Future Plans

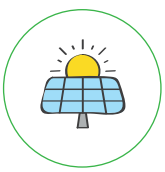
For the future energy reduction plan, Bangchak has collaborated with internal experts for technology and knowledge transfer as well as for future projects development. This collaboration ensures that the Company's energy consumption development plan will be effective. In 2021, the Company will have an 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 stream from residual heat in hydrogen production unit

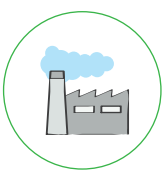
Climate Change

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 net carbon dioxide emission 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