4.3 Energy Management

ISO14064-1
Taichung Plant Completes 2022 Third-Party GHG Verification

-42%
Reduction in GHG Emission Intensity

The largest source of GHG emissions for PharmaEssentia is from Scope 2 purchased electricity, primarily due to the need for temperature control during the drug production process. Therefore, energy use and GHG emissions are closely managed. In 2023, following the global commercialization of major new drugs, overall sales volume and production increased, leading to a rise in total electricity consumption. However, energy intensity and greenhouse gas emission intensity decreased by 52.3% and 42% respectively compared to the previous year.

PharmaEssentia Taichung Plant - GHG Emissions Statistics for the Past Three Years

Category	ISO 14064-1	Definition	2019 (base year)	2020	2021	2022	2023 (Unaudited)
Scope 1	Category 1	Direct Energy	707.23	503.21	510.95	569.55	692.39
Scope 2	Category 2	Purchased Electricity from TPC	3055.00	3094.32	3029.61	3037.27	2905.97
Scope 3	Category 3	Transportation Related (Upstream + Taichung to Other Countries, Commuting + Attendance) No Downstream Transport	822.80	814.53	785.36	657.79	105.18
	Category 4	Indirect Emissions from Raw Materials/Services					669.86
Total		Total: CO_2e (ton-CO_2e)	4585.03	4412.06	4325.92	4264.60	4374.40
Carbon Intensity Trends (CO_2e)		Revenue (NT$ million)	305.69	557.26	656.51	2,882.04	5,105.62
		GHG Emission Intensity (tCO_2e / NT$ million)	15.00	7.92	6.59	1.48	0.86
		YoY Change	-	-47%	-17%	-78%	-42%

Note 1: The data in this table are specific to the PharmaEssentia Taichung Plant.
Note 2: The greenhouse gases included in the inventory are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).
Note 3: The statistical method used is the 'emission factor method'. The emission factors for purchased electricity follow the carbon emission factors announced by the Bureau of Energy, Ministry of Economic Affairs, with the factors for 2021 and 2022 being 0.509 ($kgCO_2e$/kWh) and 0.495 ($kgCO_2e$/kWh), respectively. Emission factors for CO2 equivalents of natural gas are based on the Global Warming Potential (GWP) of various GHGs as reported in the IPCC AR6 (2021).
Note 4: Intensity is measured by total annual sales revenue (million NT$) as a metric for usage density and emission intensity.
Note 5: This is the first time Scope 3 emissions are disclosed separately by category.

GHG Emissions Analysis

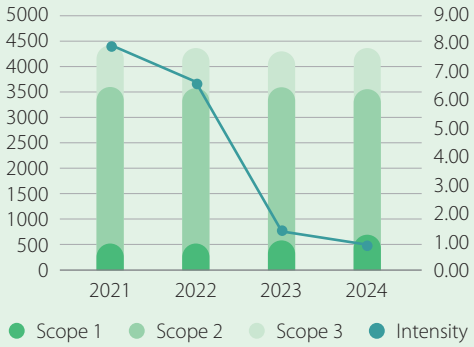
GRI 305-1~305-4

The main production facility in Taichung has implemented the ISO 14064-1: 2018 Organizational Inventory Management System. As of the end of 2023, the Taichung plant has obtained the 2022 SGS verification certificate. Additionally, the greenhouse gas inventory operations for 2023 have been completed, with external verification expected to be passed in Q3 of 2024

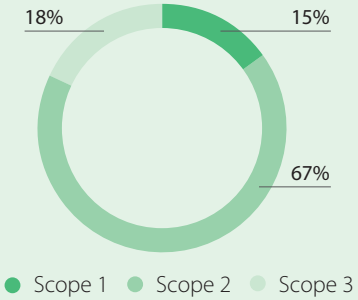

SGS
Greenhouse Gas Verification Statement
PharmaEssentia Corporation
Taichung Plant
ISO 14064-1:2018

Historical Carbon Emissions

Historical Carbon Emissions and Intensity Changes



Distribution of Scope 1-3 Emissions in 2023



Energy Use Analysis GRI 302-1, 302-3 CSA 2.3.1

Our company's energy consumption primarily consists of purchased electricity and natural gas. To comply with Good Manufacturing Practice (GMP) standards, which require maintaining a certain level of cleanliness even during non-production periods, our company has implemented various energy-saving actions. These include investing in suspended ice water chillers and variable frequency drive air compressors to achieve energy savings. As of 2023, the total energy consumption has shown a year-over-year declining trend, with energy intensity decreasing by 52.3% compared to the previous year.

-52.3%

Decrease in Energy Consumption Intensity

PharmaEssentia and Panco - Energy Consumption Statistics for the Past Three Years

Item	Year	2020	2021	2022	2023
Purchased Electricity	Renewable Energy Use (GJ)	0	0	0	0
	Non-Renewable Energy Use (GJ)	24,839.53	27,277.60	23,454.71	19,165.49
Natural Gas	(GJ)	8,395.93	7,339.11	9,045.06	8297.21
Petroleum	(GJ)	-	-	19.58	9.56
Total	Total Energy Consumption (GJ)	33,235.46	34,616.71	32,519.36	27,472.26
Intensity	Energy Intensity (GJ/million NT$)	59.64	52.73	11.28	5.38
	Revenue (million NT$)	557.26	656.51	2,882.04	5,105.62
	YoY Changes	-	-11.6%	-78.6%	-52.3%

Note 1: Energy consumption data includes PharmaEssentia and Panco.
Note 2: Starting in 2022, petroleum (including diesel and gasoline) was added to the statistics.
Note 3: Intensity is measured by the total annual sales revenue (million NT$) as a metric for usage density and emission intensity.

2023 Energy Conservation and Carbon Reduction Achievements GRI 302-4 GRI 305-5

At the Taichung plant, new energy-saving equipment was purchased in March and June 2023, including variable frequency drive air compressors and suspended ice water chillers. These investments resulted in savings of 87.3kWh of electricity, equivalent to a reduction of 43.2135 tones of CO_2e (approximately 314.2 GJ of energy), accounting for a total energy consumption reduction of about 1.7%.

1.7%

Reduction in total energy consumption with installation of new equipment at Taichung Plant