

Refinery Business Operating Results



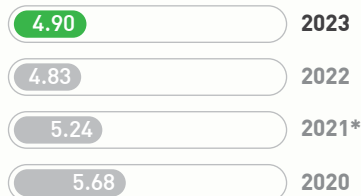
Energy Consumption in Production Unit (% FOEB)



Target



Performance



*Annual Turnaround

Climate Change Management

Climate change from the greenhouse gas emission is a sustainability matter of all industries. The Company acknowledges the risks and physical impacts associated with climate change, as well as the regulatory changes related to climate transition impacting the Company and stakeholders. This commitment aligns with the Paris Agreement, which aims to limit global temperature rise to below 2 degrees Celsius, and the UN Sustainable Development Goal (SDG) 13. Bangchak group has declared a Carbon Neutrality target by the year 2030, and aims to reduce greenhouse gas emissions (Scopes 1 and 2) by 30% and ultimately achieve Net Zero GHG Emissions by 2050. The greenhouse gas emissions target is set as a corporate

key performance indicator (KPI), and as evaluation criteria for the Group's CEO, president, and the management's performance. Additionally, the Company has determined the strategies, assessed risks and opportunities related to climate change in both the short and long term, in line with the Task Force on Climate-Related Financial Disclosures (TCFD) guidelines. These assessments cover financial implications associated with physical risks and transition risks such as those risks associated with carbon pricing policy, crude oil market price, organizational reputation, and climate impact reporting requirements. Additionally, there are assessments of policies supporting the renewable energy technology and greenhouse gas reduction. Opportunities also exist in carbon capture, utilization, and storage (CCUS) technologies, as well as the market demand for renewable electricity. For more information, please see the 2024 Task Force on Climate-Related Financial Disclosures (TCFD) Report as per the QR Code.



More information available in

Task Force on
Climate-Related Financial
Disclosures (TCFD) 2024

The Company has a sustainability policy on the efficient management of resources and the environment, promoting awareness in the management and employee levels regarding environmental risks and impacts from business operations, covering climate change, by requiring regular audits, risk management and impact assessment that may affect the environment and climate, promoting the use of technology and innovation to develop environmental, energy, water, and waste management systems to be efficient throughout the business process and in new businesses, as well as developing cooperation with local and international organizations in the management of resources, environmental care, adaptation, and mitigation of climate change impacts to be effective and economically valuable.

Climate Governance

The Company defined the governance structure to govern the greenhouse gas emissions reduction from the director to operator levels to ensure that the system and operation are integrated and aligned with the goals. The matter is governed by Sustainability and Corporate Governance Committee (SCGC), acting as presenting the sustainable development guidelines to the board of directors in order to govern the operations of board of directors and the management to be aligned with sustainability guidelines and to revise the sustainable development guidelines by benchmarking with the international standard and propose to the board of directors to consider the revision to be keep up with the modern world, and responding to stakeholders' requirements, along with delivering sustainable development policy to the Sustainability Policy Committee (SPC).

The Sustainability Policy Committee (SPC) has a responsibility to determine and revise the sustainable development policy, operations, and targets. Along with the guidelines on

processes related to the Company's sustainability strategy that covers the climate change management, related risks and opportunities for business sustainability development, and support the operations from Sustainability Management Committee (SMC). SMC has a responsibility to implement the policy and initiatives in place regarding climate change, to assess risks and opportunities for climate conditions, and to conduct initiatives to reduce greenhouse gas emissions. Furthermore, the Company recognizes the importance of setting up Net Zero Development Division to support the operation and steer Bangchak Group to achieve its milestones and targets.

The Company has expressed its commitment to participate in driving and supporting the achievement of carbon neutrality and net greenhouse gas emissions by the year 2050. This effort is carried out under the Thailand Carbon Neutral Network, where it serves as a "Climate Action Leading Organization" (CALO).

2023 Targets



Greenhouse gas emission scope 1 of the refineries amounting less than **941,640** tonnes of CO₂ equivalent



Greenhouse gas emission scope 2 of the refineries amounting less than **4,400** tonnes of CO₂ equivalent



Office buildings and regional offices to achieve **"Carbon Neutrality"** (Scope 1 and Scope 2)

However, while the world prioritizes investment in clean energy, which is growing rapidly, the transition to energy alternatives takes time. Coupled with critical risk factors such as energy crises, which are expected to impact Bangchak Group's countries of operations, it remains crucial to maintain a stance in business operations that emphasize balancing the energy trilemma. This trilemma consists of three key aspects: Energy Security: being accessible to public; Energy Affordability; finding opportunities to increase energy stability while being affordable and sustainable in resources and environment; and Environmental Sustainability; balancing the use of global energy sources while considering environmental impact to release carbon dioxide emissions to maintain a sustainable world.

Climate Change Strategy and Action Plan

To achieve the goal of carbon neutrality by the year 2030 and the target of net zero greenhouse gas emissions by 2050, the Company has developed the BCP 316 NET strategy, which encompasses four key directions. These directions emphasize processes that are tangible and can yield long-term results:



B: Breakthrough Performance

The goal is to reduce the greenhouse gas emissions by 30% from the baseline year (2019) by enhancing energy efficiency through high-performance production processes, minimizing carbon emissions, and environmentally-friendly clean energy and fuel use in the production process. The details are as follows:

- Energy management in the refinery business, with projects implemented to enhance energy efficiency, aiming to reduce greenhouse gas emissions. Examples include installing heat-insulating surface coating materials on the furnace wall to prevent heat loss, upgrading heat exchangers, and reducing high-pressure steam usage. Additionally, the Company studied and assessed carbon dioxide (CO₂) emissions through Life Cycle Assessment (LCA) of the products.
- The marketing business focuses on using electricity from solar energy sources. This includes using solar-powered air conditioning systems in Inthanin and Dakasi stores, and installing solar rooftops at the service stations. The goal is to achieve Net Zero Service Stations. Furthermore, in collaboration with business partners, EV chargers are being installed at selected service stations along major routes to support the increasing adoption of electric vehicles (EVs) across all regions of Thailand. In 2023, 37 service stations were under the process of applying for licenses to install solar energy production units expected to total 1 MW, with an estimated reduction of over 600 tonnes of CO₂ equivalent emissions per year.



C: Conserving Nature and Society

The greenhouse gas emission reduction target of 10% from the baseline year (2019). Bangchak Group has studied the feasibility and related risks on the activities to develop carbon capture and storage from the land and sea ecosystem last year. Bangchak Group has worked with multiple partnerships to exchange knowledge from experiences and ways to compensate the domestic and international carbon credit standard certification to further the green and blue carbon initiatives.

More information available in



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P: Proactive Business Growth and Transition

The greenhouse gas emissions reduction target of 60% from the baseline year (2019) supported by the energy transition in order to achieve net zero greenhouse gas emissions from green energy technologies and achieve sustainable growth, which are also expected to be a New S-Curve business for Bangchak Group by focusing on green energy and energy transition technologies.



NET: Net Zero Ecosystem

The Bangchak Group of Companies realizes the need to prepare Thai society for the goal of Carbon Neutrality by 2050 and Net Zero by 2065. Therefore, it drives collaboration with partners to prepare stakeholders both inside and outside the organization to have knowledge, understanding, experience, and awareness of the country's greenhouse gas management, carbon mechanisms, including trading systems, tax systems, and carbon credits, which are considered new issues for Thai society at the individual, community, SMEs, and business organization levels. In the past year, Bangchak Group communicated and created experiences together in various channels throughout the business value chain to achieve the most as follows:

- **Establishment of Winnonie E-Bike Rental Service Platform** Electric Motorbike hire-purchase service and focuses on Battery as a Service (BaaS) platform. Currently, it accumulates to 1,050 rental customers and 120 battery swapping stations, reducing gasoline consumption and spending to the customers of more than THB 41 million per year while reducing accumulated 2,100 tonnes CO₂ equivalent (when compared to motorbike fueled by gasoline).
 - **Fuel pipeline Transportation Business by BFPL and LNG Procurement and Distribution Business by BTSG** to support the business of providing and distributing low-carbon alternative fuels. In 2023, the volume of oil transportation through pipelines exceeded 4,416 million liters, which can reduce greenhouse gas emissions compared to road transportation by more than 22,084 tonnes of CO₂ equivalent per year.
 - **Partnership with Thanachok Oil Light Company Limited and BGGI Public Company Limited to establish BSGF Company Limited** to operate the business of producing and distributing sustainable alternative fuel (SAF) from used cooking oil at SAF production unit, Bangchak Phra Khanong Refinery. In addition, "Tod Mai Ting", also known as "Fry to Fly" Project, was established with partners inside and outside the value chain to collect used cooking oil through Bangchak service stations/food industry/restaurants/households. SAF is a fuel that the aviation sector around the world can use as a substitute immediately without affecting the engine, and help reduce carbon dioxide emissions by up to 82,000 tonnes of CO₂ equivalent per year. It also supports the business of producing and distributing SAF fuel from used cooking oil to return to the production process as much as possible.
- **Carbon Offset Scope 1 and 2 at the Office Building and Regional Offices** that released in 2023 by buying carbon credits from BCPG Public Company Limited headquarters office and was awarded carbon emission reduction from Low Emission Support Scheme: LESS by reducing energy consumption, electricity, and waste separation for recycling.
 - **Increase in Carbon Markets Club Network** As of December 31,2023, there are entities and individual members totaling 772 members (165 entities and 607 individuals). In the past year, the Carbon Markets Club has had many actions as follows:
 - **Support and Share Carbon Credits Transaction** via Carbon Markets Place with voluntary transactions. In December 2023 TVER and RECs carbon credit trading totaling 164,160,507 trees planted equivalent. Moreover, the members also broadcast the buy-sell posts on the Carbon Markets Club website.
 - **Communication to Raise Awareness** disseminate information and knowledge about global warming, carbon credit trading, and reducing greenhouse gas emissions through various activities and operations.
 - **System Development and Launch to demo the Carbon Footprint Tracking for Organization (CFO)** free of charge as a tool that develops a calculation system adhering from ISO14064 standard to help members identify the causes of significant greenhouse gas emissions and find ways to reduce them.

More information available in



www.carbonmarketsclub.com

- **Climate Action for Employees** The KPIs are set in place for the second year to focus on the greenhouse gas emissions reduction behaviors to reduce the single-use plastic waste separation, use of public transportation, and reduce household electricity consumption by tracking in climate actions throughout the year. There are more than 500 employees in the process and can reduce greenhouse gas emissions by 90 tonnes of CO₂ equivalent, 28% higher than last year.

Operating Results in 2023

In 2023, Bangchak group has released greenhouse gas with a total of **960,241.72** ton of CO₂ equivalent, and can be categorized as follows:

