Community of Practices (CoPs) and Community of Interests	<ul style="list-style-type: none"> Recording and keeping information from CoPs activities and "WeShare" club 	<ul style="list-style-type: none"> Members of CoPs and Cols

Examples of knowledge gained from knowledge management activities are as follows:



Since there were a number of retired staff in 2019 and these people have been working with the company since the first establishment, the company took that opportunity to organize a Knowledge Transfer Program for the Board Directors, middle management successors and concerned offices to compile knowledge necessary for decision making. The knowledge transfer was organized in various forms such as presentation, template, calculation and video clips etc.

Furthermore, Bangchak has organized the community of practices as the tool to develop knowledge for people of the same profession or people who have the same interest so that they can help each other solving the problems. The practice can be done through meetings that encourage people to share ideas in a most friendly atmosphere. It is allowed to have experts from outside to share knowledge in depth too. The company also encourages for the exchange of knowledge with external companies in the same industry. This year of 2019, two new CoPs were established, namely CoP Environment and CoP Internal Audit.



Participation in Social and Community Development

Bangchak operates its business according to its founding mission to continuously contribute to the well-being of Thai society both in the near distance (local level) and far distance (national level) by addressing social problems and responding to specific expectations of the community. In 2019, the company has actively driven this mission in both levels as follows:

1. Social Development in the Local level
2. Social Development in the National level

Social Development in the Local level (Disclosure 413-1)

Targets and Strategies 2019-2024

Because the refinery is considered as the main work area as it comprises 90% of operations area and there are many people living around the site, it is necessary to group them by the target involved so that the company can address their needs and expectations properly. They were finally divided into 4 groups and the following are established as expectations and needs of the groups: (1) Conducting business with safety (2) Communicating in advance of the implementation of the plan (3) Communicating quickly in case of an emergency (4) Variety of communication channels including (5) Engaging communities in activities that are beneficial to the community and society. Hearing these expectations, the company has formulated a community relations strategy and established community relations activities covering 8 areas such as safety, education, sports, quality of life, environment, strengthening relationship and preserving cultural custom, economy, and public good. In 2019, more than 238 activities were organized and more than 52,640 persons participated.

Community Relations Strategy

Organize activities that consistently meet the needs of the community, creating friendliness, usefulness, and safety

FY2020 Target

Complaints from the wider community 0 case

Satisfaction rate of participants in the community relations activities ≥ 90

Evaluation of community engagement ≥ 85

Friendliness, helpfulness, safety assessment ≥ 85

	Community	Family	School	Condos
Population estimate	10 communities in Bang Na / Phra Khanong 1 military flats 1 Bang Nam Phueng Subdistrict, Phra Pradaeng District 17,885 people	5,098 households that are members of "Leaf Family" 5,098 people	19 schools in Bang Na District, Phra Khanong and Bang Nam Phueng sub-district 14,363 people	8 projects around the refinery 4,817 people
Participants of activity (amount/ percentage*)	28,594 people 55.58%	5,954 people 11.57%	15,117 people 29.38%	1,780 people 3.46%
Social investment 22.72 million baht (Development Budget/ Donation Budget) (Disclosure 201-1)	Development Budget 59.77% Donation Budget 12.89%	Development Budget 5.02%	Development Budget 13.19% Donation Budget 5.72%	Development Budget 3.41%

*Percentage of all people participating in community relations activities from all groups in 2019 = 51,445 persons

2019 Performance

Safety

Emergency Drill for Evacuation in the Event of an Accident

In order to address the needs and expectations of the communities and to serve the United Nations Sustainable Development Goal (SDG), Goal 11 regarding the sustainable community and urban development, the company in cooperation with Phra Khanong District office and Fire station conducted a public emergency evacuation drill in the surrounding factory.

The company extended this exercise to the community in Bang Na District in 2019 as the first year. The Table Top Exercise (TTX) was organized in cooperation with Bangna District Office, Phra Khanong Fire Station, for community in Bang Na District and Sapphavut zone. This exercise was initiated with an aim to help the community learn, understand and be ready to handle any disasters.

Communication

The company established a communication system that delivered in multi channels suitable for target groups living in the surrounding area of Bangchak Refinery. The main channel includes a direct contact with community relations staff when they are visiting the communities, phone in direct line, activity group line, seminars for community committee, focus group and public relations board.

Economy

Community Enterprise: "Khun Jaew Clean Service" Project

Community Enterprise: "Khun Jaew Clean Service" Project
It is a project that has been ongoing since 2015 in order to create opportunities for additional income for housekeepers in the community. The housekeepers provide services in the condominiums surrounding the refinery. In 2019, the company continued to provide support to this service group by developing an on-line service evaluation system whereby the clients can evaluate and give feedback on their service. The housekeepers were also provided with English language training to serve an expanding clientele of foreign customers. In addition, the company always encouraged them to join in thinking process or to help find possible solutions on their work. Group welfare is now initiated to motivate members of the group.

In the year 2019, Khun Jaew Community Enterprise Group was able to generate revolving income in the group with an average of 30,000 baht / month. Members of the group can now depend on themselves. They can also develop their work potential and practice problem solving in a systematic manner. There are regular meetings to develop and improve work by using performance evaluation information from customers.



Activity: "Thinking...Talking with Financiers"

The company held a seminar on Financial Planning to help the communities, families and residents in the nearby condominium increase their knowledge and skills on financial management and investment. Speakers from different expert groups from Stock Exchange were invited to share knowledge and encourage neighbors around the refinery to see the importance of saving, investment and cost planning. The discussion referred to the philosophy of sufficiency economy as the principle of thought and application to enhance the quality of life and to create financial stability in the future.



Environment

"OUR Khung BangKachao" Project to develop the Bang Ka Chao area for sustainability

"Khung Bang Kak Chao" This project is a collaboration of leading organizations in the country, including the private sector, the public sector, civil society and the people sector and 6 communities of Bang Kung Chao district. It is under the supervision of the Chaipattana Foundation for the development of the Bang Bang Chao Chao area for sustainability and balance. The King's Philosophy was applied to the project implementation and the collaboration of all parties, having community as the center to ensure that the development can directly respond to the actual needs of the communities.

The company has joined the working group for the development of the Bangkok Chao area in 3 aspects, namely green area development, promoting sustainable tourism and educational development, focusing on the Youth and Culture. In 2019, the company joined in the development of Kung Bang Kha Chao green area in Bang Nam Phueng Sub-district in 11 plots of land, representing an area of 19.71 rai. At that time, the company took employees to plant more than 1000 trees for the community.

The Project "Bai Mai Family Together We Plant Bang Khun Thian Mangrove Forest" "

Bang Khun Thian Mangrove Forest Planting Project is the project of forest planting following the King's Philosophy. Currently, it has been more than 3,000 rai of land sinking into the sea. The mangrove forest planting project is a restoration and conservation of the mangrove forest to return to its original state of ecological balance. It is meant to help increase land back for Bangkok too.

The company has supported the planting and conservation since 2017 in the area of 50 rai. In 2019, the company escorted youth from communities around the refinery members of the Bangchak Good Deed Youth Project, neighbors of the family groups and condominiums around the refinery to plant mangrove forest in order to increase green area, learn about biodiversity, study the process of ecological rehabilitation and the maintenance of Bangkok seashore to return to its original condition with fertility and sustainability at the Bang Khun Thian Mangrove Forest Learning Center.

"Bangchak Cares for the Community" Project to Help Reduce Dust

The company, in collaboration with the office of Phra Khanong helped relieve the dust problem in the area by using water trucks to spray and clean Sukhumvit Road. Employees together with executives and officials from the district took the same opportunity to give 12,000 facial masks in protection of PM 2.5 dust to the communities and schools around the refinery.

"Health Care for the Elderly" Project.

The company gives importance to the development of the quality of life of communities, especially the elderly. The project "Health Care for the Elderly" has started in 2017 for the purpose of promoting and helping the elderly to achieve well-being, good health both physically and mentally. In year 2019, the company organized activities for this project in the area of physical health by providing health check-up for the elderly by physicians, by training exercise for the elderly such as Jigong and Yoga, and by learning activities about organic food at Baan Suan Organic Way. For mental health, the company organized recreation activities, such as teaching tray gardening for relaxation and meditation, teaching on how to make environmentally friendly baskets, which can be sold to make extra incomes, and organizing field trip to the ancient city at Samut Prakan province.



Education

Project for Potential Development to International Standard of Educational Personnel is set to develop teachers to achieve international standards.

The company believes in the importance of developing teachers and students, both in academics and other fields. In 2019, it organized an active learning development course for Science and English language which teachers focus on learner-centered learning and the use of innovation in developing teaching materials that are authentic and effective.

Promotion and Preservation of Cultural Traditions

Organize an activity "Bangchak creates happiness: Learning through the movie, watching the movie Ramawata, a living mural painting

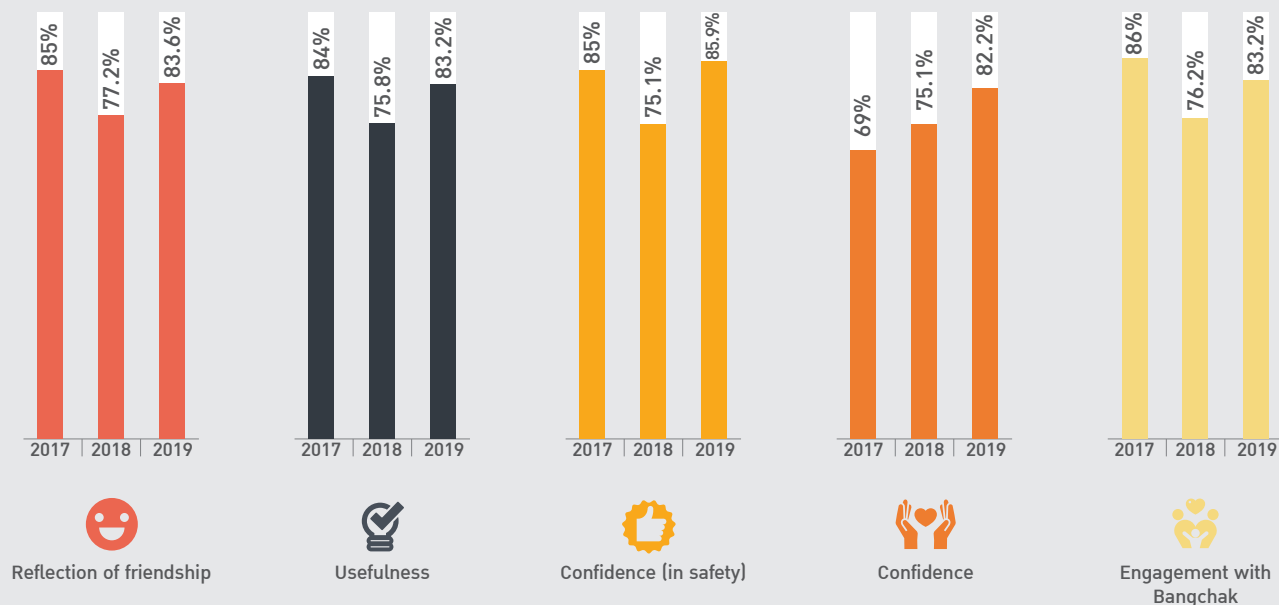
As the Ministry of Culture had initiated a project to promote the movie Ramawatar, a living mural painting, with the primary purpose to create a mural painting live movie "Ramayana", One of the goals was to see Thai people, especially the children, watch this movie and absorb the wider arts and culture of Thailand.

Organize the Activity "35- Year-Olds but Still Young Concert"

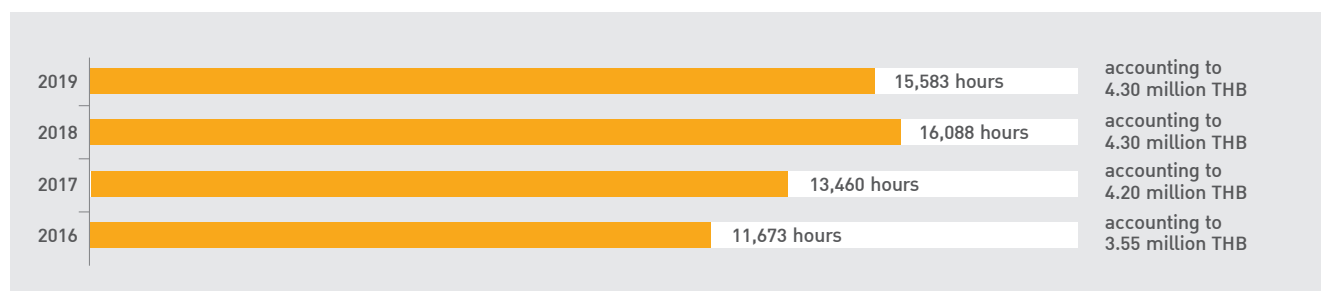
In celebration of the 35th Anniversary, Bangchak sponsored a thanksgiving celebration with the communities surrounding the refinery by organizing a concert. The famous singers, GOT Charpraphan and Sarunyu graced the event. Members of the community set up food and drink booths to the participants. The sellers had a total income of 90,000 baht. There were also fun activities and an opportunity for community to make merit in some of the kiosks around. The donations raised a total of 100,000 baht net and they were donated to the construction of Ban Praew Eye Hospital.



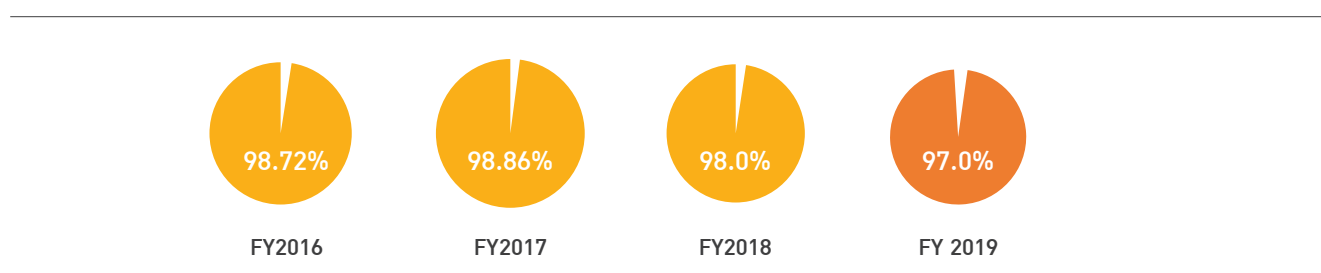
Results of Community Work (percentage)



Total hours of employees' volunteer work around the refinery (hours/THB)



Community Satisfaction on CSR activities around the refinery (Percentage)



On-going CSR Projects

Aspect	Commitment	On-going Project
Safety 	<ul style="list-style-type: none"> Believe in the safety of the refinery Have safety immunity and able to deal with emergencies from situations or disasters 	<ul style="list-style-type: none"> Training for emergency plans and fire fighting for schools / communities / condominiums Provide equipment and fire extinguishers Check the availability of community safety equipment.
Economy 	<ul style="list-style-type: none"> Making money and providing opportunities for people in the community using knowledge and ability to create work that is beneficial to oneself and family Promoting learning about financial management and investment 	<ul style="list-style-type: none"> Community enterprise make extra money, increase business potential, expand support and group integration to establish more professional groups Supporting products and services from entrepreneurs in the community to use in the activities of the company to distribute income to the community Opportunity for restaurants in the community to sell food in the headquarters canteen and in the Bangchak Green Stadium area, free of charge, to generate income for the community more than 1,000 baht / shop / day
Environment 	<ul style="list-style-type: none"> Aware of environmental problems and make good use of resources 	<ul style="list-style-type: none"> "Pha Pa Upstream Preservation Project", Chaiyaphum Province, Year 15 A project to buy used vegetable oil in communities around the refinery, year 8 Firefly Path Project Way of Conservation Year 6 Love the Earth Project, Year 5 The 15th Bai Mai Family Rehabilitation Project Family Roaming Project Year 11
Quality of Life 	<ul style="list-style-type: none"> Enhancing quality of life... Healthy Body...Healthy Mind 	<ul style="list-style-type: none"> "The Same Family" Project, Year 26th "Healthy Community" Project, Year 9th "Health Elderly" Project, Year 3th "Bangchak Good Youth" Project, Year 4th
Education 	<ul style="list-style-type: none"> Age-appropriate learning development among children Proper grooming and behavior 	<ul style="list-style-type: none"> Citizenship Project, Year 10th Bangchak Youth Scholarship Project, Year 15th Reading and Writing with Ease Project, Year 6th Project to fill knowledge with a full tank of Bangchak Refinery, year 14th
Sport 	<ul style="list-style-type: none"> Drug-free living among the youth Able to make money/income when there is opportunity Having opportunity for good education from sports 	<ul style="list-style-type: none"> Bangchak Youth Futsal, Year 16th Bangchak Youth Football Club, Year 13th
Relationships and preserving cultural traditions 	<ul style="list-style-type: none"> Strengthen good relations between the distilleries and neighboring communities 	<ul style="list-style-type: none"> The Roaming Community Project, Year 11th Leaf Family Journal, Year 15 Children's Day, Bangchak, Year 35th Watering the elders in the community on Songkran Day, Year 17th Visit communities on important days such as Mother's Day, New Year's Day, Year 17th Inviting children to watch movies, year 12th Condo Neighbor Activity, Year 9th

Future Plans

The company focuses on participation in caring for the communities around the refinery in parallel with its business operations. Part of the plan is identifying potential young leaders in the community and providing them with opportunities to further grow and become self-reliant and establish a better life.

Social Development at National Level

Bangchak has been known for 35 years with sound practices in the way they do business. This has been constantly communicated. Business done through sustainable development based on the United Nations Sustainable Goals (SDGs) is the basis of “Sustainable Happiness” way that we bring to all parts of the organization, community we work with and society as a whole.



From the problem of climate change and plastic waste that continuously affects the society, the company has tried to find ways to help mitigate the impact both on the people living in Bangkok and upcountry by extending the activities through innovation and working with network partners, in line with the BCG Model economy concept on sustainable use of natural resources, including Biological economy, Circular economy and the Green economy.

Key Performance/ Results in 2019

In the development of social activities that are more responsive to national problems :

1. Use the circular economy for business operations

Waste Reduction Project at Inthanin Coffee Shop

- ✔ Encourage customers to use their own glass to buy drinks, for discount of 5 THB.
- ✔ The use of bio-degradable glass with no straws to reduce plastic waste from 200,000 Inthanin drinks each year.
- ✔ “Nursery Cup” is another activity that the company gets refund from using Inthan Bio-degradable glass from fellow employees of the Bangchak Group and customers in Inthanin Coffee Shops nationwide and gave to the Royal Forest Department for nursery of seedlings instead of using black plastic bags. It is aimed to reduce the generation of waste and to increase green area at the same time.

"Rak Pansuk" Project

- ✔ The company donated PET bottles from users to Indorama Company to be recycled as fiber used in making shirts, hats and bags for the public. This year, the company donated 600,000 PET bottles.

Greenovative Lube Packaging project

- ✔ In collaboration with SCG to bring plastic gallons of engine oil recycle into plastic beads to reuse

2. Adaptation & Mitigation from Climate Change



- ✔ **Mitigation of dust particles up to 2.5 microns (PM 2.5) for Bangkok residents** The company adjusted the quality of all diesel fuel to Euro 5 standards with sulfur values below 10. In the millions and the sulfur value is reduced by 5 times compared to Euro 4, which will help reduce dust, and PM 2.5
- ✔ **Provide knowledge on how to apply innovation to mitigate climate change problems for people** by organizing seminar on environment called SynBio Forum. SynBio is bringing innovation for living organisms to combine with knowledge of biology, technology and engineering to solve global resource problems and develop new things that are useful for the reduction of raw materials from natural resources, waste, environmental impact and costs.



- ☑ To help minimize the impact of climate change among the farmers in accordance with the King's Philosophy, the company rolled out 2 projects:

1. **"Water management project to solve drought crisis"** "Model for changing agricultural areas to sustainable agriculture communities Bai Mai Pan Sook Foundation has driven work with a group of farmers that are members of agricultural cooperatives in the central region, which together with the Natural Agriculture Foundation started the farmer development training. This helped adjust the production path, increase forest areas, dig water sources, and refrain from using chemicals to create sufficiency in the sufficiency economy ladder by 9 steps. And in this year, the company has started to assess the project with financial tools to analyze social returns (Social Return on Investment) by simulating the return of social results and analyze financial worthiness. Through Cost-Benefit Analysis, it was found that when evaluating the positive and negative effects that occurred to farmers of 4 families in Khok Tum area, Lop Buri province, there is a positive social and environmental return on investment in the ratio of 3.9: 1.

Summary of Analysis on Social Return to "Pan Sook" farmers in Kok Toom Area (Disclosure 201-1)

		NPV
Cost	Benefit	
250,135 THB	750,770 THB	500,635 THB

2. Stop Soil Erosion, Save our Future

The company has cooperated with the Department of Land Development, the Institution in Promotion and The Pid Thong Lang Phra Institution for Activities Promotion and Department of Forestry and the network to stop soil erosion in the sloping



mountain areas. Under "TEAM D", they are working at the Preserving Huai Kha Khaeng forest to improve the quality of life of farmers in Kaen Makrut Subdistrict and the target is to maintain topsoil so that villagers can continue farming.





3. Partnership School Project

To support the problem of climate change for farmers, the company has collaborated with the Meechai Pattana Foundation and agricultural cooperatives to remove and promote the development of agribusiness through innovation for 4 schools with a combined 700 students as members of the agricultural cooperatives. The project gives opportunities for students to explore agriculture with innovations such as drip irrigation systems to reduce water use, planting baskets, making mushrooms, ATM, planting sand and also to

bring knowledge to help parents. Produce like vegetables that grow in the school premises can be used for cooking food for the students or can be used for social enterprise. All agricultural plots that can be made can also be used as a base for learning outside of Science, Math, English and Thai language classes, etc.





In the next academic year, the school will be offered training in finance and accounting. It will also include training in Agribusiness Project Management and may further expand into agricultural product process to increase value-added as part of activities to reduce study time, increase knowledge time

4. **School safety program is another project** This project is run by the Security, Safety and Occupational Health Management Division of the company, organizing safety training Evacuation and emergency management for teachers and students in 6 different schools. There are 1,553 trained teachers and students.

3. Solving the Problem of Low Literacy Rate of Thai Children

The problem of low literacy rate of Thais is still a big problem. Therefore, the company has collaborated with Tung Sak Hermitage Art to organize the project "Reading and Writing with Ease" by providing training on how to teach to solve problems of children who cannot read and write. The company has expanded the project to another 8 schools, helping improve 891 students and helping minimize this problem in kindergarten and grade 1.



Reading and Writing with Ease Project	2017	2018	2019
Number of students whose illiteracy was improved	443 students (6 schools)	682 students (8 schools)	891 students (8 schools)

SROI from Reading and Writing with Ease Project



1:1.19

Business and social activity development for the environment and society

In developing businesses that contribute to social development and environment, Bangchak promotes social enterprise through the CSR-In-Process:

- ✔ **Expansion of community service stations** as a result of cooperation between the company and the agricultural cooperatives. In addition to reducing fuel costs for farmers, it is also a definite increase in revenue, dividends and average cash back based on business as another way to promote well-being of more than 1 million farmers. It is expected to increase to 1.12 million households by 2021. In 2019, the company expanded 13 additional branch of community service stations

- ✔ **Green Impact Project : “Click to Flip the Nation“**



This project provides opportunities for farmers, and SME young agricultural cooperatives to develop the sales of their produce and service or the project good for society and environment through regular channel or online distribution. Entrepreneurs and 40 finalists got to present their ideas. The company has sponsored and distributed products / projects via the online platform of the project over 89,000 times. Tungsamrit Rice of Phimai Agricultural Cooperative, Ltd., from Nakhon Ratchasima Province received a prize and was encouraged to make rice gift for sale at SPAR.

- ✔ **Social activities by the Oam Suk Social Enterprise:** In association with the Bangchak Employee Club took initiative in organizing the project of “Double Benefit : Help Farmer Help School”. This project helps to buy RD43 healthy rice which has a medium to low glycemic from farmers who are members of Banphot Phisai agricultural cooperatives and donate to 13 Schools around Bangchak Refinery. Also supported sugarcane juice from farmers in Kaen Makrut District to sell to SPAR at M tower



- Future Project for Education: Connex ED** in response to the civil state policy and youth achievement improvement, the company participated in the youth development program of 20 schools in 9 provinces, with more than 5,000 students in primary to lower secondary levels. More than 30 school partners surveyed the needs of the school and collected data to jointly develop school plans with school administrators. Most schools have a desire to improve student achievement. Part of the initiative is to develop vocational skills, especially in agriculture, support in providing teaching materials and improving public utilities in schools and Teacher-Potential Development Program.
- Project to buy used vegetable oil to produce biodiesel** It is a business that benefits society and the environment at the same time. The company has initiated this for more than 15 years, with the aim to develop and collect used vegetable oil from both the households in the communities around the refinery and the work areas. The company also conducted an analysis of social returns (SROI). It was found that the most obvious benefit is the additional income for the community with a ratio of 0.50: 1

Summary of the Analysis on the Social Return from the Buying Used Cooking Oil Project (Disclosure 201-1)

		NPV	SROI
Cost 575,833 THB.	Benefits/Return 283,831 THB.	292,000 THB.	0.50 : 1

Future Plans

The company will use innovation in the bio-economy, circular economy and economic systems to help alleviate problems and improve the quality of the environment and society. The way to go is by developing or extending the projects and activities under the "Bangchak WOW": Well-Being improvement - Oxyzen Enhancement - Water Management initiative both at the operational level and the wider society.



Sustainability Performance Statistics

Economic Performance

Revenue (million THB) (Disclosure 201-1)	2016	2017	2018	2019
Total revenue from selling of goods and services	144,705.29	172,138.24	192,025.32	190,488.59
Total Revenue	145,232.40	173,378.94	193,340.41	190,983.67
Net profit	4,729.41	6,163.00	3,234.70	2,488.49
EBITDA	11,363.00	13,420.00	10,201.00	8,709.00

Expenditure for income distribution to stakeholders (million THB) (Disclosure 201-1)	2016	2017	2018	2019
Operating expenses	132,809.35	158,595.55	180,594.37	180,256.90
Interest expenses paid to financial institution creditors	1,489.61	1,502.30	1,559.06	1,839.24
Tax payment to government and local authorities	822.32	544.16	194.45	258.46
Financial supports for encouraging public policies	3.64	3.63	3.34	3.75
Community and social development	38.88	32.98	36.00	34.00
Donation to society and schools	37.82	73.61	62.94	64.60
Dividend payment to shareholders (THB)	2,753.52	3,310.75	3,090.52	1,759.84
Dividend payment to shareholders (THB/Share)	1.80	2.15	1.35	0.80
Wages and employee benefits	2,903.82	3,277.33	3,310.33	3,609.11

Corporate Income Tax (BCP) (million THB)												
Tax Jurisdiction	Revenue						Profit / (Loss) before Income Tax		Income Tax Paid (on a Cash Basis)		Income Tax Accrued - Current Year	
	Related Party		Unrelated Party		Total							
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Thailand	50,442	53,977	175,951	159,877	226,393	213,854	5,309	4,711	1,107	210	13	110
Singapore	22,890	23,995	14,995	31,314	37,885	55,309	(103)	91	4	17	17	34
Philippines	-	-	1,002	6	1,002	6	443	(117)	12	2	98	-
Japan	327	21	1,383	230	1,710	251	701	(177)	2	298	-	-
Australia	9	-	-	-	9	-	(521)	-	-	-	-	-
Laos	-	-	-	550	-	550	-	109	-	-	-	-

Supply chain management (Disclosure 204-1)	2016	2017	2018	2019
Local purchases of goods and services*	4,351	5,749	4,424	2,764
Percentage of Local purchases of goods and services*	98%	84%	98%	98%

* Local purchasing in Thailand, exclude raw materials and crude oil

Environmental Performance

Details	Refinery Business				Bio-based Product Business				Green Power Business			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Material (ton)												
- Renewable Material	305,374	395,578	426,633	459,665	434,836	524,967	394,929	882,167	0	0	0	0
- Non- Renewable Material	5,358,267	6,731,065	6,093,537	6,468,825	5,681	27,029	26,625	152,336	3	4	2	3
Product (million L)	8,618	11,070	11,856	12,380	269	393	322	522				

	Refinery Business				Marketing Business				Bio-based Product Business				Green Power Business			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Energy ^{/1} (Terajoule: TJ) [Disclosure 302-1]	13,561.3	13,903.0	13,116.8	13,182.0	63.8	60.6	94.1	99.9	1,686.6	1,683.7	1,166.6	2,246.3	8.9	10.4	10.0	10.1
Non-Renewable Energy Consumption	13,561.3	13,903.0	13,116.8	13,182.0	63.8	60.6	94.1	99.9	386.1	613.0	551.4	1,410.8	8.9	10.4	10.0	10.1
Energy used in process :																
• Fuel gas and LPG	6,589.8	6,776.3	5,450.5	5,505.9	-	-	-	-	-	-	-	-	-	-	-	-
• Natural gas	3,227.1	3,457.0	3,770.8	3,796.3	-	-	-	-	208.5	386.2	419.8	414.0	-	-	-	-
• Natural gas for cogeneration	2,719.6	2,814.5	3,783.6	3,794.6	-	-	-	-	-	-	-	-	-	-	-	-
• Fuel oil	913.4	744.0	-	-	-	-	-	-	-	-	-	41.3	-	-	-	-
Electricity and steam used in process																
• Electricity	102.8	103.1	101.7	78.2	63.8	60.6	94.1	99.9	162.7	195.3	117.6	241.3	8.0	9.5	8.8	8.8
• Steam	-	-	-	-	-	-	-	-	-	-	-	700.8	-	-	-	-
Other :																
• Mobile fuels	8.4	8.0	10.1	7.0					14.9	31.6	14.1	13.3	0.9	0.9	1.2	1.3
Renewable Energy	0.1	0.0	0.0	0.0					1,300.5	1,070.7	615.2	835.5	-	-	-	-
• Wind and Solar	0.1	0.0	0.0	0.0					-	-	-	-	-	-	-	-
• Biomass ² and Biogas	-	-	-	-					1,300.5	1,070.7	615.2	835.5	-	-	-	-
Sold Energy									-	-	-	-	914.4	949.0	969.8	1,025.7
• Non-Renewable Energy Sale	-	-	-	-					-	-	-	-	-	-	-	-
• Renewable Energy: Electricity generated by PV cells	-	-	-	-					-	-	-	-	914.4	949.0	969.8	1,025.7
Energy Intensity Index (EII) [Disclosure 302-3]	103.1	103.1	100.5	97.9												
Total Energy Consumption within the Organization³ (Terajoule: TJ) [Disclosure 302-1]	14,406.2	14,708.7	13,417.7	14,512.6												

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

^{/2} Calculated energy consumption of biomass (rice husk and wood chip) by using wet weight multiply by Net Calorific Value (NCV) since percentages of moisture content of biomass are not available.

^{/3} Calculated from the difference of total energy consumption from every business and sold electricity and steam

		Refinery Business				Marketing Business				Bio-based Product Business				Green Power Business			
		2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
Operational Control Approach	Greenhouse gas (GHG) emissions (tCO₂e) (Disclosure 305-1), (Disclosure 305-2)																
	Direct GHG emission from production processes (SCOPE 1)	989,258	972,926	900,683	898,292					101,943	121,638	58,504	173,475	66	61	86	94
	• Carbon dioxide (CO ₂)	987,722	972,012	899,955	897,563					101,913	121,579	58,456	173,419	65	60	84	93
	Biogenic CO₂	25	40	52	31					94,623	77,181	55,054	70,716	2	2	4	4
	• Methane (CH ₄)	990	385	329	331					7	13	12	15	0	0	0	0
	• Nitrous oxide (N ₂ O)	546	530	399	398					23	47	36	42	1	1	2	2
	Other Biogenic (CH₄ & N₂O)	-	-	-	0					-	-	-	890	-	-	-	0
	Indirect GHG emission from power and biogas purchased (SCOPE 2)	15,540	23,554	14,129	10,750	9,649	8,716	13,071	13,655	24,589	28,099	16,328	77,330	1,219	1,370	1,220	1,205
	• Carbon dioxide (CO ₂)	15,540	23,554	14,129	10,750	9,649	8,716	13,071	13,655	24,589	28,099	16,328	77,284	1,219	1,370	1,220	1,205
	Biogenic CO₂	-	-	-	-	-	-	-	-	10,933	8,135	-	-	-	-	-	-
	• Methane (CH ₄)	-	-	-	-	-	-	-	-	-	-	-	21	-	-	-	-
	• Nitrous oxide (N ₂ O)	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-
	Other Biogenic (CH₄ & N₂O)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	1,004,798	996,480	914,812	909,042	9,649	8,716	13,071	13,655	126,532	149,737	74,833	250,805	1,285	1,431	1,305	1,300
Equity Share Approach	Direct GHG emission from production processes (SCOPE 1)	989,258	972,926	900,683	898,292					27,421	21,927	27,696	96,630	47	43	60	66
	• Carbon dioxide (CO ₂)	987,722	972,012	899,955	897,563					27,409	21,912	27,674	96,603	46	42	59	65
	Biogenic CO₂	25	40	52	31					20,137	9,856	28,077	37,071	2	2	2	2
	• Methane (CH ₄)	990	385	329	331					4	5	5	7	0	0	0	0
	• Nitrous oxide (N ₂ O)	546	530	399	398					8	10	17	21	1	1	1	1
	Other Biogenic (CH₄ & N₂O)	-	-	-	0					-	-	-	455	-	-	-	0
	Indirect GHG emission from power and biogas purchased (SCOPE 2)	15,540	23,554	14,129	10,750	4,728	4,271	8,803	9,141	7,676	6,082	7,585	44,165	853	964	857	845
	• Carbon dioxide (CO ₂)	15,540	23,554	14,129	10,750	4,728	4,271	8,803	9,141	7,676	6,082	7,585	44,138	853	964	857	845
	Biogenic CO₂	-	-	-	-	-	-	-	-	2,327	1,039	-	-	-	-	-	-
	• Methane (CH ₄)	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-
	• Nitrous oxide (N ₂ O)	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-
	Other Biogenic (CH₄ & N₂O)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	1,004,798	996,480	914,812	909,042	4,728	4,271	8,803	9,141	35,097	28,008	35,282	140,795	900	1,007	917	911
GHGs Intensity (tco₂e per ton raw material)		0.21	0.14	0.14	0.14												

* The report of direct and indirect GHG emissions data are calculated by using the BCP GHGs calculation tool in accordance with IPCC 2006

Air emissions (Disclosure 305-7), [OG6]	Units	2016	2017	2018	2019	Targets
NOx (Combustion) ¹	ton	349	426	644	236	1,000
Intensity NO _x	ton per thousand tons crude	0.07	0.08	0.12	0.04	
SO ₂ (Combustion & SRU/TGTU Stack) ¹	ton	35	75	24	32	1,000
Intensity SO ₂	ton per thousand tons crude	0.01	0.01	0.00	0.01	
TSP PM10 (Combustion) ¹	ton	17	48	5	11	200
Intensity TSP	ton per thousand tons crude	0.00	0.00	0.00	0.00	
H ₂ S (SRU/TGTU Stack) ¹	ton	0.36	0.50	14.3	0.7	20
Intensity H ₂ S	ton per thousand tons crude	0	0	0	0	
VOCs Inventory ^{2/3}	ton			520.84	371.51	
Fugitive VOCs ⁴	ton	2.99	2.60	2.50	2.50	126
Intensity VOCs	ton/barrel	0	0	0	0.0	
Flared hydrocarbon ⁵	kl	1,892.1	2,809.1	1,777.0	2,472.9	N/A
Flared hydrocarbon ⁵	ton cu.m. (Gas)	0.20	0.43	0.25	0.37	
Flared hydrocarbon per total product produced	ton cu.m. (Gas) / million barrel oil equivalent	0.0053	0.0104	0.0063	0.0085	
Vented hydrocarbon	ton cu.m. (Gas)	N/A	N/A	N/A	N/A	
Vented hydrocarbon per total product produced	ton cu.m. (Gas) / million barrel oil equivalent	N/A	N/A	N/A	N/A	

¹ Calculated from production capacity using a third-party entity ² Include VOC Inventory from combustion, flare, tank, marketing and terminal, and wastewater ³ Use emission factors from AP 42-US EPA, for VOC inventory calculation from combustion, flare, and marketing and terminal. Tank 4 program and Water 9 program are used as tools for VOC inventory calculation from tank and wastewater respectively. ⁴ Calibrated measurement tools ⁵ Including Flared hydrocarbon from Plant 2, 3, 4

Water (million m ³)	Refinery Business			
	2016	2017	2018	2019
Tap Water used in production ¹ (Disclosure 303-1)	2.36	2.43	2.27	2.47
Ground water used (Disclosure 303-1)	0.05	0.11	0.10	0.03
River water used (Disclosure 303-1)	-	0.00	0.01	0.20
Reused water ^{2/5} (Disclosure 303-3)	1.10	1.15	1.10	1.16
Percentage of water recycled and reused to total water withdrawal (Disclosure 303-3)	45.65	45.30	46.21	43.12
Water discharged in Bang Ao Canal (Disclosure 306-1)	0.84	0.90	0.90	0.77
Ratio of water used per barrel of oil produced (m ³ /BOE) ³	0.061	0.061	0.062	0.065
COD (ton) ⁴	42.00	39.23	39.02	53.31
BOD (ton) ⁴	5.96	4.43	4.76	7.32
Oil and Grease (ton) ⁴	1.68	1.36	4.52	2.22
TSS (ton) ⁴	10.92	9.04	11.15	8.23
TDS (ton) ⁴	1,321.23	1,105.00	791.03	1,125.09
Sulfide (ton) ⁴	0.29	0.18	0.90	0.34
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 [Disclosure 306-2]	2016	2017	2018	2019	Percentage 2019
Routine wastes (ton : percentage)					
Hazardous waste ¹	1,573 (20.2)	1,571 (80.69)	2,808 (17.99)	2,023	33.81
Non-hazardous waste ¹	179 (2.3)	332 (17.07)	220 (1.41)	158	2.64
Non-routine wastes (ton : percentage)					
Hazardous waste from oil and chemical spill clean-up ² (Disclosure 306-3)	0	1 (0.05)	0	0	0
Construction waste ²	1,204 (15.5)	43 (2.19)	10,583 (67.80)	3,696	61.77
Hazardous waste from Turnaround Maintenance	4,745 (61)	0	1,916 (12.27)	106	1.77
Non-Hazardous waste from Turnaround Maintenance ²	84 (1)	0	82 (0.52)	1	0.02
Total	7,785 [100]	1,947 [100]	15,609 [100]	5,984	100

¹ Weight from waste manifest² Estimate from volume of waste sent to disposal based on calculation of number of bags per container and average weight per bag /container"

Waste Management Method ¹ (ton) [Disclosure 306-2]	2016		2017		2018		2019	
	Hazardous Waste	Non-Hazardous Waste	Hazardous Waste	Non-Hazardous Waste	Hazardous Waste	Non-Hazardous Waste	Hazardous Waste	Non-Hazardous Waste
- Reuse	0	0	0	0	0	0	0	0
- Recycle	1,137	16	564	28	4,321	302	571	6
- Recovery, including consumption as fuel	4,281	235	1,006	233	360	0	1,543	154
- Incineration	901	0	0	28	44	0	0	0
- Sent to secure landfill	0	11	0	0	0	0	15	0
- On site storage	318	0	0	0	0	0	0	0
- Other (Land Reclamation)	0	1,204	0	43	0	10,583	0	3,696
Total	6,637	1,466	1,571	332	4,725	10,884	2,129	3,856

¹ Disposal methods and quantity from DIW waste disposal permit documents and manifests

Oil and chemical spills (case) [Disclosure 306-3]	2016	2017	2018	2019
- Number of significant oil and chemical spills (more than 100 Barrels each)	0	0	0	0

Supply Chain Management (Percentage)	2016	2017	2018	2019
New Supplier/ Critical Supplier were self assess on SCOC criteria	62. ¹	31	29	24

¹ 2016 Number of Critical suppliers were self assessed on Bangchak's Supplier Code of Conduct covering 5 assessment topics

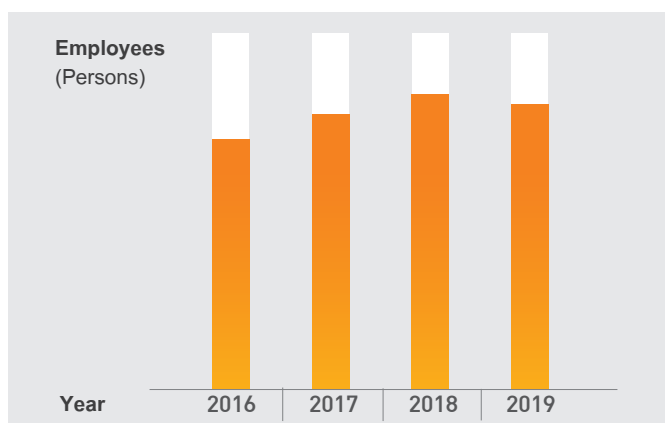
Environment Compliance [Disclosure 307-1]	2016	2017	2018	2019
Number/Monetary Value of significant fines associated with environmental law violation (Disclosure 307-1)	0	0	0	0

Social Performance

Employment

Employees* (Persons)

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



Employees (Disclosure 102-8), (Disclosure 401-1)	2016		2017		2018		2019	
	Persons	%	Persons	%	Persons	%	Persons	%
By gender								
• Male	847	70.82	866	69.84	881	70.26	868	69.38
• Female	349	29.18	374	30.16	373	29.74	383	30.62
Total	1,196	100	1,240	100	1,254	100	1,251	100
By Religion								
• Buddhism	1,162	97.16	1,189	95.89	1,205	96.09	1,204	96.24
• Christian - Catholic	17	1.42	23	1.85	27	2.15	22	1.76
• Islam	16	1.34	27	2.18	21	1.67	23	1.84
• Others	1	0.08	1	0.08	1	0.08	2	0.16
Total	1,196	100	1,240	100	1,254	100	1,251	100
By Generation								
• Baby Boom	55	4.60	47	3.79	42	3.35	36	2.88
• Generation X	544	45.48	546	44.03	550	43.86	541	43.25
• Generation Y	586	49.00	627	50.56	632	50.40	625	49.96
• Generation Z	11	0.92	20	1.61	30	2.39	49	3.92
Total	1,196	100.00	1,240	100.00	1,254	100.00	1,251	100.00
By Level								
• Level 10-14: Executive up	135	11.29	134	11.20	151	12.04	158	12.63
- Male	91	67.41	89	66.42	103	68.21	103	8.23
- Female	44	32.59	45	33.58	48	31.79	55	4.40
• Level 5-9: Manager up	616	51.51	669	55.94	685	54.63	697	55.72
- Male	373	60.55	401	59.94	416	60.73	417	33.33
- Female	243	39.45	268	40.06	269	39.27	280	22.38
• Level 1-4 : Practitioner	445	37.21	437	36.54	418	33.33	396	31.65
- Male	382	85.84	376	86.04	362	86.60	348	27.82
- Female	63	14.16	61	13.96	56	13.40	48	3.84

Employees (Disclosure 102-8), (Disclosure 401-1)	2016		2017		2018		2019	
	Persons	%	Persons	%	Persons	%	Persons	%
By Age								
• Less than 30	303	25.33	308	25.75	328	26.16	287	22.94
• Between 30-50	791	66.14	811	67.81	810	64.59	827	66.11
• More than 50	102	8.53	121	10.12	116	9.25	137	10.95
By Area								
• Head office	159	13.29	530	44.31	544	43.38	545	43.57
• Refinery	972	81.27	642	53.68	634	50.56	630	50.36
• North District	39	3.26	10	0.84	9	0.72	10	0.80
• Central District	9	0.75	41	3.43	49	3.91	49	3.92
• North-East District	10	0.84	10	0.84	10	0.80	9	0.72
• South District	7	0.59	7	0.59	8	0.64	8	0.64

Ratio of Salary by gender (Female : Male)	Female	Male	Female	Male	Female	Male	Female	Male
By Level								
• Level 10-14: Executive up	0.88	1.00	1.00	1.00	0.98	1.00	0.89	1.00
• Level 5-9: Manager up	0.92	1.00	0.93	1.00	0.95	1.00	0.97	1.00
• Level 1-4 : Practitioner	1.00	0.78	1.00	0.77	1.00	0.84	1.00	0.99

Employees Turnover (Disclosure 401-1)	2016		2017		2018		2019	
	Persons	%	Persons	%	Persons	%	Persons	%
Turnover rate		4.2		4.00		3.55		5.63
By Gender								
• Male	35	67.31	31	63.27	27	58.70	52	74.29
• Female	17	32.69	18	36.73	19	41.30	18	25.71
By Age								
• Less than 30	32	61.54	28	57.14	20	43.48	39	55.71
• Between 30-50	18	34.62	21	42.86	25	54.35	27	38.57
• More than 50	2	3.85	0	0.00	1	2.17	4	5.71

New Employee (Disclosure 401-1)	2016		2017		2018		2019	
	Persons	%	Persons	%	Persons	%	Persons	%
By Gender								
• Male	64	52.89	61	59.80	46	68.66	45	60.81
• Female	57	47.11	43	42.16	21	31.34	29	39.19
By Age								
• Less than 30	99	81.82	86	84.31	37	55.22	55	74.32
• Between 30-50	21	17.36	18	17.65	27	40.30	16	21.62
• More than 50	1	0.83	0	0.00	3	4.48	3	4.05

Parental leave	2016		2017		2018		2019	
	Persons	%	Persons	%	Persons	%	Persons	%
Parental leave	5	0.42	4	0.32	5	0.40	7	0.56
Employee back to work after parental leave	5	0.42	4	0.32	5	0.40	7	0.56

Average Training hours (hours/person/year) [Disclosure 404-1]	2016	2017	2018	2019
	Persons	Persons	Persons	Persons
Total training hour	53,741	55,926	57,487	56,449
Total average training hour	44.92	45.10	45.88	45.12
By gender				
• Male	41.10	42.66	43.07	42.82
• Female	53.90	50.76	52.65	50.35
By Level				
• Level 10-14: Executive up	62.00	63.91	56.66	52.33
• Level 5-9: Manager up	59.20	56.31	58.09	56.35
• Level 1-4 : Practitioner	20.10	22.39	22.34	22.48
By Business Category				
• President & Chief Executive Officer (PS)	52.90	56.00	104.29	56.45
• Corporate Strategic Planning and Sustainability Development Group (CG)			73.56	102.23
• Corporate Management and Organization Development Group (MD)	58.20	53.45	73.22	71.68
• Accounting and Finance Group (AF)	53.90	64.28	71.06	67.65
• Marketing Business Group (MKBG)	43.67	43.53	43.83	44.35
• Refinery Business Group (RFBG)	39.80	39.23	30.47	30.63
• Natural Resource (NT)			86.00	-
Best Employer (Percentage)	68.00	61.00	67.00	56.00
Employee Engagement (Percentage)	69.00	61.00	69.00	62.00
Labour and Human Rights Complaint (Case)	0.00	0.00	0.00	0.00

Safety and Occupational Health

Injury*, Illness, Fatality, Safety in Production Processes [Disclosure 403-9:2018]	2016		2017		2018		2019	
	Male	Female	Male	Female	Male	Female	Male	Female
Total work hour (hours)								
• Employees	1,630,207.80	443,448.30	1,352,215.40	210,360.90	1,806,814.30	662,860.50	1,736,499.30	658,555.50
• Contractors	4,490,917.00	1,012,761.50	4,253,591.00	1,255,606.90	4,250,297.90	1,209,490.90	4,714,105.12	1,850,478.40
Near miss report (cases)								
• Employees	6		25		15		19	
• Contractors	7		3		2		16	
Total Recordable Injury Case (TRIC)								
• Employees	3	2	1	0	3	0	0	0
• Contractors	3	1	0	0	6	0	5	0

Injury*, Illness, Fatality, Safety in Production Processes (Disclosure 403-9:2018)	2016		2017		2018		2019	
	Male	Female	Male	Female	Male	Female	Male	Female
LWC								
• Employees	0	0	0	0	1	0	0	0
• Contractors	1	0	0	0	3	0	2	0
Fatalities								
• Employees	0	0	0	0	0	0	0	0
• Contractors	0	0	0	0	0	0	0	0
Total Recordable Injury Rate (TRIR) (Person per 1 million working hours)								
• Employees	1.8	0.00	0.74	0.00	1.66	0	0.00	0.00
• Contractors	0.67	2.96	0.00	0.00	1.41	0	1.06	0.00
Injury Frequency Rate (IFR) (Person per 1 million working hours)								
• Employees	0	0	0	0	0.55	0	0.00	0
• Contractors	0.22	0	0.00	0	0.71	0	0.42	0
Injury Severity Rate (ISR) (Day per 1 million working hours)								
• Employees	0	0	0	0	7.75	0	0.00	0
• Contractors	10.24	0	0.00	0	9.18	0	1.27	0
Rate of work-related illness								
• Employees	N/A	N/A	N/A	N/A	N/A	N/A	0	0
• Contractors	N/A	N/A	N/A	N/A	N/A	N/A	0	0
High-consequence work-related injuries								
• Employees	N/A	N/A	N/A	N/A	N/A	N/A	0	0
• Contractors	N/A	N/A	N/A	N/A	N/A	N/A	0	0
Absentee rate (Percentage)								
• Employees	0.83		1.05		0.85	0.97	0.78	1.13
Tier 1 Process Safety Event	0		0		0		0	
Tier 2 Process Safety Event	0		0		0		0	
Dupont Assessment Score (2020 Target : 3.3)	1.6		2.3		2.7		3.1	

* Injuries are excluded first aid in the injury rate (IR) and lost days count begins the scheduled work day after the accident.

Customer Responsibility	Unit	2016	2017	2018	2019
Customer Satisfaction : Customers (Disclosure 102-43), (Disclosure 102-44)	Percentage	79.4	80.5	85.8	86.6
Customer Satisfaction : Industrial customers	Percentage	90.3	88.9	82	87
Net Promoter Score (NPS)	Ranking	2 nd ranking	2 nd ranking	1 st ranking (Joint)	1 st ranking (Joint)
Total number of substantiated complaints regarding breaches of customer privacy	Case	0	0	0	0
Significant Case of Non compliance in marketing communication laws (Disclosure 417-3)	Case	0	0	0	0

Socio-Economic Compliance	2016	2017	2018	2019
Number/Monetary Value of significant fines associated with economic and social law violation (Disclosure 419-1)	0	0	0	0

GRI Content Index (Disclosure 102-55)

GRI Standard	Disclosure	Page number(s) and/or URL(s)	SDGs	External Assurance
GRI 101: Foundation 2016				
GRI 102 : General Disclosures 2016				
GRI 102 General Disclosure 2016	ORGANIZATIONAL PROFILE			
	102-1	Name of the organization	11	
	102-2	Activities, brands, products, and services	11	
	102-3	Location of headquarters	11	
	102-4	Location of operations	12-13	
	102-5	Ownership and legal form	14	
	102-6	Markets served	12-13	
	102-7	Scale of the organization	11	
	102-8	Information on employees and other workers	149-150	SDG 8 - Employment
	102-9	Supply chain	16-17	
	102-10	Significant changes to the organization and its supply chain	6	
	102-11	Precautionary Principle or approach	65	
	102-12	External initiatives	82	
	102-13	Membership of associations	11	
	STRATEGY			
	102-14	Statement from senior decision-maker	8-10	
	102-15	Key impacts, risks, and opportunities	65-69	
	ETHICS AND INTEGRITY			
	102-16	Values, principles, standards, and norms of behavior	23, 26, 61, 64, 91	SDG 16 - Ethical and lawful behavior
	GOVERNANCE			
	102-18	Governance structure	15	
	102-19	Delegating authority	23	
	102-20	Executive-level responsibility for economic, environmental, and social topics	23	
	102-22	Composition of the highest governance body and its committees	23	SDG 5 - Women in leadership SDG 16 - Inclusive decision making
	102-24	Nominating and selecting the highest governance body	Annual Report 2019, 53-54	SDG 5 - Women in leadership SDG 16 - Inclusive decision making
	102-25	Conflicts of interest	64	SDG 16 - Effective, accountable and transparent governance
	102-26	Role of highest governance body in setting purpose, values, and strategy	23	
	102-28	Evaluating the highest governance body's performance	44, 55	
	102-29	Identifying and managing economic, environmental, and social impacts	66-68	SDG 16 - Inclusive decision making
	102-32	Highest governance body's role in sustainability reporting	6, 44	
	102-33	Communicating critical concerns	44	
	STAKEHOLDER ENGAGEMENT			
	102-40	List of stakeholder groups	29, 30-43	Yes
	102-41	Collective bargaining agreements	121	SDG 8 - Freedom of association and collective bargaining
	102-42	Identifying and selecting stakeholders	29	Yes
	102-43	Approach to stakeholder engagement	30-43	Yes
	102-44	Key topics and concerns raised	30-43	Yes
	REPORTING PRACTICE			
	102-45	Entities included in the consolidated financial statements	6-7	
	102-46	Defining report content and topic boundaries	6-7, 29	Yes
	102-47	List of material topics	45-46	Yes
	102-48	Restatements of information	6	
	102-49	Changes in reporting	6	
	102-50	Reporting period	6	
	102-51	Date of most recent report	6	
	102-52	Reporting cycle	6	
	102-53	Contact point for questions regarding the report	6	
	102-54	Claims of reporting in accordance with the GRI Standards	6	
	102-55	GRI content index	153-159	
	102-56	External assurance	162-164	

GRI Standard	Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
Material Topics							
GRI 200 Economic Standard Series							
ECONOMIC PERFORMANCE							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 60				
	103-2	The management approach and its components	60, 65-69, 144				
	103-3	Evaluation of the management approach	60, 144				
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	60, 133, 139, 143, 144			SDG 2 - Infrastructure investments SDG 5 - Infrastructure investments SDG 7 - Infrastructure investments SDG 8 - Economic performance SDG 9 - Infrastructure investments, Research and development	
PROCUREMENT PRACTICE							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 72-76				
	103-2	The management approach and its components	72-76				
	103-3	Evaluation of the management approach	72-76				
GRI 204: Procurement Practices 2016	204-1	Proportion of spending on local suppliers	144			SDG 12 - Procurement practices	
Sustainable Supplier Development	BCP Indicator	Effective time and cost management of packaging procurement	75				
Sustainable Supplier Development	BCP Indicator	Percentage of efficiency in supplier contract management	75, 101				
ANTI-CORRUPTION							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 61-62, 63-64				
	103-2	The management approach and its components	61-62, 63-64				
	103-3	Evaluation of the management approach	61-62, 63-64				
GRI 205: Anti-Corruption 2016	205-2	Communication and training about anti-corruption policies and procedures	61-62, 63-64			SDG 16 - Anti-corruption	
	205-3	Confirmed incidents of corruption and actions taken	63-64			SDG 16 - Anti-corruption	
CORPORATE RISK MANAGEMENT							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	44-49 65-69				
	103-2	The management approach and its components					
	103-3	Evaluation of the management approach	65-69				
Risk Management	BCP Indicator	KRI does not exceed risk acceptance values	66				

GRI Standard	Disclosure		Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
Material Topics								
GRI 300 Environmental Standard Series								
ENERGY								
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 83-84					
	103-2	The management approach and its components	83-84					
	103-3	Evaluation of the management approach	83-84, 145					
GRI 302: Energy 2016	302-1	Energy consumption within the organization	83-84, 145	Fuel Combustion from mobile source of Bang Pa-In Terminal, Northern Region Business Office, Northeast Region Business Office, Southern Region Business Office, BGN and BCR	Information unavailable	The data will be available in 2020	SDG 7 - Energy efficiency, Renewable energy SDG 8 - Energy efficiency SDG 12 - Energy efficiency, Transport SDG 13 - Energy efficiency	Yes

GRI Standard		Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
	302-3	Energy intensity	84, 145				SDG 7 - Energy efficiency SDG 8 - Energy efficiency SDG 12 - Energy efficiency SDG 13 - Energy efficiency	
WATER								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 87-88					
	103-2	The management approach and its components	87-88, 147					
	103-3	Evaluation of the management approach	87-88, 147					
GRI 303: Water 2016	303-1	Water withdrawal by source	87, 147				SDG 6 - Sustainable water withdrawals	Yes
	303-3	Water recycled and reused	87-88, 147				SDG 6 - Water efficiency, Water recycling & reuse SDG 8 - Water efficiency SDG 12 - Water efficiency	Yes
EMISSIONS								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 85-86, 91-92					
	103-2	The management approach and its components	85-86, 91-92					
	103-3	Evaluation of the management approach	85-86, 91-92, 146-147					
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	85, 146	GHG emission from Fuel Combustion from mobile source of Bang Pa-In Terminal, Northern Region Business Office, Northeast Region Business Office, Southern Region Business Office, BGN and BCR	Information unavailable	The data will be available in 2020	"SDG 3 - Air quality SDG 12 - Air quality, Transport SDG 13 - GHG emissions SDG 14 - Ocean acidification SDG 15 - Forest degradation"	Yes
	305-2	Energy indirect (Scope 2) GHG emissions	85, 146	Marketing base scope 2 GHG emission	Not Applicable	BCP account and report energy indirect (Scope 2) GHG emission based on the location based method (Electricity grid) only	SDG 3 - Air quality SDG 12 - Air quality, Transport SDG 13 - GHG emissions SDG 14 - Ocean acidification SDG 15 - Forest degradation	Yes
	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	147				SDG 3 - Air quality SDG 12 - Air quality SDG 13 - GHG emissions SDG 14 - Ocean acidification SDG 15 - Forest degradation	Yes
	OG6	Volume of flared and vented hydrocarbon	147	Volume of vented hydrocarbon and vented for oil and gas production in relation to volume produced	Not Applicable	BCP is planning to install instrument for capture gas flared at plant 4, 2 and 3 in 2018 and 2020 respectively	SDG 3 - Air quality SDG 7 - Energy efficiency SDG 8 - Energy efficiency SDG 12 - Air quality, Energy efficiency, Waste SDG 13 - Energy efficiency SDG 14 - Ocean acidification	Yes

GRI Standard		Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
EFFLUENTS AND WASTE								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 89, 90, 93					Yes
	103-2	The management approach and its components	89, 90, 93					
	103-3	Evaluation of the management approach	89, 90, 93, 147-148					
GRI 306: Effluents and Waste 2016	306-1	Water discharge by quality and destination	89, 147				SDG 3 - Water quality SDG 6 - Water quality, Water-related ecosystem and biodiversity SDG 12 - Water quality SDG 14 - Water discharge to oceans	
	306-2	Waste by type and disposal method	93, 148				SDG 3 - Spills SDG 6 -Waste, Water- related ecosystems and biodiversity SDG 12 - Waste	Yes
	306-3	Significant spills	90, 148				SDG 3 - Spills SDG 6 - Spills SDG 12 - Spills SDG 14 - Spills SDG 15 - Spills	Yes
ENVIRONMENTAL COMPLIANCE								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 80-105					
	103-2	The management approach and its components	80-105					
	103-3	Evaluation of the management approach	80-105, 148					
GRI 307: Environmental Compliance 2016	307-1	Non-compliance with environmental laws and regulations	148				SDG 16 - Compliance with laws and regulations	
SUPPLIER ENVIRONMENTAL ASSESSMENT								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 72-76					
	103-2	The management approach and its components	72-76					
	103-3	Evaluation of the management approach	72-76					
GRI 308: Supplier Environmental Assessment	308-2	Negative environmental impacts in the supply chain and actions taken	73					
ENVIRONMENTAL PROTECTION EXPENDITURES AND INVESTMENT								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 104-105					
	103-2	The management approach and its components	104-105					
	103-3	Evaluation of the management approach	104-105					
Environmental protection expenditures and investment type	BCP Indicator	Total environmental protection expenditures and investment type	104-105					
PRODUCT TRANSPORTATION								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 101-104					
	103-2	The management approach and its components	101-104					
	103-3	Evaluation of the management approach	101-104					
Product Transportation	BCP Indicator	Percentage of Efficiency in Transportation Contract Management	103					
	BCP Indicator	Significant environmental impacts of transporting products	101-102					

GRI Standard	Disclosure	Page number[s] and/or URL[s]	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
Material Topics							
GRI 400 Social Standard Series							
EMPLOYMENT							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 122-132				
	103-2	The management approach and its components	122-130				
	103-3	Evaluation of the management approach	122-132, 149-150				
GRI 401: Employment	401-1	New employee hires and employee turnover	122-132, 149-150			SDG 5 - Gender equity SDG 8 - Employment, Youth employment	
	BCP Indicator	Best Employer Score by Kincentric	151				
LABOR/MANAGEMENT RELATION							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 122-132				
	103-2	The management approach and its components	122-132				
	103-3	Evaluation of the management approach	149-151				
	BCP Indicator	Best Employer Score by Kincentric	151				
OCCUPATIONAL HEALTH AND SAFETY							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 110-115				
	103-2	The management approach and its components	110-115				
	103-3	Evaluation of the management approach	114, 151-152				
GRI 403: Management Approach Disclosure 2018	403-1	Occupational health and safety management system	110				Yes
	403-2	Hazard identification, risk assessment, and incident investigation	110				Yes
	403-3	Occupational health services	111				Yes
	403-4	Worker participation, consultation, and communication on occupational health and safety	112				Yes
	403-5	Worker training on occupational health and safety	113				Yes
	403-6	Promotion of worker health	113				Yes
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	73				Yes
GRI 403: Occupational Health and Safety 2018	403-9	Work-related injuries	151-152			SDG 3 - Occupational health and safety SDG 8 - Occupational health and safety	Yes
	OGSS	Emergency Preparedness	113				
TRAINING AND EDUCATION							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 124-128				
	103-2	The management approach and its components	124-128				
	103-3	Evaluation of the management approach	151				
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	151			SDG 4 - Employee training & education SDG 5 - Gender equity SDG 8 - Employee training & education	
	404-3	Percentage of employees receiving regular performance and career development reviews	129			SDG 5 - Gender equity SDG 8 - Employee training & education	
HUMAN RIGHTS ASSESSMENT							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 119-121				
	103-1	The management approach and its components	119-121				
	103-3	Evaluation of the management approach	119-121				
GRI 412: Human Rights Assessment 2016	412-1	Operations that have been subject to human rights reviews or impact assessments	119-120				

GRI Standard		Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
LOCAL COMMUNITIES								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 133-143					
	103-2	The management approach and its components	133-143					
	103-3	Evaluation of the management approach	133-143					
GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	133					
	BCP Indicator	Social Return on Investment	139, 141, 143					
SUPPLIER SOCIAL ASSESSMENT								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 72-76					
	103-2	The management approach and its components	72-76					
	103-3	Evaluation of the management approach	72-76					
GRI 414: Supplier Social Assessment 2016	414-2	Negative social impacts in the supply chain and actions taken	73				SDG 5 - Workplace violence and harassment SDG 8 - Labor practices in the supply chain SDG 16 - Workplace violence and harassment	
	BCP Indicator	Number of suppliers that were self-assessed using SCOC criteria	74					
MARKETING AND LABELING								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49, 94-100, 116-118					
	103-2	The management approach and its components	94-100, 116-118					
	103-3	Evaluation of the management approach	94-100, 116-118					
GRI 417 MARKETING AND LABELING 2016	417-3	Incidents of non-compliance concerning marketing communications	152					
Product and service Development	BCP Indicator	Net Promoter Score (NPS) / Customer satisfaction	99, 118, 152					
	BCP Indicator	Number of new service stations	99					
	BCP Indicator	Number of renovated service stations	97					
	BCP Indicator	Expansion of convenient stores, coffee shops, and restaurants	97					
	BCP Indicator	Share of products transported by larger vehicles	101					
	BCP Indicator	Percentage of share in retail markets	99					
	BCP Indicator	Number of Transportation service complaint	101					
SOCIOECONOMIC COMPLIANCE								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	29-43, 44-49					
	103-2	The management approach and its components	61-62, 63-64					
	103-3	Evaluation of the management approach	63-64					
GRI 419: Socioeconomic Compliance 2016	419-1	Non-compliance with laws and regulations in the social and economic area	152				SDG 16 - Compliance with laws and regulations	

United Nations Global Compact (UNGC)

Bangchak GC Advanced COP-Self Assessment

GC Scope or Principle	Criteria of GC Advanced Level	Bangchak Approach	Disclose
Scope:	Strategy, Governance and Engagement		
Implementing the Ten Principles into Strategies & Operations	1. The COP describes mainstreaming into corporate functions and business units	<ul style="list-style-type: none"> Bangchak and Sustainability Sustainability Strategy 	23-26 50-55
	2. The COP describes value chain implementation	<ul style="list-style-type: none"> About Bangchak Value Chain Supply Chain Management 	11-13 16-17 72-76
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights	Human rights		
	3. The COP describes robust commitments, strategies or policies in the area of human rights	<ul style="list-style-type: none"> Human Rights Due Diligence 	119-121
Principle 2: Businesses should make sure that they are not complicit in human rights abuses	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	Labour		
	6. The COP describes robust commitments, strategies or policies in the area of labour	<ul style="list-style-type: none"> Bangchak and Sustainability 	23-26
Principle 4: The elimination of all forms of forced and compulsory labour.	7. The COP describes effective management systems to integrate the labour principles	<ul style="list-style-type: none"> Stakeholder Engagement (Employees) 	30-31
	8. The COP describes effective monitoring and evaluation mechanisms of labour principles integration	<ul style="list-style-type: none"> Safety & Occupational Health Human Rights Due Diligence 	110-115 119-121
Principle 5: The effective abolition of child labour		<ul style="list-style-type: none"> Employee Stewardship 	122-131
Principle 6: The elimination of discrimination in respect of employment and occupation			
Principle 7: Businesses should support a precautionary approach to environmental challenges	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 	23-26
Principle 8 : Businesses should undertake initiatives to promote greater environmental responsibility	10. The COP describes effective management systems to integrate the environmental principles	<ul style="list-style-type: none"> Environmental Performance 	80-106
Principle 9: Businesses should encourage the development and diffusion of environmentally friendly technologies	11. The COP describes effective monitoring and evaluation mechanisms for environmental stewardship	<ul style="list-style-type: none"> Sustainable Product and Service Development Eco-Efficiency Environmental Cost Accounting 	94-100 82 105-106

GC Scope or Principle	Criteria of GC Advanced Level	Bangchak Approach	Disclose
Principle 10: Businesses should work against corruption in all its forms, including extortion and briber	Anticorruption		
	12. The COP describes robust commitments, strategies or policies in the area of anti-corruption	• Bangchak and Sustainability	23-26
	13. The COP describes effective management systems to integrate the anti-corruption principle	• Corporate Governance • Anti-Corruption	61-62 63-64
	14. The COP describes effective monitoring and evaluation mechanisms for the integration of anti-corruption	• Supply Chain Management	72-76
Scope: Taking Action in Support of Broader UN Goals and Issues	UN Goals and Issues		
	15. The COP describes core business contributions to UN goals and issues	• Bangchak and Sustainability	23-26
	16. The COP describes strategic social investments and philanthropy	• Community & Social Development	133-143
	17. The COP describes advocacy and public policy engagement	• Bangchak and Sustainability	23-26
	18. The COP describes partnerships and collective action	• Bangchak and Sustainability	23-26
Scope: Corporate Sustainability Governance and Leadership	Governance		
	19. The COP describes CEO commitment and leadership	• Message from the President and CEO • Sustainability Strategy	8-10 50-55
	20. The COP describes Board adoption and oversight	• Bangchak and Sustainability • Corporate Governance	23-26 61-62
	21. The COP describes stakeholder engagement	• Bangchak and Stakeholders	29-49



LR Independent Assurance Statement

Relating to the Bangchak Corporation Public Company Limited's Integrated Sustainability Report for the calendar year 2019

This Assurance Statement has been prepared for the Bangchak Corporation 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 Limited (LR) was commissioned by the Bangchak Corporation Public Company Limited (BCP) to provide independent assurance on its Integrated Sustainability Report ("the report") against the assurance criteria below to a limited level of assurance at the materiality of the professional judgement of the verifier using LR's verification procedure. LR's verification procedure is based on current best practice, is in accordance with ISAE 3000 and uses the following principles of - inclusivity, materiality, responsiveness and reliability of performance data.

Our assurance engagement covered Integrated Sustainability Report 2019 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 Standard and core option
 - GRI Oil & Gas Sector Disclosure
- Evaluating the reliability of data and information for only the selected indicators listed below: ¹
 - GRI 302-1: Energy consumption within the organization ⁽²⁾ (2016)
 - GRI 303-1: Water withdrawal by source ⁽³⁾ (2016)
 - GRI 303-3: Water recycled and reused ⁽⁴⁾ (2016)
 - GRI 305-1: Direct (Scope 1) GHG emissions ⁽²⁾ (2016)
 - GRI 305-2: Energy indirect (Scope 2) GHG emissions ⁽²⁾ (2016)
 - GRI 305-7: Nitrogen Oxides (NO_x), Sulfur Oxides (SO_x), and other significant air emissions (VOC and H₂S) ⁽⁴⁾ (2016)
 - GRI 306-2: Waste by type and disposal method ⁽⁴⁾ (2016)
 - GRI 306-3: Significant spills ⁽⁴⁾ (2016)
 - GRI 403-9: Work-related injuries ⁽³⁾⁽²⁾ (2018)

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 42% in equity, except mergers and acquisitions (M&As) that have been in operation for less than two years.
- 3) Includes BCP Refinery, refinery office at Sukhumvit Soi 64 and BCP Head office at M Tower
- 4) Limited to a BCP refinery and refinery office at Sukhumvit Soi 64 only.

LR's responsibility is only to BCP. LR 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.

LR's Opinion

Based on LR's approach nothing has come to our attention that would cause us to believe that BCP has not, in all material respects:

- Met the requirements above
- Disclosed reliable performance data and information for the selected indicators

¹ GHG quantification is subject to inherent uncertainty.



- 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. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

LR's approach

LR'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 through interviews with 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.
- Sampling of evidence presented at BCP's refinery, refinery office located at Sukhumvit 64 and at their Head office located at M Tower to confirm the reliability of the selected topic specific standards.

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 and has adopted various methods and tools for consolidating results from stakeholder engagement done by business units into corporate level. 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. BCP has established criteria for determining which issue/aspect is material. These material issues have then been prioritised and influenced BCP's performance disclosures.
- **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 the reporting scope to include the subsidiaries' performance of all applicable Environmental and OHS indicators as reported by BCP to further demonstrate responsiveness at a broader level.
- **Reliability:**
Data management systems are considered to be properly defined for collecting and calculating the data and information associated with the selected indicators. We believe that the reliability of the data and information from all subsidiaries will improve if BCP implement regularly their own internal verification.



LR's standards, competence and independence

LR 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.

LR is BCP's certification body for ISO 9001, ISO 14001, ISO45001, and ISO50001. The verification and certification assessments are the only work undertaken by LR for BCP and as such does not compromise our independence or impartiality.

Paveena Hengsrirawat

LR Lead Verifier

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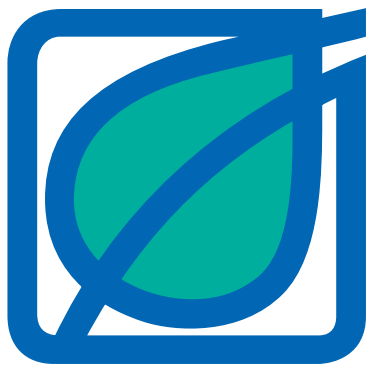
Dated: 22 March 2020

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