



Integrated Sustainability Report 2020
Bangchak Corporation Public Company Limited

Vision :

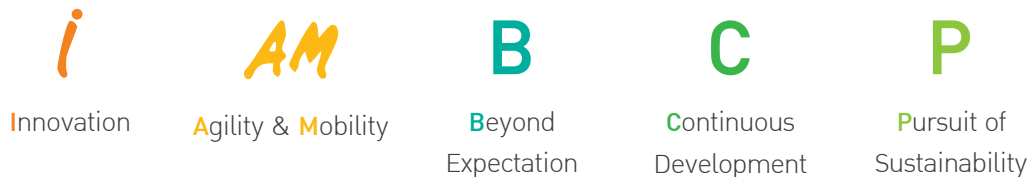


Mission :

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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About this Report

Report Content

Bangchak Corporation Public Company Limited has prepared an Integrated Sustainability Report to disclose the Company's annual sustainability performance (Disclosure 102-52) for the 16th year. The reporting period of this report is from January 1 to December 31, 2020 (Disclosure 102-50). This report has been prepared in accordance with the GRI Sustainability Reporting Standards (GRI Standards): Core option (Disclosure 102-54) and the Oil & Gas Sector Supplement (OGSS) and 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 and the needs and expectations of various groups of stakeholders.

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

This report discloses 2020 sustainability performance data of businesses under Bangchak Corporation Public Company Limited (BCP) operating in Thailand. The scope excludes subsidiaries and joint venture companies, except for energy and GHG emissions performance data. These data cover our subsidiaries that Bangchak has over 42% ownership. Bangchak has extended data collection and reporting of GHG emissions of the Green Power Business to cover Lomligor Co., Ltd. and four new electricity generation from solar power projects which have been operated since August 2020. In addition, the Company has collected fuel consumption data of vehicles of the Marketing Business. Therefore, the reporting boundary of energy consumption and GHG emissions of Bangchak's subsidiaries is different from the previous year. The subsidiaries under the reporting boundary of energy consumption and GHG emissions include (Disclosure 102-49) :

- ✔ Bangchak Green Net Co., Ltd.
- ✔ Bangchak Retail Co., Ltd.
- ✔ BCPG Plc.
- ✔ Bangchak Solar Energy Co., Ltd.
- ✔ Lomligor Co., Ltd.
- ✔ BBGI Plc.
- ✔ Bangchak Biofuel Co., Ltd.
- ✔ Bangchak Bioethanol (Chachoengsao) Co., Ltd.
- ✔ KSL Green Innovation Plc. (Bo Phloi factory (KGI-BP) – Bophloi, Kanchanaburi Province, and Nampong factory (KGI-NP) - Nam Phong, Khon Kaen Province)

In addition to the report on GHG emissions, Bangchak has collected data and report on the reduction of GHG emissions of the Green Power Business compared with the base year 2015.

Data regarding water withdrawal, water discharge and water consumption was for the operations at the office and refinery located in Sukhumvit 64 and Bangchak's head office at M Tower. Water discharge data of Bangchak's head office at M Tower was reported additionally in 2020 (Disclosure 102-49). Data regarding water management, air pollutions, significant oil and chemical spills, and waste management was only for the office and refinery located in Sukhumvit 64 as it is the important operating site of the Company.

For occupational health and safety data, the Company has reported on occupational health and safety data of the office and refinery located in Sukhumvit 64 and M Tower Headquarters only. The Company has improved the occupational health and safety performance table to be consistent with corporate sustainability assessments by reporting on holistic occupational health and safety performance and the performance by genders for both employees and contractors (Disclosure 102-48). For 2020, there was no significant change in relation to the organization or any supply chains (Disclosure 102-10).

Report Assurance

This report has been reviewed by executives from each business unit and functions (Disclosure 102-32) to ensure the completeness, accuracy and cover stakeholders' expectations. 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 align with GRI Standards. In 2020, the Company upgraded the level of assurance for GRI 302-1 Energy consumption within the organization, GRI 305-1 Direct (Scope 1) GHG emissions, GRI 305-2 Energy indirect (Scope 2) GHG emissions, and GRI 305-5 Reduction of GHG emissions from limited level of assurance to reasonable level of assurance (Disclosure 102-49). Details are shown in the Assurance Statement on page 151-153

Contact Information (Disclosure 102-53)

For more information or suggestion, please contact

✔ **Corporate Sustainability Development and Standards**
Bangchak Corporation Public Company Limited
E-mail: nintira@bangchak.co.th Tel: +66 2335 4383

Companies within report boundary

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

No.	Company	% equity	Production	Energy	GHG Emissions	GHG Reduction	Water use	Waste water	Air Emissions	Waste	OHS
Refinery and Trading Business											
1	Bangchak Corporation Plc.	100	/	/	/	/	/	/	/	/	/
2	BCP Trading Pte. Ltd.	100									
3	Bongkot Marine Service Co., Ltd.	30	NR	NR	NR		NR	NR	NR	NR	NR
4	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.	60.36									
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	• Greenery Holdings Pte Ltd.	100									
14	• Greenery Power Pte Ltd.	100									
15	• BCPG Wind Cooperatief U.A.	100									
16	• Petro Wind Energy Inc.	40									
17	Thai Digital Energy Development Co., Ltd.	75									
18	Lomligor Co., Ltd.	100	/	/	/	/	x	x	NR	NR	NR
19	Star Energy Group Holdings Pte Ltd.	33.33									
20	Impact Energy Asia Development Limited.	45									
21	BCPG Indochina Co., Ltd.	100									
22	• Nam Sam 3A Sole Co., Ltd.	100									
23	• Nam Sam 3B Sole Co., Ltd.	100									
24	BSE Power Holdings (Thailand) Co., Ltd.	99.99									
25	• RPV Energy Co., Ltd.	99.99	/	/	/	/	x	x	NR	NR	NR
26	• JRK Energy CO., Ltd.	99.99	/	/	/	/	x	x	NR	NR	NR
27	• Aquatist Energy Co., Ltd.	99.99									
28	• Lopburi Solar Co., Ltd.	99.99	/	/	/	/	x	x	NR	NR	NR
29	• Prachin Solar Co., Ltd.	99.99	/	/	/	/	x	x	NR	NR	NR
Bio-Based Product Business											
1	BBGI Plc.	60	NR	/	/	/	x	x	NR	NR	NR
2	BBGI Utility and Power Co., Ltd.	100									
3	WIN Ingredients Co., Ltd.	100									
4	KSL Green Innovation Plc.	100	/	/	/	/	x	x	x	x	x
5	Bangchak Bioethanol (Chachoengsao) Co., Ltd.	85	/	/	/	/	x	x	x	x	x
6	Bangchak Biofuel Co., Ltd.	70	/	/	/	/	x	x	x	x	x
7	Ubon Bio Ethanol Plc.	21.28									
8	• Ubon Bio Agricultural Energy Co., Ltd.	100									
9	• Ubon Biogas Co., Ltd.	100									
10	• Ubon Sunflower Co., Ltd.	100									
Natural Resource Business and Business Development											
1	BCP Energy International Pte. Ltd.	100	NR	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	NR
10	• BCPR Pte. Ltd.	100									
11	• OKEA AS	46.32									
12	BCP Innovation Pte. Ltd.	100	NR	NR	NR	NR	NR	NR	NR	NR	NR
13	• Lithium Americas Corp.	15.86									
14	• Minera Exar S.A	50									
15	• Lithium Nevada Corp.	100									
16	• Rheo Minerals Inc.	100									
17	• Bonumose LLC.	5.45									
18	• Eneva Corporation	1.15									
19	• Geltor, Inc.	0.97									
20	• Manus Bio Inc.	0.75									
21	BCV Bio Based Co., Ltd.	100									
22	BCV Energy Co., Ltd.	100									
23	BCV Innovation Co., Ltd.	100									
24	BCV Partnership Co., Ltd.	100									

- Companies which their sustainability performance data was disclosed in the Integrated Sustainability Report 2020 in accordance with the GRI Standards. These were the companies operating in Thailand with Bangchak had >42% shares and have significant environmental and safety data (Disclosure 103-1)
- Office buildings, 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 companies

- Blue: Subsidiaries with Bangchak holding >42% shares
- Green: Joint venture means Bangchak holds 20-42% shares
- Orange: Other companies

Message from the President and CEO

(Disclosure 102-14)

2020 was a difficult and challenging year for all of us. A global pandemic, Coronavirus, or COVID-19, remains humanity's greatest challenge today, affecting all walks of life, and prompting us to adapt to the 'New Normal' lifestyle. This emerging "new norm" has undoubtedly changed consumer behavior as well.

At the corporate level, in addition to COVID-19, Bangchak Group was faced with the effects of the ongoing oil price war which caused oil prices to collapse, coupled with shrinking domestic demand due to lockdown measures that limited travel and logistic activities.

However, the Company was able to effectively handle the COVID-19 by implementing its rehearsed Crisis Management Plan (CMP) since early 2020, imposing strict preventative and control measures to contain the spread of COVID-19.

Through the 3S (Security, Stability, Sustainability) and 4G (Green Business, Green Production, Greenovative Experience, Green Society) Business and Sustainability strategies, the Company was able to continue operations without interruption, and gained investor confidence, that allowed it to successfully issue a 8,000 million baht perpetual bond in May the previous year. Details of business operations within the 4G sustainability strategy 2020 are as follows:

Green Business: In 2020, BCPG Public Company Limited invested in a 45MW hydroelectric power plant in Laos, as well as the construction and operation of transmission lines and electricity distribution station connecting the facility from Laos to Vietnam. BBGI Public Company Limited expanded its investments in high-value bio-based products through its investments in the bio-based industry global leader, Manus Bio Inc., and jointly established "WIN Ingredients" to operate its biotechnology business. Additionally, the Company launched the startup "Winnonie", literally "Debt-Free Motorcycle Taxis", a project developed by Bangchak Initiative and Innovation Center (BiIC), leveraging green mobility technology, electric motorcycles, with motorcycle taxi services in the environs of the Bangchak headquarters and refinery. Winnonie is the first operator in Thailand to provide battery-swapping services with the vision to reduce debt obligations for motorcycle taxis.





Green Production: The Company launched the “Rocket Project” to optimize product value, production energy consumption, raw material and product logistics, as well as improve overall refinery stability to extend the Turnaround Maintenance Cycle from two to three years through the implementation of the 3(E) Project (Efficiency, Energy, and Environment Improvement Project). Additionally, Niche Refinery Products have been developed through the production of Unconverted Oil (UCO) as precursor material for the production of lube base oil and paraffin wax, and improved solvent production processes, specifically for “BCP White Spirit – 3040”, which is used in the paints and resin industry. Bangchak Refinery was received the ISO/IEC27001:2013 for the Information Security Management System of the oil refining control system, and is the first and only refinery in Thailand to receive the acclaimed certification.

Greenovative Experience: The Company produces and retails high quality Euro IV standard products, and offers two Euro V products, namely, Gasohol E20s EVO and Hi-Premium Diesel S. The Company improved the standard of all diesel products offered in its Bangkok service stations, featuring low-sulfur content, to reduce detrimental PM2.5 smog, which subsequently pushed its B20 market share to number 1. A new generation of service stations has been introduced under the 4Rs Process (Renewable, Recycle, Reuse, and Reduce) featuring solar rooftops, rainwater and gray water recycling for garden features, and accessible design for the elderly and disabled that has enable its service stations to maintain its number 1 in customer mind Net Promoter Score (NPS). Additionally, in collaboration with Krung Thai Bank Public Company Limited, Bangchak introduced Bangchak Digital Payment to lower the risk of COVID-19 transmission and service times, becoming the first company in Thailand to provide full service fuel payment via QR Code integrated mobile application of all banks, credit cards, debit cards, and loyalty points collections.

Green Society: The Company takes social and environmental initiative through the Bangchak WOW Model (Well-Being Improvement, Oxygen Enhancement, Water Management), and partners with the public and private

sectors to improve the quality of life, and improve the air and water quality, and enhance the well-being of Thai society. Projects include “Conserve & Share for Happiness” and “Used Cooking Oil” projects, which promote circular economy and waste management. The retail of “Low Sulfur Diesel” at the same price, despite higher production costs, addresses the PM2.5 problem. Furthermore, the “Everlasting Battery to Revolutionize Future Energy” seminar aims to provide knowledge about battery businesses which will play a critical role in the future economy.

The Company has continued to maintain its valued trust from the surrounding communities, with an 84% approval rating, reflecting close-knit relationship and trust in the Company’s operations. For education, the Bai Mai Pun Suk Foundation had adapted its “Fun Reading, Writing & Learning Project” which aims to strengthen literacy among first-grade students, to feature digital technology, and widen the reach of the project to cover the entire country, expanding to over 38 schools across 28 provinces, with more than 1,100 participating teachers and students.

Even amidst crisis, the Company continues its support of public and social organizations through its social initiatives, which are its core tenants, and which it continues to embrace. Bangchak’s “Bangchak Group Joins Caring Efforts during COVID-19 Crisis” project joins together all stakeholders, such as providing alcohol hand-sanitizers to organizations, partners, communities, schools, etc. procuring alcohol sprays at a special price, establishing the “Happiness Barrel” in Bangchak service stations, retailing blue-flag facemasks in Inthanin coffee shops, etc.

Bangchak remains committed to being the leading Asian Greenovative Group, determined to become the leading green energy company in the region as an innovation-driven company. Through sustainable business innovation, creating favorable return for investors and value for stakeholders in harmony with the environmental and society.

(Chaiwat Kovavisarach)

President and Chief Executive Officer

Bangchak Overview

Company name

Bangchak Corporation Public Company Limited

Stock Market Name : BCP

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 (Disclosure 102-3) :

No. 2098 M Tower, 8th Floor, Sukhumvit Road, Phra Khanong Tai, Phra Khanong, Bangkok 10260, Thailand

Chief Executive Officer :

Mr. Chaiwat Kovavisarath

Chief Executive Officer and President

Paid-Up registered capital : 1,376,923,157

Number of permanent employees

(Disclosure 102-7) :

1,230 employees (as of December 31, 2020)

Business type:

Petroleum and Renewable Energy

Membership of association (Disclosure 102-13) :



Global Compact
Network Thailand





Refinery Business



Marketing Business



Green Power Business



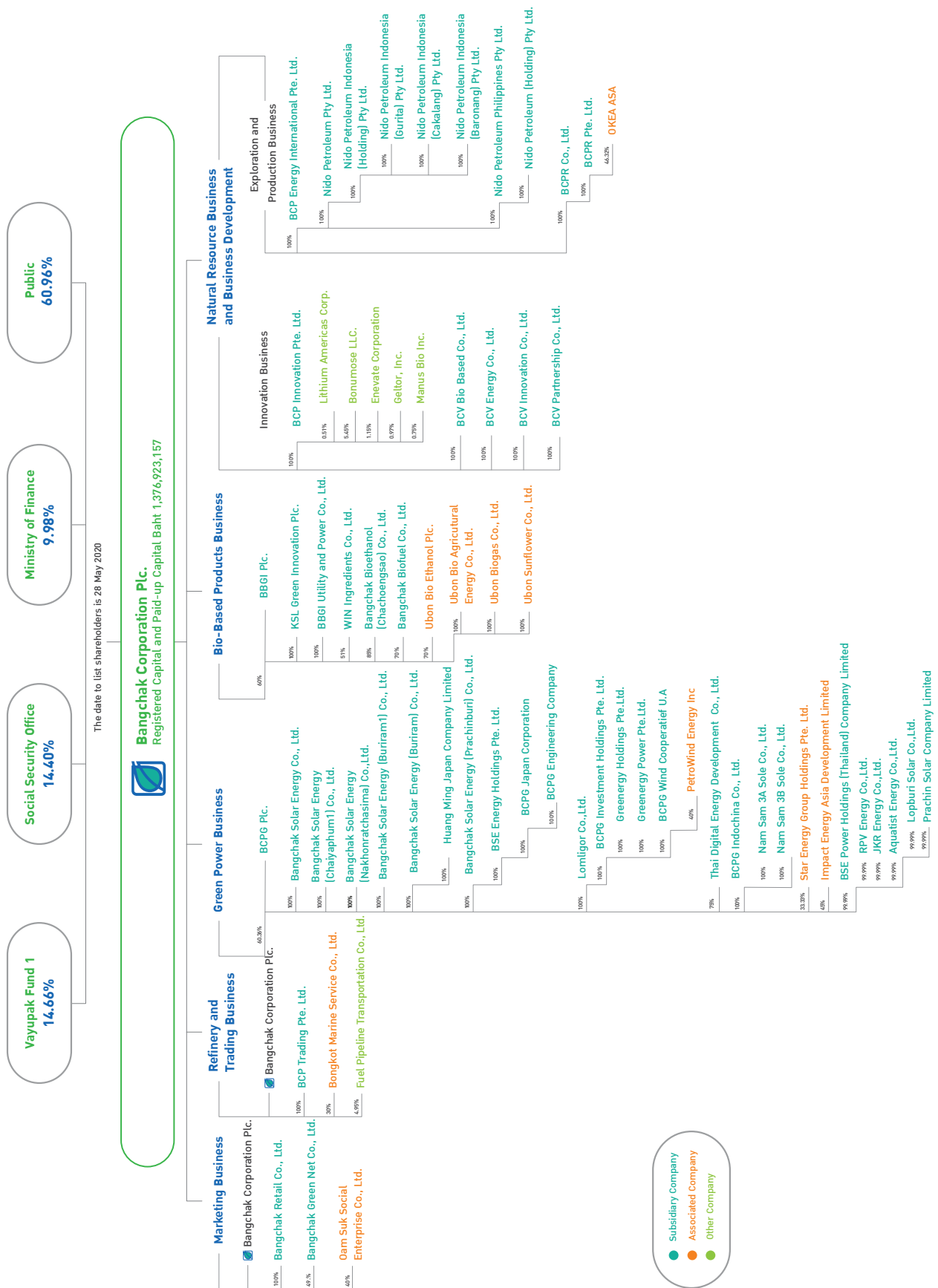
Bio-based Products Business



Natural Resources Business

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

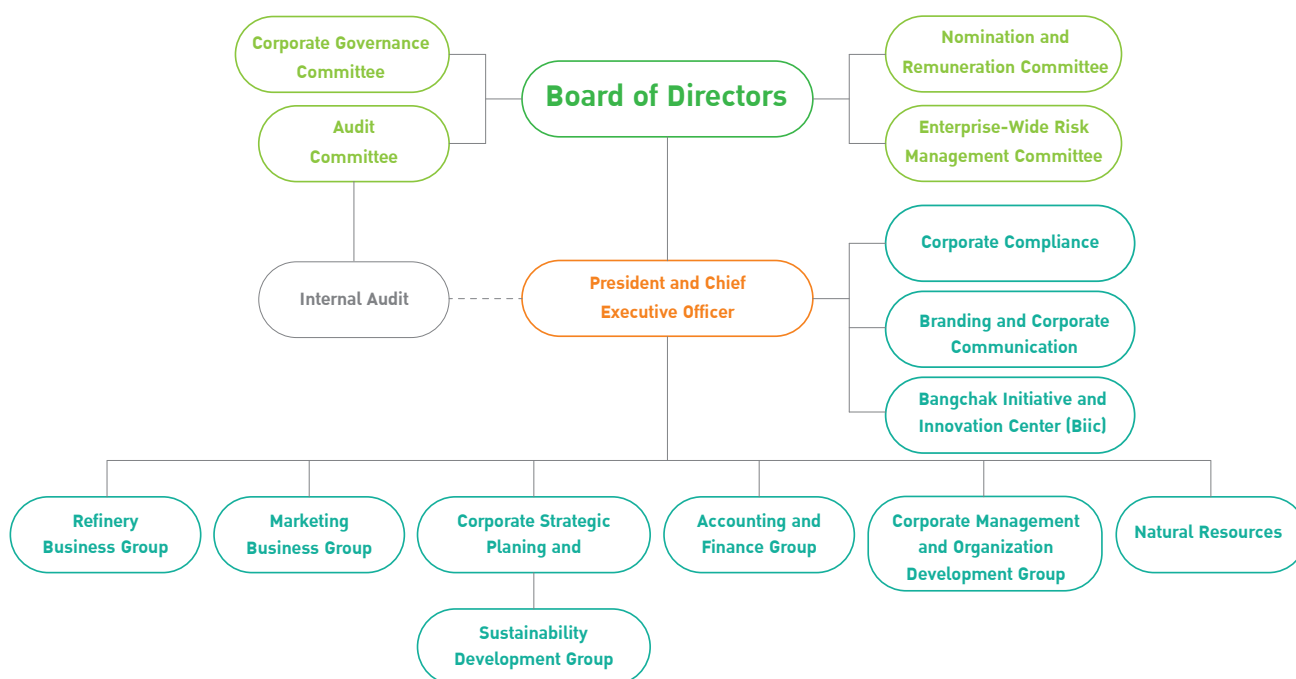
Shareholding Structure (Disclosure 102-5)



Note: The Ministry of Finance sold and transferred the Company's common shares to Vayupak Fund 1 managed by MFC Asset management Plc. and Vayupak Fund 1 managed by Krung Thai Asset management Plc. totaling 71,899,000 shares, on January 19th, 2021.

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

The Board of Directors and the management perform in the best interests of Bangchak and its shareholders under a clear, balanced, and accountable management structure. The Board monitors and ensures that the management implements its policies, plans and strategies, and that there is clear distinction of roles and responsibilities between the Board and the management. The Board appoints sub-committees to consider significant matters, consist of the Audit Committee, Corporate Governance Committee, Nomination and Remuneration Committee, and Enterprise-wide Risk Management Committee. The President & CEO is the top executive.



Remark: The Audit Committee considers, appoints, transfers, dismisses, and undertakes annual evaluation of the Chief Audit Executive and review the independence of Internal Audit.



Bangchak's Value Chain



Natural Resources Business

Exploration and Production Business: Bangchak formed BCPR Pte. Ltd., in Singapore to invest in OKEA ASA, which holds rights in Draugen, Gjøa, Ivar Aasen, Yme, and Grevling oil fields in Norway. The current capacity is 20 KBDOE (thousand barrels per day of oil equivalent). The Company aims to expand its investment to increase production capacity in oil fields in the future.

Natural Resources Business and Business Development: Bangchak also formed BCP Innovation Pte. Ltd. in Singapore to conduct businesses related to innovation abroad. At present, the Company has decreased its shareholding in Lithium Americas Corp., which operates two lithium mines in Argentina and the USA.



Research and Development (R&D) and Innovation Business

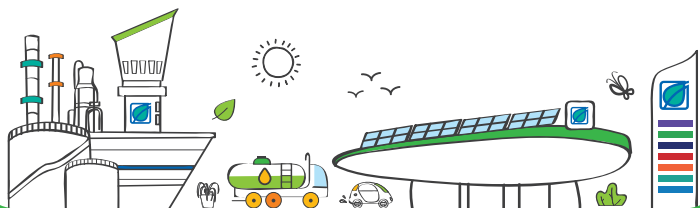
Bangchak established Bangchak Initiative and Innovation Center (BiIC) in order to create a Green Ecosystem to drive innovation by focusing on green energy and bio-based products to extend businesses both domestic and overseas through Research and Development (R&D), with technological and network management, and in cubation of startup businesses in support of the Thailand 4.0 economy.



Refinery and Oil Trading Business

Bangchak Refinery is a modern complex refinery with a maximum production capacity of 120 KBD. It can produce a large volume of premium gasoline and diesel. Gasohol and diesel from Bangchak Refinery are certified by the government as Euro 4 Standard-compliant. Its refinery is the first in Asia that produces eco-friendly Gasohol E20 to meet the Euro 5 Standard with less than 10 parts per million (ppm) of sulfur or five times lower than the Euro 4 standard. Finished products are sold through Bangchak service stations which are under the marketing business group.

Furthermore, Bangchak develops international oil trading continuously through BCP Trading Pte. Ltd. (BCPT), focusing on the strategic expansion of out-out trading (procuring oil from oversea producers for sale to customers in foreign countries), whose main products are crude oil, gasoline, diesel, fuel oil, naphtha and solvent products. The Company has expanded the oil trading market to new partner companies and new countries.



Marketing Business Group

Bangchak sells finished products from the refining process to customers directly through Bangchak's service stations networks. In Thailand, there are 1,233 Bangchak service stations which are comprised of 619 standard service stations and 614 agriculture cooperative service stations (as of December 2020). Bangchak service stations focus on green, renewable fuels with high performance, embracing the gasohol and diesel groups.

In addition, Bangchak has extended the business with non-oil businesses and auxiliary services to attract more service station clients, including convenient stores, coffee shops, and centers for lubricant replacement and car wash. In year 2020, the Company had over 673 branches of "Inthanin Coffee Shop" located in Bangchak service stations and outside Bangchak service stations.



Bio Based Products Business

Bangchak conducts bio-based products business through the business operation of BBGI Co., Ltd., which engages in the production and sale of biofuels as the largest player in Thailand. Its subsidiaries and associated companies have the total production capacity of 2 million liters/day which comprises 1 million liters/day of ethanol and 1 million liters/day of biodiesel. The objective is to lower trade deficits due to fuel imports, contribute to national energy security, support farmers, and preserve the environment. The Company also promotes the blending of ethanol with gasoline and biodiesel with diesel to yield gasohol 91, gasohol 95, gasohol E20, gasohol E85, and Hi-Diesel.



Green Power Business

Bangchak invests in the green power business via BCPG Public Company Limited (BCPG), a subsidiary established to engage in the generation and distribution of green electricity from renewables and new forms of clean energy in Thailand and overseas. In the end of year 2020, BCPG had the total production capacity of 472 MW which comprised electricity generation and distribution from solar power in Thailand and Japan, wind power in Nakhon Si Thammarat province, Thailand and in Philippines, Geothermal power in Indonesia, and hydropower in Laos.

Business Model

Key inputs

Financial capital



- Total liabilities THB 90,006 million
- Total equity THB 58,316 million
- Cost of sale of goods and rendering of services THB 132,122 million
- Investment in subsidiaries THB 13,851 million

Manufactured capital



- Property, plant and equipment THB 54,567 million
- Total assets THB 148,322 million
- Investment in 3E projects for efficiency improvement
- Strategic Sourcing

Natural capital



- Raw materials used in the refinery
- Renewable raw materials: 407,333 tons
- Non-renewable raw materials: 6,649,518 tons
- Total water withdrawal: 21.33 million m³
- Energy consumption: 12,845 TJ

Human capital



- Total employees: 1,230 persons
- Total training hours of employees: 28,650 hours
- Investment in employee training and development THB 44.5 million

Social and relationship capital



- Community and social development and philanthropy: THB 44.29 million
- Total voluntary working hours of employees: 9,001 hours
- Numbers of community relation activities: 140 activities
- Green procurement

Intellectual capital



- Established Bangchak Initiative and Innovation Center (BiIC) to support business innovation
- Technology and innovation R&D expenditure in 2020: THB 15,450,000
- Business Process Redesign (BPR) projects to improve working processes, reduce working time, and increase efficiency
- Promote new business development through Design Thinking project
- Rocket project

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

i AM BCP

Corporate culture

Sustainable Innovative Business Development in Harmony with the Environment and Society

Employee culture

To be virtuous, Knowledgeable, and Contributive to others



Green Business



Refinery and trading business group



Marketing business group



Green power business



Bio-based product business



Natural resources and business group



Investment in startups, innovations and green energy



Green Production



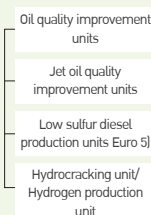
Crude oil



Refinery



Ethanol & B100

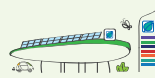


Gasoline (Euro 5) production unit → Gasohol
 Jet oil quality improvement units → Jet fuel
 Low sulfur diesel production units (Euro 5) → Diesel
 Hydrocracking unit/Hydrogen production unit → Fuel oil

- 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



Greenovation Experience



- 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, B20



- 600 branches of Inthanin coffee shops



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



Green Society

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 refining capacity at 97,200 barrels/day or equal to 81% of total production capacity
- 1,233 Bangchak service stations in Thailand
- Environmentally friendly oil products: Hi Premium Diesel S, B20 S, B10 S, Hi Diesel S, E85 S, E20 S, Gasohol 91 S, and Gasohol 95 S



Waste generated from production processes

- Total waste generated: 3,155 tons
- Waste to landfill: 0 ton



Other by-products

- Total scope 1 and scope 2 GHG emissions: 1.00 million tCO₂e
- Effluent: 0.72 million m³
- Water recycled and reused: 1.31 million m³

- Revenues from sales and services: THB 136,450 million
- Average sale volume through Bangchak service stations: 458.5 thousand liters/month/service station
- Net Promoter Score (NPS): 1st rank (joint)
- Market share of the retail sale volume: 15.6%
- Net profit (loss): THB (6,967) million
- EDITDA: THB 4,104 million

- Total GRM: \$ (0.68) per barrel
- Cumulative retail sale volume market share in 2020: 15.6%
- Cost saving associated with procurement: 14.5 % of the 2020 budget
- Suppliers' satisfaction score for procurement officers: 85% (very good level)

- Reduced total GHG emissions (scope 1 and scope 2) by 11% compared to based year 2015
- Reduced new water withdrawal thorough 3Rs (Reduce, Reuse and Recycle) by 1.45 million m³ or equal to 36.60% compared with water demand for production

- Human Capital Return On Investment (HC ROI): 91.47%
- Employee turnover rate: 3.16%
- Employee engagement score: 63%

- Percentage of community satisfaction to community relation activities: 91.47%
- Community Engagement Score: 84.4%
- Numbers of environmentally friendly products: 50 products

- Bangchak submitted applications for petty patent registration of seven items for intellectual property protection.
- Bangchak received THB 1 million in tax privileges from NSTDA.
- The BPR created added values, reduce operational costs, and increase efficiency of approximately THB 800 million

Financial capital



- Market Capitalization: 24,311,873 (as of Dec 2020)
- Net earnings per share: THB (5.50) per share
- Divident payment: THB 0.40 per share
- Tax payment to government and local authorities: THB 20.44 million

Manufactured capital



- Increasing safety performance of the production process and zero complaints related to air pollution
- Users' satisfaction score for suppliers was 74% (Good level)

Natural capital



- Reduced GHG emissions from using Bangchak's oil products by 197,737 tCO₂e
- Reduced third-party water in production processes equivalent to water consumption of 3,810 households
- Euro 5 oil products help reduce 2.5 micron particulate matter (PM 2.5) issue

Human capital



- Average training hours of employees: 23.29 hours/person/year
- Total employee benefit expense: THB 2,165 million
- Total Recordable Injury Rate (TRIR) of employees: 0.43 and contractors: 0.38 times/1 million working hours

Social and relationship capital



- Social investment: THB 9.386 million including
 - Community group : development budget: 64.88% and donotion budget: 17.40%
 - Family group: development budget: 9.45%
 - School group: development budget: 4.50% and donation budget: 1.07%
- Condominium group: development budget: 2.70%
- 71,083 people benefited from community relation activities
- Project "Community Kitchen - Pansuk Market" was able to generate over
- 153,500 people benefited from the support of alcohol gel, case packages, medical masks, and donoation barrels of Bangchak.

Intellectual capital



- Winnonie project which was originally from the Design Thinking project has allowed taxi motorcyclist to rent electric motorcycles and provided swapping batteries at swapping station to reduce financial burdens of the taxi motorcyclist from over THB 6,000 per month to THB 3,000 per month.

Bangchak at a glance in 2020



Corporate governance

The revision of the Corporate Governance Policy

17th

Re-certified for the membership of the CAC

CAC

(Thailand's Private Sector Collective Action Coalition against Corruption)

participated in the online CAC seminar

57 suppliers

NO Gift Policy



For 7 consecutive years



Percentage of executives and employees acknowledging the Anti-Corruption Policy and passing the test



Percentage of notification of the online conflict of interest

100%



Number of corruption incident

1 CASE



After due investigation, Bangchak found no grounds for this complaint, since the complainant had delivered his or her job not by its standard specified in the agreement, making it impossible for Bangchak to inspect the job.

Economic growth

Revenue from selling of goods and services

136,450 million baht



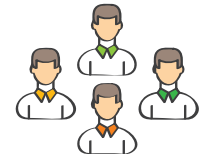
Profit (loss) for the year

(5,770) million baht



Dividend payment per share

0.40 THB/share



EBITDA
4,104 million baht

EBITDA by business group



Natural Resource Business:
(1,004) million baht



Green Power Business:
3,640 million baht



Refinery and Trading Business:
(2,169) million baht



Marketing Business:
2,174 million baht



Bio-based Product Business:
1,828 million baht

Other:
(365) million baht

Strengthen liquidity

Adjusted plans to reduce expenses

900 million baht

Proposed debenture in the amount of

8,000 million baht

The debenture was well received amongst Institutional Investors and/or High Net Worth Investors

Postponed the Turnaround Maintenance which reflect cost saving of

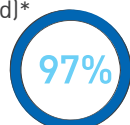
1,100 million baht

Obtained **4** times

from the investment in Startup "Lithium Americas"
The Company still has the right to buy lithium following the agreement.

Local purchases of goods and services (Thailand)*

1,846 million baht



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

Percentage of cost saving from strategic sourcing procurement

14.5% Of the **2563** budget

Percentage of tier 1 suppliers and critical non-tier 1 suppliers participating in ESG risks assessment

100%

In Harmony With Environment

Total GHG emissions (Equity share approach)



Percentage of GHG emissions by business group (equity share approach)



Refinery and Trading Business
89.0%



Bio-based Product Business
10.1%



Marketing Business
0.8%



Green Power Business
0.1%

Net energy consumption with in the organization

14,112 Terajoules

Energy Intensity Index (Refinery Business)

EII = 102.0

Total water withdrawal*



*Surface water, groundwater, produced water from crude oil extraction/processing, and third-party water of the refinery and the headquarter office

Water recycled and reused of the refinery

1.31
Million m³



Effluent

0.72
Million m³



3Rs waste management



99.96%
of total waste



Number of significant oil and chemicals spills (more than 100 barrels/case)

0
case

Environmentally friendly products



Low Carbon Product



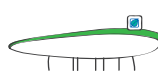
Avoid emission for third-parties

Numbers of accidents from product transportation (financial loss more than THB 1 million/accident)

2
cases

Greenovative Experience

Bangchak service stations



1,233
stations

standard service

619 stations

COOP service

614 stations



branches of the Inthanin coffee shop



Inthanin

673 shops

Creating values for society



Safety

(Loss-time Injury Frequency Rate: LTIFR)

Employees **0** case
Contractors **2** cases

(Total Recordable Injury Rate: TRIR)



(High-Consequence Work-Related Injuries)

Employees **0** case
Contractors **0** case



Customers

Percentage of customer satisfaction

88.1%

NPS Score
1st rank (joint)



Percentage of customer returning to service stations

95%



Employees



The Best Employer Score

56%



Employee engagement score
63%



Average training hours of employees

23.29%
hours/person/year



Society

Voluntary hours of employees

9,001 hours

Circular Economy

Delivered
300,000

plastic water bottles collected through "Rak Pan Sook" project for producing bags and sanitary masks



Accumulated number of **Bio cup** fordrinks at Inthanin coffee shops

78,000,000

cups

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 Maharajababophit 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

- 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

- 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 & Sustainability

Bangchak is committed responses to needs and expectations of all stakeholders and sustainable development goals (SDGs). The Company also considers corporate sustainability assessments at national and international levels, which include sustainability topics in the areas of corporate governance and economic dimension, environmental dimension, and social dimension, to mitigate risks and their impacts on business and to seek for opportunities for improvement of business operations in all aspects of sustainability in accordance with targets and guidelines of international standards of sustainable development. As a result, the Company is able to conduct proactive business operations and to cope with global changes and emerging risks with immunity.

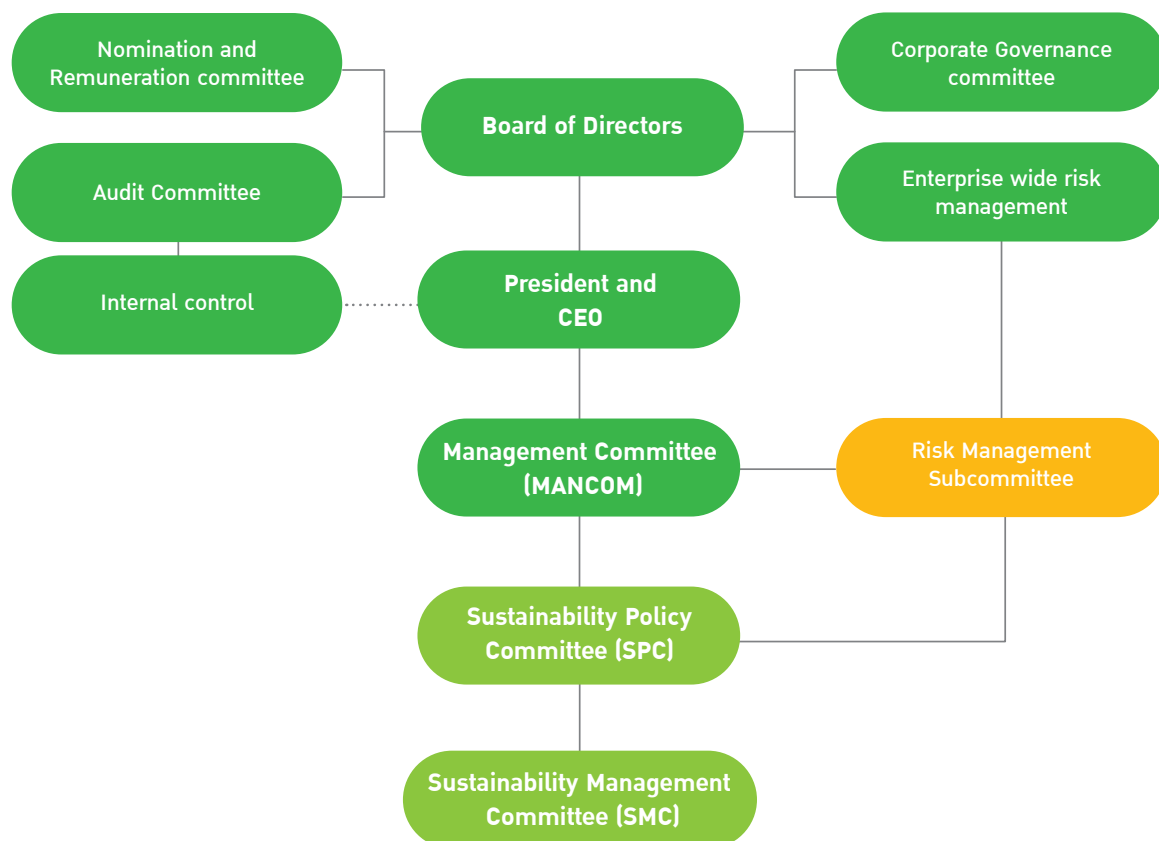
Bangchak operates its businesses in the aspect of sustainability through the Sustainability Policy Committee (SPC). The President and CEO is the chairman of the SPC, and executives of each business units and functions are the committee members (Disclosure 102-19, 102-20, 102-22).

The SPC sets directions, policies and corporate strategies for sustainable business development for Bangchak

and its subsidiaries in response to the SDGs, corporate sustainability assessments as well as needs and expectations of stakeholders.

Policies and targets from the SPC are executed through business functions and committees associated with sustainability. Sustainability Management Committee (SMC) is responsible for progress monitoring, data collection, result evaluation, and progress reporting to the SPC. the SPC then reports sustainability progresses to Management Committee (MANCOM) and Risk Management Sub-Committee.

In 2020, the Company reviewed Sustainability Management Committee (SMC) to extend the scope of sustainability to cover safety and occupational health issues of Bangchak refinery. The SMC also focuses on climate change strategy, climate change risks, and GHG emissions reductions to pursue the target of carbon neutrality of Bangchak Group within 2030.



Sustainability Frameworks and Principles (Disclosure 102-16)

Bangchak has the Sustainability Policy that integrates international Sustainability guidelines, criteria and standards, such as United Nation Global Compact (UNGC), Dow Jones Sustainability Indices (DJSI), Thailand Quality Awards (TQA), International Organization for Standardization (ISO) as well as stakeholders' expectation to Company's vision, direction and business strategy as the corporate sustainability framework. The Company monitors and reports on sustainability performance in accordance with the GRI Sustainability Reporting Standards (GRI Standards). This policy is a framework that demonstrates Bangchak's sustainability commitments along the business value chain.

In 2020, Bangchak revised its Sustainability Policy to cover current and future sustainability issues by assessing issues, emerging risks, and global sustainability trends from Bangchak Group's businesses in Thailand and international. Eight aspects covered under the Sustainability policy includes:

1. Good corporate governance
2. Fair business conduct
3. Responsible production and services and promoting sustainable society
4. Sustainability due-diligence assessment for new businesses
5. New innovative business investment for sustainability
6. Worthwhile resources and environmental management
7. Human rights support for sustainable economic prosperity
8. Sustainable social development

For further details of eight sustainability issues of Sustainability Policy, please refer to <https://www.bangchak.co.th/th/sustainability/sustainability-policy-framework>

Furthermore, Bangchak has adopted the "BCG Economy Model" which comprises three key economies: Bio-Economy focusing on the productive use of biological resource through the use 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 Green Economy focusing on overcoming environmental issues and mitigating their impacts sustainably. The model has been adopted to create profits, values and sustainability for the Company and stakeholders.

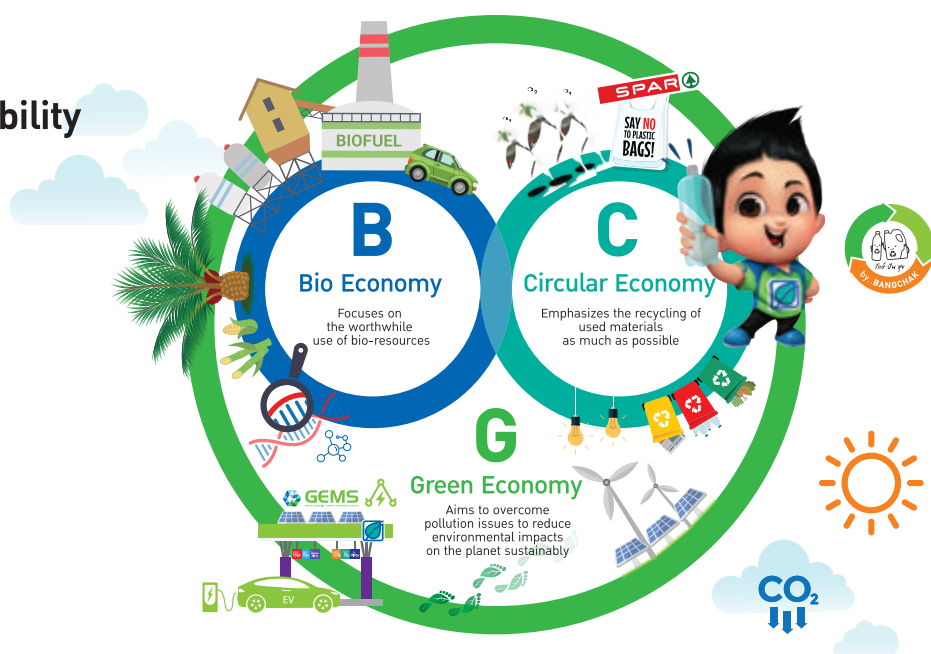


ESG Ratings/Sustainability Assessments

Sustainability Award
Bronze Class 2021

S&P Global

MSCI
ESG RATINGS



Bangchak and Stakeholders

Stakeholder engagement

From the company's vision of "Evolving Greenovation – pursuing to be the Leading Green Innovation Companies in Asia that has good corporate governance and conducts business with a participatory and sustainable approach. "Working with stakeholders is an important matter that the Company has consistently implemented in accordance with the vision. Incorporating the information gained from working with stakeholders 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 Risk Assessment Intelligent Risks 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

- ✔ What groups of stakeholders are related to the Company's business operations?
- ✔ Does the Company make a lasting impact on the stakeholders?
- ✔ Do stakeholders have an influence that will have a lasting impact on the company?

2

Working with Stakeholders, there are important steps as follows:

- ✔ Specifying the department responsible for the stakeholder groups
- ✔ Systematically determine methods for surveying the needs, expectations and stakeholders' expectations and operating frequencies
- ✔ Gather information about the needs and expectations of stakeholders

3

Analysis and Selection of Materiality





- ✔ Consider the importance of the 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

- ✔ Propose the analysis results to the Corporate Sustainability Policy Committee (SPC) in order to determine the direction of the sustainability operations and create organizational strategies.






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

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	2020 Targets
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	1. Engagement survey 2. Focus group 3. HR Visit 4. CEO Box 5. Data Analytics	1. Talent management and personnel 2. Career opportunities 3. Recognition from top management 4. Employee performance evaluation 5. top management appear to be role models for employees 6. Taking care of employees during COVID-19 crisis 7. Innovation	1. Engagement Score > 67% 2. Employee turnover rate not more than 4% 3. Rotation rate > 10%.
Contractor / Supplier 	1. Supplier and Buyer relation management 2. Annual Trade Partner seminar 3. Satisfaction, need & expectation survey 4. Supplier site visit	1. Speed of purchasing / procurement process 2. Digital transformation 3. Effective communications during the COVID-19 crisis	1. 80% of supplier satisfaction on the performance of the procurement officers 2. 80% of user satisfaction on the operations of suppliers
Oil transportation suppliers 	1. Communicate both directly and online Using Microsoft Team conducts monthly performance meeting during COVID-19 2. Send information Measures during COVID-19 3. Satisfaction, need & expectation survey	1. Reconsider transportation cost because of the impact of coronavirus disease 2019 (COVID-19) 2. Having income and profit in the deal 3. Allocate jobs fairly such as in long weekend 4. Abide by the contract 5. Facilitates parking, equipment systems and staff 6. Mitigating transportation disruptions	1. Making understanding and working together between supplier and dealer 2. Help suppliers safe cost 3. Allocate jobs fairly
Raw materials suppliers 	1. Meeting to communicate about work and solve problem together 2. Regular discussion	1. Consistent procurement 2. Advanced notification in case of any delay in receiving-distributing goods 3. Flexible and smooth operation on the reception of raw materials 4. Paying bills on time (by the due date) 5. Accurate and complete financial document regarding receiving-paying	Suppliers have overall satisfaction in purchasing raw materials, finish product, purchasing process and accounting not less than 60%
Ship Transportation suppliers 	1. KPI and fleet management meeting 2. regular discussion and site visit 3. Tanker Management and Self Assessment (TMSA)	1. Work process improvement and solve problem meeting 2. No accident, no oil spill during the course of transportation 3. Reducing oil loss during the course of transportation 4. Reducing number of times that vessels got damaged to the condition that is not possible to provide oil transportation service 5. Marine & Cargo Insurance 6. Ongoing reports of incidents. when there is an emergency 7. Able to coordinate with relevant persons at any time when there is a incident	1. Controlling quantity of oil loss during the course of transportation by the targets as follows: <ul style="list-style-type: none"> Intransit Loss : Product < 0.25% on B/L Intransit Loss : Crude < 0.17% on B/L 2. Number of times in the occurrence of oil spill is zero. 3. Number of accident occurred during the course of transportation is zero

Responses by the company in 2020	Results 2020	Next Year Plan
<ol style="list-style-type: none"> 1. Talent Development : Develop IDPs for high potential or Sucessor, rotation program, innovationand design thinking project, employee performance evaluation and Mentoring program 2. Career opportunities : Communicate the growth path and allow employees to define their career paths 3. Employee performance evaluation : educated management all level about how to give constructive feedback to employees, special promotion based on high potential and fast track, revised commonKPI in accordance with the economic situation and business strategies 4. Cost reduction policy, reductions in executive pay during the COVID-19 5. Epidemic – The company maintains engagement between management and employees such asTown Hall Meetings were conducted via live streaming to hold on a regular basis and plans are updated in response to the on-going crisis where any updates and new information are communicated to employees. 6. Innovation : allow employees to join the innovation projects such as TGIF, Exist Strategy and Intrapreneur , Promote the use of technology such as work from home,teleconference ,VDO conference and RPA 	<ol style="list-style-type: none"> 1. Engagement Score 67% 2. Employee turnover rate not more than 3.16% 3. Rotation rate 10.11% 	<ol style="list-style-type: none"> 1. Improve engagement Score : conduct focus group to communicate and find out need and expectation) 2. Continuously develop career path, IDPs and close competency gap Communicate the growth path, and revise operation staff career path guideline 3. Effective internal communication <ul style="list-style-type: none"> • Communicate the organization’s goals, how employees contribute to its success and feedback from leader • Conduct internal business unit meeting and activities more often • Create a podcast for employees
<ol style="list-style-type: none"> 1. Using general equipment parts in the refinery E-catalog 2. Using Microsoft Team conducts the meeting between user, buyer and supplier while in lockdown at home 3. Using an eletronic bidding system 4. Reduces workload, enhances productivity by using electronic 5. Not only contacted with user and buyer, suppliers continued to receive wages on time, even with Work from Home 	<ol style="list-style-type: none"> 1. 85% of supplier satisfaction on the performance of the procurement officers 2. 74% of user satisfaction on the operations of suppliers 	<ol style="list-style-type: none"> 1. Study about e- bank guarantees to improve speed, convenience and and transaction costs for suppliers 2. Study about leveraging robotic process automation in procurement to help the end-to-end management of the demand and supply planning, reduce operating costs, and allow buyer or specialists to pursue higher-value work such as category management and analysis
<ol style="list-style-type: none"> 1. Making understanding and working together between supplier and dealer 2. Coordinate customers to work step by step description of a receiving oil process 3. Revised TOR and reduce costs such as do not reserve trucks, extend Vehicle Age and can get a temporary job from another employer during the COVID-19 4. Job assignment to contractors is considered on performance and KPI 5. Facilitates parking at dupot 6. Distributed alcohol gel and medical masks to drivers and contractors. In addition, alcohol gels are provided throughout the office and operational areas. 	<ol style="list-style-type: none"> 1. Customer satisfaction score was higher 2. Install new necessary equipment without increasing the delivery price 3. Building relations as long-term partner and helping each other to improve efficiency 	<ol style="list-style-type: none"> 1. Develop work system in order to save cost for the contractor by back haul project and oil transferring 2. Using IT to increase efficiency at work 3. Extending the installation of anti-opiates equipment
<ol style="list-style-type: none"> 1. Consistent procurement 2. Paying bills on time (by the due date) 3. Smooth material receiving operations 4. Management of receiving-distribution of oil according to plan/time, completely done as scheduled 5. Ongoing reports of incidents when there is an emergency 	<ol style="list-style-type: none"> 1. Suppliers have overall satisfaction in purchasing raw materials, finish product, purchasing process and accounting 78% 2. Suppliers have overall satisfaction in purchasing finish product, purchasing process and accounting 80% 	<ol style="list-style-type: none"> 1. Consistent procurement 2. Fair and transparent procurement 3. Exchanging 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 4. Management of receiving-distribution of oil according to plan / time, completely done as scheduled 5. Accurate and complete financial and document on time
<ol style="list-style-type: none"> 1. Work process improvement and solve problem meeting 2. No accident, no oil spill during the course of transportation 3. Reducing oil loss during the course of transportation 4. Reducing number of times that vessels got damaged to the condition that is not possible to provide oil transportation service 5. Marine & Cargo Insurance 6. Ongoing reports of incidents when there is an emergency 7. Able to coordinate with relevant persons at any time when there is a incident 	<ol style="list-style-type: none"> 1. Controlling quantity of oil loss during the course of transportation by the targets as follows: <ul style="list-style-type: none"> • Intransit Loss : Product < 0.14% on B/L • Intransit Loss : Crude < 0.14% on B/L 2. Number of times in the occurrence of oil spill is zero. 3. Number of accident occurred during the course of transportation is zero 	<ol style="list-style-type: none"> 1. Using Smart Logistic & Inventory Management (SLIM) 2. Using Tanker Management and Self Assessment (TMSA) to evaluate performance 3. Quarterly KPI meeting

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	2020 Targets
<p>Business Partner: Service stations (BGN)</p> <p>Business Partner: Service stations (Dealers)</p> <p>Business Partner: Service stations (COOP)</p> 	<ul style="list-style-type: none"> Marketing representative Group meeting on a monthly or quarterly BCP Link system Mystery Shopper Call Center Information from Department of Energy Business 	<ul style="list-style-type: none"> Better performance Supporting and supervising on the service station standards to be ready for competition Efficient repair of equipment Sale promotion program and high impact advertisement High quality product development The on-time, complete, no loss oil delivery service adopted and applied risk management and business continuity management plan 	<ul style="list-style-type: none"> Market share in refined oil through service station increased by 16% NPS Score 1st Rank Mystery Shopper score (BGN 90%, Dealer 75%)
<p>End user</p> 	<ul style="list-style-type: none"> NPS Customer Survey Marketing research Customer behavior data from POS and CRM systems Department of Energy Business Information 	<ul style="list-style-type: none"> Location of service stations. Fast service Service staff delivers their service politely. New products to serve the needs of customer Sufficient and clean restrooms. Convenient to travel in and out, and has parkings area enough Adopted and applied risk management and business continuity management plan Adjusted marketing strategy in response or support to customer the crisis 	<ul style="list-style-type: none"> Market share of refined oil through service station increased to 16.0% No. 1 of the Net Promoter Score
<p>Industrial Customers</p> 	<ol style="list-style-type: none"> Sale representative Technical Service engineers Boots activities with government sector and various associations. Satisfaction Assessment Form Customer Complaint 	<ol style="list-style-type: none"> Extend payment time or credit term On time product and service delivery Quality of products and convenience to order 	<ol style="list-style-type: none"> Support customers during the COVID-19 Delay product and service < 1 time/month Sales increased by developing new product to expand new Industrial Customers group during the COVID-19
<p>Wholesale customers</p> 	<ol style="list-style-type: none"> Sale representative Technical Service engineers Satisfaction Assessment Form Customer Complaint 	<ol style="list-style-type: none"> Extend payment time or credit term On time product and service delivery Sales promotion and competitive price 	<ol style="list-style-type: none"> Increase sales volume > 5% per month

Responses by the company in 2020	Results 2020	Next Year Plan
<ul style="list-style-type: none"> Improved the operator's potentials for better business performance as follows: Developed new high margin and high quality product matching with customer demand Organizing training for station manager and campaign for service warm up before taking shift Support Renovate, Bright and Clean project to boost up sale volume Sale promotion program and high impact advertisement such as Free drinking water or Point redemption More value incentive to motivated all group business partners to keep high quality of services 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 and check location of the truck since leaving the Bangchak oil depot Applied E-Training system (BOA: Bangchak Online Academy) for service station staff training during COVID-19 	<ul style="list-style-type: none"> Market share in refined oil through service station increased by 15.6% NPS Score 1st Rank Mystery Shopper score (BGN 99%, Dealer 83.6%, COOP 88.6%) 	<ul style="list-style-type: none"> Provide support to uplift service standard of the service stations through award recognition and value incentive program in a kind of good image Developing new high quality and reasonable margin product matching with customer need /demand Expanding the non-oil business to meet the needs of more customers Increase work efficiency for BGN staff, Dealer and coop staff through innovation and technology Set up Support team to help local business partners Developing order systems, transportation, and various systems to facilitate convenience.
<ul style="list-style-type: none"> Expand 48 Bangchak service stations, new non-oil business partners in 308 new service stations, and 46 instant coffee shops Develop and extend Unique Design service stations, and variety of non-oil services Improve speed up service Bangchak service stations offer consumer goods through Family Mart and Tops Daily Implement Bangchak Digital Payment to reduce the time of service Launch new products to serve the needs of customers such as Bangchak E20s B20s Evo which is premium quality and, sell at saving price Use BOA Bangchak Online Academy system which is easy to access for service station staff training Use Mobile Application Survey to in order to be able to solve customer problems timely 20 service stations installed 20 EV Charger systems Analyzed customer data to create the sales promotional campaigns such as Flash sale, redeeming membership points for gold, discount fuel costs or discount Grab and Food Panda delivery cost. 	<ul style="list-style-type: none"> Market share of refined oil through service station increased to 15.6% No. 1 of the Net Promoter Score Developed 48 new service stations 	<ul style="list-style-type: none"> Expand 100 Bangchak service stations Develop image, service quality and Fast Service in service stations Develop quality of products continuously Extend bangchak card members, and use customer data to develop new privilege Collaborate with business alliance to extend customer base continuously Use technologies to leverage services such as digital payment Increase non-oil business in service stations to cover the needs of customers.
<ol style="list-style-type: none"> Extend payment time or credit term for customers who buy all product from the company, good financial discipline and no outstanding debt. Give a special credit For good financial discipline retail customers Encouraged the use of E-Tax invoice system to improve customers' ability to access data via online system Monthly meeting with a logistics team for summarizing the delivery demand and solving customer complaints Evaluate the industrial customer satisfaction after receiving the services from the company such as technical services and Transportation services Increase the transport cycle during the press sugar canes period Launched new products to serve the needs of customers such as Bangchak Hi-Diesel B20s Evo and Hi-Diesel S B10, and sell at saving price, and Improved the solvent process for BCP White Spirit – 3040, whose application is in the production of paint, thinner, and resin Improve and expand oil terminal to increase coverage and improve delivery time Lubricants information and selection guidelines are provided on www.bangchaklubricants.com 	<ol style="list-style-type: none"> Delay product and service < 1 time/month Launch the solvent - BCP White Spirit – 3040 to paint thinner, and resin industrial customers 	<ol style="list-style-type: none"> Increase number of industrial customers and increase diesel sales volumes Launch new products
<ol style="list-style-type: none"> Approved additional credit from the credit guaranteed Launched promotion programs as discussed with the customer, and also giving the quarterly and annual discount 	<ol style="list-style-type: none"> Average sales volume increase 10% /month 	<ol style="list-style-type: none"> Increase number of whole sales customers and increase sales volumes

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	2020 Targets
Bangchak's neighbors <ul style="list-style-type: none"> Community around the refinery (within a radius of 1.5 kms around) 		Common Needs & Expectations <ol style="list-style-type: none"> Safe business operation Notification to community in advance of the Company's activity Direct communication or direct line for communities to contact with the refinery Shift Supervisor Notification in advance to community of the Company's activities Supports epidemic prevention/mitigation equipment during the pandemic Group Needs & Expectations <ol style="list-style-type: none"> Community around the refinery <ul style="list-style-type: none"> Participation in community relations activities related to Education Quality of life improvement Promotion of economy and community income 	
<ul style="list-style-type: none"> School 	<ul style="list-style-type: none"> Community relation staff and community visit Community relation activity assessment / evaluation Need & community engagement assessment by Third Party Feed back from line groups and social media 	<ol style="list-style-type: none"> Educational development and potentials development for teachers and students Technology and instructional media supports 	Common Targets <ul style="list-style-type: none"> Satisfaction score in community relations activities 95% All community engagement score 85%
<ul style="list-style-type: none"> Family Group (Single House Group) 		<ol style="list-style-type: none"> Organized the health and knowledge on New normal life, environment and financial management activities Providing environmental activities/knowledge sharing Providing economic and financial activities/knowledge sharing 	
<ul style="list-style-type: none"> Condominium 		<ol style="list-style-type: none"> Providing knowledge and enhancing understanding about the prevention of environmental impact and the safety issues of the Company <ul style="list-style-type: none"> Organized the health activities 	
Mass Media <ol style="list-style-type: none"> News Magazine Television Radio Online Media 	<ol style="list-style-type: none"> Organize press conference, send press release about updating progress of organization continuously. Visit mass media in special occasions. Set up special interview of executives in each division in occasions as mass media's request. Increase suitable content for on-line media and extend target group to new receiver of message. 	<ol style="list-style-type: none"> Progress information of business, overall picture of energy business and growth plan and related business extension. Besides regular press conference, to get a specific issue as media seeking, interviewing high executive will make a special news scoop which will be a single news different from other media. Giving interview by high ranking executive to present vision of business, place trust in news and to stimulate to follow news. Interesting photo release Fact sheet about situation Conduct the press conference or press release, which can instantaneously update relevant and useful information throughout the duration of the situation and members of the senior management team answer questions directly from the press. Site Visit for media Update and report situation to the media 	<ol style="list-style-type: none"> Media value from print media and social media Number of the media who come to join the press conference Number of news release, which was public by the media The media satisfaction scores

Responses by the company in 2020	Results 2020	Next Year Plan
<ol style="list-style-type: none"> 1. Security Patrol Project 2. Installed new Public Voice at Soi Phun Sin intersection 7-10 3. Encouraged more people to join in community relations activities of Bangchak 4. Re-designed community relations activities to match with community demands/needs, focusing on the in-come generation activities <ul style="list-style-type: none"> - Organized Bangchak Cares - Fight COVID-19 project 5. Promotion of economy and community income "Community Kitchen - Pansuk Market" 6. Supported and participated in community activities 	<p>All group performance</p> <ol style="list-style-type: none"> 1. Satisfaction score in community relations activities 91.40% 2. All group community engagement score 84.2 % 	<ul style="list-style-type: none"> • Building relationship and Re-designed community relations activities to match with community demands and needs • Community demands and need Promotion of economy and community income by establishment of professional groups to increase their household income • Providing educational supports for the Youth in community, to let them have better opportunity in furthering their study in university • Promoting opportunity for the Youth in community to show their potential/talent • Supports epidemic prevention/mitigation equipment during the pandemic
<ol style="list-style-type: none"> 1. Organized the Eco-School project utilized online resources and BCP Knowledge Tube: Module Math Tricks 2. Organized Bangchak Cares - Fight COVID-19 project 3. Organized Bangchak Scholarship Project 4. Organized fire drill together with schools and provided firefighting equipment / fire extinguishers 		<ul style="list-style-type: none"> • Educational development and potentials development for teachers and students • Organized fire drill together with schools and provided firefighting equipment / fire extinguishers • Continuously organized the Eco-School project
<ol style="list-style-type: none"> 1. Organizing activities continuously and Re-designed s activities to match with community demands/needs such as <ul style="list-style-type: none"> • volunteers sew masks for donation • Organized fire drill and firefighting • D.I.Y Bag from t-shirt, Krathong from Corn husks - Vegetables for share 2. Organized Bangchak Cares - Fight COVID-19 project <ul style="list-style-type: none"> • Wearing a mask, cleaning your hands campaign 3. Communicated through new channels, such as Facebook of Bangchak Bai Mai Family 		<ul style="list-style-type: none"> • Re-designed community relations activities to match with community demands and needs of family group • Encouraging for voluntary services for the benefits of better society and environmen • Developing communication channel to better cover the target groups
<ol style="list-style-type: none"> 1. Organized fire drill and firefighting 2. Organized Bangchak Cares - Fight COVID-19 project 3. Support Knoeledge for generating extra income through digital media 4. Organize Clean Food, clean recipes online teaching 5. DIY Krathong from Corn husks 6. Support Condo Residential Juristic Person such as annual shareholder meeting 7. Communicated through new channels, such as Facebook of <ul style="list-style-type: none"> • Bangchak Bai Mai Family • Line group for Bangchak Neighboring Condos • Poster 		<ul style="list-style-type: none"> • Re-designed community relations activities to match with community demands and needs of condominium • Health Promotion Activities • Environmental Conservation Activities • Organized fire drill and firefighting • Developing communication channel like the online in order to access more the target groups
<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. Support mass media's activities for public as well as media's anniversary to create good relation to each other. 4. Have a regular visit to media in energy business and join in their events as possible 	<ol style="list-style-type: none"> 1. Value of news disseminated through publication and on-line media are on target 2. The company release continuously picked up by mainstream and online media 3. The content of the release which were published, is accurate and complete 	<ul style="list-style-type: none"> • Create media engagement activities to enhance relation • Extend to connect with international media in Thailand and Asia, and prior press release in English language for media, foreigners and those interested in business / activities

Stakeholder Groups (Disclosure 102-40)	Engagement Approaches (Disclosure 102-43)	Needs & Expectations (Disclosure 102-44)	2020 Targets
Shareholder 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. Higher returns (Capital Gain) 4. Dividend payment of the company is in satisfactory level and regular payment 5. Progress of projects as planned 6. Conducting business in accordance with sustainable development guideline (Sustainability) 7. Providing the importance of data and information, which could direct impact on business operations 8. Conduct and Monitor risk and business continuity management every year 9. Communicate effectively, shortened and rapidly in the unstable and complex situation 10. Innovation 	<ol style="list-style-type: none"> 1. Received IR reward 2. Invited to Roadshow 3. Invited as a speaker to join the conference call
Creditor <ul style="list-style-type: none"> • Financial Institution • 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. Follow the terms of the loan agreement 2. Cooperate in providing important information of company as requested by the bank 3. Complete opportunity to use financial services with bank and being good partners to each other 4. Provide timely, accurate, and clear information to creditors in the unstable and complex situation 5. Conduct Business Continuity and Risk Management plan 	<ol style="list-style-type: none"> 1. Assessment of overall needs of financial institution and high level lender 2. The result of evaluation of compliance with loan conditions, providing information and other cooperation is at high to very high level
Government Agencies Central and Local Government Agencies 	<ol style="list-style-type: none"> 1. Meeting, informing, explaining and discussing 2. Participating in government projects 3. Visiting government operations 	<ol style="list-style-type: none"> 1. Legal compliance or better than legal requirements 2. Social and environment responsibility and sustainable living with communities 3. International standard for safety and environmental management system 4. Good cooperation in providing accurate and rapid information 5. Support government projects 6. Recognise and willing to listen stakeholders' opinions 	<ol style="list-style-type: none"> 1. Government agencies allowed continuous operations as requested by the company 2. Control air quality to meet standard without complaints from communities
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 or promoting corporate sustainability organization 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 2. Support in critical emergencies such as an emergency shutdown 	<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

Responses by the company in 2020	Results 2020	Next Year Plan
<ol style="list-style-type: none"> Dividend payment to shareholders is appropriate to the operating results. And company policy and the rate of payment in the same direction as other companies in the same business. Revised online meeting / video conferences to communicate with investors during the COVID-19 situation Joined the Opportunity Day activity at the Stock Exchange of Thailand, where the executives can give corporate information to the investors Improve the investor relation website to be up-to-date and complete information, easy access and improve on-line communication through Chatbot program to be more accurate and comprehensive Provides Investor Kits such as MD&A / Factsheet / Company Profile as primary information to shareholders and investors for sharing up to date company business, quarterly business performance, investment plan and project progression of Bangchak group Communicate executives to be informed opinions and questions from shareholders 	<ol style="list-style-type: none"> Invited from stock market to join in Roadshow both domestic and abroad TSR Avg. 4-yrs (Sep16 - Sep20): -12.85% 	<ol style="list-style-type: none"> Websites and online are a key communication channel in COVID-19 situation Closed coordinate with SET to increase the frequency of activities and to get new investors Communicate opinions and questions received from investors to executives continuously
<ol style="list-style-type: none"> Assessment of overall needs of financial institution and high level lender The result of evaluation of compliance with loan conditions, providing information and other cooperation is at high to very high level Respond to questions to credit analysis officers timely, accurate, and clear information The company can issue debentures 	<ol style="list-style-type: none"> Responding to the needs of financial institution given loan is average high Complying with conditions of loan agreement, information providing and other cooperation is at high to very high level the company issued Unsubordinated and Unsecured Debentures with a Debentureholders' Representative in the Name-Registered Certificate to Institutional Investors and/or High Net Worth Investors in the amount of THB 8,000 million 	<ol style="list-style-type: none"> Find opportunity to access complete financial services with financial institution and update to new financial innovations
<ol style="list-style-type: none"> Conducted business in compliance with law and regulations related to 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, WaterFootprint, 3Rs in operational process Supported and cooperated with government sector to promote environmentally friendly projects 	<ol style="list-style-type: none"> Allowed by government agencies to continuously conduct activities or projects as requested No complaints from communities about air pollution 	<ol style="list-style-type: none"> Invite government officer to visit business and share ideas for new improvement initiatives Supported and cooperated with government sector to promote environmentally friendly projects
<ol style="list-style-type: none"> Continuous transparent business operation under competition and free trade mechanisms, also complied with all laws and regulations 	<ol style="list-style-type: none"> No complaints or negative news when competing with competitors No complaints from competitors regarding unfair trading practices 	<ol style="list-style-type: none"> Continuous transparent business operation under competition and free trade mechanisms, also complied with all laws and regulations

Key Sustainability Issues

Bangchak operates a sustainable business while co-creating value to society and environment and responding to stakeholders' needs and expectations. The Company identifies material issues using a robust materiality assessment process based on the perspectives of stakeholders' needs and expectations as well as potential business impacts.

Materiality Assessment Process

1. Issues Identification

Bangchak assesses both internal and external information sources to identify issues that may impact the governance, economic, environmental and social performance of the Company.

- Internal information sources include targets and business directions, business plans and issues from executive's brainstorming workshop, business strategies, and enterprise risk management with short and long-term potential impacts
- External information sources include global sustainability trends, global risks, Sustainable Development Goals (SDGs), Dow Jones Sustainability Index (DJSI), The Ten Principles of UN Global Compact, peer benchmarking with refinery and renewable energy businesses, and stakeholders' needs and expectations.

2. Issues Prioritization

Bangchak ranks and prioritizes identified material issues by considering the alignment with GRI indicators. In 2020, 18 material issues were identified. Issues are mapped onto materiality matrix using the criteria below:

2.1 Horizontal axis: these sustainability issues are considered to have potential significant positive and negative risks and impacts to Bangchak's business both in short and long-term.

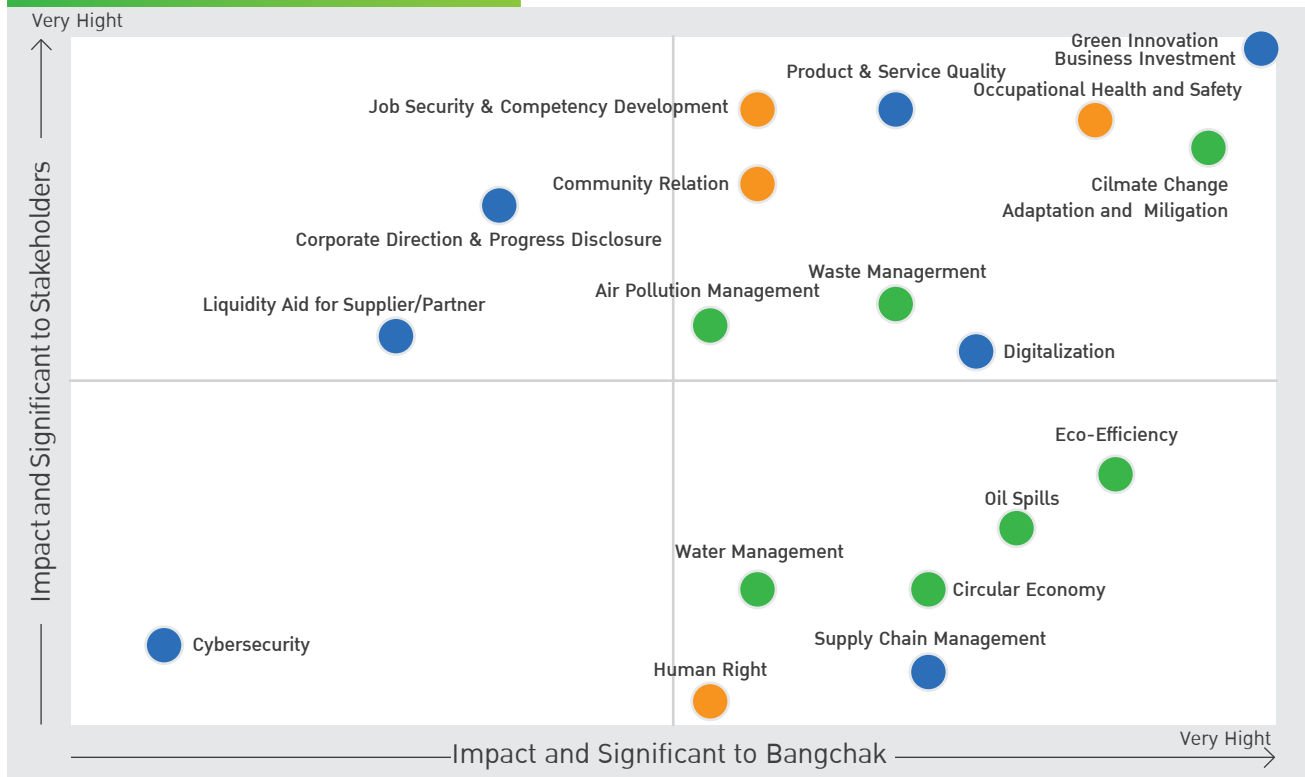
2.2 Vertical axis: these sustainability issues are considered to have potential significant positive and negative influences and impacts to Bangchak's stakeholders.

In 2020, Bangchak invited sustainability professionals and experts to provide feedbacks on the Company's materiality assessment process in order to ensure that the scope covered are adequate, identification and prioritization process are sound, and issues are fairly assessed from multiple perspectives.

3. Validation

Result of materiality assessment were endorsed by the Sustainability Policy Committee (SPC) (Disclosure 102-32). In 2020, material issues were green innovation investment, climate change adaptation and mitigation, occupational health and safety, products and service quality, job security and human capital development, community relations, and digitalization. The Company have set a framework to respond to the material issues using four levels of importance and appropriateness which are: Initiative Base, Strategic Focus, Mission Driven, and Sustainability Leader. In addition, Bangchak also defined performance indicators 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. Due to COVID-19 crisis in 2020, there were emerging issues that became more important including digitalization, job security and human capital development, disclosure of business direction and progress, cash flow assistance to suppliers and business partners, eco-efficiency and circular economy, and cyber security. Material issues for 2020 are:

Materiality Matrix (Disclosure 102-47)



Remark: materiality assessment process was assured by third party

Data assured by 3rd party

☐ No ☒ Yes

Prioritization Criteria

Bangchak's stakeholders

1. Impacts level to stakeholders
2. Significant to stakeholders in the future
3. Impacts to diverse stakeholders
4. Expectations level on issues management from the Company

Bangchak

1. Opportunities to create impacts
2. Severity impact level
3. Business risk level
4. Long-term impacts level
5. Significant or opportunities for future issues
6. Relevant to Bangchak's policies or targets

2020 Materiality Issues

Governance and Economic Dimension

- ✓ 1. Green innovation business investment
- ✓ 2. Product & service quality
- ✓ 3. Digitalization
- 4. Corporate directions & progress disclosure
- 5. Supply chain management
- 6. Liquidity aid for suppliers/partners
- 7. Cybersecurity

Environment Dimension

- ✓ 1. Climate change adaptation and mitigation
- ✓ 2. Waste management
- ✓ 3. Air-pollution management
- ✓ 4. Eco-efficiency
- ✓ 5. Oil spills
- ✓ 6. Water management
- 7. Circular economy

Social Dimension

- ✓ 1. Occupational health and safety
- ✓ 2. Job security & competency development
- 3. Community relations
- ✓ 4. Human rights

GRI - Materiality topics (Materiality)

(Disclosure 102-47)

Dimension	Materiality topics	Impacts		Significance
		Internal	External	
Governance & Economic	Green innovation business investment	Bangchak	<ul style="list-style-type: none"> Investors 	To develop and improve Company's operations and performance by using innovation and to prevent business disruption
	Product & service quality	Bangchak Group	<ul style="list-style-type: none"> Customers Investors 	To improve customers and business partners satisfaction and brand loyalty through Greenovative Experience Strategy
	Digitalization	Bangchak Group	<ul style="list-style-type: none"> Customers 	To improve Company's performance by integrating digitalization
	Corporate directions and progress disclosure	Bangchak	<ul style="list-style-type: none"> Investors Media 	To be transparency and attract more investors
	Supply chain management	Bangchak	<ul style="list-style-type: none"> Suppliers Business partners 	To develop sustainability practices of suppliers to grow sustainably with the Company
	Liquidity aid for suppliers	Bangchak	<ul style="list-style-type: none"> Suppliers Business partners 	To maintain important suppliers and help reduce impacts from COVID-19 for suppliers-19
	Cybersecurity	Bangchak	<ul style="list-style-type: none"> Customers Suppliers Business partners 	To prevent cybersecurity incidents and embed good practices of cybersecurity for the Company
Environmental	Climate change adaptation and mitigation	Bangchak Group	<ul style="list-style-type: none"> Government sectors 	To be in line with the corporate target of being a carbon neutral company within 2030 and to respond to SDG7 and SDG13
	Waste management	Bangchak	<ul style="list-style-type: none"> Government sectors Communities 	To comply with relevant laws and regulation by using 3Rs principles
	Air pollutions	Bangchak	<ul style="list-style-type: none"> Government sectors Communities 	To pursue better quality of air emission and management control than regulatory limits
	Eco-efficiency	Bangchak		To increase eco-efficiency reflecting high efficiency in the production with low environmental impacts
	Oil spills	Bangchak	<ul style="list-style-type: none"> Suppliers Government sectors 	To prevent oil spill incident
	Water management	Bangchak	<ul style="list-style-type: none"> Government sectors Communities 	To manage water withdrawal, consumption and discharge effectively using new initiatives and water management tools
	Circular economy	Bangchak	<ul style="list-style-type: none"> Government sectors 	To respond to the national policy and new business opportunities

GRI topics	GRI topic-specific disclosure	Reporting contents/Chapters	Pages
201: Economic Performance (2016)	201-1 Direct economic value generated and distributed (2016)	<ul style="list-style-type: none"> Innovation Management Green Business Strategy 	65 50
Bangchak: Product and Service Development	Bangchak Indicator - NPS Score and customer satisfaction	<ul style="list-style-type: none"> Sustainable Product & Service Development Social Performance 	82 139
201: Economic Performance (2016)	201-1 Direct economic value generated and distributed (2016)	<ul style="list-style-type: none"> Sustainable Product & Service Development Economic Performance 	82,128
201: Economic Performance (2016)	201-1 Direct economic value generated and distributed (2016)	<ul style="list-style-type: none"> Stakeholder Engagement Corporate Risk Management Economic Performance 	23-31 55-60 128
204: Procurement Practice (2016) 308: Supplier Environmental Assessment (2016) 414: Supplier Social Assessment (2016)	204-1 Proportion of spending on local suppliers (2016) 308-2 Negative environmental impacts in the supply chain and actions taken (2016) 414-2 Negative social impacts in the supply chain and actions taken (2016)	<ul style="list-style-type: none"> Supply Chain Management Economic Performance 	62-64 128
Bangchak: Supplier Satisfaction	Bangchak Indicator - Percentage of supplier satisfaction	<ul style="list-style-type: none"> Supply Chain Management 	62-64
Bangchak: Information Security Breaches/Cybersecurity Incidents	Bangchak Indicator - Number of information security breaches/cybersecurity incidents	<ul style="list-style-type: none"> Information Technology & Cybersecurity 	66-67
305: Emissions (2016)	305-1 Direct Greenhouse Gas (GHG) Emissions (Scope1) (2016) 305-2 Energy Indirect Greenhouse Gas (GHG) Emissions (Scope 2) (2016) 305-5 Reduction of GHG emissions (2016)	<ul style="list-style-type: none"> Climate Change Environmental Performance 	72-73 129-130
306: Effluents and Waste (2016)	306-2 Total weight of waste by type and disposal method (2016)	<ul style="list-style-type: none"> Waste Management Environmental Performance 	81 133
305: Emissions (2016)	305-7 NOx, SOx, and other significant air emissions (Fugitive VOCs and H2S) (2016)	<ul style="list-style-type: none"> Air Pollution Management Environmental Performance 	79 131
Bangchak: Eco-Efficiency	BCP Indicator - Eco-efficiency (EBITDA/Total GHG emissions of RFBG and MKBG)	<ul style="list-style-type: none"> Eco-Efficiency 	70
306: Effluents and Waste (2016)	306-3 Significant Spills (2016)	<ul style="list-style-type: none"> Significant Oil and Chemical Spills 	77-78
303: Water and Effluents	303-3 Water withdrawal (2018) 303-4 Water discharge (2018) 303-5 Water consumption (2018)	<ul style="list-style-type: none"> Water Management Environmental Performance 	74-76 131-132
201: Economic Performance (2016) Bangchak: Plastic waste reduction	201-1 Direct economic value generated and distributed (2016) Bangchak Indicator - Plastic waste reduction	<ul style="list-style-type: none"> Community and Social Development 	121-127

Materiality topics		Impacts		Significance
		Internal	External	
Social	SHE	Bangchak	<ul style="list-style-type: none"> Suppliers Government sectors Communities 	To achieve zero incidents and manage safety operations of the Company effectively to reduce business risks and complaints from stakeholders
	Job security and competency development	Bangchak		To retain talents and develop potential employees as important workforce of the Company
	Community relation	Bangchak	<ul style="list-style-type: none"> Communities 	To build good relationship with communities and obtain social license to operations
	Human rights	Bangchak	<ul style="list-style-type: none"> Suppliers Business partners Communities 	To conduct Human Rights Due Diligence systematically to assess human rights risks and provide mitigation measure in place

Note

1. Good corporate governance and anti-corruption, corporate risk management, change management, innovation management, product transportation, and customer relationship management are the normal sustainability practices which are continuously conducted by Bangchak. The contents of these operations and performance are reported in this Integrated Sustainability Report 2020.

GRI topics	GRI topic-specific disclosure	Reporting contents/Chapters	Pages
403: Occupational Health and Safety (2018)	403-9 Work-related injuries 403-10 Work-related ill health	<ul style="list-style-type: none"> Occupational Health and Safety Social Performance 	98-103 136-139
401: Employment (2016) 404: Training and Education (2016)	401-1 New employee hires and employee turnover (2016) 404-1 Average hours of training per year per employee	<ul style="list-style-type: none"> Employee Stewardship Social Performance 	111-120 136
201: Economic Performance Bangchak: Community Engagement	201-1 Direct economic value generated and distributed (2016) Bangchak Indicator - Community engagement score	<ul style="list-style-type: none"> Community and Social Development Economic Performance Social Performance 	121-127 128
412: Human Rights Assessment (2016)	412-1 Operations that have been subjected to human rights review or impact assessment (2016)	<ul style="list-style-type: none"> Human Rights 	107-110

Sustainability Strategy

Bangchak is committed to develop and innovate our business sustainably with the environment and society using 3S Corporate Strategy (Security, Stability, Sustainability) to achieve short and long term targets.



S1 : Security: Ensure energy security through upstream investments

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.



S2: Stability : Manage portfolio to create growth and diversify risk to achieve stable returns

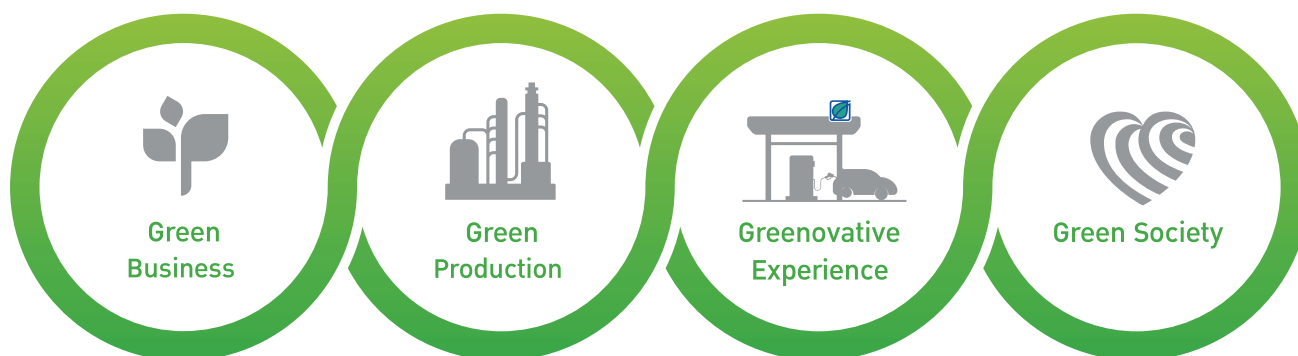
Focusing on the investment in businesses with consistent incomes and returns with low risks from external factors, both in Thailand and overseas, such as the green power businesses which have stable income through the management of production chain in other businesses to cope with business fluctuations.



S3 : Sustainability : Grow new businesses and expand core businesses sustainably

Develop related businesses or expand core businesses so that they grow sustainably and to prepare for technological disruption and any future changes such as growth of electric vehicles or the development of high value bio-based products, including bio-plastics and bio-materials.

In addition, Bangchak also has “4 Green Sustainability Strategy” that is in line with 3S Corporate Strategy, especially S3: Sustainability; Sustainability Policy, and Sustainable Development Goals (SDGs)



1. Green Business

Focus on the investment in new business and green innovation that can add long term value to increase share of revenue from new businesses and businesses that are environmentally friendly. Implement innovations from green initiatives in business operations such as high value biological products made from agricultural products based on bio-technology innovations extended from the original biofuel business. 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

Improve production processes and operations to become more environmentally friendly and safe by using resources efficiently, especially water and energy resources. Implement 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

Create new green experiences and innovation through products and services offered in Bangchak's service stations under Evolving Greenovative Experience framework to respond to the expectations of customers and stakeholders as well as new lifestyles where everyone can take part in protecting the environment using 3 main strategies:

- **Green Experience** provide products and services that are beyond customers' expectations and are environmentally friendly
- **Green Innovation** seek and develop innovation that can add value to customers and business
- **Green Sustainability** build sustainable business while taking care of the environment and the society

4. Green Society

Bangchak continues to care for the environment and contribute to 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 through projects that promote and expand community development under CSR in Process, CSR after Process, and CSR as Process framework. The aim is to create positive change in Thai society and the development of the country as well as responding to stakeholders' expectations and supporting SDGs.

Integrating Sustainable Development Goals (SDGs Integration)

Bangchak has integrated sustainable development goals (SDGs) into its business sustainability strategies, focusing on the nine SDGs related to its business operations and the competency of the company as well as global and domestic sustainability trends. Bangchak's efforts to support SDGs are driven by the Company's sustainability management structure.

In 2020, Bangchak conducted a review of SDGs that it wants to achieve in 2025 which include: SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 16 (Peace, Justice and Strong Institutions). In addition, Bangchak has set strategies and implementation plans for each SDG as well as monitoring process of each goal.



Progress in Sustainable Business Development

Green Business : Focusing on the investment and value creation to the sustainable and responsible business



Plans	Performance	2025 Targets
1. Develop power generation businesses from solar, wind, 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 473.7 MW, consisting of: <ul style="list-style-type: none"> 164.2 MW of solar PV projects (utility-scale and rooftop) that are in-operations in Thailand. In 2020, Bangchak invested RPV energy which has 20 MW solar PV project. 14.7 MW of solar PV project in Japan (operating). 9 MW of wind power in Nakhon Si Thammarat province. 14.4 MW (based on equity share) of wind power project in the Philippines (operating). 157.5 MW (based on equity share) of geothermal project in Indonesia (operating). 114 MW of hydropower in Lao people's Democratic Republic: 69 MW in Chiang Kwang (Nam Sam A) and 45 MW in Nam San 3B project. <p>Remark : Generation capacity is based on Power Purchase Agreement (PPA)</p>	<ul style="list-style-type: none"> Organic and inorganic growth through the M&A of brownfield and greenfield projects focusing on domestic and ASEAN markets while balancing returns, risks, and portfolio mix. Efficiency improvement of existing projects (owned and JV) through technological improvements and financial engineering. Move toward digital and innovative business to create new revenue streams under digital energy and infrastructure business. Sound and effective management of capital and balance sheet to support the company's goals. Human capital improvement and recruitment plans in line with business direction.
1.2 Develop biofuel businesses 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"> 1,000,000 liters per day bio-diesel production unit (78% utilization rate) including a project to improve production and the construction of glycerin refinery. (Bangchak Bio-fuel Co. Ltd). 550,000 liters per day combine capacity: 150,000 liters per day production unit of ethanol from cassava with average utilization rate of 93% (Bangchak Bio-Ethanol) and 400,000 liters per day production unit of ethanol with average utilization rate of 93% (JV with Ubon Ethanol). Ethanol production unit using molasses: consisting of KGI-BP project with 300,000 liters per day and has an average utilization rate of 82%. Ethanol production unit using molasses: consisting of KGI-NP project with a production capacity of 150,000 liters per day and an average utilization rate of 98% Increase investment in biotechnology by creating a joint venture with Manus Bio Inc. to set up WIN Ingredients, a company that focuses on biotechnology. Screen bio-based product businesses that can be commercially developed including bio-plastics, bio-food, and cosmetic ingredients. 	<ul style="list-style-type: none"> Develop a bio-business 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 Develop innovative business to add value and expand opportunities.	<ul style="list-style-type: none"> The company established BCP Innovation Pte. Ltd. in Singapore to conduct business related to innovation abroad. BCP Innovation Pte. Ltd. has off-taker rights to 6,000 ton per year of lithium from an Argentine mine which will operate commercially in 2023. Bangchak Innovation and Initiative Center (BiIC) established a new business, "Winnonie", which is a battery swapping service for motorcycles. The company leases electric motorcycles to motorbike taxis to operate in areas around the refinery and Head Office. Create academic partnerships with research institutions, government agencies, and various universities. 	<ul style="list-style-type: none"> Expand investment in lithium business to add value through domestic and international partnerships. Investing in incubators and startups focusing on green energy innovations such as energy storage and bio based-innovations that are beneficial to society and the environment.

Green Production : Focusing on the improvement of environment and safety management



Plans	Performance	2025 Targets
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. Level of third-party assurance for energy consumption and GHG emission of the Company and subsidiaries has improved from "Limited Level of Assurance" to "Reasonable Level of Assurance". 	<ul style="list-style-type: none"> Aim to become carbon neutral company by 2030 by using green power business to offset carbon along with other GHG reduction projects.
2.2 Improve operations to increase efficiency and stability of energy consumption in production process.	<ul style="list-style-type: none"> Implement YES-R+ Project to improve Yield Energy Efficiency Safety and Reliability. Improve energy consumption efficiency in the refinery: Energy Intensity Index (EII) was 102.0 in 2020. Continue the construction of 3Es as planned <ul style="list-style-type: none"> Completed the construction of Continuous Catalyst Regeneration (CCR) Unit. Improvement of distillation units for higher efficiency (Debottlenecking). 	<ul style="list-style-type: none"> Implemented YES-R+ Project to improve Yield Energy Efficiency Safety and Reliability. Construction of 3Es Project as plans: Completed the construction of continuous Catalyst Regeneration Unit (CCR). Improvement of distillation units for higher efficiency (Debottlenecking), to be completed in 2021.
2.3 Increase the efficiency of tap water consumption in production process through water reduction, reuse and recycle.	<ul style="list-style-type: none"> Reduced the use of tap water by 2.6%, cumulative reduction of 20.5% (compared to the baseline year 2015) Controlled efficiency of water consumption per production unit to 65 cubic meter per thousand barrel equivalent (2020 target was 60 cubic meter per thousand barrel equivalent). 	<ul style="list-style-type: none"> Reduce the use of tap water by 15% (cumulative) compared to base year 2015. Improve water consumption efficiency to achieve 54 cubic meter per barrel equivalent.
2.4 Conduct Water Footprint in support of water management throughout the product life cycle.	<ul style="list-style-type: none"> Continue to study water management in the refinery by applying the water footprint of products to optimize water efficiency of each product. 	<ul style="list-style-type: none"> Continue to conduct water footprint of products in the refinery.
2.5 Monitor air quality at stack, in operation area, and in areas surrounding the refinery to ensure better air quality than required by regulations.	<ul style="list-style-type: none"> No complaint related to air pollution. Third party monitoring of air quality is within limit 100% of the time. 	<ul style="list-style-type: none"> No complaint related to air pollution every year.
2.6 Manage waste using 3Rs (Reduce, Reuse & Recycle)	<ul style="list-style-type: none"> Manage 99.96% of waste from refinery using 3Rs principles. 	<ul style="list-style-type: none"> Zero waste send to incineration process that does not have energy recovery (not including waste that are recycled or reused).
2.7 Lay 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 drive implementation. Initiated a new PSM element: Contractor Safety Management: CSM. Conducted safety activities and drills to prepare for emergencies with the surrounding communities. In 2020, a drill was conducted with Phra Khanong District Office and Phra Khanong Fire Station. No incidents that lead to widespread complain in 2020. 	<ul style="list-style-type: none"> Developing safety activities to continuously build trust and commitment among stakeholders. Developing security management systems (PSM) in all 14 elements. In 2021, Mechanical Integrity (MI), Quality Assurance (QA), and Safety Auditing (SA) will be added. 11 communities participated in emergency response and evacuation drills. No incidents that lead to widespread complain.

Greenovative Experience : Create new green experiences and innovation through products and services offered in Bangchak's service stations



Plans	Performance	2025 Targets
<p>3.1 Develop service station to become customer centric by bringing in new concepts and image, improving services, and offering additional services to create new experiences for customers.</p>	<ul style="list-style-type: none"> Bangchak service station brand was able to maintain number 1 position from Net Promoter Score (NPS). Green Experience Offering 2 Euro 5 standards product type which are E20S EVO gasohol and Hi-Premium Diesel S which have lower sulfur contents than Euro 4 standard product. Offering diesel fuel which have sulfur level lower than 10 parts per million (PPM) and 5 times lower sulfur content in service station serving the Bangkok metropolitan area to help alleviate PM 2.5. Supporting the use of alternative energy that helps to reduce CO2 compared to traditional fuels. Develop Unique Design Service Station that uses 4Rs process: Renewable, Recycle, Reuse, and Reduce. The stations have installed solar roof top, rainwater collection system and wastewater recycling to water the garden, energy efficient equipment as well as green space. In addition, the restrooms are redesigned to accommodate the needs to the elderly and handicapped. Ensure highest standard of cleanliness. All employees are required to wear masks. Alcohol gel were given to customers to clean their hands during the COVID-19 crisis. Green Innovation Improve the responsiveness and effectiveness of service through the use of IT technology such as the development of customer database, development of Smart Digital Payment in service stations to maintain social distancing and reduce service time, development of BCP Link application that enable customers to access information such as Auto Ordering System (AOS) and the development of Bangchak Mobile Application that offers customized services to consumers and provide special privileges to BCP Green Miles Card. Green sustainability Inthanin Coffee was one of the first businesses to promote plastic waste reduction through "Bring your own cup" campaign. In addition, we were a pioneer in using BIO packaging which include lids and cups that are made with 100% plant-based material and biodegradable as well as use ready to drink lids to reduce the use of plastic straws. 	<ul style="list-style-type: none"> Maintaining the 1st place in Service Station brand, as measured by Net Promoter Score (NPS). Increase revenue from service stations and increase market share to 18% Develop service offering, service stations, and non-oil business under "Evolving Greenovative Experience" concept.

Green Society : Developing businesses/activities for environmental and social benefits



Plans	Performance	2025 Targets
4.1 Developing social activities and business that benefit the society and the environment.	<ul style="list-style-type: none"> Improved communities' quality of life economically, socially and environmentally, to promote healthy, livable and sustainable communities in the areas around Bangchak refinery on all 8 aspects which are safety, education, sports, quality of life, environment, cultural safeguards and preservation, economic, and commonwealth through activities organized with community groups, family group, school groups and condominium groups. These activities contributed benefits to over 71,083 participants. Community engagement score for 2020 was 84.4%. 614 COOP service stations with agricultural cooperatives Established a new business, "Winnonie", that helps to improve the quality of life of motorcycle taxis by reducing gasoline and maintenance costs. There are 40 drivers who are members and 3 battery swapping stations. The COVID-19 crisis has impacted Bangchak's used cooking oil collection program in 2020 due to social distancing measures and lockdowns. Although the volume collected declined in 2020, Bangchak continued to put efforts into the development of collection process as well as seek out new networks for expansion. 	<ul style="list-style-type: none"> Community engagement score: 87% Develop new service stations with agricultural cooperatives continuously 1,000 motorcycle taxi drivers in "Winnonie" Project by 2021. Add at least 1 additional network per year for the collection of used cooking oil.
4.2 Developing social activities that are more responsive to national challenges.	<ul style="list-style-type: none"> Actively support the public during COVID-19 crisis by providing alcohol gels to medical personnel and to the greater public through Bangchak service stations. Other activities included: providing care packages, medical masks, and donation stations. There were over 153,500 people who received support. Use circular economy framework to reduce plastic waste through "Rak Pan Sook" project that receive over 150,000 donated PET bottles to be turned into plastic fiber to create souvenir. Turned used plastic cups from Inthanin coffee into seedlings containers for the Royal Forest Department. Collaborate with the Meechai Pattana Foundation and Agricultural Cooperatives, promoted the introduction of agricultural innovations to 5 partnership schools in 3 provinces to educate students on over 19 different agricultural based businesses. In addition, there was over THB 440,000 of funding in the cooperative. 	<ul style="list-style-type: none"> Use 15 million of bioplastics cups instead of plastic cup per year. Maintain 8 partnership schools in the network. Develop at least 10 "Por Pak Pak" networks per year (through service stations) and 1 community network per year. Develop at least 1 product per year that can supplement social enterprise income. Develop at least 10 rais of forest per year. Hold at least 1 environmental seminar annually with at least 300 attendants Help at least 800 children to become literate every year.

Plans	Performance	2025 Targets
	<ul style="list-style-type: none"> Promote sufficient economy and immunity in the society through “Bangchak Por Pak Pak” project which provides seeds for herbs and garden vegetables that can help contribute to food security for households while creating more green spaces and reduce waste under “Bangchak WOW” framework. Develop 10 rais of “Phu Long” forest under the late king’s wet forest guideline to be used as natural forest fire barrier and use Khok Nong Na model to help retain soil moisture. Held “Battery – the future of energy” seminar to over 1,000 participants (in person and online). The seminar illustrates the importance of battery in the energy transition as well as related technologies. Be part of the solution on child illiteracy through Bai Mai Pan Sook Foundation. In 2020, the network expanded to 38 schools in 25 provinces helping over 1,100 students. Teacher satisfaction score for the project was 87.2%. 	

Value Creation from Operations that Support UN Sustainable Development Goals (SDGs)

Value Creation		
	For Bangchak	For the Environment and Stakeholders
	<ul style="list-style-type: none"> Increase income stability from renewable energy and green businesses Increase effectiveness of energy consumption to reduce operating costs 	<ul style="list-style-type: none"> Increase share of renewable energy for the country Reduce Thailand’s overall GHG emissions
	<ul style="list-style-type: none"> Reduce risks and impacts from climate change both from physical risks and transition risks related to policies and technologies Increase business opportunities from climate change mechanisms, green energy businesses, and bio-based businesses 	<ul style="list-style-type: none"> Reduce risks and impacts of climate change Contribute to the efforts to limit temperature rise to within 1.5 °C Support Thailand’s GHG reduction goals according to NDC Roadmap
	<ul style="list-style-type: none"> Improve water management in production process to reduce operating costs 	<ul style="list-style-type: none"> Stakeholders are not negatively impacted by the company’s water consumption Help to alleviate the impacts of floods and droughts
	<ul style="list-style-type: none"> Reduce costs from waste management Add value to waste 	<ul style="list-style-type: none"> Reduce waste and associated GHG from waste management process Promote and support Thailand BCG (Bio, Circular, Green) economic model
	<ul style="list-style-type: none"> Promote transparency in business operation as well as brand image Maintain good relationships with anti-corruption network Protect from risks of anti-compliance and corruption 	<ul style="list-style-type: none"> Reduce corruption in business and society Build a strong business network to combat corruption
	<ul style="list-style-type: none"> Support government’s policy on disable people employment 	<ul style="list-style-type: none"> Help create more equal career opportunities
	<ul style="list-style-type: none"> Reflect the company’s engagement in community and society development 	<ul style="list-style-type: none"> Contribute to the development of youth education
	<ul style="list-style-type: none"> Expand business opportunities through innovation Create innovation culture in the organization Create partnerships with research organization 	<ul style="list-style-type: none"> Support science and technology research and development that will help improve the country’s competitiveness
	<ul style="list-style-type: none"> Maintain good relations with surrounding communities to maintain trust in the company’s operations 	<ul style="list-style-type: none"> Improve career opportunities, surrounding environment, and safety of communities

Economic, Environmental and Social Situations

2020 Global Economic Overview

The COVID-19 pandemic has forced all the countries worldwide to lock down or ban travel in order to control and limit the epidemic of this fatal coronavirus, leading to widespread economic contraction and job loss as well as unemployment in both advanced and developing economies. The ongoing trade war between the U.S. and China exerted tremendously more pressure on international trade and private investments. The 2020 world economy contracted 4.4% from the 2.8% growth in 2019 projected by the International Monetary Fund (IMF). The IMF, however, predicted the world economy would recover in 2021 with an average growth at 5.2% driven by the discovery and dissemination of COVID-19 vaccines, economic stimulation programs and relaxing monetary policies launched by countries worldwide.

For the 2020 crude oil market overview, the average 2020 Dubai crude price was around USD 42.27 per barrel, a drastic drop from USD 63.51 per barrel in 2019 of 33.44% due to the COVID-19 pandemic which led to the widespread lockdowns and travel ban measures imposed by countries worldwide. The combined ‘double shock’ effect cut the global oil demand by at least 20% and sent the oil inventory through the roof. The oil industry crisis worsened with the price war beginning with unsuccessful production quota agreement between the OPEC and non-OPEC bloc led by Russia, in their summit in March 2020, later escalating into the retaliation from Saudi Arabia to abolish OPEC production quota but continuously increasing the daily supply of oil in the world market. Nevertheless, the OPEC and non-OPEC, known as the OPEC+, finally reached an agreement to cut down production to stabilize the global oil supply and level up the global crude price. The world oil price climbed up in the last quarter, supported by the progress reports of successful COVID-19 vaccination testing and inoculation in various countries, thus lifting up the expectation of global economic recovery and oil demand.

The 2020 Thai economy was under contraction stemming from COVID-19 and the strict preventive measures launched by the authorities in the second quarter, affecting the overall economy and increasing unemployment. From the 2.4% economic growth in 2019, the Bank of Thailand reported the Thai economy experiencing 6.6% contraction in 2020 despite several stimulus and

economic measures launched by the government slowly lifting employment and economic recovery, beginning in the third quarter. Unfortunately, the new wave of COVID-19 epidemic before the year-end sapping the overall economy, particularly high-season tourism. For the oil retail market, the total average sales through nationwide service stations during January - December 2020 was 2,237 million liters per month, down by 0.5% on a day rate basis from the 2019 level of 2,233 million liters per month (Year 2020 has 1 day more than in 2019). Sales at Bangchak service stations in 2020 dropped by 2.3%, denting its total market share from 15.9% in 2019 to 15.6% in 2020, but Bangchak still ranked second in retail market leadership.

The 2021 Thai economy is projected to recover with 3.2% growth, even with a new wave of COVID-19 epidemic beginning in late 2020 over to early 2021. The negative concerns include continuous rise in household debts and stronger Thai baht currency against major trade partners affecting overseas demand for Thai goods. The positive factors are the launches of COVID-19 vaccine inoculation in many countries worldwide and the domestic inoculation plan in the first quarter, creating a sentiment of tourism revival and budgetary disbursement according to the state economic rehabilitation plan. Additional investments from state enterprises and private entities under the public-private partnership (PPP) scheme, particularly in the Eastern Economic Corridor (EEC) Development Plan, will be more pronounced. The general inflation projected to rise to 1.0% in 2021 in line with the expected rising crude price.

Fierce competition in the oil industry in Thailand is likely to continue into 2021. Despite the ongoing negative impacts on tourism and domestic oil demand due to the sluggish economy and COVID-19, new dealers, more service stations, and modernization of stations with a variety of services to better respond to customers’ needs (by combining oil and non-oil businesses) will consistently drive higher competition in the market.

Current environmental and social conditions

According to the Office of the National Economic and Social Development Council’s Social Situation and Outlook Quarter 4 2020 report¹, in 2020 Thai labor market was significantly impacted by COVID-19 which resulted in increase in unemployment and reduced work hours.

In 2020, there were 38.5 million people in the labor market, a 1% increase YoY, from the influx of 100,000 workers who were previously out of the labor market and are now participating in the labor market as self-employed or gig workers. Hiring expanded 0.2%. Employment in the non-agricultural sector increased by 0.3 percent, while employment in the agricultural sector decreased by 0.1 percent. Hiring outside agriculture sector expanded in wholesale & retail trade and construction sector which expanded during the second half of the year once movement restriction measures were relaxed. In addition, hiring in transportation and logistics sector benefited from shift in consumers behavior to ward online purchase. Unemployment rate increased from 0.98 in 2019 to 1.69 percent in 2020, resulting in 651,000 unemployed workers. Where 413,000 of these are workers who were in the workforce and 238,000 people who have never been in the workforce, an increase of 126.2% and 24.8%, respectively.

In 2020, healthcare measures to control the pandemic were on of the key issues. World Health Organization argues that businesses have the responsibility to protect the health and safety of employees and people who are affected by the pandemic². In addition, the Global Reporting Initiative (GRI), an organization that develops sustainability reporting framework, has issued the “Culture of Health for Business Framework” as a guide to reporting the health care of those affected by the pandemic including preparing for the risks from emerging diseases or resurgent of existing diseases that may affect the sustainability of the organization.

According to the The Thailand Environmental Institute,³ environmental issues such as greenhouse gas emissions, high particulate matter (PM 2.5) in large urban areas and industrial areas, including Thailand and especially in the Bangkok metropolitan area have been a problem since November 2019. In 2020, lockdown measures, the drop in international travels globally, and widespread of work-from-home measures have impacted the environment as follow:

🌱 **Better air quality:** due to the drastic drop in personal activities, transportation, industrial activities, and uncontrolled burns. Urban areas especially have benefited from reduction in traffic. However, once vaccines for COVID-19 become widely available and movement restrictions are lifted, air pollution may return in 2021.

🌱 **Climate change:** during the COVID-19 pandemic carbon dioxide intensity has showed to increase at a slower rate than prior to the outbreaks (Sarakadee Magazine, June 2020). Between March 2020 – May 2020, carbon dioxide emission dropped significantly due to the decrease in transportation activities which is a sector that contributed up to 97% of all carbon emissions, reflecting the impacts of human activities on the climate. In Thailand, carbon dioxide emission from industrial activities, transportation, power generation, and building energy consumption dropped almost 20 million tons in March 2020, a 12.6% YoY reduction (Thaipost, 2020).

Climate change remains an important global issue. The move towards a low-carbon, or a shift towards a Carbon Neutral, is being raised to the Carbon Negative concept, or to a negative carbon footprint. (No offsets), businesses that follow this approach are called Regenerative Business⁴.

🌱 **Oceans and forests:** due to the closure of national parks and reserves wildlife and the ecosystems have the opportunity to rejuvenate and recover from the impacts of tourism.

🌱 **Waste:** waste generation increase over 200% during the lockdown in March and April 2020 compared to prior to the lockdown. Infectious waste, especially medical masks, has increased significantly with around 1.5 - 2 million pieces of waste generated every day. In Bangkok, infection waste increased 1.7 tons per day, 50 tons of these wastes are incinerated in an approved facility (compared to 43 tons per day prior to the outbreak). Municipal waste in Thailand also increased more than 27.8 tons in 2020. Thais


1 Office of the National Economic and Social Development Council, Social Situation and Outlook Quarter 4 2020 and overall situation in 2020, Source: https://www.nesdc.go.th/ewt_dl_link.php?nid=5491

2 Thaipat Institute, “6 CSR directions : Build Resilient Enterprise”, seminar documents.

3 Wijarn Simachaya, PhD., “New Normal and the Opportunities for Sustainable Management of Natural Resources and the Environment, Source: http://www.tei.or.th/th/blog_detail.php?blog_id=57

4 Thaipat Institute, “6 CSR directions : Build Resilient Enterprise”, seminar documents

generated 1.3 kilogram of waste per capita, 12 - 13% of which were plastic waste, except for Bangkok metropolitan areas where 20% of waste generated were plastics. Bangkok generated 10,500 tons of waste per day around 2,000 tons of which is plastic. Overall waste generation in major tourist hubs, including Bangkok, declined. In Phuket, daily waste generated reduced from 970 tons per day to 840 tons per day (13% reduction). In Pattaya, daily waste generated reduce from 850 tons per day to 380 tons per day (55% reduction). However, share of plastic wastes increase in the majority of provinces due to the increase in online shopping and food delivery services which have been growing 10 - 20% per year. As a result companies are now exploring ways to implement Circular Economy.

 **Drought:** dams water level continued to drop in 2020, resulting, in lower volume of water in 2021. As of 14 February 2021, 16,151 million cubic meter of water is available which is 1,176 million cubic meters lower than 2020 level. Risks of drought during the dry season remains a concern especially for farmers who grow crops that requires a lot of water⁵.

⁵ Office of the National Economic and Social Development Council, Social Situation and Outlook Quarter 4 2020 and overall situation in 2020, Source: https://www.nesdc.go.th/ewt_dl_link.php?nid=5491

COVID-19

Humanity's challenge
that makes the business world lifestyle
must change and adapt to a new way

Economic growth

Revenue from
selling of goods
and services



136,450
million baht

Dividend payment per
share

0.40 THB/share



EBITDA 4,104 million baht



Strengthen liquidity

Adjusted plans to
reduce expenses

900
million baht

Proposed debenture in the
amount of

8,000 million baht

The debenture was well received amongst Institutional
Investors and/or High Net Worth Investors

Postponed the Turnaround
Maintenance which reflect
cost saving of
(Turnaround Maintenance)

1,100
million baht

Obtained

4
Times

from the investment in

Startup

“Lithium Americas”



The Company still has the right to
buy lithium following the agreement.

More liquidity

20,000
million baht

Ready to soar
forward as a leader

Energy Transition



Revenues

In 2020, Bangchak and its subsidiaries generated revenue from sales of products and services of refinery and trading business, marketing business, green power business, and bio-based product business totaling THB 136,450 million which decreased 28% compared with year 2019. The EBITDA was THB 4,104 million which decreased by 53% compared to year 2019. This was due to impacts of the decline in crude oil prices and oil product prices in the global oil market, resulted from an oil price war between the major crude oil producers, and the COVID-19 pandemic which has unprecedented global implications. In addition, the lockdown announcements in several countries has resulted in the decrease in demand for fuel consumption globally. As a result, the refinery and trading business recorded EBITDA decline of THB 5,041 compared with 2019. The annual average production was lowered to an optimal level of 97.2 KBD. Bangchak Group had net loss of THB 5,770 million.

Expenses

In 2020, Bangchak Group had the decrease in the operating costs by THB 48,135 million due to the marketing cost which was the result of the decline in oil prices and sales. This correlated with the decrease in revenue from sales of products and services.

Other expenses of the Company included social and community development and philanthropy in terms of goods and monetary donation approximately THB 44 million.

In 2020, employee wages and benefits expenses decreased from 2019 approximately THB 207 million. Interest and bond expenses increased from the previous year approximately THB 211 million. The payment of taxes to the government and local authorities decreased by THB 238 million. This correlated with the performance of the Company which was the net loss. As a result, the Company did not have to pay corporate income tax. This year, Bangchak and its subsidiaries issued THB 742 million in dividend back to shareholders.

Corporate Governance

Bangchak Corporation Plc. has instituted its corporate governance policy in writing (Disclosure 102-16) since 2003 as a result of a workshop engaging all employees where everyone played a part in contributing ideas for the Company's practical guidelines. To date, the Company has focused on cultivating an understanding of good corporate governance as well as awareness of how to apply such principles in their daily life. This has turned into a company culture. The Company has constantly evolved its corporate governance practices by way of studying domestic and international governing guidelines for such practices.

Board of Directors

The Board of Directors consists of 14 members, 8 of which are independent directors and 1 female and one executive director. 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 directors appear in the Annual Report 2020 (56-1 One Report) under the heading "Corporate Governance Structure and key information about the board, sub-committees, management, employees, and others".

This year the Board endorsed Revision 17 of the CG Policy, adding the Board Skill Matrix to embrace the "information technology and digital" aspect to align with the DJSI and suit the current business model. More information associated with the Board of Directors is showed in 56-1 One Report /Annual Report under the topic of "Corporate Governance Structure".

Board Skills Matrix

Name/Specific Expertise	Knowledge of Company Business	International Business	Accounting and finance	Management	Compliance	Organizational development and innovation	Information and Digital technology	Society environment and safety	Risk and crisis management
1. Mr. Pichai Chunhavajira	X	X	X	X		X		X	X
2. Mr. Surin Chiravisit	X			X	X	X		X	X
3. Mr. Suthep Wongvorazathe	X	X	X	X					X
4. Gen. Vitch Devahasdin	X			X	X	X		X	X
5. Adm. Sucheep Whoungmaitree	X			X	X	X		X	X
6. Pol.Lt.Gen Chaiwat Chotima	X			X				X	X
7. Lt.Gen. Thammanoon Withee	X			X	X	X		X	X
8. Dr. Poramettee Vimolsiri	X	X	X	X		X		X	X
9. Mrs. Prisana Prahmkhasuk	X		X	X		X	X		X
10. Mr. Teerapong Wongsiwawilas	X			X	X	X			X
11. Dr. Anuchit Anuchitanukul	X	X	X	X		X	X		X
12. Dr. Prasert Sinsukprasert	X			X				X	X
13. Mr. Suthi Sukosol	X	X		X		X		X	X
14. Mr. Chaiwat Kovavisarach	X	X	X	X		X	X	X	X
Total	14	6	6	14	5	11	3	10	14

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



94.7%

1. Regular self-assessment of board performance :
Average score 94.7 Excellent



95.5%

2. Cross-assessment by group (3-4 unnamed directors assessing another director) :
Average score 95.5 Excellent



95.8%



3. Entire board assessment :
Average score 95.8 Excellent

There is also a sub-committee assessment by a separate committee. Details appear in the annual report 2020 (56-1 One Report) titled “Highlights of Corporate Governance”.

Anti-Corruption

The Anti-Corruption policy applies to all Bangchak directors, executives, and employees and its subsidiaries. The relevant implementing measures apply to all subsidiaries, associates, joint-venture companies and other companies that the Company has control over, as well as its business agents. In addition, Bangchak values good corporate governance and anti-corruption alike.

Bangchak also joined the UN Global Compact and in 2013 was one of the first 22 companies to achieve CAC (Collective Action Coalition against Corruption) membership certification. In 2019 it won the second membership recertification since its first membership recertification in 2016.

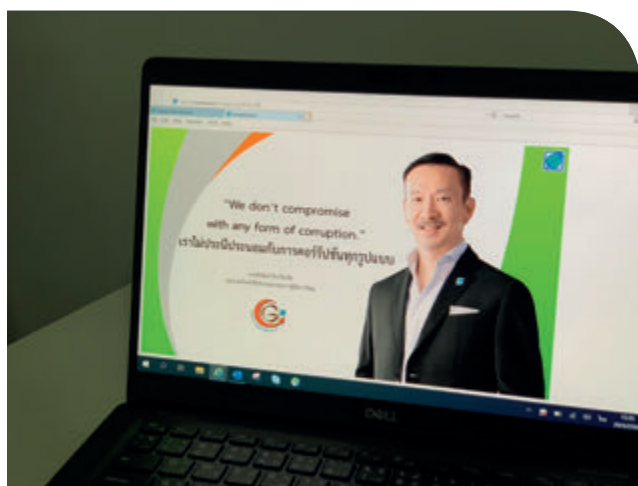
Anti-Corruption Targets	2020 Performance								
1. All executives and employees of the Bangchak Group acknowledge the anti-corruption policy and use it as a framework for business operation.	<p>Policy acceptance to practice and learn until passing the test [Disclosure 205-2]</p> <div><p>100% Policy Acceptance</p></div> <div><p>Knowledge Testing 100% Result 90.88%</p></div> <div><p>Online notification of Conflict of Interest through e-HR system [Disclosure 102-25] 100%</p></div> <div><p>Complaints associated with Anti-Corruption [Disclosure 205-3]</p><table><tr><th>2017</th><th>2018</th><th>2019</th><th>2020*</th></tr><tr><td>0</td><td>0</td><td>0</td><td>1</td></tr></table><p>* After due investigation, Bangchak found no grounds for this complaint, since the complainant had delivered his or her job not by its standard specified in the agreement, making it impossible for Bangchak to inspect the job.</p></div>	2017	2018	2019	2020*	0	0	0	1
2017	2018	2019	2020*						
0	0	0	1						

Anti-Corruption Targets	2020 Performance
<p>2. Encourage business partners to participate and become certified members of the CAC.</p>	<p>During the spread of Covid-19, Bangchak continued to encourage its business partners to join the CAC project. The Company assisted with the public relations and invited the business partners who announced their intention with CAC in the form of an online seminar through the WebEx system. Three CAC seminars were held with the participation of 57 companies, with eight companies serving as the Company's business partners or 14% of the total participants.</p>

Communication about Anti-Corruption Policies and Procedures

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

- Communication of good deeds, morality and ethics, and anti-corruption, as well as guidelines of corporate governance policy through Tone from the Top, prepared as the executive's CG Motto, on the Company's Intranet.



- On March 13, 2020, Bangchak held a talk on corporate governance and anti-corruption for new employees as part of the Newcomer Discovering Program (orientation) at M Tower.
- On June 5, 2020, the President and CRO gave an interview to Collective Action against Corruption (CAC) as CAC had prepared and disseminated the contents on social media to publicize Bangchak's success in joining the CAC Project as a Change Agent and encouraging business organizations in their concrete anti-corruption efforts and measures to prevent bribes to government officials.
- On June 23, 2020, the Chairman of the Board and the President and CEO gave an interview on "The Secret Sauce: Boardroom Wisdom" to share their experience in management thinking and perspectives of the Board and organization leaders. The content and the VDO of the interview would probably be used as part of the IOD course, held by Thai Institute of Directors (IOD) with the Standard, an online news agency.
- On June 23, 2020, the Chairman of the Board and the President and CEO gave an interview on "What is the role of the directors that contributes to each company's success?" on best practices and as an example of directors' work in formulating sustainable business strategies, held by Thai Institute of Directors (IOD).
- On August 25, 2020, the Company gave a talk on corporate governance for senior executives of the Bank for Agriculture and Agricultural Cooperatives on organizational development at Head Office, Bank for Agriculture and Agricultural Cooperatives.
- Bangchak planned to organize the annual CG Day activity with its group to communicate and cultivate awareness among employees and stakeholders on the corporate governance code for concrete implementation.

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.

Bangchak Supply Chain and Collective Action Against Corruption (CAC):

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.

Thanks to all these CG practices, this year Bangchak earned steady prestigious rankings and CG awards, including:

- ✓ Excellent ranking (five emblems) under the 2020 CGR (Corporate Governance Report) survey of listed companies, organized by Thai IOD and SET. Bangchak was among those in Thailand with top scores.
- ✓ Country TOP3 PLCs, ASEAN Asset Class PLCs for listed companies scoring 97.5 and more, and ASEAN Top 20 PLCs, earned at the 2019 ASEAN Corporate Governance Scorecard (ACGS) event, organized by SEC and Thai IOD in conjunction with ASEAN Capital Markets Forum (ACMF) and the Asian Development Bank (ADB).

Corporate Risk Management

Bangchak has adopted an international integrated enterprise-wide risk management system based on COSO ERM and ISO 31000 for more than 16 years to define management directions and measures to prevent and minimize impacts from a variety of risks preventing it from achieving goals. (Disclosure 102-11) In addition, for business continuity and sustainability, Bangchak reviewed trends and business factors that are expected to change and impact business (mega trends and global risks) to manage them in the medium term and long term, including competition in the business and industry, economic situation, consumers' behavior, the surroundings and climate change due to global warming, and technological and innovation growth, including alternative & renewable energy, energy storage, electric vehicle, and policies of the public sector. These studies have been integrated with primary data of stakeholders' expectations and needs for further analyses of future impacts and directions of risk management in parallel with integrated corporate strategy to strive for mutual sustainability.

In 2020, virtually countries, Thailand included, faced shrinking economies caused by COVID-19, national lockdowns to cut down on travel so as to stop the spread, in turn affecting unemployment rates and household debts, not to mention the private sector's investment confidence. In addition, the impacts of drastic crude oil price fall due to the failure to strike a deal between OPEC and allied countries harmed the economy, inflation rates, and Bangchak's performance. However, Bangchak had business risk management and disclosed business directions and progresses in the COVID-19 situation to reduce economic, social and environmental impacts.

Bangchak has grouped its risk management framework into 1) corporate risk management, 2) project investment risks, and 3) business continuity management. This framework helps formulate appropriate risk management system and assessment. Below is a progress report in these three areas.

1. Corporate Risk Management

In 2020, Bangchak assessed and managed corporate risks aligned with the corporate strategy and sustainability development involving the environment, society and governance as follows.

Economic Risks (Disclosure 102-29)

Risks from depressed global economy and reduced demand

The devastating effects of COVID-19 on the economy and reduced consumption of certain goods due to the lockdowns and suspension of certain businesses along with reduced travel domestically and internationally prompted Bangchak to develop the following risk management plans:

- ✔ The year 2020 saw aviation fuel demand bear the brunt of COVID-19, so Bangchak trimmed its capacity and modified processes to more diesel production rather than aviation fuels to better suit the market.
- ✔ The Refinery and Trading Business Group modified Bangchak into a niche products refinery to present new, more diverse products to the market, going from a variety of fuels into production of UCO (unconverted oil) for feedstock of lube base oil and paraffin wax along with modifications for greater diversity. An instance is solvents, which are key industrial components, including paint, thinner, and resin. Bangchak still plans to sell more diverse array of products in the future.

Risks of volatile prices of oil and feedstock

With this in mind, Bangchak manages these risks with short-term and long-term plans as follows.

- ✔ Administer crude oil and refined product stocks, lower capacity to appropriate levels in line with lower market demand, lowered operating costs by about 20%, and adjust turnaround maintenance (TAM) in line with economic situation and reduced demand.

Risks of volatility of exchange rates and interest rates

The year 2020 witnessed high volatility in the currency exchange rates. Notably the month of March saw the rates at their lowest in the region, which picked up toward the year-end. The major factor is the weakening US dollar with world economy recovery, which brings uncertainty to Bangchak's revenue, notably its petroleum businesses and international joint ventures. Still, Bangchak commands a plan to constantly deal with foreign exchange and interest rate risks as follows:

- ✔ Adopt natural hedges on transactions with international currencies on both income and expenses.
- ✔ Manage major costs of capital toward fixed and consistent interest rates.
- ✔ Closely monitor movement and trends of international monetary markets to execute proper hedging on exchange rates and interest rates decided by the Risk Management Committee on pricing and finance to ensure successful businesses as planned.

Risks of energy innovation transformation

Bangchak has therefore developed risk assessment and converted advancement of energy innovation into business opportunities as follows.

- ✔ Carved investment opportunities in businesses related to electric vehicles (EVs) and batteries of the future with a springboard in the lithium purchase agreement of up to 6,000 tons a year under the Cauchari-Olaroz Project of Lithium Americas Corp.



- ✔ Grew business to high-value bio-based product businesses through BBGI Plc. by purchasing recapitalization shares in Manus Bio Inc., a world-class biotechnological leader, and join in the investment to set up WIN Ingredients and planned to form a Syn Bio plant for multi-products, a first in Southeast Asia.

- ✔ Launched the "Winnonie" startup, an extension of green energy innovation to improve the quality of life for motorcycle taxis. To elaborate, this is a marriage between electric motorcycle technology and motorcycle taxis in the form of battery renting with swapping of expired batteries at Bangchak's service stations.



Risks of managing feedstock and supply chain

- ✔ Conducted supporting plans for substitute goods procurement to reduce risk impacts from undelivered goods due to the city closure in countries of suppliers or other causes to maintain business continuity
- ✔ Select crude oil from various sources at suitable periods with due regard for appropriate quality for processes that yield healthy refining margins to add business value.
- ✔ Develop long-term crude sales agreements with domestic and international suppliers to secure consistent supply for the refinery.
- ✔ Stock and procure feedstock for biofuel production from competitive sources with appropriate prices.

Social Risks (Disclosure 102-29)

Risks of impacts on communities and society

Bangchak's work processes have therefore been continuously upgraded to ensure safety and zero impact on communities and the public under the following risk management plan.

- ✔ Constantly developed a system for occupational health and safety of international standard to upgrade health and safety in the workplace while systematizing work processes with due regard for risks, opportunities, and legal requirements. Bangchak was certified with ISO 45001, ISO 14001, and ISO 50001.
- ✔ Prevented oil spills into the river by specifying double-hulled transport vessels for crude oil and refined products; implemented preparedness measures for emergency gear and oil slick equipment; tested oil-pumping pipes every six months; deployed two layers of oil-slick booms during oil-pumping periods; constantly developed personnel and improved safety technology for port/jetty equipment, systems, and instruments in line with the Oil Company International Marine Forum Institute's standard.
- ✔ Bangchak has a vessel to tackle oil slicks that are mobilized immediately without having to wait for other vessels, thus ensuring that it can collect oil slicks efficiently and rapidly. Bangchak stays ready to extend support to the public sector and the Oil Industry Environmental Safety Group Association (IESG) and other incidents upon request.
- ✔ Perform hazard and operability study assessment and install the process safety management system at all procedural levels of refining processes in conjunction with leading engineering consulting firms to ensure international work standards and practices
- ✔ Install an online air quality metering system with automatic display on all monitors in the refinery and its vicinity for the communities surrounding the facilities to get real-time air quality information, leading to higher public confidence in Bangchak's operation.
- ✔ Consistently organize community educational activities for people living near the refinery facilities, schools, temples, and condominiums to understand, learn and be fully aware of safety. The programs include sharing of knowledge and practical drills on evacuation, firefighting, and first-aid medical treatment, as well as community safety alert and warning systems. Community members have actively participated in these programs.
- ✔ In supervising businesses operated by joint ventures, Bangchak monitored and stayed vigilant over risks with impacts on individual communities to prevent them from hardship or impacts of production processes or operation, including vigilance over wastewater treatment. The ERM is charged with year-round monitoring of work in this aspect.

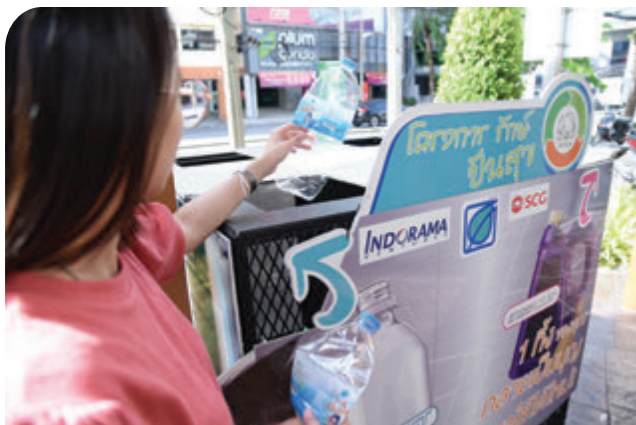
Environmental Risks (Disclosure 102-29)

Risks of climate and environmental changes and measures on GHG emission control

Bangchak focuses on reducing all impacts causing global warming by cutting down on energy consumption and carbon dioxide or greenhouse gas (GHG) emissions with the following programs.

- ✔ Routinely conduct risk management with systems of Safety Integrity Level, Reliability-Centered Maintenance, and Risk-Based Inspection to ensure the efficiency of all equipment and work processes for accurate preventive maintenance programs.
- ✔ Through BCPG Public Company Limited, expand businesses to green power, generating power from clean renewable energy sources including solar, wind, hydro, and geothermal in domestic and international markets.
- ✔ With a commitment to continuously managing the reduction of GHGs, Bangchak won three awards in 2020 for excellent management of GHG emission reduction, presented by Thailand Greenhouse Gas Management Organization (Public Organization); an award on Carbon Footprint of Product (CFP), an award on Thailand Voluntary Emission Reduction Program





(T-VER) in its third consecutive year – a voluntary program awarded to refineries capable of reducing GHGs with a 2% target – and an award on Carbon Footprint Reduction (CFR).

- ✔ Replace fuel oil with natural gas to generate power and steam in the combined-cycle plant and deploy it as a primary energy source for the distillation units, resulting in higher energy efficiency and reduction of carbon dioxide emissions.
- ✔ Bangchak took part in easing pollution in the form of PM 2.5 particulates and smog by selling diesel containing five times less sulfur (lower than 10 ppm), as less sulfur can lower dust problems resulting from combustion along with sulfur dioxide. Such diesel were sold in Bangkok Metropolis during such critical periods.
- ✔ Remodel resource consumption with the 3Rs strategy of Reduce, Reuse and Recycle to achieve sustainable and environmentally friendly business success. This includes collection of plastic bottles from customers voluntarily to produce recycled products for society.

Water Shortage Risks

Global warming and a booming population are the main causes of uncertainty on available water for consumption. In 2020 Bangchak conducted water stress assessment through the AQUEDUCT program to find that the location of Bangchak Refinery was a medium-high (20-40%) risk area, which by definition is not a significant area for water stress. Therefore, Bangchak has paid its full attention to water management to conserve water in production processes as follows.

- ✔ Monitored risks from climate change, such as drought, by monitoring and staying vigilant over daily water situations of the Metropolitan Waterworks Authority to assess the water shortage risk affecting refining processes, to ensure emergency water source

availability, and to define proactive measures in case of risk arising from lower Chao Phraya River water levels, which may affect navigation, while ensuring minimal effects on stakeholders. Monitored flood situations and took proactive steps, for example, monitoring the levels of water in the major rivers during the rainy season, inspecting the readiness of flood prevention equipment by establishing a risk management plan in response to flood possibility and severity in order to ensure continuous business operation.

- ✔ This year Bangchak successfully reduced the water used in tap water quality improvement via the micro-filtration, reverse osmosis, and electro de-ionization systems by 137,395 cubic meters. It also reused condensate water and stripped water in its production processes, which saved 1,135,517 cubic meters. In addition, it improved mildly contaminated condense water and treated wastewater via the reverse osmosis system, resulting in 173,505 cubic meters of reused water. Thanks to these water reduction measures, Bangchak saved the equivalent of water used by 3,810 households.
- ✔ Promote the reduction of water consumption in all production processes with all affiliates and business units, led by the water recycling program by the Bio-based Product Business Group. Moreover, a project of drilling for groundwater was initiated for water storage and supply for the facilities.

Emerging Risk (Disclosure 102-29)

Risks of epidemics

The COVID-19 pandemic worldwide has impacted everyone economically and personally. Lifestyles faced change to keep the virus under check. Bangchak assessed these impacts in several aspects and commanded measures to lower risks and undertook Business Continuity Management (BCM) drills.

Risks of digital technology transformation and cybersecurity

Bangchak took action to cater to such technological development and change along with reviewing technological risk issues concerning current business disruption as follows:

- ✔ Establish a digital technology unit in charge of planning, monitoring, and procuring proper digital technologies for Bangchak to cope with changes

in consumer behavior, work process improvement toward increasing competitive advantages, and adding value and efficiency to its services. The following additional technologies were applied in 2020.

- The Digital Payment Project, in which digital payment is made in the Mobile EDC (electronic data capture) form to avoid physical contact at service stations by scanning the QR Code to pay through all banks' applications and PromptPay or simply touch and pay with contactless credit cards while accruing Bangchak membership points.



- Develop personalized marketing by applying data analytics to examine individual consumer behavior to develop tailor-made service patterns specific to each consumer and hence increase customer satisfaction.
- Introduce the Robotic Process Automation (RPA) system to increase productivity and decrease turnaround time in work processes, including business partner verification, service station maintenance planning, and sales document processing.

- Establish a dedicated cybersecurity function, tasked with planning, monitoring and tracking, testing and procuring necessary equipment and systems to counter threats from cyber-attacks. During 2020, the ERM approved the purchase of cybersecurity tools and systems for Bangchak's computer center and development of cybersecurity system architecture. The system provides real-time security system alerts through key risk indicators. Actions were taken to enable work systems to be secure and safe in line with international standards; established awareness and cyber-threat knowledge among employees.
- Develop a refinery cybersecurity system program to safeguard work systems from cyber-attacks or

interruptions which might affect refining processes. Since 2020, Bangchak has won ISO/IEC 27001 certification (Information Security Management), covering the refinery's Distributed Control System.

- Determined preventive measures for personal data protection in compliance with the Personal Information Protection Act B.E. 2562 (2019) by establishing a PDPA taskforce to manage and control personal information, including establishing preventive and corrective measures in case of personal information breach or abuse that might harm Bangchak.

Risks to reputation from social media

Managing reputation risk therefore demands a dedicated team to relentlessly monitor movements of online social media. These tasks increase communication efficiency under normal circumstance and crises and reduce negative impacts. The system also calls for regular drills to ensure crisis preparedness.

Risks of managing human resources for future growth

Managing risks of human resources for future growth to align with business strategies is defined and treated with consistent programs and sessions of lessons learned and knowledge exchange among staff of Bangchak Group. These sessions hone skills, identify career advancement, and sustain business continuity as well as strengthening ties among staff workers and Bangchak. Activities in these sessions are organized and analyzed jointly by the management through the Subsidiary Synergy and Strategic Alignment Steering Committee.

2. Project Investment Risks

All investment projects must therefore be reviewed for risk management with risk treatment at various stages as follows.

- ✔ Development phase risk
- ✔ Construction phase risk
- ✔ Operation phase risk including risks concerning operation, finance, taxation imposed by the tax policy of the country of investment, business, and reputation
- ✔ Natural disaster risk

This year, ERMIC approved and monitored updates of the risk management plans of investment projects to raise Bangchak's production efficiency. The same goes for BCPG Plc.'s investment projects to grow capacities for solar and wind power plants.

3. Business Continuity Management (BCM)

To ensure the ability to continue its businesses even during crises, Bangchak has developed and installed a Business Continuity Management (BCM) system. Bangchak won the ISO 22301: 2012 BCM award covering Headquarters, Bangchak refinery and Bangchak Oil Distribution Center, Central Region Business Office and Bang Pa-in Oil Distribution Center for the seventh consecutive year since 2013.

In 2020, the world faced the COVID-19 pandemic, which caused widespread impacts. To grapple with this, Bangchak conducted emergency drills for various possible situations and duly modified its crisis management plan and the enterprise wide business continuity management plans to keep up with current circumstances. It also modified epidemic control measures and physical distancing as required by the public sector. In addition, Bangchak assessed the prevailing circumstances and came up with guidelines of the following aspects.

- ✔ **Safety:** Bangchak advocated compliance with BCM, which covered epidemic crisis, with particular value given to the safety of employees, customers, and related parties. To this end, it staged drills and prepared the IT system for working from home. Hand-washing alcohols were handed out to employees and the public at Bangchak service stations while gel alcohol was in shortage. Implemented was office cleaning, physical distancing, and office hour staggering as guided by Bangchak's incident command. Meetings were held to roll out plans in a systematic way, as was regular communication with employees and their related parties.
- ✔ **Marketing:** Bangchak modified its marketing plans in view of the changing demand, notably that for diesel and aviation fuels, directly affected by the national lockdown to check the spread. Bangchak came up with sales promotion measures through assorted loyalty programs as well as cooperation with business partners to handle the pandemic, which could cut the number of Inthanin Coffee customers, by focusing on more sales through delivery channels.
- ✔ **Finance:** Bangchak stayed prepared by lowering expenses and investment by about 20% and successfully issued bonds worth Baht 8 billion as well as winning financial institutions' support in the form of long-term loans worth a total of THB 6 billion.
- ✔ **Business continuity:** In view of the assessed impacts of COVID-19, Bangchak adjusted its production and marketing plans in addition to lowering its expenses and investment to fit circumstances. Finally, it appointed an Innovation Continuity Workforce to brainstorm the workforce on extension to new businesses to sustain business change.

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:

1. Business Process Redesign (BPR) Development
2. Health assessment and enhancement of the organization (Organization Health Index: OHI)
3. Promoting work behavior in accordance with the new corporate values I AM BCP (Value Transformation)

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

2020 Performance

1. Business Process Redesign (BPR) Development

The BPR focused on process improvements in order to maximize efficiency, reduce costs, and better meet the needs of our customers. In 2020, Bangchak extended the BPR to cover more subsidiaries and associated companies. This resulted in new projects which have opportunities to create added values, reduce operating costs, and increase operational efficiency for over THB 800 million during 12 months of the project. Example projects under the BPR are as the followings:

- 1) Project to develop premium grade if fuel oil which has low sulfur and new form of contract associated with export. These created THB 60 million of revenues.
- 2) Project to improve oil depot to collect spare oil for the turnaround maintenance of the refinery. This resulted in cost reduction associated with oil collection and distribution for THB 35 million.
- 3) Project to improve the contract form for the procurement of oil additives. This project reduced procurement costs for THB 20 million.
- 4) Project to improve efficiency of oil distribution plans considering costs, time, and safety. This project reduced distribution costs of THB 10 million.
- 5) Project to improve car pool management of the Company. This project cut car rental for THB 4 million.

In addition, the Company has set a target to create added value and reduce expenses from BPR projects of over THB 1,000 million 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 Lean & Six Sigma in order to improve work efficiency.

2. Organizational Health Assessment and Enhancement

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 2020, the OHI assessment was started with the refinery business group and the Company set up cross-functional working group to develop the improvement plans for gap closing.



3. Drive New Organizational Values to Improve Work Behavior I AM BCP (Value Transformation)

The Company has designated it as a personal KPI for employees and management. Due to the COVID-19 pandemic, the Company formed Innovation Continuity Task Force to brainstorm ideas from employees to extend existing businesses or to seek for new business opportunities to generate revenues and prepare for changes in business landscapes of post COVID-19 pandemic. In addition, Bangchak created a project called TGIF (Think Great, It's Friday) which encourage all employees to group together in every Friday afternoon to think about new business innovation based on the design thinking concept in three ways which were the Quick Win Project for business extension, Business Process Re-design Project, and the Intrapreneur Project. As a result from the Intrapreneur Project, in year 2020, Bangchak introduced a startup called “Winnonie” which bring green energy innovation to improve the quality of life of motorbike taxis in Thailand.

Supply Chain Management

In the past year, COVID-19 pandemic has impacted people and businesses, leading to customers' behavioral changes. Bangchak has devoted management effort to supply chain management and stakeholder engagement to ensure smooth operation, quality products and services as well as to ensure that our business practices do not adversely impact the environment and that we maintain our high standard of corporate governance throughout the crisis. There are 2 aspects of supply chain management which are:

1. Efficiency of supply chain management.
2. Sustainable supply chain management by integrating environment, social and governance (ESG) into our supply chain management.

5 Year Targets



Reduce suppliers sustainable-related risks aligned with target



Reduce procurement spending through cost management by 10% of annual budget per year

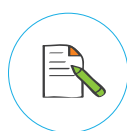


Enhance green procurement for products and services



Develop and manage supplier and business partner relationships

2020 Strategy



Enhance knowledge and knowhow of Bangchak Group's procurement process to pursue international standard for procurement



Maximize Company's benefit in terms of quality and spending through process improvement



Develop suppliers' capability through Supplier Code of Conduct (SCOC)

2020 Performance

Supply Chain Management

Development of Bangchak Group Strategic Procurement Processes Development

Through the collaboration between procurement function and users, the Company uses category strategy and other procurement strategies to analyze points of improvement for product groups and services, leading to improved products and service quality, better pricing, and process efficiency. Examples of procurement strategy include;

1. **Standardization:** define standardize specification of products and services by analyzing potential of current products and services that can be standardized or adjusting products from sole sources distributors to increase competition and/or find substitute products.

Bangchak was able to consolidate volume of multiple products and services which increase our bargaining power with suppliers. In addition, products which were sole sourced are now being bided competitively, resulting in cost savings.

2. **Improvement of internal processes:** procurement functions worked with users to analyze scope of work to find improvements that could increase productivity and adjust work process to the changing markets examples of improvement process included: new inventory management of spare parts and chemical to better reflect true consumption which resulted in cost savings and reduced inventory.

3. **Digital transformation:** Bangchak expanded the E-catalog process from office equipment and consumables to include spare parts and tools used in the refinery. The E-catalog process has reduced the search and payment time for warehouse as well as increase convenient for users with online ordering and tracking process. Other technology driven efforts included: using Microsoft Team for meetings, consolidate bidding process with other procurement groups to reduce use of envelopes and papers, and using electronic signature for contracts which reduce time and paper usage.

Result:



contracts can be completed within 38 days on average



14.5% cost reduction in the use of packaging (per 2020 budget)

Supplier Relationship Development by Supplier Seminars

Bangchak held supplier seminars to clarify the company's operating guidelines and provide knowledge of procurement standards and procedures. The seminars allow for two-way communications so suppliers can ask questions, provide suggestions and comment on procurement-related issues. Procurement function acts as an intermediary between suppliers and users to co-develop solutions. Certain issues are resolved during the seminars. Issues identified include bidding system process, transportation issues, and bidding results announcement process.

Due to the regularly arranged seminars, partnerships between Bangchak and registered suppliers have improved which also promote trust and confidence between suppliers and users.

Results



users' satisfaction score for procurement function was 85% (Very Good level)



users' satisfaction score for suppliers was 74% (Good level)

Green Products and Services

Bangchak has developed guideline and register for green products to promote the procurement of green products and services. The effort expands to include services such as construction works, repair works at service stations and offices where Bangchak has required that green products and services are used.

In addition, Bangchak gives higher preference to domestic suppliers or suppliers from neighboring countries to replace products that come from further away in order to lower procurement costs as well as reduce transportation costs.

Result



number of environmentally friendly products and services was 50 (target 20)

Sustainable Supply Chain

To reduce risk in supply chain and enhance business competitiveness, the Company emphasizes on supplier group development by integrating UN Global Compact into our framework for working with suppliers as follows:

1. Developed BCP Supplier Code of Conduct (SCOC) that integrates environment, social and governance (ESG). SCOC includes 5 aspects:
 - ✓ Business Ethics
 - ✓ Labor Practices and Human Rights
 - ✓ Safety and Occupational Health
 - ✓ Environment
 - ✓ Community Engagement and Development

2. Definitions of critical suppliers:

- ✔ High spending suppliers
- ✔ Suppliers of critical raw material, products, and services
- ✔ Non-substitutable suppliers

Type of suppliers	Numbers	Share of total procurement spent (%)
Tier 1 Suppliers	979	100
Critical Tier 1 Suppliers	53	57.6
Critical Non-tier 1 Suppliers	101	-

3. Encourage suppliers to implement BCP SCOC into their operations through SCOC Assessment. Bangchak has set a target for 100% of tier 1 suppliers to complete the SCOC Assessment by 2020.

- ✔ 53 critical tier 1 suppliers completed SCOC Assessment.
- ✔ The Company conducted onsite audit of 13 critical tier 1 suppliers. Over the past two years Bangchak has conducted onsite audit of 45% of critical tier 1 suppliers.

4. Analyzed and closed gaps for raw material, transportation, and products and services suppliers' ESG issues.

- ✔ The Company sets target of ESG risk assessment for Tier 1 suppliers every 3 years (2019 - 2021). In 2019, Bangchak completed the assessment of 979 tier 1 suppliers and 101 critical non-tier 1 suppliers. The assessment found that 5 tier 1 suppliers and 22 critical non-tier 1 suppliers have critical and high risk levels in all ESG aspects. In economic aspect risk findings include late delivery and low quality products that will effect to business continuity. For social aspect, risks include community grievances from improper operation. And for environment aspects risks include oil and chemical spills. The Company recognizes the important of these issues and prepares risk mitigation measures with high risk suppliers (100% corrective action) to prevent ESG risk impacts from ESG risks and ensure business continuity as a result Bangchak has not cease doing business with the identified suppliers (0%) (Disclosure 308-2, Disclosure 414-2).

Encouragement Suppliers to Implement BCP SCOC

Numbers of Suppliers	2020	2019
1. Critical Tier 1 Suppliers who accepted and participated in the SCOC Assessment	53	24
2. Suppliers monitored by site visit	24	11
Remaining numbers of Suppliers monitoring	29	42

Encouragement Suppliers to Develop Corrective Action Plans

ESG Risk Exposure	Numbers of Suppliers		
	Assessed	High-critical risk level	Corrective action plans & improvement
Tier 1 Suppliers	979	5	5
Critical Non-tier 1 Suppliers	101	22	22
Total		27	27

Supply Chain Transparency & Reporting

Percentage of suppliers	2019	2020	2021 Target
Percentage of critical suppliers who accepted BCP supplier code of conduct (SCOC) assessment invitation	100% (53 suppliers)	100% (53 suppliers)	100%
Percentage of critical suppliers who achieved the BCP supplier code of conduct (SCOC) assessment	45.3% (24 suppliers)	100% (53 suppliers)	100%
Percentage of sustainability risk assessment of tier 1 suppliers	100% (979 suppliers)	100% (979 suppliers)	100%
Percentage of sustainability risk assessment of critical non-tier 1 suppliers	100% (101 suppliers)	100% (101 suppliers)	100%

Innovation Management

Bangchak established Bangchak Initiative and Innovation Center (BiiC) to establish a Green Ecosystem to drive innovation by focusing on green energy and bio-based products to extend businesses both domestic and abroad from Research and Development (R&D), with technological and network management, and incubation of startup businesses in support of the Thailand 4.0 economy. The ultimate goal is Bangchak as a Leading Asian Greenovation Group. In 2020, Bangchak launched the “Winnonie” startup business, introducing innovative green energy electric motorcycles and renting them to motorcycle taxis on queue at Head Office as well as Bangchak Refinery, complete with battery swapping service for the first time in Thailand, further emphasizing the leadership in green energy innovator.

In the past year, Bangchak’s R&D group established a laboratory for microalgae cultivation and a prototype plant for high-value products from microalgae. In addition, it has ongoing technical cooperation and co-development projects with various research institutes and universities such as the National Nanotechnology Center (NANOTEC), Thailand Institute of Scientific Technological Research (TISTR), the Enhancement Board of Science, Research, and Innovation (TSRI), Chulalongkorn University, Asian Institute of Technology (AIT) and King Mongkut University of Technology Thonburi.

Technology and Innovation R&D Expenditure

Year	Action	Amount (Baht)
2018	Production of astaxanthin from algae and selection of algae species for wastewater treatment in bioethanol plants	5,400,000
2019	Production of astaxanthin from algae, bioplastics, bio-based oil, and wastewater treatment	9,200,000
2020	• The construction of a microalgae laboratory, a biorefinery, and the pilot plant for astaxanthin	10,000,000
	• Bioplastic prototype production, plant-based alternative protein products development, and gas station wastewater treatment	5,450,000

Remark

In 2019, Bangchak received Baht 2.8 million in tax privileges from NSTDA and Baht 2.3 million in research fellowship from the Thailand Research Fund.

In 2020, Bangchak received Baht 1 million in tax privileges from NSTDA.



Information Technology (IT) and Cyber Security for Business

Bangchak promotes the use of information technology as an important tool to manage stakeholders' expectations. The Company ensure that guidelines, tools, and standards used are in accordance with international safety and security standards in order to support business expansion according to the Company's strategic plan.

Information Technology and Cyber Security Management Structure

The Company has appointed The Information Technology and Cybersecurity Digital and Information Technology Department is responsible for the management of the Committee and report performance to the Management Committee (MANCOM), and they also report IT risk management and cybersecurity to the sub-committees and the Enterprise-wide Risk Management Committee (ERMC).

The Cyber Security Division was established in 2018 to be responsible for cybersecurity management following the ISO/IES 27001: 2013 ISO/IES 27032: 2012 and NIST Cyber Security Framework.

Information Security Management in accordance with International Standards

- ✔ Bangchak has received certification for ISO/IES27001:2013, an Information Security Management Systems standard, since 2012. The Company implemented the standard in risk management, design of security system, and in operations to create resiliency in control and development.
- ✔ In 2018, Bangchak received ISO/IES 27032: 2012 which focuses on the confidentiality, integrity and availability in the cyberspace to protect hardware and software assets as well as information and virtual assets such as brand and reputation.
- ✔ Protection of assets, information, and systems Bangchak has implemented the Information Technology and Cyber Security Policy to ensure protection coverage through:

1. Conduct risk assessment of important IT systems and develop backup system and emergency management plan in an event where operations cannot be conducted electronically. The backup system and emergency plan are frequency tested for readiness.
2. Information technology management shall have measures to control and protect assets and equipment to ensure operational readiness and deterrent against unauthorized access from both onsite and offsite usage.
3. Control access to information and information technology usage based on level of importance as part of data management and confidentiality. This includes control of electronic messaging such as email and EDI as well as providing a written contract on confidentiality and information protection with external entities.
4. Protect against system attacks from networks and malware by detecting and preventing unauthorized access as well as restoring systems in an event of attack. The Company conduct awareness raising activities with relevant users. Technical vulnerabilities are managed through:
 - Testing of procedures and processes to manage security incidents at least once a year including conducting a cyber security drill.
 - Conducting a penetration test by third-party experts on important operation systems to analyze risks and impacts to the business at least once every 3 years. Tests are conducted at least once every 5 years for other systems.
 - Conducting vulnerability assessment of the operating system and network/ security equipment to determine whether there are any vulnerability and impact level so system operators/managers can determine the likelihood of attacks and develop corrective actions.

- Internal communication to raise awareness and increase effectiveness of IT system usage.

Internal communication has been increasingly implemented in internal operations and businesses. Therefore, Bangchak has provided communications and training for employees which included:

- Orientation for new employees and executives include policies, laws, regulation, program and application usage related to IT systems.
- Communicate potential cyber risks to create knowledge and security awareness through Company's e-mails.
- Conducted Cybersecurity Awareness Improvement Program annually through phishing mail assessment understanding assessment which includes conducting phishing simulation in order to determine the level of risk to the Company. To assess users' awareness, the Security Awareness Assessment is conducted. Results are documented, analyze, and use to develop further training plans as well as to improve phishing mail prevention measures. In 2020, Security Awareness Assessment was conducted twice. The results showed that employees had improved awareness and understanding of how to cope with the phishing mail significantly.

Year	Testing #1	Testing #2
2020	3.4 %	1.3 %
2019	6.2 %	2.1 %

- Cyber Security Response for Bangchak Group is another measure implemented to improve cyber security. The Company educated employees, executives, and subsidiaries through cyber security incident case studies such as business email compromise (e.g. fake invoice). The Company also implemented Strictly Process Confirming as follow:

1. Requests: Register or change to important information especially bank account information
2. Use FCD form to verify
3. Must be signed by responsible person of the counter party
4. Must have relevant, formal, and legal documents
5. Re-Check with requester by telephone
6. Add these steps into the work flow

- Emergency drill and business continuity plan : conducted a drill simulating an incident where the Company's data center is inoperable. The drill was conducted with subsidiaries and IT system vendor. Recovery process for IT system and equipment according to the Disaster Recovery Plan and related risk management and business continuity management plan was conducted jointly with Risk Management Department.

- 1) BMC remedy system: <https://myit.bangchak.co.th/ux/myitapp>
- 2) Email: IT-Service
- 3) Call: 4336

Bangchak conducts Cybersecurity Awareness Improvement Program twice a year. Employees can report suspect cases of cyber security incidents.

Number of information security breaches or cybersecurity incidents



Number of customer data compromised, or data leaked



Integration of international standard and technology
for safety production and
environmentally friendly



In Harmony With Environment

Net energy consumption with in the organization



14,112
Terajoules

Energy Intensity Index (Refinery Business)

EII = 102.0

TotalGHG emissions
(Equity share approach)



Total water withdrawal*



21.33 Million m³

*Surface water, groundwater, produced water from crude oil extraction/processing, and third-party water of the Refinery and the headquarter office

Water recycled and reused of the refinery

1.31 
Million m³

3Rs waste management



99.96%
of total waste

Operational Eco-Efficiency

In 2020, Refinery and trading business group had an average refining capacity of 97,200 barrels per day, representing 81% of the total refining capacity. This was due to the effects of the oil price volatility and the low level of Gross Refinery Margin coinciding with the significant decline of the global demand for fuel consumption. In addition, the COVID-19 pandemic resulted in the decline in the domestic demand of fuel consumption. Therefore, Bangchak has upgraded the refinery to be the niche product refinery to produce new products, such as the solvent product group under the name “BCP White Spirit 3040”. Furthermore, the Company has extended its refinery to become the sole producer of UCO (unconverted oil) in Thailand, which helped improve the Gross Refinery Margin.

Due to the impacts of climate changes, natural resources scarcity, and COVID-19 pandemic, Bangchak determined to emphasize the efficient use of natural resources in its

production processes to maximize production capacity and minimize waste and emissions from production. The Company adopts environmental management system which is in accordance with ISO 14001:2015 regarding the use of natural resources and pollution control covering 100% of Bangchak’s operational sites (Bangchak refinery and Bang Pa-In oil terminal) to drive 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. The Green Industry Level 5 covers environmental management of business operations and the expansion and promotion of environmental management practices for stakeholders in the supply chain, communities, and consumers in order to create a green network and to demonstrated the Company’s commitment to environmental development to become the corporate culture in business operation with social responsibility. (Disclosure 102-12)

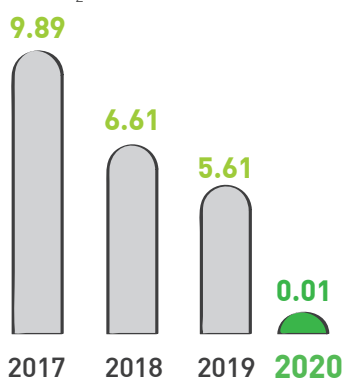
Eco-efficiency

Bangchak aims to create economic growth of its businesses, together with considering impact minimization of business operations, particularly environmental impacts, in order to pursuing sustainable business development. Because of this, the Company uses eco-efficiency as a indicator reflecting production efficiency and environmental impacts from the production. The Earning Before Interest, Tax, Depreciation and Amortization (EBITDA) is applied to reflect economic growth, and the amount of GHG emissions, which is a significant environmental aspect if the petroleum industry, is used to reflect the environmental impact. A high eco-efficiency value indicates high efficiency in production and low environmental impacts.

In 2020, the eco-efficiency decreased in comparison with the 2019 eco-efficiency due to severe effects of the oil price volatility and the low level of Gross Refinery Margin coinciding with the significant decline of the global demand for fuel consumption. In addition, the first wave and the new emerging phase of COVID-19 pandemic resulted in the decline in the domestic demand of fuel consumption. As a result, the performance of the oil refinery industry and the businesses of the Company decreased. However, the amount of GHG emissions in 2020 was lower than the previous year due to the energy efficiency improvement projects of the refinery business. This reflected the Company’s strong intention to operate its businesses, together with reducing environmental impacts.

Eco-efficiency

(Thousand THB / tCO₂e)



Remark :

Note: EBITDA, scope 1 GHG emissions, and scope 2 GHG emissions (tCO₂e) of the refinery and trading business, and marketing business.

Energy Consumption

As a company in industry with high energy intensity in the form of heat, electricity, and steam, Bangchak ensures that its management of energy efficiency is integral to its performance. The Company's energy efficiency management has been ISO 50001 certified since 2014. The Company defined short, medium, and long-term targets and plans to improve energy efficiency for the refinery. The short-term plan is to set an energy consumption target and improve existing systems. Medium plan is to enhance the efficiency and effectiveness of production. In addition, the Company has plan to significantly reduce its energy consumption through the EII Improvement project.

2020 Energy Efficiency Target

The Company defined Energy Intensity Index (EII) as standard KPI for benchmarking. EII is an energy usage benchmark that compares energy performance of refineries within the same capacity ranges. The EII was at level 2 (EII below 104) which improved from level 3 (EII below 114). Domestic oil demand declined due to the COVID-19 crisis in 2020, Bangchak responded by reducing production (average utilization rate for 2020 was around 85%). As a result, energy consumption target for 2020 was higher than 2019, where EII for 2020 was 111.5.

2020 Performance

The Company implemented Continuous Catalytic Regeneration Unit (CCRU) which is energy efficiency management measure, resulting in the decrease of energy consumption. In addition, the Company incorporated AI technology along with people development to increase work effectiveness and business performance.

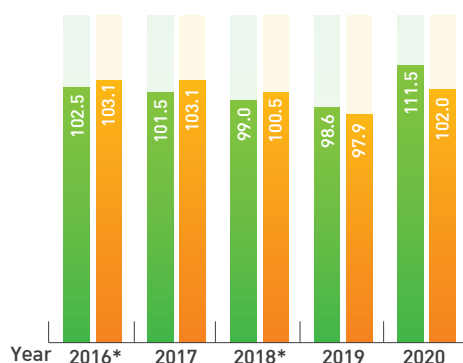
Bangchak has implemented refinery improvement programs and followed the existing programs since 2019. In 2020, energy efficiency programs included:

- ✔ Project to stop using Air Fin at diesel quality improvement unit 3
- ✔ Project to stop using air blower at waste management unit
- ✔ Project to reduce stream pressure by 20 bar from sulfur reduction 2500/2600 to TGTU
- ✔ Project to bypass heat exchanger to recover heat
- ✔ Project to improve amine flow efficiency and reduce acid gas pressure for stream reduction at sulfur reduction from fuel gas unit
- ✔ Project to reduce medium stream pressure at naphtha separation at refinery unit 2

The completions of the energy management and energy efficiency projects in 2020 resulted in Energy Consumption Index at (EII) of 102.0, which is better than the 2020 target and equivalent to energy consumption at 5.68% FOEB.

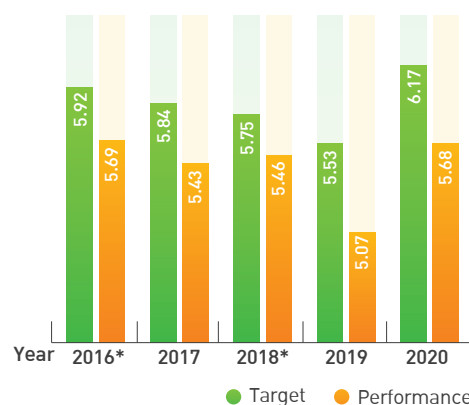
Refinery Business Results

(Energy Intensity Index; EII)



*Major turnaround maintenance.

Energy Consumption in Production Unit



Future Plans

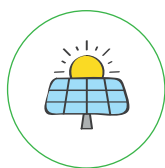
For the future energy reduction plan, Bangchak has collaborated with internal experts for technology and knowledge transfer as well as for future projects development. This collaboration ensures that the Company's energy consumption development plan will be effective. In 2021, the Company will have an annual major turnaround maintenance and install Continuous Catalytic Regeneration Unit (CCRC) in place of Catalytic Reforming in Unit 3, which should result in the reduction of energy consumption. In addition, energy reduction projects included:

- ✔ Project to use hydrogen from the desulfurization unit in fuel system in hydrogen production unit
- ✔ Project to reduce stopping gas stream in treatment unit 3
- ✔ Project to produce steam from residual heat in hydrogen production unit

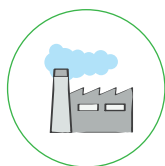
Climate Change

Bangchak places great importance to the prevention and reduction of greenhouse gas emission from business operation that exacerbate climate change and impact the environment. The Company considers physical, regulatory, transition risks as well as potential impacts to stakeholders. Therefore, the Company defined GHG emissions reduction as corporate KPI and CEO KPI to demonstrate our intention to limit and slow down climate change and to contribute to SDG13. The Company also set a target to be a Carbon Neutral Company as a long-term KPI in 2030 which will be achieved through GHG Emission Reduction and Carbon Offsets projects.

2020 Target



Greenhouse gas emission scope 1 at below 893,110 tons of carbon dioxide equivalent



Greenhouse gas emission scope 2 at below 4,603 tons of carbon dioxide equivalent

2030 Target



Strive to become **Carbon Neutral Company** from GHG emission reduction programs and carbon offsets

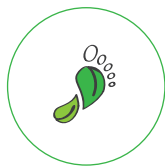
Strategy



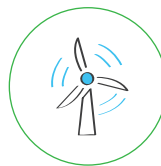
Use clean energy and fuel in production process



Energy Efficiency Program



Carbon Footprint of Products Preparation



Expand investment in renewable energy and clean technologies

2020 Performance

Bangchak manages GHG emission by using clean energy and fuel in production process, increasing energy efficiency, and expanding renewable and clean energy investment programs. In 2020, total GHG emission was 1,002,432 tons of carbon dioxide equivalent, resulting from GHG emission scope 1 at 978,515 tons of carbon dioxide equivalent and GHG emission scope 2 at 23,917 tons of carbon dioxide equivalent.

Refinery business emitted 892,436 tons of carbon dioxide equivalent of greenhouse gases, of which 885,619 tons of carbon dioxide equivalent was scope 1 GHG emission and 6,817 tons of carbon dioxide equivalent of scope 2 GHG emission. In 2020, Bangchak started up the Continuous Catalytic Regeneration Unit which is more efficient than Reforming Unit 3. The Company also managed energy and implemented energy efficiency projects for GHGs emission reduction such as project to stop using air compressor at removing sulfur unit and project to stop the kiln no.4 at

Reforming no.2 unit. In addition, the Company studied and assessed carbon dioxide emission through the Life Cycle Assessment (LCA) of products and certified carbon label from Thailand Greenhouse Gas Management Organization (scope limited to Bangchak Refinery).

In addition, GHG emissions program from solar power generation reduced 32,927 tons of carbon dioxide equivalent, compared to 2015 baseline.

Future Plan

The Company plans to have major turnaround maintenance in 2021 and will implement energy reduction program to increase energy efficiency and reduce GHG emissions. The programs included:



Cleaning heat exchanger before entering the furnace of the refinery and using anti-slag additives at heat exchanger



Project to increase heat exchanger before entering condensation level 4



Project to change the catalyst in sulfur removal unit in naphtha oil in refinery unit 2 and 3

Water Management

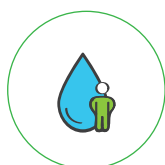
Water is a precious resource. In recent years, water-related risks such as drought and low water quality have exacerbated in Thailand. As a result, sound and effective water management is crucial for the sustainability of the business and of society.

Energy business consumed lots of water; therefore, the Company realizes the importance of water resources and works to reduce water risk and impact from using water resources and wastewater in business activities and operations. In 2020, Bangchak conducted risk assessment of the quality and quantity of water, risks related to regulatory changes and pricing structure, and risk of potential stakeholders' conflicts. In addition, Bangchak conducted water stress analysis for Chao Praya area around the refinery and Lum Lae water pumping station in Phatum Thani province which is the source of tap water for the Metropolitan Waterworks Authority. Bangchak employs the World Resources Institute's Aqueduct Water Risk Atlas as a tool to manage water stress based on risk-level. The water stress analysis showed that areas around the refinery and Lum Lae water pumping station are

not water stressed areas. In an effort to further reduce water consumption, Bangchak manages the water footprint of 6 main products to reduce the use of tap water in process operation, continually monitors drought, flood, and water level changes in the Chao Praya river, and use 3Rs principle (reduce, reuse, and recycle). In 2020, projects to increase water efficiency include:

- ✔ Project to increase water capacity at RO recycle unit from treated wastewater
- ✔ Project to improve tube air fin cleaning by soda blasting technology
- ✔ Project to reduce rinse time of activated carbon after back wash
- ✔ Project to reduce CIP cycle from time base to condition base
- ✔ Project to reduce water condensate from sealing safety valve system
- ✔ Project to reduce stream stripping at Refinery unit

2020 Targets



15% reduction in tap water compared to 2015 baseline



Limit fresh water intake used in production process to no more than 0.06 cubic meters per thousand barrels for oil production

(*actual performance was 0.065 cubic meters per thousand barrels for oil production due to the extended shut down of gas turbine engine which was out of commission in the beginning of the year and was not fixed until the end of the year due to COVID-19 disruptions which prevented spare parts and foreign specialist from entering the country. The Company had to switch to steam turbine which consumes more water.)

Strategy



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



Apply innovative tools and technologies for water management

2020 Performance

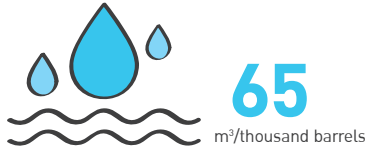
In 2020, Bangchak consumed 2.04 million m³ of water from the Metropolitan Waterworks Authority for the use in production processes and offices, 273,738 m³ of underground water for the use in production processes in order to reduce the use of tap water during droughts and to maintain the underground aquifer, and 0.19 million m³ from Chao Phraya River for oil depot maintenance, fire suppressant system testing and emergency drill. Total water consumption was 21.24 million m³ which include water extracted from crude oil and 2.51 million m³ without water from crude oil. Water consumption was 0.07 m³ per one barrel of oil production which was higher than last year's 0.05 m³ per one barrel of oil production due to higher run time of steam turbine generator which increased total water consumption. Surface water discharge was 0.72 million m³. Therefore the total water consumption for production was 1.79 million m³ or equal to 0.05 m³ per barrel of oil production

2020 Action Plans		2020 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 0.14 million m³ / year* (0.04% of total water demand excluding water extracted from crude oil and equal to 3,881 m ³ / 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 0.69 million m³ / year (0.18% of total water demand excluding water extracted from crude oil and equal to 19,574 m ³ /million barrels of oil equivalent)
3	Take the Stripped Water from the Sour Water Stripping Unit and the Stripping Steam wastewater of the 3 rd distillation unit instead of water supply in the salt removal unit from crude oil (Desalter)	Reduced water consumption by 0.05 million m³ / year (0.01% of total water demand excluding water extracted from crude oil and equal to 1,403 m ³ / 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 0.39 million m³ / year (0.10% of total water demand excluding water extracted from crude oil and equal to 11,096 m ³ /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 0.17 million m³ / year (0.05% of total water demand excluding water extracted from crude oil and equal to 4,901 m ³ / million barrels of oil equivalent)

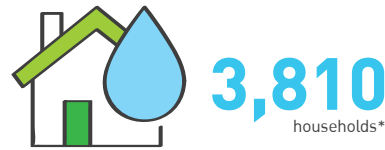
* Compared to baseline year 2015 from reusing condensate water in boilers and the 4 refinery unit plus treated water from oil treatment unit using RO, and include treated water from wastewater treatment units using RO for cooling towers

Performance Indicators

Control the amount of water consumption per production capacity
(Target not more than 60 m³/thousand barrels of oil equivalent)

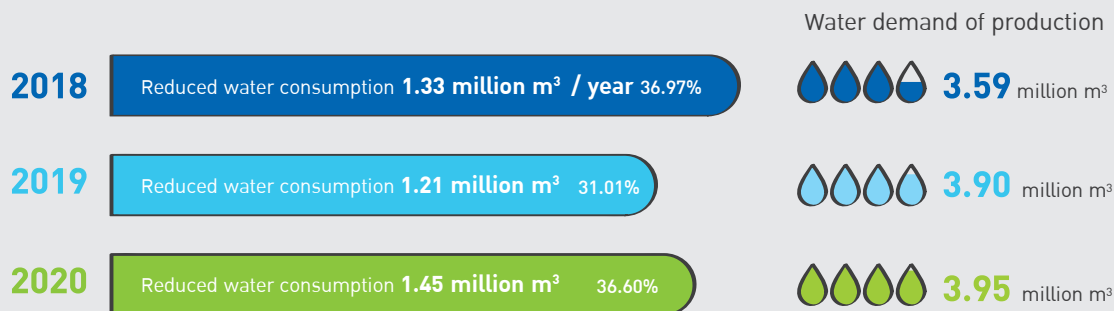


Water saving (household equivalent)



* Water usage data in Bangkok Phra Khanong area, where the refinery is located. The average family member in each household is 1.85 people /household, the amount of water used is 0.56 cubic meters / person / day or 1.04 cubic meters / household / day. (Information from the Metropolitan Waterworks Authority: 2015)

Percentage of new water withdrawal reduction compared to water demand of production in that year



Cooperation with external agencies and stakeholders on water management

Cooperation between Bangchak, external agencies and stakeholders on water management projects are as follow:

- Garbage collection and tree planting along the Chao Phraya River with members of the community
- Cooperate with the Marine Department to purchase “Sritaruk 8,” an oil spill cleanup boat that will be stationed on the Chao Phraya River
- A project to buy used vegetable oil from households around the refinery and Bang Nam Phueng Market to reduce cooking oil discharge into the Chao Phraya River and public water sources.
- Collaborated with Department of Environmental Quality Promotion Phra Khanong District Office and Bangna District Office on the ECO School project. The project supports administrators and science teachers in 11 schools around the refinery to learn how to create a curriculum and integrate environmental education systematically in the learning process. This year, Borphit Wittaya school initiated a project to reduce wastewater from its canteen in order to prevent and reduce wastewater from entering into the environment.
- Project “Citizen Awareness,” in collaboration with King Prajadhipok’s Institute, invite students to propose public policy on water management.
- A project, in collaboration with Bangkok Thanakom Company, to raise awareness of youth on the problem of canal waste that affects the environment and community.

Wastewater Management

Refinery industry consumes high volume of water in the production process and create wastewater and water discharge. Therefore, Bangchak recognizes in this issue is important to the sustainability of the business and believes it is important to minimize water pollution and to take responsibility to reduce impacts on natural sources.

Bangchak manages wastewater using a highly efficient water treatment system. The system consists of three parts which are Physicochemical Treatment Process to segregate oil and revert back to the process, Biological Treatment Process to reduce dissolved organic compounds, and Tertiary Treatment Process to reduce small particles and absorb the rest of organic compounds to ensure the quality of water before being injected into recycle system. This system ensured that quality of wastewater is higher than Industry Standard specified by Department of Industrial Works and does not create impacts to environment, communities, and stakeholders.

Bangchak implemented internal process to regularly manage quality of wastewater and analyze wastewater quality after treatment by the Company's laboratory. PH Meter and Dissolved Oxygen (DO) are used to enhance wastewater treatment. In addition, the Company establish COD Online for real-time monitoring and sending results to Department of Industrial Works and communities around the refinery.

Furthermore, Bangchak uses 3Rs principle for wastewater management to reduce water discharge to the environment by using wastewater recycling system in production process. In 2020, water discharged was 724,694 m³.

In 2020, wastewater from head office was 1,835 m³. The majority came from toilet flushing and canteen which was treated by wastewater treatment system for the building.

Oil and Chemical Spill Management

Bangchak gives the highest priorities to safety and the environmental in every work process and activity. The Company continually assesses and mitigates potential risks related to oil and chemical spills including marine transportation of crude oil using large tankers and smaller ships, in refining processes, transportation to oil terminal in Samut Sakorn and Surat Thani as well as transportation to customers to prevent any events that may cause negative impacts to environmental and safety as well as Bangchak's ability to effectively contain and manage spills.

- ✔ 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.

Commissioned an oil spill clean-up ship, “Sritaruk 8,” which is equipped with side collecting boom and belt skimmer enabling it to clean up oil spill without any assistance from other ships (the operation usually requires 3 ships). On-board features include fire extinguisher system to increase safety and a meeting room so that personnel can better respond to the emergency. The Sritaruk 8 will be stationed at Bangchak’s port, its presence will increase environmental and safety assurance around Chao Phaya bay area. In an event of an emergency, Bangchak will also be ready to assist the Oil Industry Environmental Safety Group Association (IESG), where it is a member, and any other emergencies as requested.

Current situations and performances are reported to Risk Management Working Group Committee to be reported to the Corporate Risk Management Committee on a monthly basis to ensure that effective and safe management process. In 2020, there were no significant oil or chemical spills into the environment, thus, helping to build the confidence in Bangchak’s ability to protect the environment and safety of communities around the refinery and port.

Significant oil and chemical spills

	2017	2018	2019	2020
• Number of case related to significant oil and chemical spills (more than 100 Barrels)	0	0	0	0
• Volume of significant oil and chemical spills with more than 100 Barrels/time (Barrel)	0	0	0	0
• Volume of oil and chemical spills with more than 1 Barrel/time (Barrels)	3	141	4	11
• Data coverage as percentage of Annual Production (MMBOE)	100	100	100	100



Air Pollution Management

Bangchak manages and monitors quality of air emissions beyond air emission laws and regulations. The Company also considers impacts from air pollution to stakeholders such as employees, contractors, and communities and environment around the refinery by emphasizing air pollution management from beginning. The Company uses clean fuel in production process and implements environmental management system in compliance with ISO 14001 for 23 consecutive years.

According to proactive Environmental Management Policy, Bangchak continually sets air pollution emission target to

be more challenging and continuously monitors quality of air emission by online instruments at vents, working area, and air around the refinery. Air quality has been verified by a third party. Fugitive Volatile Organic Compounds (VOCs) is also measured every day. In addition, the Company surveys fugitive VOCs by infrared camera to improve monitoring equipment of raw material storage tanks and all products.

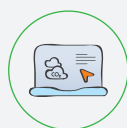
Strategy

Environmental Management System

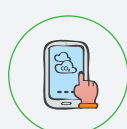


Focus on environmental management system in accordance with ISO 14001

Digitize Measurement and Transparent Communication



Monitor air quality using online real-time instruments from vent, working area and atmosphere around the refinery



Communicate environmental quality to the public via online channel to promote data transparency and verifiability

Reduction in Air Pollution



Use clean fuel in all production process



Reduce air emission targets from stacks



Use new tools and technology that reduce air pollution

2019-2021 Target



Zero complaints related to air pollution



Vented air emissions from stacks meet the targets

From 2020 air pollution management strategy

The Company had zero complaint about air pollution from community. Bangchak continues to manage and control air quality before venting to the environment as follow:

Environmental Management System

- ✔ The Company focuses on the implementation of environmental management system in accordance with ISO 14001 and has been ISO 14001 certified for 23 consecutive year.

Digitize Measurement and Transparent Communication

- ✔ Bangchak monitors air quality through 7 Continuous Emission Monitoring System (CEMs) units. This system sends real-time data to Department of Industrial Works, helping the Company to monitor and report air quality real-time.

Air Pollution Reduction

1. Use natural gas which is cleaner fuel in production process.
2. Reduced air pollution ventilation from vent target to be more challenging.
3. Built Enclosed Ground Flare to supplement Elevated Flare. This combination allows for the accommodation of excess gas that is discharged from the production process in the event of 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, flare, and the environment.

2020 Results



Received ISO 14001
International Certification
for the
ISO14001
consecutive **23** Years

Zero complaints
associated with
air pollutions
2020



0 Case
(target : 0 complaint)



Air quality measured by
meet are
Third Party
within **standards**



2020

Control the release of
Fugitive VOCs
at every measurement point
to not exceed 200 ppm
(Law requires not more than 500 ppm)
2.5 Tons



The new
Enclosed Ground Flare
at 2020
installation progress
Enclosed Ground Flare

2021 Action Plan

- 🟢 The Company plans to implement an integrated VOCs air quality management plan

Waste Management

Bangchak recognizes the important of waste management and complies with law and regulations. The Company adheres to the 3Rs waste management principles which are reduce, reuse and recycle and follows local and international guidelines on waste management to mitigate environmental impacts from waste disposal. Bangchak continues to set zero waste to landfill as waste management target is and minimize waste generation and waste disposal.

In 2020, the Company signed Memorandum of Understanding (MOU) with National Metal and Materials Technology Center (MTEC), governed by National Science and Technology Development Agency (NSTDA) to study Environmental Management System in Refinery Business Program. The project is aligned with circular economy principles to analyze waste management method, focusing on waste to value.

Strategy



Waste management based on 3Rs principles (Reduce, Reuse & Recycle)



Compliance with laws and regulations

2020 Targets



Zero waste to landfill



Waste management managed by 3Rs increase continuously

2020 Performance

Waste generated in 2020



Hazardous waste: accounting for **2,670.61 tons** **84.64%**

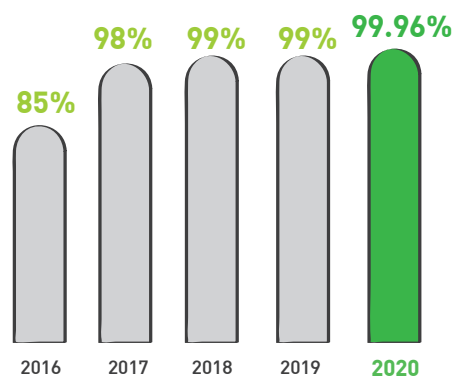


Non-Hazardous waste: accounting for **484.66 tons** **15.36%**



The Company managed waste aligned with 3Rs. The amount of waste that can be utilized was 99.96% of total waste generation.

Waste management aligned with 3Rs (%)



The amount of waste disposed by waste incineration without energy recovery (excluding recycling or reused or energy recovery) was **1.27 tons** (waste incineration and landfill)

2025 Targets



Zero waste to landfill



Zero amount of waste disposed by waste incineration without energy recovery (excluding recycling or reused or energy recovery)



3% waste generation intensity reduction in 2025 (baseline 2015)



Sustainable products and services development

Bangchak is committed to develop products and services based on inclusive and sustainable business practices for the betterment of the country. During the COVID-19 crisis, Bangchak lend a helping hand to the society through various products and services such as giving out free alcohol gel at Bangchak service stations, selling alcohol get at a discounted rate to consumers, setting up donation stations in our service stations, developing digital payment methods to maintain social distancing and reduce service time as well as developing EVO FAMILY products such as E20S EVO gasohol and offering diesel fuel which have sulfur level lower than 10 parts per million (PPM) and 5 times lower sulfur content in service station serving the Bangkok metropolitan area to help alleviate PM 2.5 problems.

In addition, the Company focuses on business innovations such as the development of E20 gasohol that meets Euro 5 standard (first in Asia), the development of B10 and B20 diesel fuel, and the development of Bangchak Mobile Application to give consumer better access to special privileges which also helps to management customer information systematically. In addition, the Company developed Unique Design Service Station that integrates customers' expectations with unique design for each area to bring the best and greenovative experience to our customers.

Bangchak places great important to listening to stakeholders' demands and expectations, especially customers and business partners which include end user, business to business (B2B) customers, dealers, and coop service station operators. In 2020, Product and Service Quality was a material issue for the business. As such, Bangchak has set Customer Centric as a strategy to address stakeholders' demands and expectations. The company strives to meet these expectations through innovation and technology under the "Evolving Greenavative Experience" framework and using Net Promoter Score (NPS) together with Customer Satisfaction as tools to monitor the effectiveness of our operations. Service quality are controlled using Standard Service Procedure and Service Audits are used to ensure the effectiveness of products and services delivered to customers and business partners. In addition, Bangchak uses Mystery Shopper program to audit service processes and maintenance of service stations. Products qualities are tested at service stations using Mobile and Training Lab. In order to ensure that Bangchak's products and services quality meet expectations, customers can use Mobile Application Survey to provide feedbacks in real-time.



2025 Targets



Maintain the 1st place in Service Station brand, as measured by Net Promoter Score



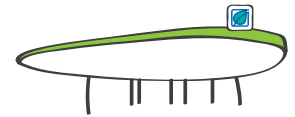
Increase revenue from service stations and increase market share to 18%



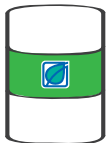
Continue to develop services, service stations, and non-oil businesses through products and services that are sustainable and responsive to customers' needs



Expand the number of service stations to 420 branches throughout the country and improve service station to be Unique Design to 75 branches from 33 branches currently



Develop and improve cooperative service stations to have the same quality and standards as Bangchak service stations



Develop high quality fuel products that keep with the changing automotive technologies while ensuring that all products are environmentally friendly



Develop brand and lubricant products



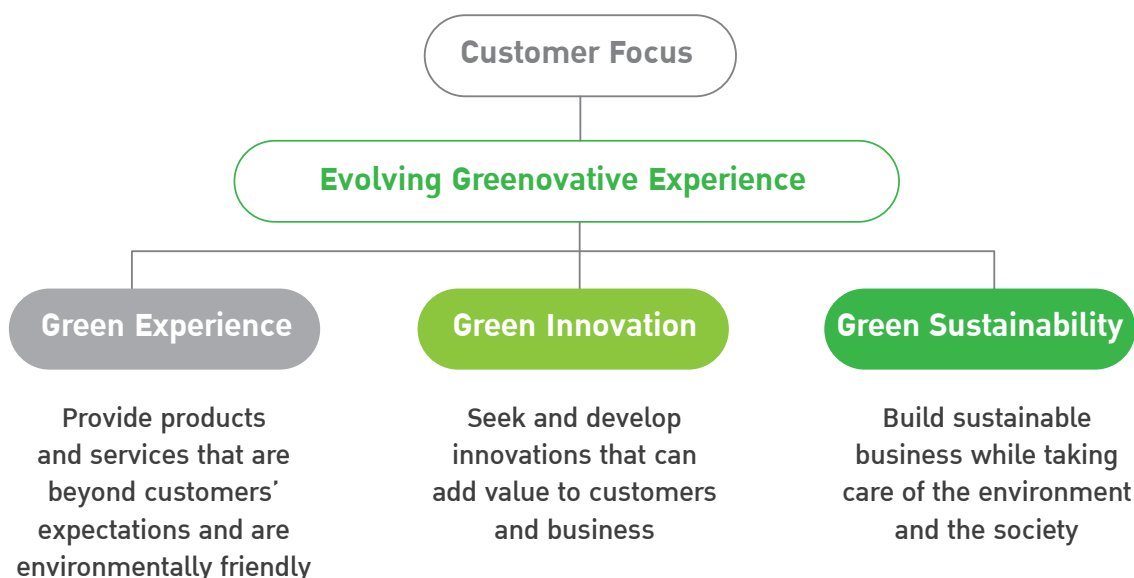
Provide high quality service experiences to customers through exceptional service standards



Develop Bangchak GreenMiles membership car toward The Best Loyalty Program that meet customers' expectations

Strategy

Bangchak's products, services, and experiences development are guided by "Evolving Greenovative Experience" framework to ensure that products and services delivered through our service stations are exceptional. The company aims to become the Most Admired Brand for service stations and response to any issues relating to product and service qualities from all stakeholders. The main strategy the company employs to are:



2020 Performance

Green Experience - provide products and services that are beyond customers' expectations and are environmentally friendly

Green Products: The delivery of products that are with in specifications and environmentally friendly

- Bangchak provides two products that are certified by Euro 5 standard. The two products are E20 S EVO gasohol and Hi-Premium Diesel S that not only has lower sulfur content than Euro 4 products but also fully compatible with new Euro 5 standard engine ensuring that engine can perform optimally. In addition, Bangchak offers diesel fuels which have sulfur level lower than 10 parts per million (PPM) and 5 times lower sulfur content in service station serving the Bangkok metropolitan area to help alleviate PM 2.5 problems.



- Promote the use of B10 biodiesel fuel under Hi-Diesel S brand, the fuel has S Super Booster additive that provide higher cetane value which helps engine efficiency and S Super Purifier additive which helps to clean injection nozzle and product engine from corrosion. The fuel is aimed to customers who want high quality, low price, and environmentally friendly diesel fuel. The development of the product also supports government's policy to help palm oil farmers as well as reduce transportation costs for customers and improve air quality.
- Develop gasohol S EVO FAMILY products to be the best in the market while improving E20 S EVO to be a premium product. To provide the best products for customers during COVID-19 crisis, Bangchak added S Dual Purifier and S Turbo Modifier to our gasohol S EVO FAMILY products to help clean injection nozzle, achieve better combustion which helps engine to

perform optimally. Tests show that using E20 S EVO improve performance in GDI engines.

- Develop standard lubricant products that are ISO 9001 (Quality Management System) and ISO/TS16949 (Quality Management system for automotive production and relevant service part organization) certified for the procurement, product development, sale, and after sales services to ensure quality and effective operational management. Continue to promote sales of biofuels for products that help to reduce greenhouse gas emission compared to traditional fuels. In 2020, there were 845 service stations that sold E20 gasohol and 335 service station that sole E85 gasohol. Bangchak was able to maintain number 2 market share for E20 gasohol at 16.6% and maintained the highest market share for E85 gasohol at 40.4%.



Innovative Service Stations : implement technology and innovation to improve service station, environment around service stations, and non-oil business

- ✔ Enhance brand image through Unique Design Service Stations that provide experiences in service stations through design and non-oil partnerships. At the end of 2020, there were 33 service stations branches
- ✔ Develop service stations along the main highways to better serve customers
- ✔ Support and improve the standards and brand image of 18 service stations to increase competitiveness both in terms of infrastructure and service quality
- ✔ Expand customer network for Fleet Card and Pre-Paid Card to improve revenue contribution from service stations
- ✔ Collaborate with Thailand Environment Institute (TEI) to develop guidelines for designing service stations under Inno-Green Station framework that take environmental factors into considerations, use innovation, safe, and aim to improve all groups of customers' qualities of life through better design
- ✔ Expand non-oil business such as Inthanin Coffee in service stations. There are now Inthanin Coffee in 673 service stations. In addition, Bangchak expanded new partnerships to include convenient stores brands. There are Tops Daily stores in 13 service stations and Family Mart in 21 service stations.
- ✔ Better management of service station areas to optimize benefits under the new business framework to provide end-to-end services such as car care services under "Wash Pro," "Green Wash," "Trye Care" brands; food kiosks and food trucks, laundry services, logistics and delivery services, and vending machines.



- ✔ Work with partners to develop EV charging points in service station on the main location to support the increase adoption of electric vehicles.

BCP Mind : Develop attentive services and use IT technology to manage customer data to provide quick and effective services

- ✔ Bangchak raised the cleanliness standard of all service stations in response to the COVID-19 pandemic. Cleaning measures standards were raised, and all employees are required to wear marks at all time. In addition, Bangchak provides alcohol gel for customers and the public and implement digital payment for payment and membership points collection at all Bangchak service stations, Inthanin Coffee branches, and convenient stores in service stations to reduce contacts and maintain social distancing between customers and employees in order to increase customers' trust in Bangchak service station.
- ✔ Improve the standards of service stations at are in prime areas to have good infrastructure to serve customers such as Point of Sale system (POS) and automatic tire inflator to emphasize quick service. In addition, restrooms standard was improved to ensure the highest customer satisfaction.
- ✔ Expand "Lost and Found at Bangchak" project to instill the importance of keeping lost or forgotten objects such as wallets, necklaces, and mobile phone safe in order to contact the owners and return to customers. Bangchak also plans to expand Road Side Assistant project to help drivers on basic emergencies such as changing spare tires and jump start their cars.
- ✔ Control service quality through service audits which are conducted randomly using Mystery Shopper.

Green Innovation - seek and develop innovations that can add value to customers and business

- Develop membership system into a Digitized Loyalty Program through the development of new Bangchak Mobile Application. The new application is built on the slogan “More than Giving is Caring”. New features include customer feedback for service station where customers’ comments and suggestions will be used to improve services; same price privileges; and system to help customers become more environmentally friendly such as “Your Tree” and “Giving Basket” that allow customers to donate their membership points to non-profit organizations and foundations.
- Use digital payment system for payment and membership points collection at all Bangchak service stations, Inthanin Coffee branches, and convenient stores in service stations by using QR code that can be paid with any mobile banking application to reduce contacts and maintain social distancing between customers and employees in order to increase customers’ trust in Bangchak service station.
- Developed BCP Link Application to facilitate dealers to access important information in real-time such as the Auto Ordering System (AOS) and work effectively through system such as Smart P&L which helps service station owners to monitor and manage the effectiveness of their operations.
- Develop online training for service station employees and operators to enable them to access important information anytime and anywhere.



Green Sustainability - build sustainable business while taking care of the environment and the society

Bangchak continues to drive projects and engage our customers and stakeholders in the development of society. Examples of projects are:

- Fuel Up and Share Project** Bangchak provides sales opportunities for innovative small and medium enterprises (SMEs) by providing agriculture products, OTOP products, or innovative products to service station customers. Proceeds are used to support SMEs.



- Employment of Disabled and Elderly Project** Support quality of life and self-value for disabled and elderly people as well as promoting the engagement of society in supporting products that are made by disable groups.
- Garden Vegetables in Service Station Project** Bangchak converted unused areas behind service stations into vegetable gardens to help reduce food cost for service station employees as well as to give away to customer as a thank you gift for using Bangchak service station. The gardens also serve to provide educational opportunities about growing garden vegetables to surrounding communities and schools.





- “Rak Pan Sook” Project” Using circular economy principles, the project take PET bottles and empty lubricant bottles donated by customers and put them through an upcycling process to produce new products, helping to reduce resources consumption and plastics waste.



- Inthanin Coffee, a leader in environmentally friendly coffee business” Inthanin Coffee was one of the first coffee shops to promote plastic reduction through “Bring Your Own Cup” campaign. In addition, Inthanin Coffee was a leader in using BIO Packaging including lids and cups that are made from plants and are fully biodegradable as well as ready to drink lids that reduce the need for straws; thus, reducing plastic waste.
- Thai Culture Promotion Project Provide experiences that create good impressions to Thai cultures to customers such as promotional events during major holidays, giving krathong to customers on Loi Krathong Day including a dedicated area for worshipping and watering buddha statues.

- Lost and Found at Bangchak Project to create a trustworthy image and good impression for service stations customers by providing lost and found service.
- Roadside Assistant Project (Road side assistant) instill a helpful mindset and culture to service station employees by providing basic services to drivers such as tires change and jump start.

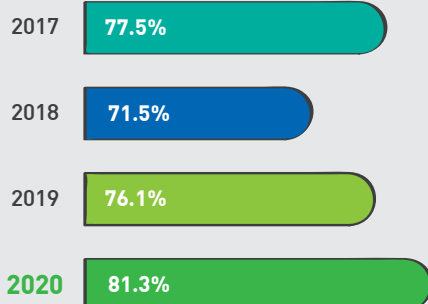


- Bangchak’s Members Collective Giving Project create engagement between customers who are Bangchak’s members and the society; Bangchak members can donate points from using Bangchak’s products and services to convert into cash donations to partner nonprofits and foundations such as Princess Maha Chakri Sirindhorn Medical Volunteer Foundation, Ramathibodi Foundation, and the Thai Red Cross Society.

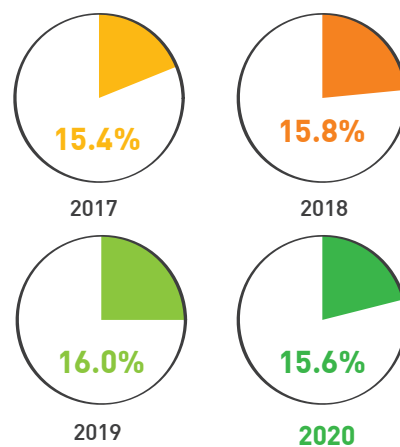
Bangchak service stations maintained the co-number one position as measured by Net Promoter Score (NPS) for the year 2017 – 2020 (based on a survey of 2,000 customers conducted by a third party).

NPS Score

1st (Joint)

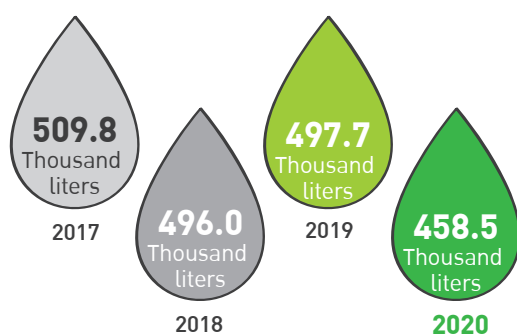


Retail market share



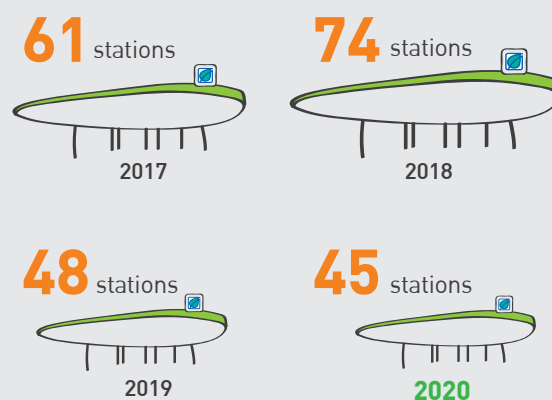
Average sale volume

Thousand liter/month/standard service station



Service station expansion

(Numbers of service stations)



Amount of GHG emission reduction from oil filling through Bangchark membership card (Unit: tCO₂e)

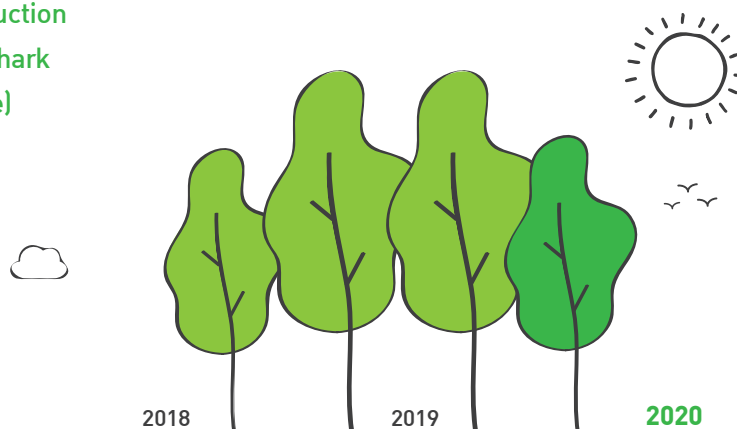


2017
196,828
Unit: tCO₂e

2018
215,469
Unit: tCO₂e

2019
232,146
Unit: tCO₂e

2020
197,737
Unit: tCO₂e



Product Transportation

Bangchak emphasizes supplier product transportation aligned with company's standard to enhance efficiency, accuracy and punctuality of product transportation process, to strengthen sustainable partnership and uplift working environment. The transportation process improvement can be done through seminar, training, and supplier relationships activities with helping them to maximize their capability.

2022 Target



To deliver products by semitrailers at 50% of total volume of shipments



To deliver oil to customers by future sales plan (calculating from service station expansion rate to 330 locations between 2018-2023)



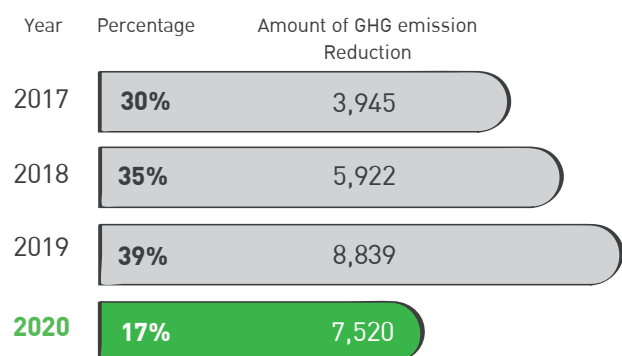
Zero Accident in product transport



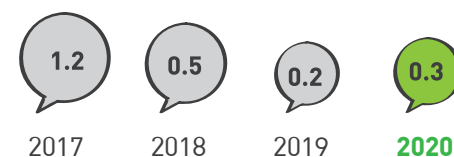
Transportation complaints are less 3.5 issues per one thousand runs

Key Success Indicators

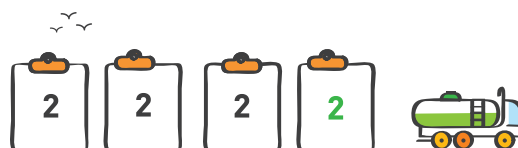
The proportion of refined oil transportation by trucks decrease the GHG emissions
(Target: Increase 2% per year and decrease the amounts of transportation for reducing greenhouse gas emission.)



Number of complaints about transportation
(Target: ≤ 3.5 issues per 1,000 transportation trips)



Accident Record in Transportation *
(Target: Zero accident)



*Financial loss more than 1 million THB/ accident)

Strategy

Develop an efficient oil transportation plan with cost, time, and highest safety considerations

Project to Increase Proportion of Oil Transportation by Semi-trailer

Bangchak manages transportation vehicles by changing from two single trucks to a semi-trailer (40,000 liters load). This process helps reduce transportation cost, GHG emissions per oil unit and accidental chances. The Company is driving this project through the following measures:

- Designing new service stations to support the delivery from semi-trailers.
- Driving semi-trailer delivery for multi-drop transportation to service station. This method can be delivered from one or combined order to increase transportation opportunities with semi-trailer.
- Providing discounts to other types of service stations such as agricultural co-operative service stations and

dealer service station, especially oil transportation with semi-trailer

In 2020, these measures help increase semi-trailer transportation accounting for 41%, reduce transportation cost to 450 million THB, reduce GHG emission by 7,520 tCO₂e, and decrease accidental numbers from the running numbers and shorter distance.

Backhaul Transportation Project

Bangchak implemented Backhaul Transportation Project by loading ethanol from manufacturer located in the same transportation route to the Company for the use as raw materials for Refinery's production process. 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 400 trips from Backhaul Project, reducing transportation cost for raw materials by over 1 million THB.

Professional Driver Development

Bangchak organized professional driver development training. The training covers safety driving measurement, fire-fighting, operation in terminal, Transportation Management System (TMS) and data management in SAP system to enhance confidence and professional practices to all drivers. As a result, the Company are able to manage the quality of transportation to be more efficient and good for dealer service station.

From strategic direction to implementation, Bangchak is able to efficiently manage suppliers' transportation contract (average 80%).

Development of Modern and Efficient of Transportation Technology

Smart transportation is a project to improve the current transportation management system (TMS). Bangchak is able to track the transportation plan, driver behavior, speed and time of driving, by using CCTV and GPS system installed in oil tanker trucks. The 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, Bangchak 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. In addition, 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.

In 2020, Bangchak strengthened safety 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.

Auto Ordering System (AOS) Development and Electronic Complaint (E-Complaint) Auto Ordering System (AOS)

Bangchak developed an automatic oil ordering system for dealers to enhance efficiency of ordering system and be able to implement transportation plan. 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.

Future Plan



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

Environmental Cost Accounting

Total environmental expenses in 2020 decreased from 2019 by approximately THB 33,731 million or 32.56%. This was due to the decline of crude oil price of 29% compared to the previous year. This can be seen from the material cost of product output which decreased by THB 33,610 million compared to 2019. In 2020, the refinery had the average production capacity of 97.21 KBD which decreased from 2019. As a result, material costs of non-product outputs reduced by THB 32.03 million in accordance with the decrease of products, which were below quality standards, of THB 32.24 million. Furthermore, the Company had expense control measures which could be seen from the decrease in waste and emission control costs and the prevention and other environmental management

costs. The environmental equipment maintenance cost and the monitoring and measurement cost decreased by THB 11.68 million and THB 6.67 million respectively compared to 2019. In addition, the management system operation cost decreased by THB 1.42 million, and effluent treatment cost and waste disposal cost declined by THB 3.72 million compared to 2019.

Benefits of by-products and recycling decreased by THB 6.27 million or 34.14% compared to 2019. This was due to the decline of liquid sulfur sale by THB 3.73 million, and the decrease in iron and aluminum scrap sale of THB 2.54 million.

(Unit : THB million)

Environmental Cost Accounting	2018	2019	2020
Material costs of product outputs			
Crude Feed	89,862.78	89,112.83	54,827.42
Ethanol	7,562.06	7,127.70	6,124.10
Bio-Diesel (B100)	4,000.11	4,308.22	0.11
Bio-Diesel (B100)-Premium	42.62	36.36	0.00
Bio-Diesel (B100)_HI PURE TYPE2	-	582.10	7,131.39
Used cooking oil	1.48	0.76	0.32
Chemicals	168.07	171.83	162.17
Process water	20.82	28.35	18.77
Process energy	1,893.77	1,809.57	1,303.81
Material costs of non-product outputs			
Slop oil	100.36	57.60	25.36
Effluent	11.38	10.93	11.15
Excess chemicals from neutralizing pond	0.13	0.11	0.11
Low-quality sulfur	0.07		
Waste and emission control costs			
Environmental equipment maintenance	28.29	24.29	12.62
Depreciation of pollution control equipment	267.28	301.02	234.88
Effluent treatment	7.63	9.71	6.34
Waste disposal	12.27	5.35	4.99
Prevention and other environmental management costs			
Monitoring and measurement	7.68	14.94	8.27
Depreciation of waste storage area	0.11	0.03	0.02
Management system operation	1.59	1.89	0.47
Environmental equipment maintenance	-	0.01	-
Benefits of by-products and recycling			
Liquid sulfur	(9.86)	(14.19)	(10.46)
Glycerine	(0.05)		
Iron and aluminum scrap	(5.70)	(4.17)	(1.64)

Adhering to be
**a creative worth and value
of the Thai society organization**




Hand Sanitizer Gel
เจลทำความสะอาดมือ

วิธีใช้ : บีบเจลลงบนฝ่ามือให้เพียงพอ ถูให้ทั่ว
ทั้งฝ่ามือและหลังมือ โดยไม่ต้องล้างออก

ส่วนประกอบ:
Ethyl Alcohol, Aqua, Glycerin, Carbomer,
Triethanolamine, Fragrance

ผลิตภัณฑ์ทำความสะอาดมือโดยไม่ต้องใช้น้ำ

คำเตือน:
อันตรายจากสารเคมี: ระคายเคืองผิวหนัง หากใช้ติดต่อกันเป็นเวลานาน 30 นาที อาจระคายเคือง
ผิวหนังและทำให้เกิดผื่นแพ้ได้ ไม่ควรใช้กับผิวหนังที่มีบาดแผลหรือรอยขีดข่วน

บริษัท:
บริษัท ไทยนิคมอุตสาหกรรม จำกัด
97/1 หมู่ 2 ต. นิคมอุตสาหกรรม อ. คลองใหญ่
จ. ปทุมธานี 12110
ได้ใบรับรองมาตรฐาน GMP

 **ปริมาณสุทธิ**
4 ลิตร
Liters

เลขที่ใบกำกับ: 13-1-6300011896

LOT 0010220
EXP 18/03/20
EXP 18/03/22

ตัวแทนจำหน่าย:
บริษัท บมจ. คอร์ปอเรชั่น จำกัด (มหาชน)

Creating values for society

Bangchak group support equipment to eliminate the expenses to help Thai people fight with COVID-19

Safety

(Loss-time Injury Frequency Rate: LTIFR)



(High-Consequence Work-Related Injuries)



Customers

Percentage of customer satisfaction



91%

Percentage of customer returning to service stations

95%

Employees



Employee engagement score **63%**

Measurement for employee to **Work From Home** strictly

Average training hours of employees



23.29
hours/person/year



Promoting skills development through online



Learning new experiences and adapt for changing

Community and Society Development

Voluntary working hours of employees for CSR activities

9,001 hours
= 2.64 M THB



Community engagement score **84.4%**

Type of Support

Cash contributions

3.24 M THB



Donation to society & schools



5.64%

Products or services donations

9.4 M THB

Community & social development
19.53%

Management overheads

12.02 M THB

Commercial initiatives



74.83%





Bangchak Group Getting Throuth COVID-19 Together



Business operation and activity frame work in COVID-19 pandemic situation

In 2020, every countries encountered the severe COVID-19 pandemic which had adverse impacts on human health and the economy. Because of this, Bangchak has extended its business activities to look after employees, customers, communities, and other stakeholders to be safe from the COVID-19 impacts.

The Company has operated its business activities to prevent and mitigate impacts during pre-COVID-19 pandemic, post-COVID-19 pandemic, and the recovery period from the COVID-19. In addition, Bangchak has adopted the Culture of Health for Business Practice (COHBP) for its operations during the post-COVID-19 situation. The Company's practices in the COVID-19 situation are as the followings:

Operations

- ✔ Rescheduled Total Productive Maintenance (TAM) from Q2/2020 to 2021. TAM activities require international experts and many contractors which increases the risk of COVID-19 transmission. In addition, lower production in 2020 allows the Company to extend the life of crackers, reformers, and equipment which help reduce cost and improve cash flow.
- ✔ Established Innovation Continuity Task Force to crowdsource ideas from employees on business improvement or new businesses in order to generate additional revenue and support changing business landscape after the COVID-19 crisis.
- ✔ Developed and deployed digital payment system for service stations to reduce the handling of cash as well as improve customers' experience through faster and more convenient service.
- ✔ Added a new revenue source by producing alcohol gel from our ethanol plants.
- ✔ Developed Bangchak's gasohol product, E20 EVO, to replace E20 gasohol in service stations throughout the country. Due to our marketing efforts the sale of refined fuels after the government's lockdown measures were relaxed steadily improved.

Employees

- ✔ Epidemic - Crisis Management Plan is part of the Bangchak's Business Continuity Management (BCM). The Company places great importance in the safety and health of our employees, customers, and all stakeholders. Meetings are held on a regular basis and plans are updated in response to the on-going crisis where any updates and new information are communicated to employees and stakeholders.
- ✔ Employees with pre-existing conditions and employees who are expecting can request to work from home.
- ✔ Shifts are staggered to increase social distancing where special accommodation on start and end shift are provided for employees who use public transportation.
- ✔ Promote the use of teleconference and VDO conference.
- ✔ Shift workers hours were modified to accommodate the government's curfew. Entry into the Control Room was strictly limited to essential personnel. The Company also provided company's car for door-to-door transportation from their homes to the Control Room. In addition, onsite living quarters were prepared in case of wide-spread outbreak.
- ✔ Distributed alcohol gel and medical masks to all employees. In addition, alcohol gels are provided throughout the office and operational areas.
- ✔ Tighten restrictions in offices for employees, contractors, and visitors to increase social distancing and prevent the spread of COVID-19.
- ✔ Provide strict hygiene measures at all contact points in all service stations, such as requiring all service station personnel to wear masks at all times. Inquiring and observing symptoms by measuring employees' body temperature regularly. Provide alcohol hand sanitizer for cashier and throughout service station area to increase the confidence of customers in using the service.
- ✔ Organize activities for employees to sew cloth masks and sold alcohol gel to employees at low prices.
- ✔ Provided vegetables seeds and seedling to employees to that they can grow vegetables at home to reduce food costs under "Por Pak Pak" project.

- ✔ Provided telemedical services to employees to reduce transmission risks from visiting hospitals.
- ✔ Increased communication channels between employees and management to better management operations, budget, personnel, and other measures that could directly impact employees' earning. In addition, management meet with employee's representative and union on sensitive topics to ensure that messages related to job security issues are properly communicated.
- ✔ Donated 3,500 medical masks to the People's Republic of China by way of the Chinese Embassy in Bangkok.
- ✔ Promote local products by increasing shelf space for local products in our Service Stations.
- ✔ Maintain business expansion of Inthanin Coffee and other partnered stores and expanding job creations as planned.
- ✔ Create a marketplace via Line to expand sales channel for sellers who are in communities surrounding the refinery.

Suppliers and Sub-contractors

- ✔ Bangchak ensured payments to suppliers and contractors are made on-time in accordance with all contracts even during work-from-home periods.

Supporting Local Businesses

- ✔ Bangchak bought RD. 43 rice from Thung Wat Sing Agricultural Cooperative in Chainat province. The rice was distributed to communities through "Tanks of Happiness" project.
- ✔ Bangchak bought jasmine rice from Klong Lung Agricultural Cooperative in Pathum Thani province and to be sole at low prices to employees during the crisis.

Procurement of Masks and Alcohol Sanitizer

- ✔ Sell sanitizing alcohol gel at low prices and act as a retail distributor for medical masks through our service stations and Inthanin Coffee shops.

Giving Back and Corporate Social Activities

- ✔ Setup "Tanks of Happiness" in our Service Stations, partnered areas, and multiple sites in communities to ease the suffering during the crisis. Employees and the public are encouraged to share food and necessity items to people in needs. In addition, Bangchak also contributed rice from Thung Wat Sing Agricultural Cooperative in Chainat province to the project.
- ✔ Donated sanitizing alcohol gel and bottled drinking water to government agencies for distribution to communities around the refinery.
- ✔ Donated 17,000 Bangchak Cares, COVID-19 care bags to the communities surrounding the refinery. The contents within each bag include 2 cloth masks, sanitizing alcohol gel, vitamin C, and a sticker with emergency contact number.

Communities and Society

- ✔ Provided consultation and recommendation to Khun Jeaw Cleaning Service, a business offering cleaning services in condominiums, to improve service quality and operational process to adjust to the new normal.
- ✔ Support 39 schools in 31 provinces that are struggling with illiteracy by conducting online training to teachers during half-term break, provide teaching equipment, and monitor progress and provide continual support throughout the school year.

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)

Targets



Zero work-related illness of employees and contractors



No significant oil and chemical spills to the environment



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

Occupational Health and Safety Management Guidelines

Bangchak continues to improve the implementation of Safety, Security, Occupational Health, Environment, and Energy (SHEE) management systems and ISO 45001 as well as Process Safety Management (PSM). 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.

Activities to promote safety culture in operations

- ✓ 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 and contractors
- ✓ PSM public praise and rewards are given to those who follow the process and act as a good role model for fellow employees and contractors

Ongoing activities to promote safety culture outside the work

- ✓ 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 4,000,000 safety hours person without Lost Time Injury. Bangchak has given memorabilia to every employee to celebrate the milestone achievement.

Work-related Hazards Identification, Risk Assessment, and Incident Investigation

(Disclosure 403-2)

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 for all routine activities. 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) and electronic work permit (Work Permit Online) are strictly required in every work process. 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 workday 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 always has a duty to review and monitor implementation of the recommendations to control risks.

During the COVID-19 outbreak, Bangchak screens all employees and contractors who enter the operation area using temperature checks and health and travel history questionnaires. In addition, the company established guidelines for preventing infections, including wearing a protective mask at all, keeping social distancing, hand washing, and public awareness campaigns about advice on preventing the spread of COVID-19, including installing hand washing stations and alcohol hand sanitizer as well as spraying work area with disinfectant.

Results from risk assessment showed that work-related hazards that can lead to high-consequence work related injuries and work-related incidents with low probability of causing high-consequence injuries include fire, chemical spills, and falling equipment. The company has determined appropriate preventive and control measures on these incidents including levels of control (hierarchy of controls). 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. In addition, Bangchak encourage employees to file safety



observation report focusing on unsafe acts and unsafe conditions. The safety observation report filings are precautionary measures to prevent potential incidents that may impact operations, employees, and contractors. Anyone has the authority to stop work if he or she finds unsafe conditions or unsafe acts. Unsafe conditions and unsafe acts must be reported to manager and area supervisor in order to resolve the issues and ensure safe conditions before proceeding with the work. In addition, Bangchak conducts Field Risk Assessment (FRA) to encourage employees to be proactive on safety issues, minimize safety risk and ultimately promote a safety culture of the company.

Work-related risk and incident investigation process

The report and investigation process of work-related risks and incidents are vital in safety management system. The objective of such the process is to find the root cause and set up control and preventive measures to prevent reoccurrence. Bangchak has put in place a systematic reporting system to record unsafe acts, unsafe conditions, and near-miss incidents. When an incident happens, the person involved, or a witness must file a report to the area supervisor and other involved parties within 24 hours. A working team will be formed to investigate the incident to find root causes, determine corrective actions, and opportunity for improvement (OFIs). Incidents are investigated using the “Why Tree Analysis” tool to determine the root cause. There are periodic follow-ups to confirm alignment with the measures in place. Lessons learned from the incident are captured and shared to the employees via various communication channels.

Work-related health services

(Disclosure 403-3)

Bangchak places great emphasis on the protection and well-being of our employees and contractors, especially in the refinery areas where risk-level is highest. The company uses proactive occupational health measures 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 contractors. The risk assessment includes the regular surveillance of the work environment such as light, noise, heat levels and the presence of chemicals in

the area. Assessment results are compared against the safety standards. If the assessment results exceed safety standards, the company will design and improve working areas to ensure safe working conditions. Bangchak also conducts improvement plan and systematic monitoring of the implementation. Safety officers and occupational health experts are available to provide advices and recommendations to employees and contractors on occupational health issues. Bangchak has provided employees and contractors health services as follows:

- ✔ Providing employee health check at the start of employment, during employment and at termination of employment



- ✔ Providing annual health check-up, which include general health checkup and checkup based on 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 high.
- ✔ Providing contractor occupational health measures, such as preparing work areas, procedures, prevention equipment, and knowledge.
- ✔ Conducting medical emergency drills between Bangchak and hospitals' support teams. The contracted hospitals have participated in the drills to ensure that their staff are familiar with the process which increase communication and response effectiveness.
- ✔ Hiring occupational health experts to assess and improve employee general and occupational risk-based health check programs.



Bangchak requires all contractors to undergo risk-based health check. This includes health examination, analysis, follow-up and consultation. Those whose results are found to be abnormal are required to have regular consultations with doctors. Reports of all health checkups are submitted to Bangchak supervisor and safety representative.

Participation, Consultation and Communication on Occupational Health and Safety

(Disclosure 403-4)

Bangchak has appointed the Safety and Occupational Health Committee as the official working group in accordance with the regulation to facilitate the collaboration between management and employee representatives on safety, occupational health and work environment operations and to ensure continuous improvements in the areas. At least 50% of the committee members must come from representatives of operations staff where each function elects their own representative so that all functions are represented. The committee holds a monthly meeting where representatives share information from their functions, updates on progress or operations, present future plans, and review safety performance and report results to management. In 2020, Bangchak established measures to protect workers from the spread of COVID-19 by providing medical masks to all employees and continually improve the safety and occupational health in work areas.

In addition, Bangchak facilitates activities that promote safety both inside and outside the work area, 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 (OGSS: Emergency Preparedness).

Activities to promote work safety

- ✔ SHEE Excellence Day activity which includes a multimedia exhibit and games to promote safety practices
- ✔ Awareness raising through various channels such as email (Outlook), flyers, and Safety Radio Channel. Safety information are provided in the forms of news, tidbits, and warning signs such as a reminder to wear protective equipment.

Occupational Health and Safety Training

(Disclosure 403-5)

Bangchak provides safety and occupational health training for all employees and contractors prior to starting work. In addition, there are guidelines to determine required trainings in occupational health and safety, prevention and fire prevention based on the employees' and contractors' 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 to ensure that employees and contractors work safely.

Promoting employees' health

(Disclosure 403-6)

Bangchak also provides health services and access medical services outside of work-related activities.

- ✔ Provide primary care to employees and contractors who get sick. Medical staff are available during working hours. There is a full time 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 and flu vaccine for employees.

In addition, the company provides a variety of programs that aim to promote healthier lifestyles such as:

- ✔ Fight for Fit: Do it yourself "DIY" project for employees to plan their own program to reduce body fat and increase muscle mass based on activities that match their preferences and abilities.
- ✔ Providing healthy dinner to employees everyday throughout the year.

Bangchak also provides access to fitness centers at the Bangchak Refinery Office Building and M Tower Headquarters Building.

Performance

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

As a result safety initiatives, Bangchak 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 that occurred, root cause investigations were conducted and lessons learned are documented to prevent reoccurrence. In addition, the company set long-term and short-term improvement plans, conducted monitoring process, and communicate result and progresses to related parties along with conducting safety activities of personal safety to promote safety culture.

Zero Occupational Illness Frequency Rate (OIFR) of employees and contractors

	2018		2019		2020	
	Male	Female	Male	Female	Male	Female
Lost Time Injury Frequency Rate (LTIFR)						
• Employees	0.55	0	0	0	0	0
• Contractors	0.71	0	0.42	0	0.34	0
Injury Severity Rate (ISR)						
• Employees	7.75	0	0	0	0	0
• Contractors	9.18	0	1.27	0	1.34	0
Total Recordable Injury Rate (TRIR)						
• Employees	1.66	0	0	0	0.60	0
• Contractors	1.41	0	1.06	0	0.34	0.54
High-Consequence Work-related Injuries Rate*						
• Employees	N/A	N/A	0	0	0	0
• Contractors	N/A	N/A	0	0	0	0

*High-consequence work-related injuries rate – severe injuries from work-related activities that result in recovery period of greater than 6 months after the incident

Process Safety Management

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. In addition, safety values 3E were set.

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



On-going Projects since 2015

- ✔ Felt Leadership (FL) program, presence and acting as a safety leader
- ✔ Field Risk Assessment (FRA) program to raise awareness and understanding of workers about potential hazards to prevent potential incidents
- ✔ Establishment of safety standards including LOTO (Lock Out Tag Out), LB (Line Break), and HW (Hot Work) standards
- ✔ Development of Process Safety Information (PSI), a collection of basic knowledge and necessary information for hazard identification in the production process
- ✔ Implementation of Process Hazard Analysis (PHA) tool to analyze hazards that exist in the production process which also helps in finding solutions and preventions
- ✔ Implementation of Incident Investigation (II), a procedure to analyze the root cause of an incident. Information gain from II is used to set up protection systems
- ✔ Implementation of Management of Change Technology-Facilities (MOC-T, F) which is a process to ensure effective change management process by evaluating the potential impacts and risks from proposed changes. Expert reviews are conducted for all relevant functions and communication process is in place to reduce risks from changes

- ✔ Use of Pre-Startup Safety Review (PSSR) to review equipment and operations related to the production process to ensure safe conditions prior to restarting the production process, after shutdown and major turnaround. The PSSR process helps to reduce potential risks of a restart process
- ✔ Emergency Planning & Response (EP&R)
- ✔ Management of Change Personnel (MOC-P) in production process
- ✔ Training and Performance (T&P)

In 2020, Bangchak added a new element of PSM and provided trainings for responsible persons to conduct the operation. The new element for 2020 was:

- ✔ Contractor Safety Management : CSM

Bangchak plans to conduct complete all 14 elements in the PSM by 2021. The remaining elements include:

- ✔ Mechanical Integrity (MI) - inspection of equipment to ensure effectiveness and to control hazards which may occur during the use of equipment. The MI include the maintenance of equipment and tools per designed objectives and ensuring readiness for use
- ✔ Quality Assurance (QA) - inspection to confirm that equipment and machines in production processes are installed in accordance with the design specifications and ready for use
- ✔ Safety Auditing (SA)

2020 Performance

- ✔ In 2020, Bangchak achieved all Process Safety targets.
- ✔ No significant oil and chemical spills to the environment
- ✔ 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

Importance

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, and Business Partner who are 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.

Target Year 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

Key operations in 2020

1. Development of two-way communication mechanism between customers and the Company

The Consumers

- ✔ Continuously develop for 4th year on customer contact channels both by phone and online media :
 - Call Center 1651
 - Facebook
 - Email
 - Website
 - 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 such as Pantip and Facebook

Service Station Dealers and Inthanin Coffee Shop Operators

- ✔ Continuous improvement on fuel sale system through Call Center resulted in no major disruptions to order flow during the crisis. Service Stations partners were able to order fuel 24/7 through various channels including Web ordering, Mobile Application, IVR system, Line, and Call Center. Call Center personnel were able to work from home during the crisis.
- ✔ Automatic voice recording and database management for all orders

- ✔ Improved procurement system for Inthanin Coffee resulted in no significant impact to operations
- ✔ Developed Line Group for operators to establish two-way communication
- ✔ Developed Line Group for operators to establish two-way communication
- ✔ Developed Service Station performance analysis system through E-Report for operators and MR can access important information to make decisions quickly.

Industrial Customers

- ✔ Developed customers' data online implementation in order to increase the efficiency of communicating with industrial customers.
- ✔ Follow up and evaluate the satisfaction of industrial customers through online surveys
- ✔ Evaluate the industrial customer satisfaction after receiving the services from the Company such as technical services and Transportation services

Feedback

- ✔ 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 Dealer Focus Groups in order to update marketing information and find out their needs and satisfaction
- ✔ Record customer positive feedbacks to reward employees who provided good services, as a morale and encouragement to workers.

2. Development of systems and technology to support relationship

The Consumers

- ✔ 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.
- ✔ To be able to register the membership card at the service station, the Company has expanded the Point of Sale Automation to service stations outside greater Bangkok areas for the 3rd year in a row
- ✔ Bangchak Mobile Application which display customer's CO₂ saving from using Bangchak fuel in the form of a digital tree
- ✔ Analyzed customer data by segmentation according to behavior and sale volume and use the insights to invite selected customers to refuel with special privileges
- ✔ Developed a push notification system to create personalized marketing, offering the right benefits to different customers such as birthday promotions and special privileges when refueling on the day of price increases

System development to response to the new normal

- ✔ Members can provide telephone number to collect points instead of handing over the physical membership card (reduce contacts)
- ✔ QR CODE payment and wireless credit card machines, which customers can manually swipe their credit card by themselves

Service Station Dealers and Inthanin Coffee Shop Operators

- ✔ 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.
- ✔ Instituted call forwarding system for Call Center which allowed Call Center personnel to work from home during the crisis
- ✔ Upgraded E-Training system for operators and employees to be able to access e-training anytime and anywhere
- ✔ Improved E-Report system to facilitate decision making by allowing operators and MR to access critical information in a timely basis

Industrial Customers

- ✔ Encouraged the use of E-Tax invoice system to improve customers' ability to access data via online system
- ✔ Improve and expand oil terminal to increase coverage and improve delivery time
- ✔ Lubricants information and selection guidelines are provided on www.bangchaklubricants.com

3. Relationship management to maintain current customers and obtain new ones

The Consumers

Customers continue to receive membership privileges which include:

- ✔ New members receive bonus points for joining
- ✔ Four new membership card designs depicting four regions in Thailand
- ✔ Sixteen new charities/nonprofit organizations where members can donate points or cash via Bangchak Mobile Application
- ✔ Member receive points equal to the difference in price on the days where fuel prices increase
- ✔ Customers who incurred damages from using service stations were compensated

Privileges for the new normal

- ✔ Extended reward points expiration to 31 December 2021
- ✔ Flash sale and special sale promotions for redeeming membership points for various rewards.
- ✔ Redeem 1,000 points for COVID-19 insurance policy.
- ✔ Redeem only 1 point for COVID-19 insurance policy during the New Year Holiday.
- ✔ Facebook and Line Official games
- ✔ Promotional products such as Vaseline hand soap bar, herbal toothpaste tablet, and discount coupons for Inthanin Coffee
- ✔ Customers can order Inthanin Coffee through various platforms such as Grab, Lineman, and Foodpanda to reduce risks as well as enjoy special discounts
- ✔ Mar 2020, Inthanin started selling medical masks and currently selling sanitizing alcohol
- ✔ 23 Mar, 2020: Provided free sanitizing alcohol gel at service stations
- ✔ 6 Apr, 2020: Round 1 of sanitizing alcohol gel sale at service stations
- ✔ 5 May, 2020: Round 2 of sanitizing alcohol gel sale at service stations

Provision of Additional Benefits

- ✔ Expand customer base by giving discounts to cardholders of SCG, AIS Serenade, The 1 Card when refilling fuel at Bangchak gas stations.

- ✔ Credit Cards Co-promotion
- ✔ Birthday privileges for Bangchak cardholders like extra 50 points to redeem for special discounts at Inthanin coffee shop or Furio Care : Car Service Center

Service Stations Dealers

- ✔ Improved high quality products such as B10s and modified the formula for GSH S Evo Family to response to customers' expectations
- ✔ Use more online communication channel to improve the effectiveness of communication with customers
- ✔ Developed Bonding Program to support Service Station Dealers' investments to improve level of service, increase the number of products, and renovate service stations.
- ✔ Expand online sales channels to support Inthanin Coffee shops including promotional activities with delivery platforms and new TO GO menu items
- ✔ Continue offering new beverages and bakery selections to customers

Industrial Customers

- ✔ Capability building by providing knowledge related to product specifications, emergency drills, after sales services, and equipment handling and maintenance.
- ✔ Provide Total Solution Service, in addition to product sales, through equipment maintenance and warranties.
- ✔ Monthly meeting with key customers to develop marketing tools and expand networks

Taking care of our customers and business partners during the COVID-19 outbreak: Bangchak has adjusted our marketing strategy in response to the crisis by:

1. Develop a Call Center system to support all communication channels from consumers. Operators can handle calls from consumers, service station

operators (for ordering fuel shipment) as well as Inthanin Coffee shop customers. Call Center employees were able to work from home.

2. System development to response to the new normal including upgrade where members can provide telephone number to collect points instead of handing over the physical membership card (reduce contacts), QR CODE payment and use of wireless credit card machines to be able to serve customers at their cars
3. Modify promotions And special privileges including
 - 3.1. Extended reward points expiration to 31 December 2021
 - 3.2. Flash sale and special sale promotions for redeeming membership points for various rewards.
 - 3.3. Redeem membership points for COVID-19 insurance policy and accidental insurance.
 - 3.4. Facebook and Line Official games
 - 3.5. Promotional products such as Vaseline hand soap bar, herbal toothpaste tablet, and discount coupons for Inthanin Coffee
 - 3.6. Customers can order Inthanin Coffee through various platforms such as Grab, Lineman, and Foodpanda to reduce risks as well as enjoy special discounts
 - 3.7. Masks and sanitizing alcohol gels sales:
 - Mar 2020 Inthanin started selling medical masks.
 - Mar 2020: Provided free sanitizing alcohol gel at service stations
 - Apr. 2020 Round 1 of sanitizing alcohol gel sale at service stations
 - May 2020 Round 2 of sanitizing alcohol gel sale at service stations
 - Currently, Inthanin coffee shops sell alcohol gels.

Complaints and Suggestions

Contact

• Call Center 1651	96.5%
• Website	0.5%
• Major social media	2.8%
• Posts	0.2%

Total number of 2,297 cases

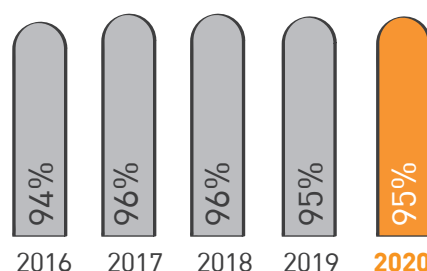
• Service provision	77%
• Products and promotions	19%
• Others	4%

Results

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



Assess the return of service (target 95%)



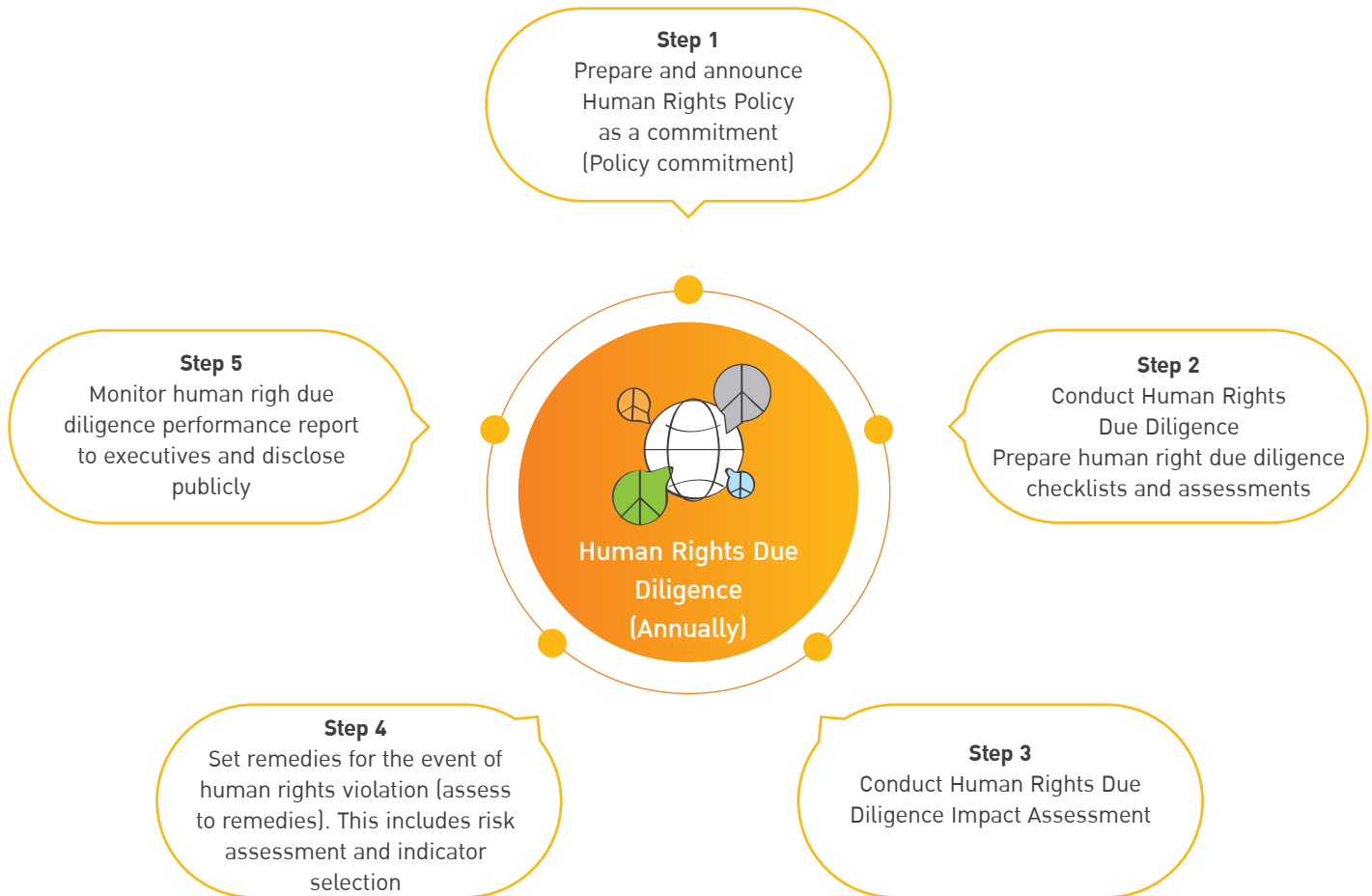
There was no significant legal violation on marketing communications

(Disclosure 417-3)



Human Rights

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 determines Business responsibility policy towards respecting human rights By adhering to 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 conducted Human Rights Due Diligence (HRDD) in accordance with the National Human Rights Commission of Thailand's guideline which covers 8 main risk areas including construction and expansion of business operations, employees and contractors, surrounding communities, customers and consumers, business partners, foreign labors, and temporary workers. It covered refinery and oil trading business, marketing business, and suppliers (100% of human rights impact assessments and reviews for 2 business groups and suppliers in Thailand) (Disclosure 412-1). The target groups of HRDD include employees, contractors, communities, customers, and suppliers. In addition, vulnerable groups, which are females, children, indigenous people, people with disability and the LGBTQ group, are included. The HRDD assessment considers opportunities of occurrence and severity of human rights issues. Prevention and mitigation approaches are provided for groups with high-critical level of impacts.

For contractors and tier 1-suppliers, the Company uses a Supplier Code of Conduct (SCOC) assessment tool for labor and human rights, safety, occupational health and environment risk.

Performance

	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

2020 Key operations

Findings from the HRDD indicates that, although residual risks related to safety and occupational during COVID-19 and personal information protection have not resulted in any human rights violations, Bangchak will continue to improve on the risk management process to mitigate the probability and impacts of these risks as follows:

✔ Personal Information Protection:

Implemented policies, guidelines, mechanisms or regulatory measures along with improving work processes. To ensure full compliance with the Personal Information Protection Act 2019, Bangchak has established Policy for Managing Work Process, conducted training and seminars to educate and raise awareness to employees so that they are equipped to ensure compliant with the law. In addition, Bangchak conducted workshops to analyze key operations to develop guideline and improve processes focusing on efficacy and risk reductions at control points. Development of technology to help with internal control and compliant has been an on-going effort. Since 2018, Bangchak has established the cybersecurity division to be responsible for cybersecurity management based on

the International Standards for Cybersecurity Management ISO / IES 27001: 2013, ISO / IES 27032: 2012 and NIST Cyber Security Framework.

✔ Occupational Health:

Bangchak has expanded our human rights management to cover emerging epidemics in response to the COVID-19 crisis. The Company provides necessary protective equipment such as masks, sanitizing alcohol gel, and working hours adjustment for employees, contractors, communities, customers, citizens as well as government agencies.

✔ Safety:

Bangchak operates in accordance with ISO 45001 and in accordance with the laws on safety, occupational health and work environment. The Company provides knowledge, training, and drills to ensure the highest standard of safety. Protective equipment and best-in-class technology are employed to mitigate risk. In addition, risk-based physical checkups are conducted annually as well as daily baseline health checks. In 2020, Bangchak conducted evacuation drills and training sessions to 6 schools and 11 condominiums around the refinery.

Community Rights

Risk Issue	Key operations 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 	Occupational health <ul style="list-style-type: none"> Provided N95 respirator masks during the PM 2.5 situation for communities around our operating sites Promoted COVID-19 prevention by providing training in sewing cloth face masks for employees. The cloth face masks and hand sanitizer gel were then send to communities around our operating sites Reflected transparency in clear and open communication regarding the pandemic and complied with the government's announcements. Environmental <ul style="list-style-type: none"> Environmental quality control is better than the standards required by law. There is an environmental patrol to check, secure and communicate about the air quality of the communities around the refinery. Communication and Safety <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 8.00 AM - 17.00 PM call 02 335 4102-5 After 17.00 PM call 02 335 4151

Contractor rights

Risk Issue	Key operations 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 	<p>Occupational health</p> <ul style="list-style-type: none"> Arrange annual health check-ups according to risk factors and basic health examination before starting daily work. Provided health welfare to prevent COVID-19 by initiating employees' voluntary projects and providing training in sewing cloth face masks for contractors. Had work flexibility and provided recommendations regarding health issues, quarantine or how to looking after family members during the COVID-19 pandemic in Thailand. <p>Safety</p> <ul style="list-style-type: none"> Comply with the laws regarding safety, occupational health and working environment, including the Company. Company's policy on Occupational Health and Safety. Provide training and ensure compliance with work safety regulations. <p>Environmental</p> <ul style="list-style-type: none"> During the COVID-19 pandemic, the Company encouraged employees to work from their home which help reduce commutes and reduce environmental pollutions. Had waste management measures which include measures to cope with hazardous waste, used face masks, used face shields, PPE, and used gloves.



Employee Rights

Risk Issue	Key operations to protect and reduce impact on human rights
Safety and health of employees at service Impact: <ul style="list-style-type: none"> Rights to good quality of life Rights to work 	<p>Occupational health</p> <ul style="list-style-type: none"> Health check-up and drug testing of work station employees. COVID-19 prevention <ul style="list-style-type: none"> Provided safe offices for employees by regular cleaning and disinfection in the offices. Set up the temperature screening points before entering the offices. Increased alcohol gel service points for hand cleaning. Promoted working with social distance. Provided extra welfares for employees, such as COVID-19 examination and treatment. <p>Safety</p> <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.

Customer Rights

Risk Issue	Key operations to protect and reduce impact on human rights
Occupational Health and Safety Impact: <ul style="list-style-type: none"> Rights to good quality of life 	Occupational health <ul style="list-style-type: none"> COVID-19 prevention <ul style="list-style-type: none"> Increased alcohol gel service points for hand cleaning. Provided alcohol gel services. 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.
Customer rights and Personal Information Protection Impact: <ul style="list-style-type: none"> Rights to equality 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 1651 or 02 335 4410, 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 Protection <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.

Collective Bargaining

Bangchak ensures open communication between management and employees in regards to negotiation of employees' benefits through Bangchak's Labor Union where meeting are held quarterly in accordance with regulations. Currently over half of Bangchak's employees are members of the Union. The union has members who are the company's employees in 55.85% of the total employees (2020 Total employees 1,230). However, 100% of employees are covered by collective bargaining agreements. The Union meets with management regularly and have 13 committee members who act as employees' representatives to work with management to improve employees benefits and response to employees' expectations. In 2020, Bangchak offered an early retirement package to employees, increased payment to level 8 and 9 shift workers, and modified the requirements for former employees to become Bangchak's suppliers. The Company has not had any significant labor disputes in the past 3 year.

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

Complaints and Disputes: There were no significant cases of complaints and disputes including labor disputes, human right violations, breach of regulations, and negative impacts to the community and society for the past 3 years.

Please scan QR code below for more information



Business Social Responsibility and Human Rights Policy



Human right due diligence checklist

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

Employees Stewardship and Development

Under the rapid changes of global situations associated with the economy, environment and society coupled with the changes in technology, there must be some influences to the operation of business. Bangchak is well aware of the impacts causing by such the changes and, therefore, stands strong on the stewardship and development of employees, the most important human capital of the company, to be high potential persons taking part in driving 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:

Target Year 2020 - Year 2025

✔ The BEST Employer

The BEST Employer			
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
			

Employee Stewardship Operations

- ✔ The Company has 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 gathers employee feedback from the Employee Engagement Survey and screen various issue for discussions 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, 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.

Bangchak's employee management consists of four areas: 1) Planning and Recruitment 2) Employee Development 3) Employee Engagement and 4) Employee Retention.

1. Planning and Recruitment

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 Y2025 (long-term targets)



90% of job succession rate



Hiring the disabled 1% of the total employees (in the number of 12 persons)



Ranked 1 of the top 8 companies in the survey of most desirable organizations that new generation in engineering want to work with.



Reducing time for recruitment to 30 days

Recruitment Targets in Year 2020



94% job succession rate



Hiring the disabled 1% of the total employees (in the number of 12 persons)



Recruiting time in 40 days



Recruiting 30 new employees

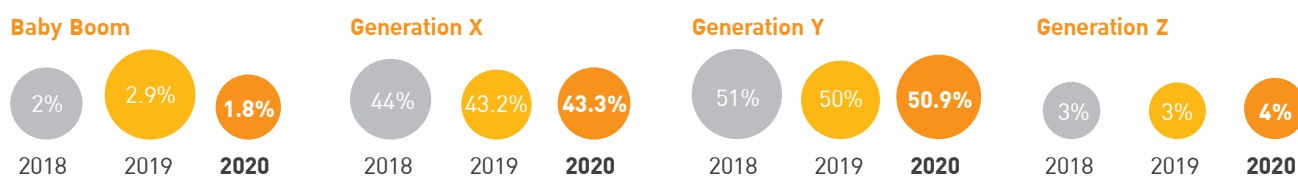
Strategy	Key Performance in 2020
<ul style="list-style-type: none"> Manpower and capability planning in line with the company's 3-year strategic plan (strategic medium-term plan) 	<ul style="list-style-type: none"> Proactive recruitment by means of public relations in various universities (Roadshow) and job fair according to the targeted universities. In addition, an online recruitment channel improvement by creating a Career Roadshow Online Session with the targeted universities. To comply with the needs and strategic plans of the company who wants to create an Employer Branding. Undergraduate Scholarship Program And high vocational certificate level (Diploma) in order to create a knowledgeable and capable personnel ready to support the company's growth, including companies in the group.
<ul style="list-style-type: none"> Employment with value and equality, providing opportunities for employment of disabled people to create sustainability for the society 	<ul style="list-style-type: none"> Employment of disabled persons who has potential to work in appropriate positions, a total of 12 persons, 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).
<ul style="list-style-type: none"> 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 BCP Talent Internship Program is open to accepting internships for both Thai and foreign students studying in Thailand. Participate in the annual internship program Learn experience working with the company And create opportunities to work together in the future. In the year 2020, there are 67 Thai and foreign students participating in the project with various internship periods due to COVID-19 pandemic situation. Expanding channels for creating a good image of the company via Social Media channel as a means of reaching out to new generations including Facebook Page : Bangchak Career (5,400 follower) / Line Official Account : Bangchak Career (625 followers) / TikTok : Bangchak Career.

Strategy	Key Performance in 2020
	<ul style="list-style-type: none"> Explore the needs of job applicants in each generation by creating communication channels and public relations content to be in line with the needs. To motivate more people to apply for jobs in the company. Retention Rate of employees under two years of service is continuously increasing as the company adapted to a new lifestyle and also improving benefit programs to match with employee needs in each generation.
<ul style="list-style-type: none"> Shorten the time for recruitment 	<ul style="list-style-type: none"> Extending the Smart ME personnel management system to the staffing and recruitment system through computer systems. Also, the continuous development of the new Onboarding Program to create I AM BCP values and engagement with the organization from the beginning throughout the probation period. Increasing recruitment channel by using “Introduce Yourself” function in Smart Me so interested applicants can post the resume without a job opening offered. Cooperate with Government in the campaign “Thai Mee Ngan Tam” as a new channel for recruitment which associated with the company strategy. Improving online screening test to align with the new generation and also to increase an accuracy rate of the test.

Performance on Recruitment Targets in 2020

Target	2017	2018	2019	2020
Employees (person)	1,240 persons	1,254 persons	1,251 persons	1230 persons
The ratio of successful employment as planned (Target)	91.80% (90%)	94.44% (90%)	90.72% (90%)	94% (90%)
Employment of the disabled/ handicap (Target)	6 persons (13 persons)	13 persons (13 persons)	13 persons (13 persons)	12 persons (12 persons)
Length of time for recruitment of new employees (Target)	43 days (45 days)	40 days (43 days)	40 days (43 days)	40 days (43 days)
Rate of new employee	104 persons	67 persons	74 persons	30 persons
Retention Rate (less than two years of service) (Target)	88% (85%)	99% (85%)	99% (85%)	99% (85%)

Generations Breakdown of Bangchak Employees



2. Employee Development

Bangchak considers employees 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 uplift 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 Target Year 2020 - Year 2025

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 Y2020-Y2025 as follows:

Goals Year 2020-Year 2025	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 Individual Development Plan (IDP) 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/ curriculum 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 passed Mandatory Program	<ul style="list-style-type: none"> Mandatory Program Model: Developing program/ curriculum for employee of each level to match 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 	Number of employees learning through the library system and the e-Learning system	<ul style="list-style-type: none"> Technology & Innovation Developing application for human resource management systems

2020 Targets & Performance

Targets	2020 Performance
Increasing people capability according to the competency standards and continuously manage career progress	Developed career development guideline to measure competency following standards, expertise, and attributes which are necessary for each career (competency assessment) to develop the IDP
Talent & Succession Plan: Having succession plan for the management/executive positions, critical positions and positions in new business	<ul style="list-style-type: none"> - Developed IDP for potential employees and provided mentoring programs - Developed Sustainable Growth project to develop management levels to be ready for positions which need specific knowledge
Mandatory Program : eveloping basic courses for employees at each level (Mandatory Program) as well as building leadership in the organization.	98.6% of employees who participated in the mandatory programs passed the program following core competency of the Company
Developing learning systems through modern technology, easy to access and meet the needs of employees	100% of target group of employees participated in e-learning

Employee Development Programs

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:

Leadership Development :

Bangchak focused on the executive development, especially the BCP Leadership DNAs (5 Givings: Time, Opportunity, Direction, Value & Role Model). This is to reinforce the corporate culture which allows effectiveness and efficiency for team management, leading to the success of the Company.

Career Development Guideline:

A Career Development Plan to uplift 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.

Talent Development & Succession Plan: A development plan for the talents and successors by career path

In addition to 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.

Assessment Center :

Personal interest of the employees is also included. 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

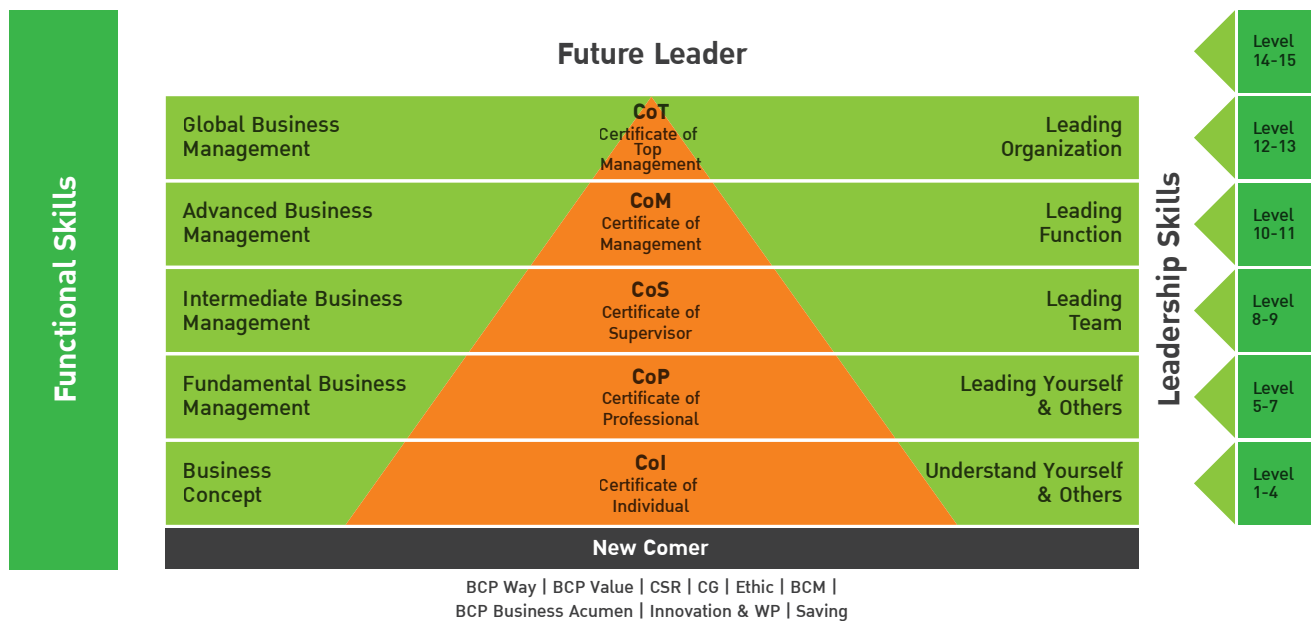
characteristics. It also analyzes the differences of others which are useful for developing communication style suitable for people of different characters and socializing each other in the workplace.

- 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.





BCP e-Learning

The Company focuses on the importance of employees' flexible learning experience, and the broad choices of contents based on each person's interest. To suit the needs of the changing trends of learning method, the Company has adopted the e-Learning systems, provided by SkillLane and Conicle to enhance the capability of the employees.

BCP Library Weekly Development e-Journal

Since March 2020, during the Work from Home period, the Company wanted to keep the employees informed about the up-to-date knowledge and to enhance the reading habits. Thus, #StaySafeStaySmart by BCP Library, which is the weekly Development e-Journal, was developed so as to provide knowledge of English, interesting knowledge, and book recommendations available at the library and e-library system.

Reskill & Upskill

In 2020, the Company emphasized on the collaborations of the staff, changing the way of work and enhancing efficiency. Also, innovations and new business creations were highlighted to prepare the organization for the disruptive environment. The Company managed to reskill employees from across functions (such as engineers, analysts, chemists, and quality management staff) to be able to handle sales work, understanding the business operation to support the New Normal and company's policy and culture of I AM BCP.

Employee Scholarships

Striving to be the leading green innovative corporation in Asia with good governance, inclusivity and sustainable operations, Bangchak puts importance on the development and employee's education by setting up the criteria for BCP Group's employee scholarships to support the study in master's and doctoral degrees from both domestic and international institutions.

Preparation Program for Organizations in the Disruptive World

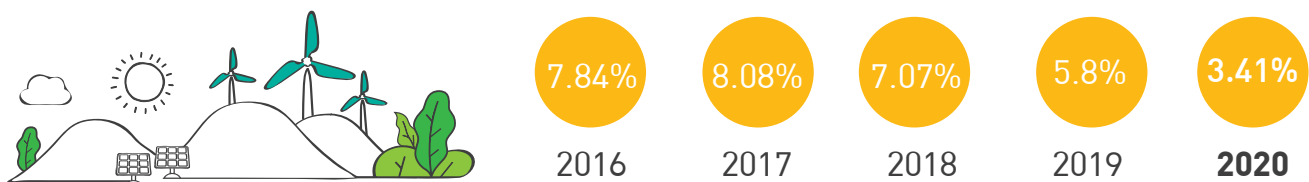
- For the year 2020, the Company continuously emphasized the new concept of development like agile and design thinking and adopted such the concept into employee development in every training session for the groups of new employee, the employee who will be prepared for upgrading and the talent. The Company 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 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



3. Employee Engagement

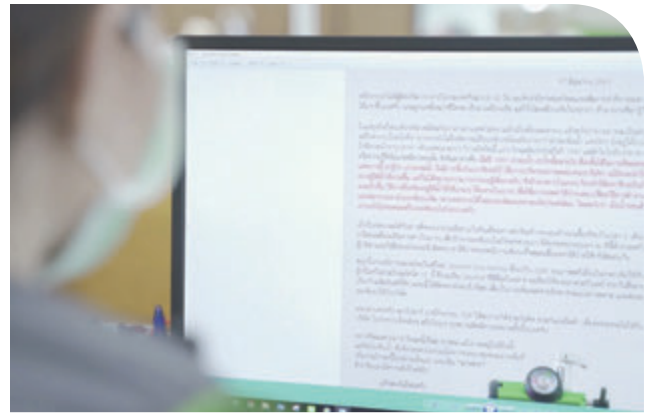
1. The company has arranged annually for an Employee Engagement Survey, as a measure of employee satisfaction toward organization. The results obtained from the survey are used as a basis for nurturing, developing and promoting employees in various areas, which will help employees feel satisfaction and commitment to the organization, and has a sense of ownership as well as ready to drive together the organization’s success. There is also a quick engagement survey (Pulse Survey) during the year to check the engagement development plan and to know the current situation in order to improve the work plan to be more in line with the current situation. In 2020, total of two Pulse Surveys were conducted.

The results of the survey in 2019 that issued the staff’s attention were the potential talent attention/management, career development, and communications. The results were analyzed and executed by focusing on communication for growth, development plan and competency including criteria adjusting for performance evaluation by knowledge sharing and assessment (Performance Management) as a result of rotation rate in 2020 stood at 10.11%.

2. Studying the distribution of employees by age group (Generation) found that employees in generation Y and Z representing 55% of total staff and distributing in almost every section of the organization. The company, therefore, emphasizes on building engagement between management and employees through communication as the essential details below.

- **Thorough Communication**
 - Communication activity “Tea Time” by senior executives a total of 10 times, which is a communication between management and employees to discuss various issues. This is a platform where employees and management can talk informally, exchange views, and give employees an understanding of the business direction of the organization. It also helps to promote the relationship between management and employees.
 - Focus on reaching employees to listen to employees’ opinions through an activity called “HR Site Visit” to communicate with employees about their career growth performance evaluation criteria, level adjustment and review of the company’s welfare criteria for employees to understand. Including listening to other issues that

- employees want to suggest for development.
- Communication of business direction, organization movement and news to let employees know directly from the Chief Executive Officer and President And Senior Executive Vice President in the form of “Town Hall” activity that focuses on building understanding of business direction, changes to give employees inspiration to work, with a total of four Town Hall events in 2020. In the first half of the year through Live streaming, employees can listen through their computers and the second half with limited attendee seats and space between seats to maintain a distance (Social Distancing) under a new normal lifestyle (New Normal) as well as other channels such as broadcast, short articles with PS, online media (VDO clip).
- The monthly message from the President & CEO called “A Few Words with PS” is a one page A4 written informally by the President & CEO. It is delivered to employees to express care, to inform operational progresses of the Company, and to make good understanding about situations, particularly situations which are related to the Company and employees.
- Podcasts are another communication method which the Company has developed for disseminating sound records of the President & CEO and executives for employees through an online platform in order to talk about their stories or topics which have been categorized clearly.
- Opening a way to listen to employees’ voices through a channel called “CEO Box” where all employees can express their opinions, and any suggestions. They can be submitted directly to PS through a CEO Box without limiting the story you want to offer and without identifying true identity. PS as being the recipient will reply back directly all the messages by himself or communicate during the Town Hall.
- Project “Engagement Ambassador” established in 2019 and still in continuing by selecting employees as representatives from each business group to communicate for company policy of each business group.



It also serves to collect feedback from sub-groups of employees to senior management as well as participating in planning activities to strengthen corporate engagement. And also improvement of the work plan according to the needs of the employees and in accordance with the company policy by getting approval from the Subcommittee (Management Development Sub The Committee,- Sub The MDC Modem) of each business group.

- **Relationship strengthening**

- The recognition activities through “Thank you card” to encourage management and staff express their gratitude, appreciation between each other and the “Congrats day” event where the top management congratulated the employees who are promoted/upgraded. It also provides direction and expectation that the organization has for its employees as a motivation in working for employees.
- Building relationships between senior management and employees through employee club activities such as tree planting, green area in refinery, sporting events, employees birthday activities to strengthen the relationship between management and employees.

- **Bringing technology to work**

- Support in digital channel for fast and versatile communication such as the MS-Outlook 365, Skype for Business, WebEx, and MS Team etc.
- A modern system to support the operations, easy to use anywhere, such as Smart ME, EZ-Pay, E-Procurement, E-Catering, Smart Meeting, and Smart Office etc.

- **Flexibility to work**

The company realizes current working environment as well as changing in technology which makes employees with enough flexibility to make their work life balance by adjusting the working hours to be more flexible in 2018 onwards. From the survey after the implementation of flexible working hour, it found that most of the employees are able to better organize their travel time, work more efficiently and able to allocate better rest time including the aid of technology for development a “Clock-in Clock-out” system to replace the finger scan which enables staff to record their working hours on location in order to facilitate the staff even more.

- **Employee health care in normal and COVID situations**

- The Company realizes the importance of health care by focusing on employees to be aware of weight control. Beginning since the year 2018, the company has been promoting employee health activities for a period of three years, one of activities is a body mass measurement for employees. Most of the weight loss is aimed at reducing the weight and the company therefore wants its employees to have the correct understanding and realizing of body mass measurement. Consequently, the average of most employees’ fat in 2020 is about the same as 2019.
- Due to the coronavirus outbreak (COVID-19), the Company is aware of the health of its employees and has issued precautionary measures by arranging a preliminary screening through temperature measurement before entering the area as well as providing alcohol gels at various locations throughout the office. Arranging a campaign for staff to care of themselves with wearing masks, washing hands regularly as well as implementing a WFH policy to reduce the risk of infection to employees. Follow up on the situation through media releases to keep employees continuously update and be aware of health care while exploring for those employees who journey to vulnerable areas to prevent the spread of virus in the office strictly.

- The company realizes that the lifestyle changes in each age and the current working environment make employees from different age groups with different needs, the company began adopting flexible benefits to outpatient medical expenses which can be used to reimburse the cost of eyeglasses or sign up for a fitness membership to promote the maintenance of good physical health.

The results of the 2020 employee engagement survey, although the company was impacted by the economic crisis and the spread of COVID-19 pandemic, the company received the overall engagement score of 63% which is one percent higher than year 2019. Employee participation to the survey is up to 97% in year 2020 which reflects a good sign for human resource management system development for employees.

Plans for the next phase

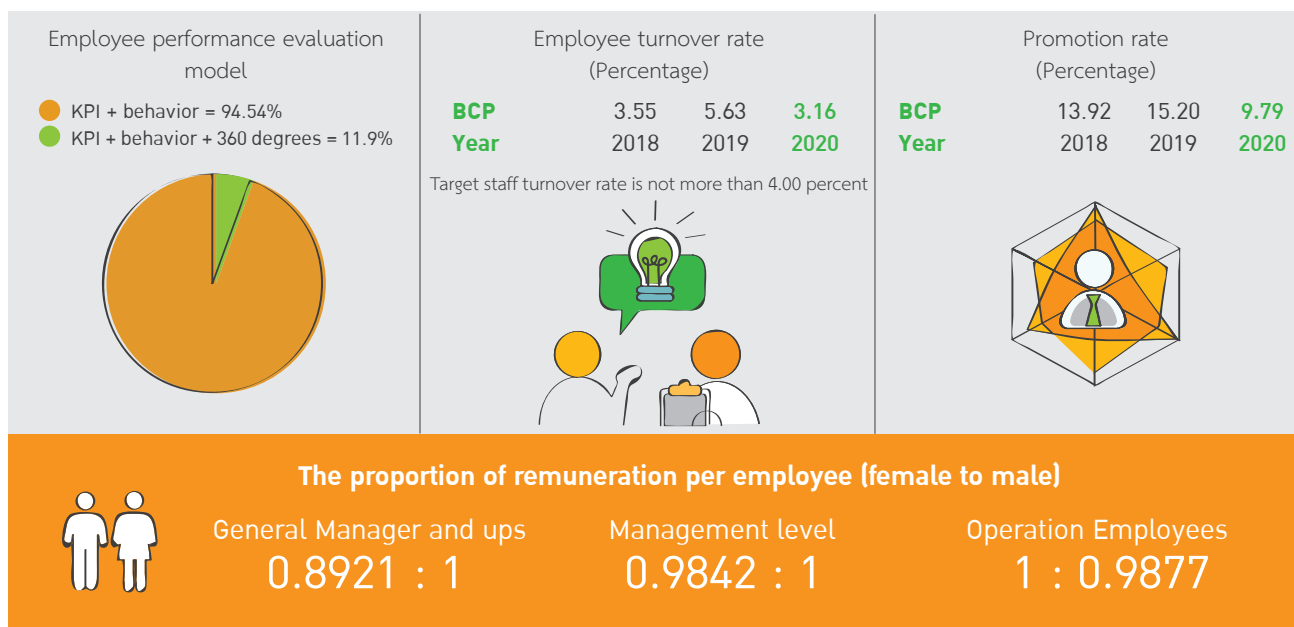
In this year 2021, the company focuses on awareness through a process of knowing, understanding and participation. To enhance employee engagement in the organization is a common understanding of issues affecting employee engagement. Methods that the organization wants to improve, including a focus group by taking the matter of organizational culture as a basis for creating a bond and continues to work on growth and performance appraisals to give employees a better understanding of the criteria.

4. 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.

Goal and Performance in 2020

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



Key Operations

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 / transmitted 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 11.9% 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.

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.

Community and Social Development

Importance

The company has actively driven this mission in two levels as follows:

1. Taking care of Bangchak's neighbors (Disclosure 413-1)

Targets Year 2020-2025

Because the refinery is considered as the main work area as it comprises 90% of operations area, participation in community activities around our operations are broken down into four sub-groups to better respond to the needs / expectations of each group. The majority of the expectations are 1) conducting business with safety 2) advance communication of any work plans 3) prompt communication during any emergency 4) multiple communication channels 5) continual communities activities, which include 6) members of the communities' participation in activities that benefit the community and society. Bangchak's community relation strategy comprises of eight areas: safety, education, sports, quality of life, environment, community relations and culture preservations, economic improvement, and corporate social responsibility. In 2020, more than 140 activities were organized and more than 71,083 beneficiaries from the activities.

2020 Targets	Community Relations Strategy
<ol style="list-style-type: none"> 1. Complaints from the wider community 0 case 2. Satisfaction rate of participants in the community > 90% 3. Evaluation of community engagement > 85% 4. Friendliness, helpfulness, safety assessment > 85% 	Organize activities that consistently meet the needs of the community, creating friendliness, usefulness, and safety

2020 Performance



Zero complaints from the communities



Satisfaction rate of participants in the community > 90%



Community engagement score was 84.4% (assessment conducted by a third-party)



Friendliness: 84.2%,
Helpfulness: 84.0%
Confidence (in safety): 86.13%





	Community	Family	School	Condominiums
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	29 projects around the refinery 6,316 people
Participants of activity (amount/ percentage*)	45,986 people 64.69%	6,258 people 8.80%	18,249 people 28.67%	590 people 0.83%
Social investment 9.386 million baht (Development Budget / Donation Budget)	Development Budget 64.88% Donation Budget 17.40%	Development Budget 9.45%	Development Budget 4.50% Donation Budget 1.07%	Development Budget 2.70%

* Percentage of all people participating in community relations activities from all groups in 2020 = 71,083 persons

2020 key operations to respond to Bangchak's neighbors expectations

Safety

Emergency Evacuation Drills

Every year Bangchak organizes emergency evacuation drills for various potential incidents and conducted training and seminars to educate teachers, students, and school personnel to be able to use fire extinguishers.

In 2020, Bangchak conducted evacuation drills and training sessions to 6 schools and 11 condominium around the refinery in Phra Kanong and Bang Na districts.

Communication

There are various communication channels available for communities around the refinery including:

- ✔ Direct communication with community relations personnel who visit the communities or via telephone conversations
- ✔ LINE group for community committee, condominium residents, and teachers in schools in the communities around the refinery
- ✔ Public announcement boards in the communities and condominiums
- ✔ Facebook group: Bangchak Family Group
- ✔ Expanded coverage of audio announcement system for advance communication of work plans



Economic

1. Project "Community Kitchen - Pansuk Market"

Community Kitchen - Pansuk Market has been on-going since 2012. The project aims to generate income for residents in the communities by providing occasional retail space to sell food and other products free of charge such as during major turnarounds and during construction projects, in staff canteen, as well as catering food from community sellers during various community activities. In addition, Bangchak provides biodegradable containers and packaging as well as educate sellers on waste separation so that they can take part in caring for the environment.

In 2020, Community Kitchen - Pansuk Market was able to generate over 7,764,000 baht of income for 12 sellers, which helped strengthen communities and improve product offering through a customer satisfaction and feedback survey.

Environment

1. Project “Bangchak Cares for the Community” project to reduce dust

Bangchak partnered with Phra Khanong District Office to help alleviate PM2.5 health problems in the community. Bangchak’s management and employees together with District Office personnel gave away 20,000 N95 masks to residents in the communities, schools and government agencies surrounding the refinery.

Quality of Life

1. Project “Bangchak Cares - Fight COVID-19”

Bangchak started projects and activities to produce and distribute masks and sanitizing alcohol which were in short supply through multiple projects as follows:

- ✔ Bangchak COVID-19 Care Bags:
Provided 32,000 care bags which include cloth masks, sanitizing alcohol gel, vitamin C, and a sticker with emergency contact number to communities residents, condominiums, and schools.
- ✔ Provide alcohol gel for hand washing during shortage to residents of the community and condominiums, their families and student and health centers around the refinery
- ✔ Employing community residents to sew masks to fight COVID-19 members of the communities (mostly stay-at-home mothers and young adults) were able to generate additional incomes for their families. The masks sewn were given to Service Station personnel and contractors in the refinery.
- ✔ Bangchak helped organized an activity where community volunteers sew masks for donation. Bangchak supported by provided sewing kits and fabrics, as well as taught volunteers to sew cloth masks. The volunteers were able to donate 300 masks to the elderly in the community.



- ✔ Bangchak provided vegetable seeds to 200 families so that they can grow their own food, reduce trips to buy food, reduce costs and create family activities during Work from Home periods.
- ✔ Setup “Tung Pan Suk” in our Service Stations, schools, and temples around the area to ease the hardship of community members during the crisis. Food and necessity items to people in needs were provided to people in needs.



Education

Eco-school project

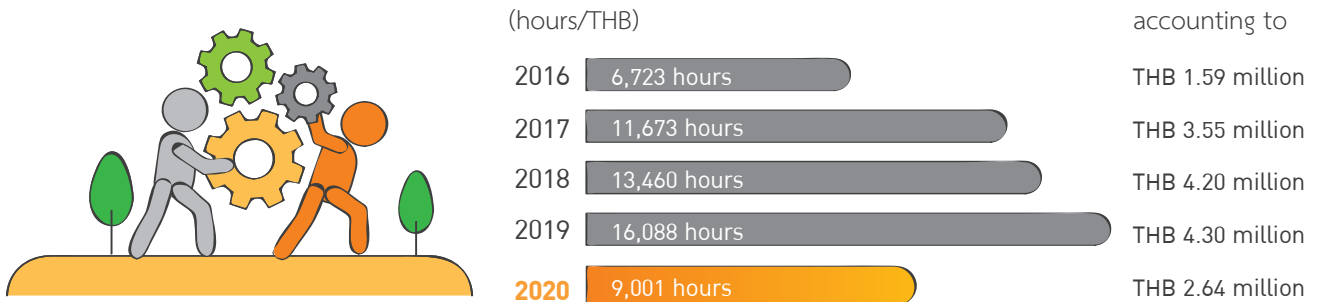
The project is a partnership between Bangkok, Department of Environmental Quality, Phra Khanong District Office, and Bang Na District Office. The project aims to encourage school administrator and science teachers in 11 schools around the refineries to learn how to develop curriculums that include environmental issues in an integrated manner.



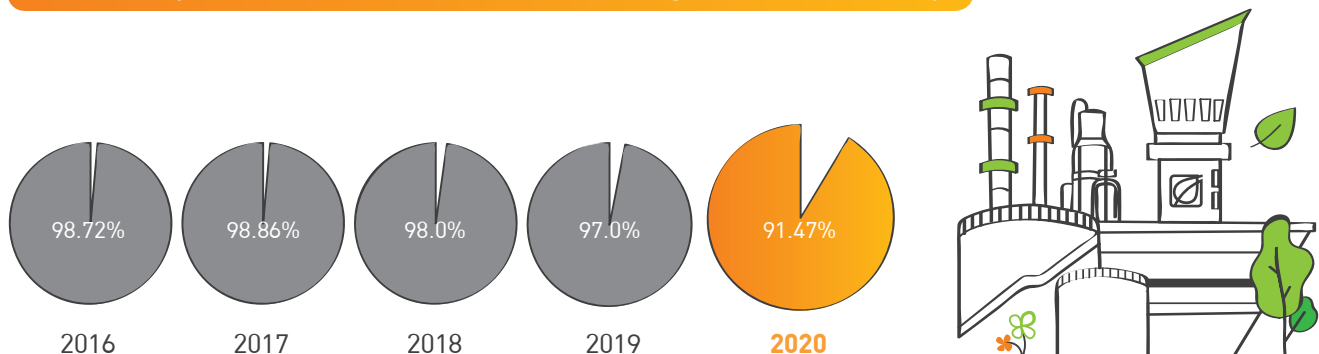
- ✓ School management / teachers can use their environment knowledge to apply in the course
- ✓ School's staffs and students were developed in terms of environment learning continuously according to government policies and trend of the world
- ✓ School's staffs and students learned, understood and lived with environment, community, and society in a sustainable way with more happiness

In 2020, the project utilized online resources such as uploading clips on Youtube to enable participants to learn anywhere and anytime.

Total hours of employees' volunteer work around the refinery



Community Satisfaction on CSR activities (Percentage) around the refinery



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, Year 17th Provide equipment and fire extinguishers, Year 17th Check the availability of community safety equipment, Year 3rd
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 (Community Enterprise Project Year 6th) Supporting products and services from entrepreneurs in the community to use in the activities of the company to distribute income to the community (Year 17th) 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 1,700 baht / shop / day (Community – Pan Sook Market Year 7th)
Environment	<ul style="list-style-type: none"> Aware of environmental problems and make good use of resources 	<ul style="list-style-type: none"> A project to buy used vegetable oil in communities around the refinery, year 9th Firefly Path Project Way of Conservation Year 7th Our Khung BangKachao Project Year 3th
Quality of Life	<ul style="list-style-type: none"> Enhancing quality of life, healthy body, and healthy mind 	<ul style="list-style-type: none"> “The Same Family” Project, Year 27th “Healthy Community” Project, Year 10th “Health Care for Elderly” Project, Year 4th “Bangchak Good Youth” Project, Year 5th Bangchak Cares Fight COVID-19 Project Year 2nd
Education	<ul style="list-style-type: none"> Age-appropriate learning development among children 	<ul style="list-style-type: none"> Bangchak Youth Scholarship Project, Year 17th the importance of developing teachers and students Project, Year 17th
Sport	<ul style="list-style-type: none"> Drug-free living among the youth Having opportunity for good education from sports 	<ul style="list-style-type: none"> Bangchak Youth Football Club, Year 14th
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"> Leaf Family Journal, Year 15th Visit communities Year 17th Condo Neighbor Activity, Year 9th

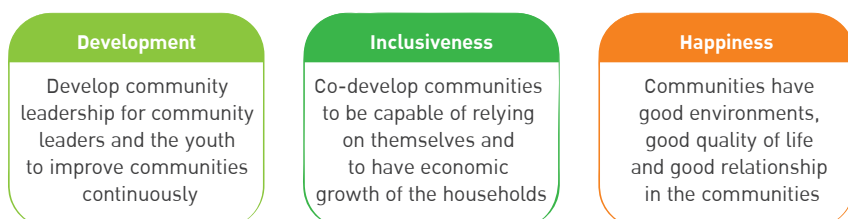
Future Plans

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.

Target 2021-2025 : Community Engagement Score 87%



Community Relations Strategy



2. Supporting the Society

Bangchak supports the UN Sustainable Development Goals (SDGs) using “Bangchak WOW” framework by promoting activities in three areas: Well Being Improvement, Oxygen Enhancement, and Water Management.



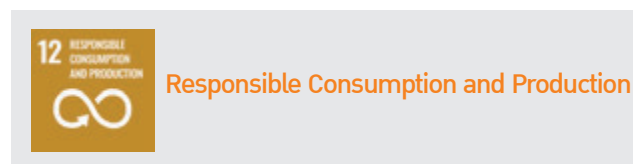
Encouraging Bangchak’s customers to take part in carbon reduction in their everyday lives. Relevant projects include:

- “Your Tree” Project a mobile application that encourage consumers to use cleaner fuel to reduce emission from combustion process which is like planting a tree to capture carbon.
- “Upgrading Diesel Products to Reduce PM2.5” Project- Bangchak produced low sulfur (10 ppm) diesel fuel to be sold in greater Bangkok Area to help reduce PM2.5. As emission from vehicle contribute to 51% of the PM2.5 in Bangkok, it is important that Bangchak act to be part of the solutions to this health crisis. Even though low sulfur diesel cost higher, Bangchak did not pass these costs on to the customers. In addition, the Company planted over 300,000 trees in Bangkok to increase green areas.
- “Winnonie” project – the project aims to improve the economic conditions of motorcycle taxi drivers who must pay high interest rate on their motorcycles. The project encourage the motorcycle taxi drivers to lease an electric motorcycle to reduce interest payments, fuel cost, and maintenance costs. The project was initiated by Bangchak’s employees under the “Intrapreneur” project, which also supports Bangchak’s goal to become a green and innovative business.



- “Everlasting Battery: Revolutionizing the Future of Energy” Seminar - which featured academics, government agencies, and world-class startups who shared experiences and development trends of Li-ion batteries that will have profound implications to the energy industry. Battery is a key technology Bangchak is focusing on to transition itself to greener and more innovative businesses.

- Project to develop Wet Forest area in Phu Long forest- the last remaining forest in Lamphao, Chaiphaphum province. Although the project has been on-going for 16 years, dry conditions led to wildfires that damaged over 3,000 rai of the forest. Bangchak’s proposed solution is to grow 10 rai of wet forest to capture water based on Koh Nong Na model. Over 2,000 trees were planted and the area is monitor quarterly.



Plastic waste remains a major global problem. The COVID-19 crisis and the subsequent increase in food delivery means that the volume of plastic waste continue to grow. In order to do our part in reducing plastic waste per SDG 12.4, Bangchak uses Circular Economy framework and bioplastics innovation to produce bioplastic. In addition, the Company support SDG 12.8 in raising consumer awareness by campaigning to reduce single-use plastics in Inthanin Coffee shops and convenient stores as follows:

- “Reduce Waste with Bangchak” Project - Bangchak encourages customers to bring their own cups to Inthanin Coffee to reduce waste (except during COVID-19). Customers who bring their own cups receive a discount. This campaign help to reduce 1 – 2.4 million plastic cup waste annually. In parallel, the Company is switching beverage cups and lids to bioplastics. To date over 60 million plastic cups have been replaced by bioplastic.
- “Rak Pan Sook” project – Bangchak collected PET bottles to be recycled into fibers which can be used to produce products from recycled plastics. In 2020, over 300,000 bottles were collected and recycled into tote bags, canvas bags, and masks, all of which were given to Bai Mai Pan Suk Foundation to be sold for charity to support the foundation’s work.

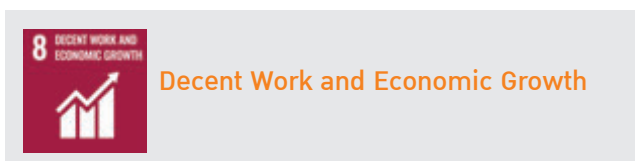


- Community Service Stations (COOP Service Station) Project – The project is supported by Cooperative Promotion Department and agricultural cooperatives across the country. Agricultural cooperatives with their own service stations can help reduce the cost of fuel to members in the COOP. In addition, members also



- “Biodiesel from used vegetable oil” project – Bangchak expanded the buying locations throughout the communities around the refinery. Employee volunteers went into the communities to collect and buy used vegetable oil in partnership with government agencies, restaurants, and private companies. In 2020, over 22,750 kilograms of used vegetables oil were collected. This project also helped to reduce the reuse of oil when cooking as well as discharging oil into the environment by raising awareness to the public in multiple areas in Bangkok such as Phasicharoen District and Laksi District. After the project, water qualities around the areas were tested and shown to have improved, especially the level of oil and grease. The project helps to alleviate water pollution as well as clogged water drains.

In addition, Bangchak also collaborated with “Tang Won Tung” and Nursery Cup - “Kaew Pao Kla” projects by donating bioplastic cups to the Royal Forest Department to grow seedling instead of using plastic nursery bags.



Helping to improve the well-being of Thai society is one of Bangchak’s core believes. Since the foundation of the company, Bangchak grew our business in tandem with society’s growth, the Company focuses on building economic strength to the communities and Thai farmers. Projects to support SDG 8 are:

- receive profit sharing in the form of dividends as well as member privileges. The project has improved the livelihood of over 1 million farmer families. Bangchak sets a target to add 10 COOP service stations annually. Bangchak also help COOP partners on the marketing and internal management tools to increase sale and operational effectiveness as well as improve the image of the service station. The COOP Turnpro project was established to improve business acumen of COOP management and agricultural cooperation.
- Partnership School Project – Bangchak, Agricultural Cooperative Project, and the Mechai Viravaidya Foundation have partnered with 5 schools in Khon Kaen, Lampang and Surin provinces to establish “Agricultural business in school”. The project aims to teach students to learn about agriculture management, saving and budgeting under the guidance of teachers. The project also lends money to families who wish to develop their own business. To date, 19 loans have been given and the fund has over 440,000 baht.

Education: Bai Mai Pan Suk Foundation

COVID-19 crisis has led to many students falling behind in their education. In 2020 Bai Mai Pan Suk Foundation has adjusted its work plan on helping to improve literacy rate by focusing on year 1 students under the “Read, Write, Learn, Fun – Make Dek Jew Becomes Dek Jaew” project. The project is entirely online from recruiting, teachers training, and monitoring. The Foundation was able to expand its reach to over 42 schools in 30 provinces and 1,100 students.

Sustainability Performance Statistics

Economic Performance

Revenue (Million THB) (Disclosure 201-1)	2017	2018	2019	2020
Sales and services	172,138.24	192,025.32	190,488.59	136,450.29
Total Revenue	173,378.94	193,340.41	190,983.67	136,982.82
Net profit	6,163.00	3,234.70	2,488.49	-5,769.98
EBITDA	13,420.00	10,201.00	8,709.00	4,104.00

Expenditure for income distribution to stakeholders (Million THB) (Disclosure 201-1)	2017	2018	2019	2020
Operating expenses	158,595.55	180,594.37	180,256.90	132,122.13
Interest expenses paid to financial institution creditors and debentures	1,502.30	1,559.06	1,839.24	2,050.58
Tax payment to government and local authorities	544.16	194.45	258.46	20.44
Financial supports for membership of associations	3.32	3.34	3.28	3.61
Community and social development	32.98	36.00	34.00	21.67
Donation to society and schools	73.61	62.94	64.60	22.62
Dividend payment to shareholders	3,310.75	3,090.52	1,759.84	742.55
Dividend payment to shareholders (Baht/Share)	2.15	1.35	0.80	0.40
Wages and employee benefits	3,277.33	3,310.33	3,609.11	3,401.92

Supply chain management (Disclosure 204-1)	2017	2018	2019	2020
Local purchases of goods and services*	5,749	4,424	2,764	1,846
Percentage of Local purchases of goods and services*	84	98	98	97

Local purchasing in Thailand, exclude raw materials and crude oil

Corporate (BCP) (Million THB)												
Tax Jurisdiction	Related Party		Revenue		Total		Profit / (Loss) before		Income Tax Paid		Income Tax Accrued	
			Unrelated Party				Income Tax		(on a Cash Basis)		- Current Year	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
Thailand	53,978	40,976	159,894	116,345	213,872	157,321	4,711	(7,513)	208	(33)	123	113
Japan	701	31	230	231	931	262	416	(163)	1,306	(213)	198	0
Singapore	23,999	25,782	31,289	20,000	55,288	45,782	(113)	(3,796)	17	22	35	27
Philippines	67	-	22	16	89	16	(1,189)	(1,378)	-	-	-	-
Australia	229	-	(11)	-	218	-	(91)	-	-	-	-	-
Netherlands	-	-	-	-	-	-	(2)	35	-	6	-	-
British Virgin Islands	59	0	3	0	62	0	(85)	-	-	-	-	-
Laos	-	199	550	756	550	955	109	87	-	-	-	6

Environmental Performance

Details	Refinery Business				Bio-based Product Business				Green Power Business			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Material (Ton)												
• Renewable Material	395,578	426,633	459,665	407,333	524,967	394,929	882,167.0	747,162	0	0	0	0
• Non- Renewable Material	6,731,065	6,093,537	6,468,825	6,649,518	27,029	26,625	152,335.9	26,813	4	2	3	3
Product (million L)	11,070	11,856	12,380	11,066	393	322	522	464				

	Refinery Business				Marketing Business				Bio-based Product Business				Green Power Business			
	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
Energy1 (Terajoule: TJ) (Disclosure 302-1)	13,903.0	13,116.8	13,182.0	12,845.2	60.6	94.1	99.9	96.4	1,683.7	1,166.6	2,246.3	2,238.3	10.4	10.0	10.1	10.3
Non- Renewable Energy Consumption	13,903.0	13,116.8	13,182.0	12,845.2	60.6	94.1	99.9	96.4	613.0	551.4	1,410.8	1,170.8	10.4	10.0	10.1	10.3
Energy used in process:																
• Fuel gas and LPG	6,776.3	5,450.5	5,505.9	5,306.8	-	-	-	-	-	-	-	-	-	-	-	-
• Natural gas	3,457.0	3,770.8	3,796.3	7,482.3	-	-	-	-	386.2	419.8	414.0	413.7	-	-	-	-
• Natural gas for cogeneration	2,814.5	3,783.6	3,794.6	-	-	-	-	-	-	-	-	-	-	-	-	-
• Fuel oil	744.0	-	-	-	-	-	-	-	-	-	41.3	60.6	-	-	-	-
Electricity and steam used in process:																
• Electricity	103.1	101.7	78.2	50.7	60.6	94.1	99.9	88.7	195.3	117.6	241.3	229.2	9.5	8.8	8.8	9.2
• Steam	-	-	-	-	-	-	-	-	-	-	700.8	444.0	-	-	-	-
Other :																
• Mobile fuels	8.0	10.1	7.0	5.4	-	-	-	7.7	31.6	14.1	13.3	23.4	0.9	1.2	1.3	1.2
Renewable Energy	0.0	0.0	0.0	0.1	-	-	-	-	1,070.7	615.2	835.5	1,067.5	-	-	-	-
• Wind and Solar	0.0	0.0	0.0	0.1	-	-	-	-	-	-	-	9.6	-	-	-	-
• Biomass/2 and Biogas	-	-	-	-	-	-	-	-	1,070.7	615.2	835.5	1,058.0	-	-	-	-
Sold Energy	-	-	-	-	-	-	-	-	-	-	-	-	949.0	969.8	1,025.7	1,078.3
• Non- Renewable Energy Sale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
• Renewable Energy: Electricity generated by solar power	-	-	-	-	-	-	-	-	-	-	-	-	949.0	969.8	1,025.7	1,078.3
• Renewable Energy: Electricity generated by solar power(MWh)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Energy Intensity Index (EII) (Disclosure 302-3)	103.1	100.5	97.6	102.0												
Total Energy Consumption within the Organization /3 (Terajoule: TJ) (Disclosure 302-1)	14,708.7	13,417.7	14,512.6	14,111.9												

^{/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

1. The report of direct and indirect GHG emissions data are calculated by using the BCP GHGs calculation tool in accordance with IPCC 2006
2. The calculation of scope 1 GHG emissions uses emission factor values from IPCC 2006 and API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry 2006
3. The calculation of scope 2 GHG emissions from electricity consumption uses emission factor values from Energy Policy and Planning Office, Ministry of Energy
4. The calculation of scope 2 GHG emission from electricity consumption and steam consumption of KGI-NP and KGI-BP under the Bio-based Product Business uses emission factor values from the Ministry of Energy
5. Global Warming Potential (GWP) values are based on the Fourth Assessment Report (AR4) of the Greenhouse Gas Protocol.

Air emissions (Disclosure 305-7), (OG6)	Units	2017	2018	2019	2020	Targets
NOx (Combustion) ^{/1}	Ton	426	644	236	280	1,000
Intensity NO _x	on ton per thousand tons crude	0.08	0.12	0.04	0.06	
SO2 (Combustion & SRU/TGTU Stack) ^{/1}	Ton	75	24	32	27	1,000
Intensity SO ₂	on ton per thousand tons crude	0.01	0.00	0.01	0.01	
TSP PM10 (Combustion) ^{/1}	Ton	48	5	11	3	200
Intensity TSP	on ton per thousand tons crude	0.00	0.00	0.00	0.00	
H2S (SRU/TGTU Stack) ^{/1}	Ton	0.50	14.3	0.7	4.0	20
Intensity H ₂ S	on ton per thousand tons crude	0	0	0	0	
(VOCs Inventory) ^{/2 /3}	Ton		520.84	371.51	417.61	500
(Fugitive VOCs) ^{/4}	Ton	2.60	2.50	2.50	2.51	127
(Intensity VOCs)	ton/barrel	0	0	0	0	
Flared hydrocarbon ^{/5}	kl	2809.1	1,777.0	2,472.9	1,174.3	N.A.
Flared hydrocarbon ^{/5}	on cu.m. (Gas)	0.43	0.25	0.37	0.17	
Flared hydrocarbon per total product produced	ton cu.m. (Gas) / million barrel oil equivalent	0.010	0.006	0.009	0.002	
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 Withdrawal (Disclosure 303-3)	Volume in all areas (million m ³)	Water Stress (million m ³)
	2020	2020
Water withdrawal by activity		
Total Chao Phraya river water (surface water)	0.19	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	0.09	0
• Other water (>1,000 mg/L Total Dissolved Solids)	0.10	0
Total groundwater	0.27	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	0.27	0
• Other water (>1,000 mg/L Total Dissolved Solids)	0	0
Total seawater	N/A	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	N/A	0
• Other water (>1,000 mg/L Total Dissolved Solids)	N/A	0
Total produced water from crude oil extraction, processing of raw materials	18.83	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	0	0
• Other water (>1,000 mg/L Total Dissolved Solids)	18.83	0
Total third-party water (tap water and treated water)	2.04	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	2.04	0
• Other water (>1,000 mg/L Total Dissolved Solids)	0	0
Total water withdrawal from all sources	21.33	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	2.40	0
• Other water (>1,000 mg/L Total Dissolved Solids)	18.93	0

Water discharge (Disclosure 303-4)	Volume in all areas (million m ³)	Water Stress (million m ³)
	2020	2020
Water discharge by source		
Refinery water discharge to river water	0.72	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	0.18	0
• Other water (>1,000 mg/L Total Dissolved Solids)	0.55	0
Head office (M Tower) water discharge to river water	0.002	0
• Freshwater (≤1,000 mg/L Total Dissolved Solids)	0.001	0
• Other water (>1,000 mg/L Total Dissolved Solids)	0.001	0

Water and Effluent Management (million m ³)	Refinery Business			
	2017	2018	2019	2020
Tap Water used in production ¹	2.43	2.27	2.47	2.04
River water used	0.11	0.10	0.20	0.19
Groundwater used	0.00	0.01	0.03	0.27
Reused water ^{2/5}	1.15	1.10	1.16	1.31
Percentage of water recycled and reused to total water withdrawal (%)	45.30	46.21	43.01	6.14
Percentage of water recycled and reused to total water withdrawal (exclude produced water from crude oil extraction, processing of raw materials) (%)				52.25
Rate of water consumption per barrel of oil produced (cu.m/BOE) ³	0.06	0.06	0.06	0.07
Effluents from the Refinery	0.90	0.90	0.77	0.72
• (COD) (Ton) ⁴	39.23	39.02	53.31	33.22
• (BOD) (Ton) ⁴	4.43	4.76	7.32	6.55
• Oil and Grease (Ton) ⁴	1.36	4.52	2.22	2.17
• TSS (Ton) ⁴	9.04	11.15	8.23	4.55
• TDS (Ton) ⁴	1,105.00	791.03	1,125.09	975.98
• Sulfide (Ton) ⁴	0.18	0.90	0.34	0.09
• Mercury (Ton) ⁴	0.00	0.00	0.00	0.00
Effluents from Bangchak Head Office at M Tower				0.002
• (BOD) (Ton) ⁴				0.007
• Oil and Grease (Ton) ⁴				0.002
• TSS (Ton) ⁴				0.017
• TDS (Ton) ⁴				0.55
• Sulfide (Ton) ⁴				0.002
• Mercury (Ton) ⁴				N/A

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

Waste [Disclosure 306-2]	2017		2018		2019		2020	
	Tons	%	Tons	%	Tons	%	Tons	%
Routine wastes (ton : percentage)								
Hazardous waste ^{/1}	1,571	80.69	2,808	18.0	2,023	33.81	2,671	85
Non-Hazardous waste ^{/1}	332	17.07	220	1.41	158	2.64	388	12
Non-routine wastes (ton : percentage)								
Hazardous waste from oil and chemical spill clean-up ^{/2} (Disclosure 306-3)	1	0.05	0	0	0	0	0	0
Construction waste ^{/2}	43	2.19	10,583	67.80	3,696	61.77	97	3
Hazardous waste for Turnaround Maintenance	0	0.00	1,916	12.27	106	1.77	-	0
Non-Hazardous waste for Turnaround Maintenance ^{/2}	0	0.00	82	0.52	1	0.02	-	0
Total	1946.7	100	15,609	100	5,984	100	3,155	100

^{/1} Weight from waste manifest

^{/2} Estimate from volum of waste sent to disposal based on calculation of number of bags per container and average weight per bag /container

Waste Management Method/1 [Ton] [Disclosure 306-2]	2017		2018		2019		2020	
	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	564	28	4,321	302	571	6	479	322
• Recovery, including consumption as fuel	1,006	233	360	0	1,543	154	2,190	89
• Incineration	0	28	44	0	0	0	1.3	0
• Sent to secure landfill	0	0	0	0	15	0	0	0
• On site storage	0	0	0	0	0	0	6	0
• Other (Land Reclamation)	0	43	0	10,583	0	3,696		74
Total	1,571	332	4,725	10,884	2,129	3,856	2,677	485

^{/1} Disposal methods and quantity from DIW waste disposal permit documents and manifests

Significant oil and chemical spills [Disclosure 306-3]	2017	2018	2019	2020
Number of case related to significant oil and chemical spills (more than 100 barrels)	0	0	0	0
Volume of significant oil and chemical spills with more than 100 barrels/time (barrel)	0	0	0	0
Number of case related to oil spills with more than 1 barrel/time but less than 100 barrels/time	1	3	2	3
Total volume of oil spills with more than 1 barrel/time but less than 100 barrels/time (barrels)	3	141	4	11

Supply Chain Management (Percentage)	2017	2018	2019	2020
New Supplier/ Key Supplier were self assess on SCOC criteria	31	29	24	29

Environment Compliance [Disclosure 307-1]	2017	2018	2019	2020
Number/Monetary Value of significant fines associated with environmental law violation (Disclosure 307-1)	0	0	0	0

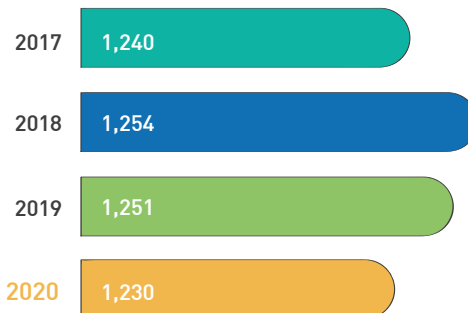
Social Performance

Employment

Employee* (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

Employee* (Persons)



Employee (Disclosure 102-8), (Disclosure 401-1)	2017		2018		2019		2020	
	Persons	%	Persons	%	Persons	%	Persons	%
By gender								
Male	866	69.84	881	70.26	868	69.38	854	69.43
Female	374	30.16	373	29.74	383	30.62	376	30.57
Total	1240	100	1254	100	1251	100	1230	100.00
By religion								
Buddhism	1189	95.89	1205	96.09	1204	96.24	1182	96.10
Christian - Catholic	23	1.85	27	2.15	22	1.76	24	1.95
Islam	27	2.18	21	1.67	23	1.84	22	1.79
Others	1	0.08	1	0.08	2	0.16	2	0.16
Total	1240	100	1254	100	1251	100	1230	100.00
By Generation								
Baby Boom	47	3.74	42	3.35	36	2.88	22	1.79
Generation X	546	44.03	550	43.86	541	43.25	533	43.33
Generation Y	627	50.56	632	50.40	625	49.96	626	50.89
Generation Z	20	1.61	30	2.39	49	3.92	49	3.98
Total	1240	100.00	1254	100.00	1251	100.00	1230	100.00
By level								
(Level 10-14: Executive up)	134	11.20	151	12.04	158	12.63	161	13.09
• Male	89	66.42	103	68.21	103	8.23	103	8.37
• Female	45	33.58	48	31.79	55	4.40	58	4.72
(Level 5-9: Manager up)	669	55.94	685	54.63	697	55.72	688	55.93
• Male	401	59.94	416	60.73	417	33.33	413	33.58
• Female	268	40.06	269	39.27	280	22.38	275	22.36
(Level 1-4 : Practitioner)	437	36.54	418	33.33	396	31.65	381	30.98
• Male	376	86.04	362	86.60	348	27.82	338	27.48
• Female	61	13.59	56	13.40	48	3.84	43	3.50
By age								
Less than 30 years	308	25.75	328	26.16	287	22.94	205	16.67
Between 30-50 years	811	67.81	810	64.59	827	66.11	875	71.14
More than 50 years	121	10.12	116	9.25	137	10.95	150	12.20

Employee (Disclosure 102-8), (Disclosure 401-1)	2017		2018		2019		2020	
	Persons	%	Persons	%	Persons	%	Persons	%
By area								
Head office	530	44.37	544	43.38	545	43.57	533	43.33
Refinery	642	53.68	634	50.56	630	50.36	620	50.41
North District	10	0.84	9	0.72	10	0.80	9	0.73
Central District	41	3.43	49	3.91	49	3.92	49	3.98
North-East District	10	0.84	10	0.80	9	0.72	11	0.89
South District	7	0.59	8	0.64	8	0.64	8	0.65

Diversity	2019	2020	Target
Percentage of female share of total workforce	30.62	30.57	
Percentage of females in management position	33.33	35.95	Increase by 2% in 2022
Percentage of females in junior management positions, i.e. first level of management (as % of total junior management positions)	28.57	35.90	
Percentage of females in top management positions	19.05	25.00	
Percentage of females in management positions in revenue generating functions	22.58	22.44	
Percentage of workforce based on people with disability	1.00	1.00	
Percentage of workforce based on LGBTQI+	1.79	1.79	

Ratio of salary by gender (Female : Male)	2020		2020 Gender pay gap analysis	
	Female	Male	Indicator	Difference between men&women employees
By level			Mean gender pay gap	-16.97%
(Level 10-14: Executive up)	0.89	1.00	Median gender pay gap	-20.29%
(Level 5-9: Manager up)	0.98	1.00	Mean bonus gap	-14.92%
(Level 1-4: Practitioner)	1.00	0.99	Median bonus gap	-15.96%

Employees Turnover (Disclosure 401-1)	2017		2018		2019		2020	
	Persons	%	Persons	%	Persons	%	Persons	%
Total employee turnover rate		4.49		4.27		6.19		4.13
Voluntary employee turnover rate		4.00		3.55		5.63		3.16
By gender								
Male	31	63.27	27	58.70	52	74.29	25	64.10
Female	18	36.73	19	41.30	18	25.71	14	35.90
By age								
Less than 30 years	28	57.14	20	43.48	39	55.71	18	46.15
Between 30-50 years	21	42.86	25	54.35	27	38.57	17	43.59
More than 50 years	0	0.00	1	2.17	4	5.71	4	10.26

New Employees (Disclosure 401-1)	2560		2561		2562		2563	
	Persons	%	Persons	%	Persons	%	Persons	%
By gender								
Male	61	59.80	46	68.66	45	60.81	19	63.33
Female	43	42.16	21	31.34	29	39.19	11	36.67
By age								
Less than 30 years	86	84.31	37	55.22	55	74.32	24	80.00
Between 30-50 years	18	17.65	27	40.30	16	21.62	6	20.00
More than 50 years	0	0.00	3	4.48	3	4.05	0	0.00

Parental leave	2017		2018		2019		2020	
	Persons	%	Persons	%	Persons	%	Persons	%
Parental leave	4	0.32	5	0.40	7	0.56	4	0.33
Employees back to work after parental leave	4	0.32	5	0.40	7	0.56	4	0.33

Employee development (training hours / person / year) [Disclosure 404-1]	2017	2018	2019	2020
Total training hour	55,926	57,487	56,449	28,650
Total average training hour	45.10	45.88	45.12	23.29
By gender				
Male	42.66	43.07	42.82	21.05
Female	50.76	52.65	50.35	28.18
By level				
Level 10-14: Executive up	63.91	56.66	52.33	45.15
Level 5-9: Manager up	56.31	58.09	56.35	24.03
Level 1-4 : Practitioner	22.39	22.34	22.48	12.53
By business category				
President & Chief Executive Officer (PS)	56.00	104.29	56.45	38.45
Corporate Strategic Planning and Sustainability Development Group (CG)	-	73.56	102.23	46.99
Corporate Management and Organization Development Group (MD)	53.45	73.22	71.68	37.00
Accounting and Finance Group (AF)	64.28	71.06	67.65	18.85
Marketing Business Group (MKBG)	43.53	43.83	44.35	15.58
Refinery Business Group (RFBG)	39.23	30.47	30.63	21.82
Natural Resource (NT)	63.00	86.00	-	-
Best Employer Score (%)	61	67	56.00	56.00
Employee Engagement Score (%)	61	69	62.00	63.00

Occupational Health and Safety Performance

Injury*, Illness, Fatality, Safety in Production Processes (Disclosure 403-9)	Unit	2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female
Total Working Hours									
• Employees	hours	1,562,576		2,469,675		2,395,055		2,344,463	
	hours	1,352,215	210,361	1,806,814	662,861	1,736,499	658,556	1,675,032	669,431
• Contractors	hours	5,509,198		5,459,789		6,564,584		7,815,554	
	hours	4,253,591	1,255,607	4,250,298	1,209,491	4,714,105	1,850,478	5,959,383	1,856,171
Absentee Rate									
• Employees	percentage	1.05		0.85	0.97	0.78	1.13	0.69	0.88

Injury*, Illness, Fatality, Safety in Production Processes (Disclosure 403-9)	Unit	2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female
Work-Related Injuries									
Fatality (as a result of Work-Related Injury)									
• Employees	Case	0		0		0		0	
		0	0	0	0	0	0	0	0
	Case / Million work hours	0		0		0		0	
		0	0	0	0	0	0	0	0
	Data coverage (percentage of operations)	100		100		100		100	
• Contractors	Case	0		0		0		0	
		0	0	0	0	0	0	0	0
	Case / Million work hours	0		0		0		0	
		0	0	0	0	0	0	0	0
	Data coverage (percentage of operations)	100		100		100		100	
Total Recordable Injury Frequency Rate (TRIFR)									
• Employees	Case	1		3		0		1	
		1	0	3	0	0	0	1	0
	Case / Million work hours	0.64		1.21		0.00		0.44	
		0.74	0.00	1.66	0	0.00	0.00	0.60	0.00
	Data coverage (percentage of operations)	100		100		100		100	
• Contractors	Case	0		6		5		0.43	
		0	0	6	0	5	0	2	2
	Case / Million work hours	0.00		1.10		0.76		0.38	
		0.00	0.00	1.41	0	1.06	0.00	0.34	0.54
	Data coverage (percentage of operations)	100		100		100		100	
Lost-Time Injury Frequency Rate (LTIFR)									
• Employees	Case	0		1		0		0	
		0	0	1	0	0	0	0	0
	Case / Million work hours	0		0.40		0.00		0.00	
		0	0	0.55	0	0.00	0	0.00	0
	Data coverage (percentage of operations)	100		100		100		100	

Injury*, Illness, Fatality, Safety in Production Processes (Disclosure 403-9)	Unit	2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female
• Contractors	Case	0		3		2		2	
		0	0	3	0	2	0	2	0
	Case / Million work hours	0		0.55		0.30		0.26	
		0.00	0	0.71	0	0.42	0	0.34	0
	Data coverage (percentage of operations)	100		100		100		100	

(High-Consequence Work-Related Injuries)									
• Employees	Case	N/A		N/A		0.00		0.00	
		N/A	N/A	N/A	N/A	0	0	0	0
	Data coverage (percentage of operations)	N/A		N/A		100		100	
• Contractors	Case	N/A		N/A		0.00		0.00	
		N/A	N/A	N/A	N/A	0	0	0	0
	Data coverage (percentage of operations)	N/A		N/A		100		100	

Injury Severity Rate : ISR									
• Employees	Event / Million work hours	0	0	7.75	0	0.00	0	0.00	0
		100		100		100		100	
	Data coverage (percentage of operations)	100		100		100		100	
• Contractors	Event / Million work hours	0.00	0	9.18	0	1.27	0	1.34	0
		100		100		100		100	
	Data coverage (percentage of operations)	100		100		100		100	

(Near Miss)									
• Employees and Contractors	Case	28		17		35		13	
• Employees	Case	25		15		19		12	
• Contractors	Case	3		2		16		1	
• Data coverage	Data coverage (percentage of operations)	100		100		100		100	

Injury*, Illness, Fatality, Safety in Production Processes (Disclosure 403-9)	Unit	2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female
(Occupational Illness Frequency Rate : OIFR)									
• Employees	Total Case	N/A		N/A		0		0	
	Case by genders	N/A	N/A	N/A	N/A	0	0	0	0
	Case / Million work hours	N/A		N/A		0		0	
		N/A	N/A	N/A	N/A	0	0	0	0
	Fatality	0		0		0		0	
	Data coverage (percentage of operations)	N/A		N/A		100		100	

Injury*, Illness, Fatality, Safety in Production Processes (Disclosure 403-9)	Unit	2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female
(Process Safety Events)									
Process Safety Events - Tier 1	Event	0		0		0		0	
	Event / Million work hours	0		0		0		0	
	Data coverage (percentage of operations)	100		100		100		100	
Process Safety Events - Tier 2	Event	0		0		0		0	
	Event / Million work hours	0		0		0		0	
	Data coverage (percentage of operations)	100		100		100		100	
PSM Assessment Score (2020 Target : 3.3)		2.3		2.7		3.1		3.3	

*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

Customer Responsibility	Unit	2017	2018	2019	2020
Customer Satisfaction : Customers (Disclosure 102-43), (Disclosure 102-44)	percentage	80.5	85.8	86.6	88.1
Customer Satisfaction : Industrial customers Net Promoter Score (NPS)	percentage	88.9	82.0	87.0	83.3
Net Promoter Score (NPS)	Ranking	2 nd Ranking	1 st Ranking (joint)	1 st Ranking (joint)	1 st Ranking (joint)
Significant Case of Non compliance in marketing communication laws (Disclosure 417-3)	case	0	0	0	0

Socio-Economic Compliance	2017	2018	2019	2020
Number/Monetary Value of significant fines associated with economic and social law violation (Disclosure 419-1)	0	0	0	0

GRI Content Index

GRI Standard	Disclosure	Page number(s) and/or URL(s)	Omission	SDGs	External Assurance
GRI 101: Foundation 2016					
GRI 102 : General Disclosures 2016					
GRI 102 General Disclosure 2016	ORGANIZATIONAL PROFILE				
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	102-2	Activities, brands, products, and services	10		
	102-3	Location of headquarters	10		
	102-4	Location of operations	10-11		
	102-5	Ownership and legal form	12		
	102-6	Markets served	10		
	102-7	Scale of the organization	10		
	102-8	Information on employees and other workers	134-136	SDG 8 - Employment	
	102-9	Supply chain	14-15		
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	STRATEGY				
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	102-28	Evaluating the highest governance body's performance	21		
	102-29	Identifying and managing economic, environmental, and social impacts	55-60	SDG 16 - Inclusive decision making	
	102-32	Highest governance body's role in sustainability reporting	32		
	102-33	Communicating critical concerns	32		
	STAKEHOLDER ENGAGEMENT				
	102-40	List of stakeholder groups	23		Yes
	102-41	Collective bargaining agreements	110	SDG 8 - Freedom of association and collective bargaining	
	102-42	Identifying and selecting stakeholders	23		Yes
	102-43	Approach to stakeholder engagement	24-31		Yes
	102-44	Key topics and concerns raised	24-31		Yes
	REPORTING PRACTICE				
	102-45	Entities included in the consolidated financial statements	6		
	102-46	Defining report content and topic boundaries	6-7		Yes
	102-47	List of material topics	33		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		
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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	23-37, 50					
	103-2	The management approach and its components	50, 55-60					
	103-3	Evaluation of the management approach	50, 55-60					
	201-1	Direct economic value generated and distributed	128				SDG 2 - Infrastructure investments SDG 5 - Infrastructure investments SDG 7 - Infrastructure investments SDG 8 - Economic performance SDG 9 - Infrastructure investments, Research and development	
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GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 62-64					
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	103-3	Evaluation of the management approach	62-64					
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GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 51-54					
	103-2	The management approach and its components	51-54					
	103-3	Evaluation of the management approach	51-54					
GRI 205: Anti-Corruption 2016	205-2	Communication and training about anti-corruption policies and procedures	52				SDG 16 - Anti-corruption	
	205-3	Confirmed incidents of corruption and actions taken	52				SDG 16 - Anti-corruption	
INFORMATION TECHNOLOGY & CYBERSECURITY								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 66-67					
	103-2	The management approach and its components	66-67					
	103-3	Evaluation of the management approach	66-67					
Information Technology & Cybersecurity	BCP Indicator	Number of information security breaches/ cybersecurity incidents	67					
Material Topics								
GRI 300 Environmental Standard Series								
ENERGY								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 71-72					
	103-2	The management approach and its components	71-72					
	103-3	Evaluation of the management approach	71-72, 129					
	302-1	Energy consumption within the organization	71, 129				SDG 7 - Energy efficiency, Renewable energy SDG 8 - Energy efficiency SDG 12 - Energy efficiency, Transport SDG 13 - Energy efficiency	Yes
GRI 302: Energy 2016	302-3	Energy intensity	71, 129				SDG 7 - Energy efficiency SDG 8 - Energy efficiency SDG 12 - Energy efficiency SDG 13 - Energy efficiency	
WATER AND EFFLUENTS								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 74-77					
	103-2	The management approach and its components	74-77, 131-132					
	103-3	Evaluation of the management approach	74-77, 131-132					

GRI Standard		Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
	303-1	Interactions with water as a shared resource	74-77				SDG 6 - Interaction with water	Yes
GRI 303: Water and Effluents 2018	303-2	Management of water discharge-related impacts	77				SDG 12 - Interaction with water	Yes
	303-3	Water withdrawal	75, 131				SDG 6 - Water management	Yes
	303-4	Water discharge	77, 132				SDG 6 - Water withdrawal	Yes
	303-5	Water consumption	74-76, 132				SDG 6 - Water discharge	Yes
							SDG 6 - Water consumption	Yes
EMISSIONS								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 72-73, 79-80					
	103-2	The management approach and its components	72-73, 79-80					
	103-3	Evaluation of the management approach	72-73, 79-80, 130-131					
GRI 305: Emissions 2016	305-1	Direct (Scope 1) GHG emissions	73, 130				SDG 3 - Air quality SDG 12 - Air quality, Transport	Yes
	305-2	Energy indirect (Scope 2) GHG emissions	73, 130				SDG 13 - GHG emissions SDG 14 - Ocean acidification SDG 15 - Forest degradation	Yes
	305-5	Reduction of GHG emissions	73				SDG 3 - Air quality SDG 12 - Air quality, Transport	Yes
	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	131				SDG 13 - GHG emissions SDG 14 - Ocean acidification SDG 15 - Forest degradation	Yes
	OG6	Volume of flared and vented hydrocarbon	131				SDG 3 - Air quality SDG 12 - Air quality SDG 13 - GHG emissions SDG 14 - Ocean acidification SDG 15 - Forest degradation	Yes
							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
EFFLUENTS AND WASTE								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 77-78, 81					
	103-2	The management approach and its components	77-78, 81					
	103-3	Evaluation of the management approach	77-78, 81, 133					
GRI 306: Effluents and Waste 2016	306-2	Waste by type and disposal method	81, 133				SDG 3 - Spills SDG 6 - Waste, Water- related ecosystems and biodiversity	Yes
	306-3	Significant spills	77-78, 133				SDG 12 - Waste SDG 3 - Spills SDG 6 - Spills SDG 12 - Spills SDG 14 - Spills SDG 15 - Spills	Yes
	BCP Indicator	Plastic waste reduction	43, 126					
ENVIRONMENTAL COMPLIANCE								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 69-91					
	103-2	The management approach and its components	69-91					
	103-3	Evaluation of the management approach	69-91					
GRI 307: Environmental Compliance 2016	307-1	Non-compliance with environmental laws and regulations	133				SDG 16 - Compliance with laws and regulations	

GRI Standard	Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
SUPPLIER ENVIRONMENTAL ASSESSMENT							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 62-64				
	103-2	The management approach and its components	62-64				
	103-3	Evaluation of the management approach	62-64				
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	64				
	308-2	Negative environmental impacts in the supply chain and actions taken	64				
ENVIRONMENTAL PROTECTION EXPENDITURES AND INVESTMENT							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 91				
	103-2	The management approach and its components	91				
	103-3	Evaluation of the management approach	91				
Environmental protection expenditures and investment type	BCP Indicator	Total environmental protection expenditures and investment type	91				
PRODUCT TRANSPORTATION							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37				
	103-2	The management approach and its components	89-90				
	103-3	Evaluation of the management approach	89-90				
Product Transportation	BCP Indicator	Percentage of Efficiency in Transportation Contract Management	90				
	BCP Indicator	Significant environmental impacts of transporting products	80-90				
ECO-EFFICIENCY							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 70				
	103-2	The management approach and its components	70				
	103-3	Evaluation of the management approach	70				
Eco-Efficiency	BCP Indicator	Eco-efficiency (EBITDA/Total GHG emissions of RFBG and MKBG)	70				
Material Topics							
GRI 400 Social Standard Series							
EMPLOYMENT							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 111-120				
	103-2	The management approach and its components	111-120				
	103-3	Evaluation of the management approach	111-120, 134-136				
GRI 401: Employment	401-1	New employee hires and employee turnover	113, 120, 135			SDG 5 - Gender equity SDG 8 - Employment, Youth employment	
OCCUPATIONAL HEALTH AND SAFETY							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 98-103				
	103-2	The management approach and its components	98-103				
	103-3	Evaluation of the management approach	98-103, 136-139				
GRI 403: Management Approach Disclosure 2018	403-1	Occupational health and safety management system	98				Yes
	403-2	Hazard identification, risk assessment, and incident investigation	99				Yes
	403-3	Occupational health services	100				Yes
	403-4	Worker participation, consultation, and communication on occupational health and safety	101				Yes
	403-5	Worker training on occupational health and safety	102				Yes
	403-6	Promotion of worker health	102				Yes
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	64				Yes
GRI 403: Occupational Health and Safety 2018	403-9	Work-related injuries	136-139			SDG 3 - Occupational health and safety SDG 8 - Occupational health and safety SDG 16 - Occupational health and safety	Yes
	403-10	Worker-related ill health	139			SDG 3 - Occupational health and safety SDG 8 - Occupational health and safety SDG 16 - Occupational health and safety	Yes
	OGSS	Emergency Preparedness	101				Yes
TRAINING AND EDUCATION							
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37 114-117				
	103-2	The management approach and its components	114-117				
	103-3	Evaluation of the management approach	114-117				

GRI Standard		Disclosure	Page number(s) and/or URL(s)	Part Omitted	Omission Reason	Explanation	SDGs	External Assurance
	404-1	Average hours of training per year per employee	136				SDG 4 - Employee training & education	
GRI 404: Training and Education 2016	404-3	Percentage of employees receiving regular performance and career development reviews	120				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	23-37, 107-110					
	103-2	The management approach and its components	107-110					
	103-3	Evaluation of the management approach	107-110					
GRI 412: Human Rights Assessment 2016	412-1	Operations that have been subject to human rights reviews or impact assessments	107					
LOCAL COMMUNITIES								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 121-127					
	103-2	The management approach and its components	121-127					
	103-3	Evaluation of the management approach	121-127					
GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	121					
	413-2	Operations with significant actual and potential negative impacts on local communities						
	BCP Indicator	Community engagement score	121					
SUPPLIER SOCIAL ASSESSMENT								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 62-64					
	103-2	The management approach and its components	62-64					
	103-3	Evaluation of the management approach	62-64					
GRI 414: Supplier Social Assessment 2016	414-2	Negative social impacts in the supply chain and actions taken	64				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	64					
MARKETING AND LABELING								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37, 82-88, 104-106					
	103-2	The management approach and its components	82-88, 104-106					
	103-3	Evaluation of the management approach	82-88, 104-106					
GRI 417 MARKETING AND LABELING	417-3	Incidents of non-compliance concerning marketing communications	139					
Product and service Development	BCP Indicator	Net Promoter Score (NPS) / Customer satisfaction	82-88, 104-106, 139					
SOCIOECONOMIC COMPLIANCE								
GRI 103 Management Approach 2016	103-1	Explanation of the material topic and its Boundary	23-37					
	103-2	The management approach and its components	51-54					
	103-3	Evaluation of the management approach	52-53					
GRI 419: Socioeconomic Compliance 2016	419-1	Non-compliance with laws and regulations in the social and economic area	139				SDG 16 - Compliance with laws and regulations	

The Adherence of the Ten Principles of the UN Global Compact

GC Scope or Principle	Criteria of GC Advanced Level	Bangchak Approach	Disclose
Scope: Implementing the Ten Principles into Strategies & Operations	Strategy, Governance and Engagement		
	1. The COP describes mainstreaming into corporate functions and business units	<ul style="list-style-type: none"> Bangchak and Sustainability Sustainability Strategy 	21 38-44
	2. The COP describes value chain implementation	<ul style="list-style-type: none"> Bangchak Overview Bangchak Value Chain Supply Chain Management 	10-11 14-15 62-64
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 	107-110
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 / Sustainability Policy 	21
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 (Employee) 	24-25
Principle 5: The effective abolition of child labour	8. The COP describes effective monitoring and evaluation mechanisms of labour principles integration	<ul style="list-style-type: none"> Safety & Occupational Health Human Rights Employee Stewardship 	98-101 107-110 111-120
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 / Sustainability Policy 	21
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"> Environment Performance 	21 70-91
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 Eco-Efficiency Environmental Cost Accounting 	82-88 70 91

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 anticorruption	• Bangchak and Sustainability / Sustainability Policy	21
	13. The COP describes effective management systems to integrate the anti-corruption principle	• Good Corporate Governance and Anti-Corruption	51-54
	14. The COP describes effective monitoring and evaluation mechanisms for the integration of anti-corruption	• Supply Chain Management	62-64
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 / Principle and conceptual framework of sustainability	21
	16. The COP describes strategic social investments and philanthropy	• Community & Social Engagement	121-127
	17. The COP describes advocacy and public policy engagement	• Bangchak and Sustainability / Sustainability Policy	21
Scope: Corporate Sustainability Governance and Leadership	18. The COP describes partnerships and collective action	• Principle and conceptual framework of sustainability	21
	Governance		
	19. The COP describes CEO commitment and leadership)	• Message from the President and CEO • Principle and conceptual framework of sustainability	8-9 38-44
	20. The COP describes Board adoption and oversight	• Bangchak and Sustainability / Sustainability Corporate Structure • Good Corporate Governance	21 51-54
	21. The COP describes stakeholder engagement	• Bangchak and its stakeholders	23-31

LR Independent Assurance Statement

Relating to the Bangchak Corporation Public Company Limited's Integrated Sustainability Report for the calendar year 2020

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 for all specific standard disclosures listed below except for Energy consumption within the organization, Direct (Scope 1) GHG emission, and Energy indirect (Scope 2) GHG emission and reduction of GHG emissions where a reasonable level of assurance and 5% materiality is applied. 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 2020 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:
 - GRI 303-3: Water withdrawal⁽²⁾(2018)
 - GRI 303-4: Water discharge⁽²⁾ (2018)
 - GRI 303-5: Water consumption⁽²⁾ (2018)
 - GRI 305-7: Nitrogen Oxides (NOx), Sulfur Oxides (SOx), and other significant air emissions (VOC and H2S)⁽³⁾(2016)
 - GRI 306-2: Waste by type and disposal method⁽³⁾(2016)
 - GRI 306-3: Significant spills⁽³⁾(2016)
 - GRI 403-9: Work-related injuries⁽²⁾(2018)
 - GRI 403-10: Work-related ill health⁽²⁾ (2018)
 - OG6: Volume of Flared and Vented Hydrocarbon⁽³⁾
 - OGSS Emergency Preparedness⁽²⁾
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below:
 - GRI 302-1: Energy consumption within the organization⁽⁴⁾(2016)
 - GRI 305-1: Direct (Scope 1) GHG¹ emissions⁽⁴⁾(2016)
 - GRI 305-2: Energy indirect(Scope 2) GHG emissions⁽⁴⁾(2016)
 - GRI 305-5: Reduction of GHG emissions⁽⁴⁾ (2016)

Notes:

- 1) Excludes subsidiaries and related companies in Thailand and overseas unless stated otherwise.
- 2) Includes BCP Refinery, refinery office at Sukhumvit Soi 64 and BCP Head office at M Tower.
- 3) Limited to BCP Refinery and refinery office at Sukhumvit Soi 64 only.
- 4) Also includes BCP subsidiaries and related companies in Thailand, where BCP holds at least 42% in equity.

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, we believe that BCP has, in all material respects disclosed accurate and reliable performance data and information related to the following selected indicators.

- GRI 302-1: Energy consumption within the organization⁽⁴⁾(2016)
- GRI 305-1: Direct (Scope 1) GHG emissions⁽⁴⁾(2016)
- GRI 305-2: Energy indirect(Scope 2) GHG emissions⁽⁴⁾(2016)
- GRI 305-5: Reduction of GHG emissions⁽⁴⁾ (2016)

¹ GHG quantification is subject to inherent uncertainty.

Notes:

- 4) Also includes BCP subsidiaries and related companies in Thailand, where BCP holds at least 42% in equity.
The opinion expressed is formed on the basis of a reasonable level of assurance and at the 5% materiality.

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
- 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 interviewing representatives of some BCP business units which have engaged 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 processes, and systems. We also spoke with key people in various departments responsible for compiling the data and drafting the Report.
- Conducting the verification remotely through VDO conference in-order to:
 - interview people involved in reporting data of selected indicators from BCP and all affiliates within the reporting scope.
 - verify evidences made available for the selected indicators.

LR did not verify the data back to its original sources, nor did it assess the accuracy and completeness of the data reported by individual locations for all selected indicators, except for energy consumption within the organization, Scope 1 GHG emission, Scope 2 GHG emission and reduction of GHG emission.
- Reviewing BCP's Integrated Sustainability Report 2020 based on the agreed criteria and term of engagement.

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 open dialogue with all of its stakeholders, applying various methods and tools at each business unit and then consolidating these results at corporate level. BCP's sustainability vision and strategy, and the content of this report, have been informed by the views and expectation 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 extensive criteria for determining which issue/aspect is material. These material issues have then been prioritised and influenced BCP's performance disclosures.
- **Responsiveness:**
BCP has established and implemented 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 in future reports the scope of water related impact assessments should be expanded to regional oil terminals, other subsidiaries and related companies in Thailand to demonstrate responsiveness at a broader level.
- **Reliability:**
Data management systems are considered to be properly defined and implemented for collecting and calculating the data and information associated with the selected indicators. However, it was noted that:
 - Gas flow meters, which were used for monitoring of fuel gas to burners that applied for calculation of Natural Gas consumption, were not corrected the reading value with actual temperature. We believe that the accuracy of the data related Fuel Gas and Natural Gas consumption of Refinery business and its Scope 1 GHG emission from this

stationary combustion source can be improved by correction the reading value of flow meter with actual temperature.

- The aggregate data calculation sheet for the quantification of Biogas flared at KSL Green Innovation Plc -Bo Phloi plant (KSL-BP) does not provide the formula link for traceability back to raw data. We believe that the reliability of biogenic CO₂ emission from biogas flared can be improved by improving this aggregated data calculation sheet.
- Data collection for the consumption of vehicle fuel at KSL Green Innovation Plc -Bo Phloi plant (KSL-BP) and KSL Green Innovation Plc - Nam Phong plant (KSL-NP), is available but it does not breakdown the types of fuel consumed. Though the current report applied the highest emission factor among these fuels for the calculation, we believe that the accuracy of energy consumption and GHG emission could be improved by applying the emission factors for each fuel type.

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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