







## Climate Change

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

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

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

<h3 style="margin: 0;">Strategy</h3> <ul style="list-style-type: none"> <li style="margin-bottom: 10px;">  <span style="margin-left: 10px;">Use clean energy in the production process</span> </li> <hr style="border: 0.5px solid white;"/> <li style="margin-bottom: 10px;">  <span style="margin-left: 10px;">Conduct Carbon Footprint of products</span> </li> <hr style="border: 0.5px solid white;"/> <li style="margin-bottom: 10px;">  <span style="margin-left: 10px;">Increase energy efficiency</span> </li> <hr style="border: 0.5px solid white;"/> <li style="margin-bottom: 10px;">  <span style="margin-left: 10px;">Expand investment in renewable and clean energy businesses in order to become a carbon neutral company</span> </li> </ul>	<h3 style="margin: 0;">2019 Targets</h3> <ul style="list-style-type: none"> <li style="margin-bottom: 10px;">  <span style="margin-left: 10px;">Carbon offsets from the green power business by 700,00 tons of carbon dioxide equivalent/year</span> </li> <hr style="border: 0.5px solid #ccc;"/> <li style="margin-bottom: 10px;">  <span style="margin-left: 10px;">Scope 1 GHG emissions target: 1,078,426 tCO<sub>2</sub>e, and scope 2 GHG emissions target: 11,344 tCO<sub>2</sub>e</span> </li> <hr style="border: 0.5px solid #ccc;"/> </ul>
--	--

### 2019 Performance

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

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




For carbon offsets from investment in the green power business of BCPG Public Company Limited, the company can offset 800,000 tCO<sub>2</sub>e. This achieves the carbon offset target of year 2019.

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

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

### Future Plans

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

 <p>Project to clean the heat exchanger before entering the refinery's stove and using anti-calc agent at the heat exchanger.</p>	 <p>Project to increase heat exchange equipment before entering the furnace of the distillation unit, sequence 2 and 3</p>	 <p>Project to increase the heat exchanger before entering the furnace of the Oil Quality Improvement Unit (DGO-HDSU)</p>
--	---	--

Reducing the power consumption at the stove of the unit above will result in energy efficiency and reduction of GHG emissions. The company has plans to invest in clean energy business. With the aim to be a company with low carbon footprint (Low Carbon Company), the company has implemented a project to produce carbon footprint in conjunction with the National Metal and Materials Technology Center (MTEC), National Institute of Science and Technology (NSTDA) to assess the efficiency of greenhouse gas emissions in the production process. The project has been going on since 2017 and has been certified carbon product label with the Thailand Greenhouse Gas Management Organization in 2018.