

RATCH PATHANA ENERGY PCL.

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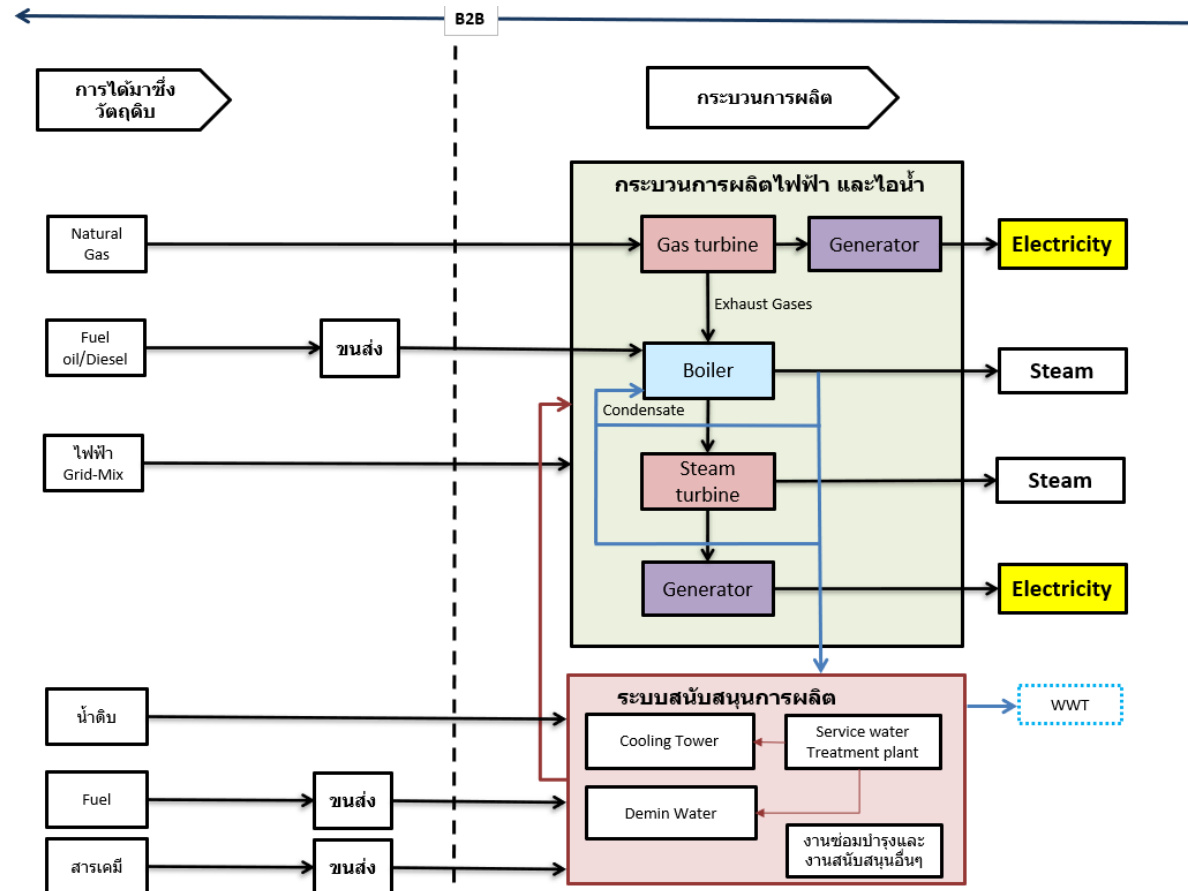
Carbon Footprint Assessment of Electricity and Steam Products

Ratch Pathana Energy Public Company Limited

Ratch Pathana Energy Public Company Limited

Item	Description
Product Name	1. Electricity 2. Steam
Assessment Boundary	B2B (Business-to-Business)
Functional Unit	1. Electricity: 1 kWh (kilowatt-hour) 2. Steam: 1 GJ (gigajoule)
Main Raw Materials	Natural gas and deionized water
Production Process	Fuel combustion and electricity generation using a combined-cycle cogeneration system
Data Collection Period	1 January 2023 – 31 December 2023

Data Collection Boundary



Compliance with Product Category Rules (PCR)

Item	PCR Requirements	Description
Reference PCR	Product Category Rules for Electricity and Steam (2016)	Specify the name of the PCR used as a reference for the calculation.
Functional Unit	Electricity: kWh Steam: GJ	Specify the functional units defined by the PCR.
Assessment Boundary	B2B (Business-to-Business)	Specify the assessment boundary defined by the PCR.

Data Collection Methods and Assumptions

Life Cycle Stage	Primary Data	Secondary Data	References
Raw Material Acquisition	- Fuel consumption for electricity and steam generation - Water consumption for steam generation - Transportation distances of raw materials	- Emission Factors (EF) for liquid and gaseous fuel production - EF for biomass production - EF for chemicals used in water treatment - EF for transportation	TGO CFP EF (July 2022)
Production Process	- Electricity consumption from the grid mix - Raw water production data - Combustion data for various fuel types used in production - Biomass fuel combustion data - Auxiliary material consumption - Waste generated from production processes	- EF for electricity - EF for chemicals used in raw water treatment - EF for fuel combustion - EF for biomass combustion - EF for auxiliary materials - EF for waste management	TGO CFP EF (July 2022) TGO CFO EF (April 2022)

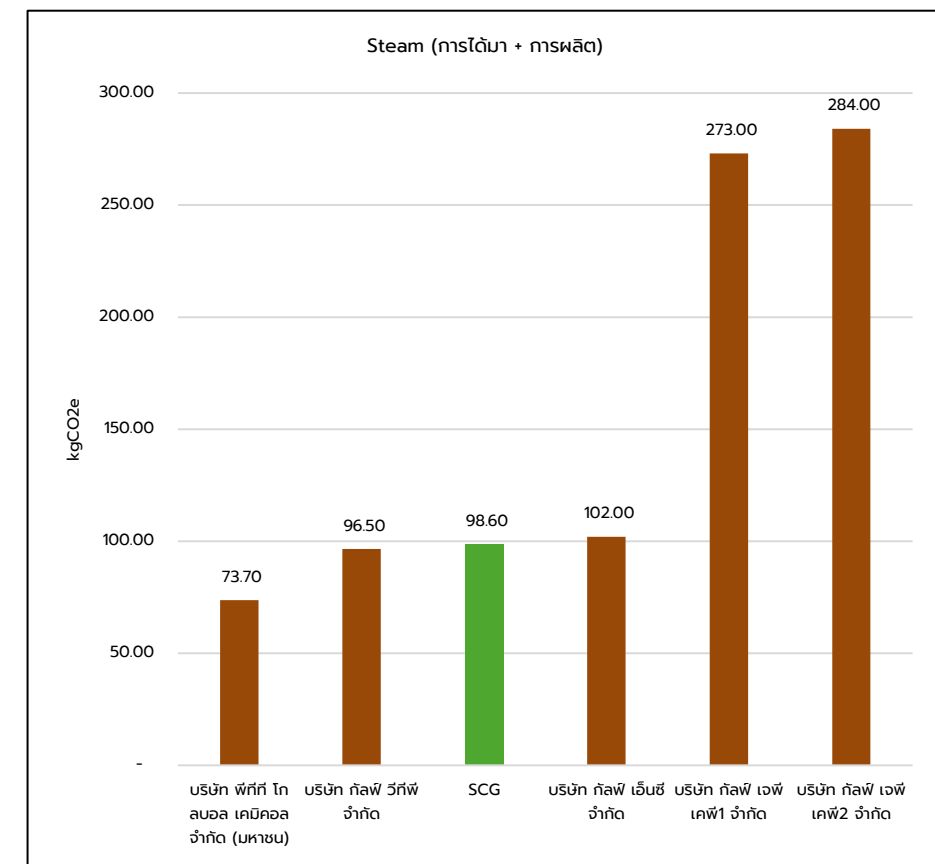
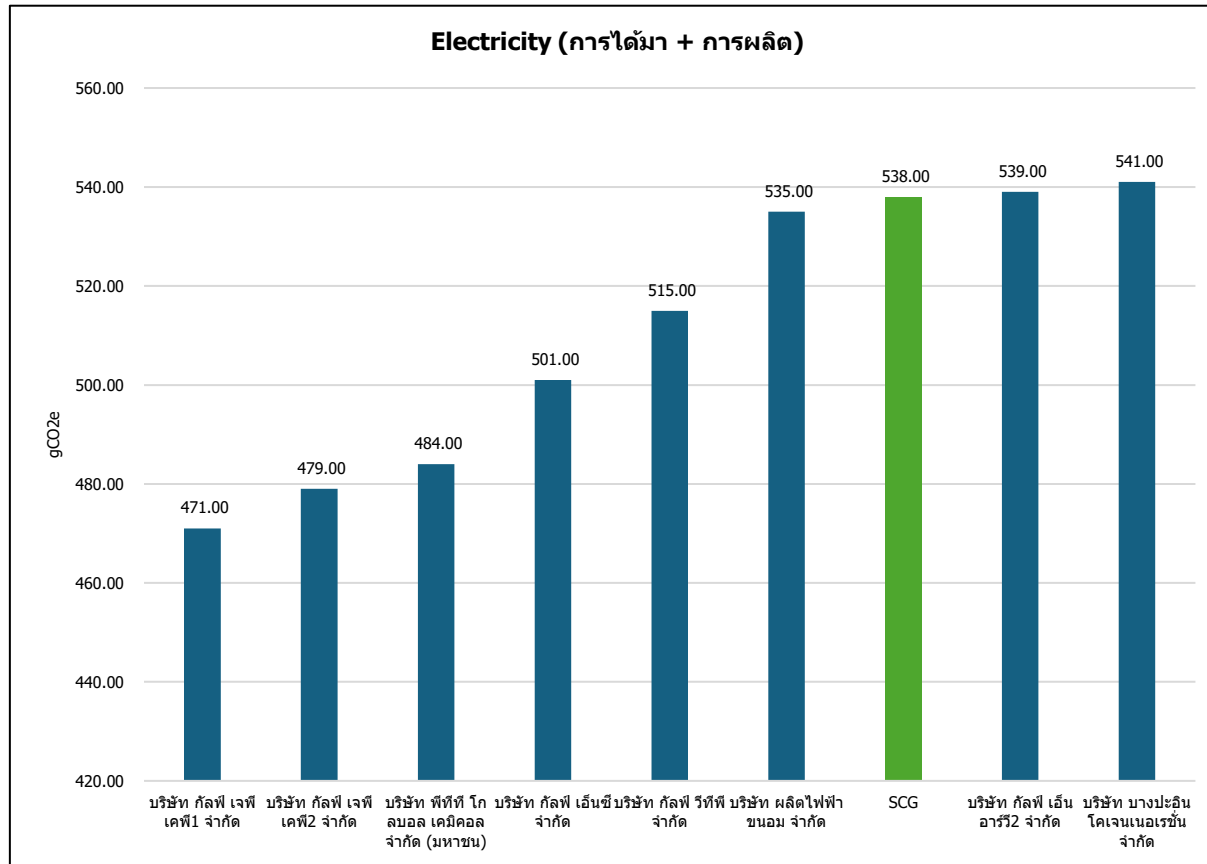
Note: EF = Emission Factor; TGO = Thailand Greenhouse Gas Management Organization (Public Organization).

Summary of Carbon Footprint of Product (CFP) Assessment Results

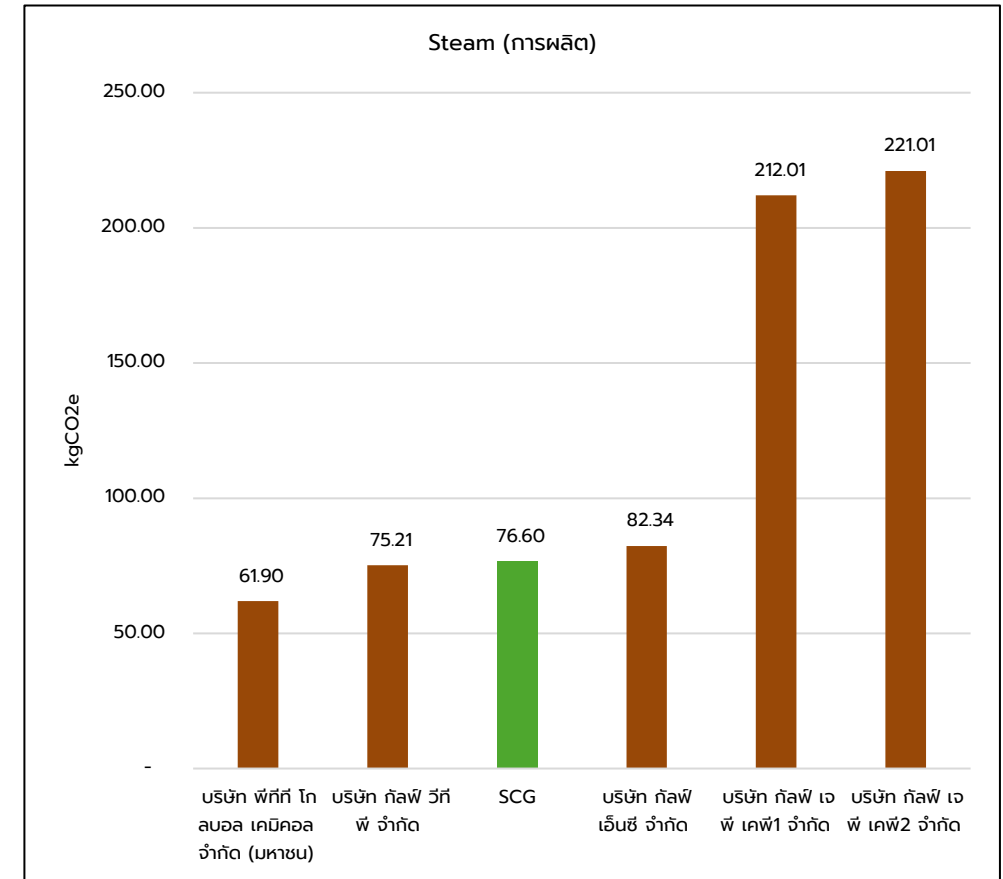
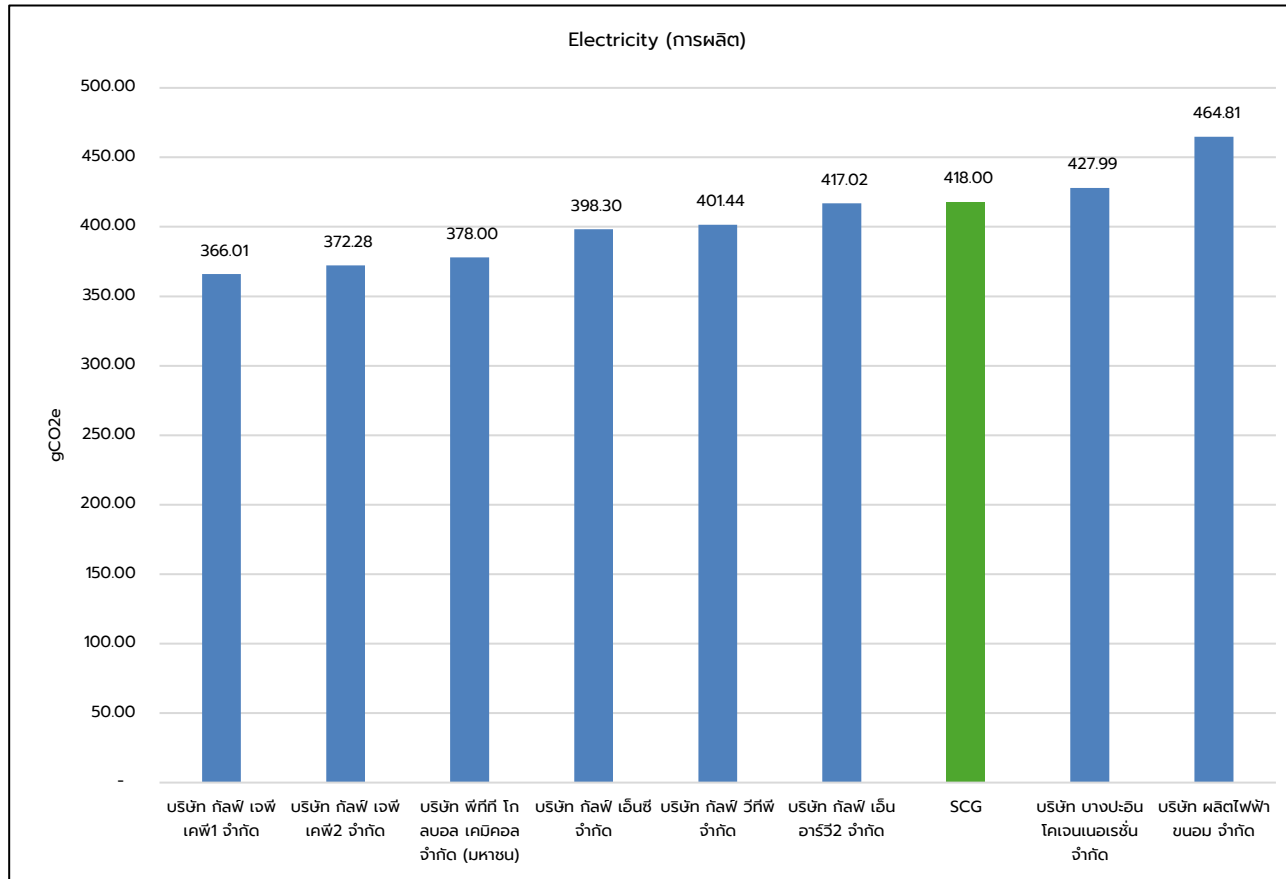
ลำดับ	ผลิตภัณฑ์	ขั้นตอนการได้มาของวัตถุดิบ		ขั้นตอนการผลิต		Total CFP /FU
		รายการ	%Hotspot	รายการ	%Hotspot	
1	ไฟฟ้า	การได้มาของ NG	99.97%	การเผาไหม้ NG	99.92%	538.00 gCO ₂ eq
2	ไอน้ำ	การได้มาของ NG	99.97%	การเผาไหม้ NG	99.92%	98.60 kgCO ₂ eq

ลำดับ	ผลิตภัณฑ์	Total CFP /FU	ค่า CFP (kgCO ₂ eq/FU) แต่ละขั้นตอน				
			การได้มาซึ่งวัตถุดิบ	กระบวนการผลิต	การกระจายสินค้า	การใช้งาน	การจัดการซาก
1	ไฟฟ้า	538.00 gCO ₂ eq	120.00	418.00	-	-	-
2	ไอน้ำ	98.60 kgCO ₂ eq	22.00	76.60	-	-	-

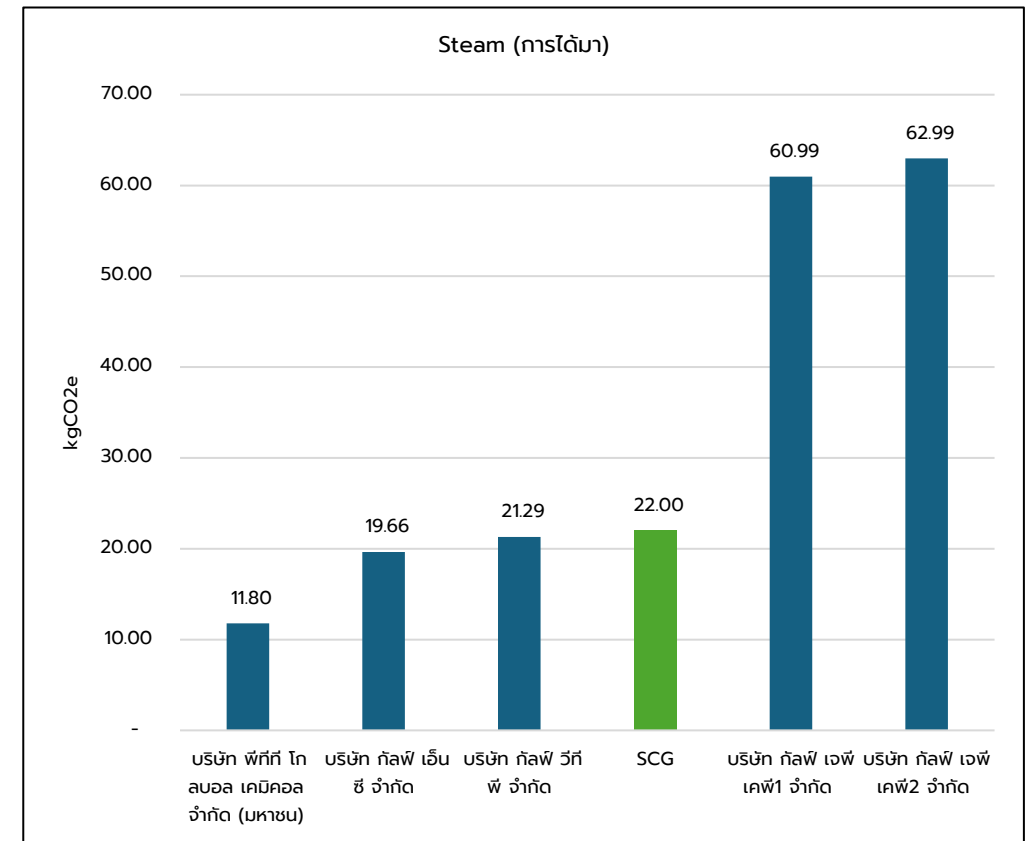
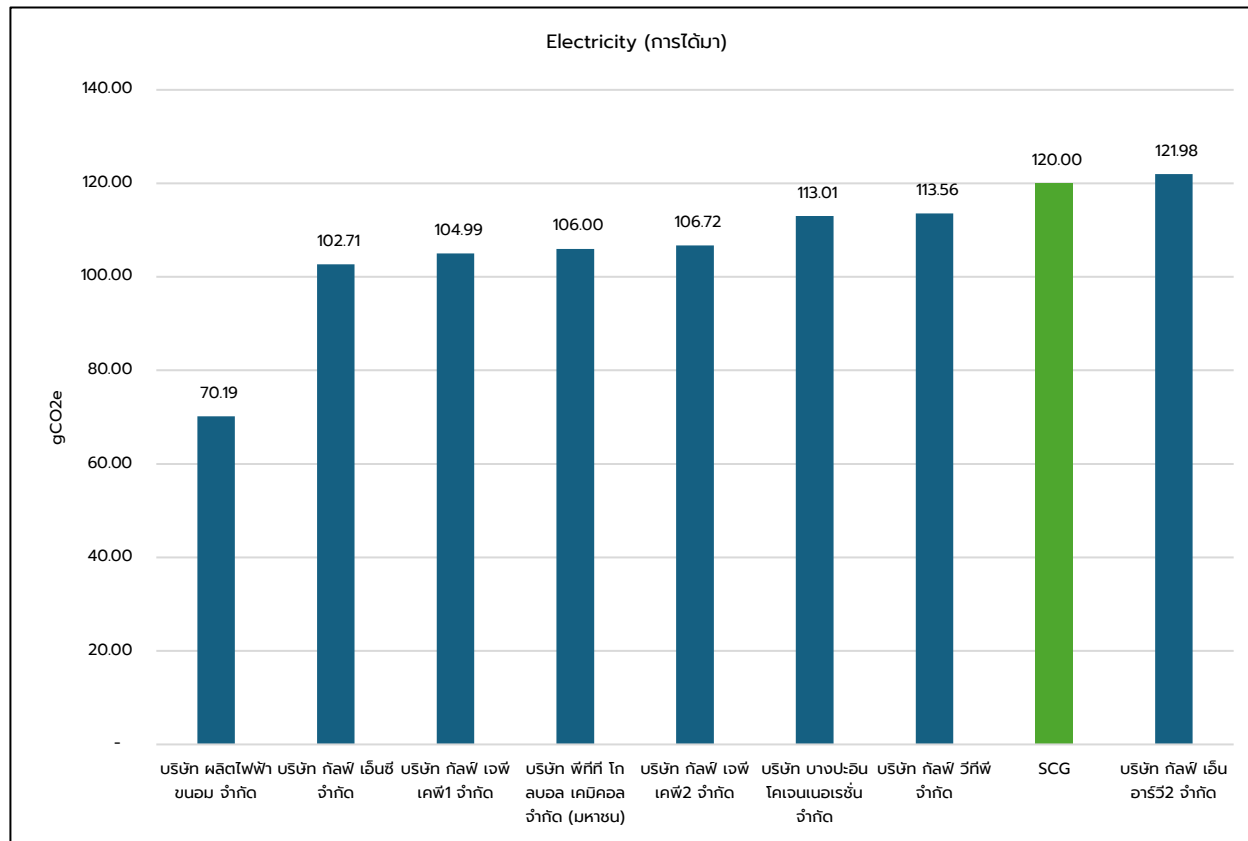
Summary of Carbon Footprint of Product (CFP) Assessment Results



Data for Calculating Organizational Scope 2 Greenhouse Gas Emissions



Upstream Emission Factor (Upstream EF) for Calculating Organizational Scope 3 Greenhouse Gas Emissions



Carbon Footprint of Product (CFP) Certification Document

Certificate Number:
TGO CFP FY24-124-1515

THAILAND GREENHOUSE GAS
MANAGEMENT ORGANIZATION
(Public Organization) TGO

CONGRATULATE

Sahacogen (Chonburi) Public Company Limited

For
Successfully meeting the requirements of
the Carbon Footprint Label Scheme for

Electricity 1 kWh

B2B Scope: 538 gCO₂e

as certified by TGO

 538 gCO₂e

Registration Date: 9 May 2024 Expiration Date: 8 May 2027



Mr. Kiatchai Maitriwong
Executive Director
Thailand Greenhouse Gas Management Organization (Public Organization)

Certificate Number:
TGO CFP FY24-124-1516

THAILAND GREENHOUSE GAS
MANAGEMENT ORGANIZATION
(Public Organization) TGO

CONGRATULATE

Sahacogen (Chonburi) Public Company Limited

For
Successfully meeting the requirements of
the Carbon Footprint Label Scheme for

Steam 1 GJ

B2B Scope: 98.6 kgCO₂e

as certified by TGO

 98.6 kgCO₂e

Registration Date: 9 May 2024 Expiration Date: 8 May 2027



Mr. Kiatchai Maitriwong
Executive Director
Thailand Greenhouse Gas Management Organization (Public Organization)