

4.2 Process Improvement

4.2.1 Greenhouse Gas Emission Management

In order to implement the Company's environmental policy of greenhouse gas carbon management, we regularly conduct an inventory of greenhouse gas emissions every year.

Since 2012, the Company has been collecting data in compliance with the information management requirements of the international standard ISO/CNS 14064-1. Starting in 2013, inventories have been conducted and verified by the Taiwan branch of BSI, a member of the British Standards Institution Group (Singapore), with successful certification.

The Company's greenhouse gas emission boundary setting principles follow the requirements and recommendations of ISO 14064-1 standard, the Greenhouse Gas Emission Inventory Guidelines, and the WBCSD/WRI Greenhouse Gas Inventory Protocol. Organizational boundaries are defined by 100% operational control and include the Guishan, Guanyin, and Dayuan factories, the Taipei Office, and subsidiary Suzhou Hong Sheng, all of which are fully included in the emissions inventory. The Company completed the greenhouse gas inventory for its 2023 consolidated financial statements ahead of schedule, and uses 2023 as the base year for the Group's greenhouse gas inventory.

2024 (January 1, 2024 – December 31, 2024) represents the thirteenth year of our inventory audit. The audit was conducted in accordance with ISO 14064-1:2018 and the requirements of the Ministry of Environment. Scope 3-other indirect emissions, upstream power-has been disclosed since 2020. Upstream transportation and wastewater treatment services were added in 2024. This data is provided to management as a reference for operational performance decision-making and to promote continuous improvement.

The types of greenhouse gases verified in 2024 are based on the seven greenhouse gases defined by the ISO 14064-1 standards; they include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. The activities, products, and services of each plant have been taken into consideration, and the survey results show that carbon dioxide emissions takes up the majority of emissions.

The emission factor is calculated based on greenhouse gas emission factor published by the Ministry of Environment, the electricity carbon emission factor announced by the Ministry of Economic Affairs for 2023, and the factor calculated from the Ministry of Environment's Product Carbon Footprint Information Network.

		2023	2024
Category 1	Direct emissions	23,883	31,374
Category 2	Energy indirect emissions	101,062	110,750
Subtotal		124,944	142,124
Density	Production volume (tons)	0.82	0.79
	Revenue (NTD million)	16.14	15.08
Category 3	Indirect greenhouse gas emissions from transportation	Not material	2,089
Category 4	Indirect greenhouse gas emissions from products used by the organization	18,487	20,113
Category 5	Indirect greenhouse gas emissions from using the organization's products	Not material	Not material
Category 6	Indirect greenhouse gas emissions from other sources	Not material	Not material
Other indirect subtotal		18,487	22,203
Total		143,431	164,327

Emission factors are based on the Global Warming Potential (GWP) as defined in IPCC AR6.

Unit: Metric tons of CO₂e

* Category 1: Scope 1; Category 2: Scope 2; Categories 3-6: Scope 3

* Scope:

- (1) Direct and indirect energy include Plant 1 to 5 (including off-site dormitories), Taipei Office, and subsidiary Suzhou Hong Sheng. Based on the scope of consolidated financial statements, Ding Sheng Material Technology Co., Ltd., Ding Sheng Material Technology Corporation, and Nicest International Trading Corp. do not have greenhouse gas emissions resulting from their operations in their respective locations and are therefore not included in the relevant calculations.
- (2) Other indirect emissions are inventoried based on the principle of materiality, using emission factors published by the Ministry of Environment's Product Carbon Footprint Information Network:
 - A. Upstream energy - Electricity (0.0973 kg CO₂/kWh). Because indirect emission factors for China's electricity are difficult to obtain, electricity consumption outside of Taiwan is excluded.
 - B. Wastewater treatment service volume - Based on the 2020 announcement for the wastewater (sewage) treatment services (Zhunan Park Wastewater Treatment Plant, Hsinchu Science-based Industrial Park Administration, Ministry of Science and Technology) (0.533 kg CO₂/m³).
 - C. Upstream transportation - Based on the 2022 published emission factor for commercial diesel trucks (0.131 metric tons CO₂ per ton-kilometer).

*Intensity - Production (tons) = Emissions (direct + energy indirect) metric tons CO₂e per ton of production.

*Intensity - Turnover (millions) = Emissions (direct + energy indirect) metric tons CO₂e / Turnover (NTD million)

Greenhouse gas reduction planning

In accordance with the Company's net-zero policy: We will continue to evaluate the energy efficiency of various equipment in the future, focusing on process improvement, energy conversion, and circular economy. We will prioritize energy efficiency when replacing equipment and promote low-carbon education and energy conservation and carbon reduction concepts internally to reduce greenhouse gas emissions.

Greenhouse gas reduction efforts began in 2013, with emissions (direct and energy indirect) of 235,798.276 metric tons of CO₂e recorded in 2013. Carbon reduction targets are set every five years, and a reduction of 13,233 metric tons of CO₂e was achieved in 2024, representing cumulative reduction of 52,601 metric tons of CO₂e and a cumulative reduction of 22%. The Company expects to achieve a cumulative reduction of 25% by 2028.

The main greenhouse gas reduction targets for 2025-2028 are as follows:

Net-Zero Emissions Strategy	Action plan
Process Improvement	- Establish a voluntary reduction plan. - Continuously plan and implement energy-saving measures, such as replacing old, high energy-consuming equipment with more energy efficient models, etc.
Energy Transformation	- Plan to install solar panels. - Solar energy is converted to self-generation and self-use. - Increase natural gas usage and reduce coal consumption. - Establish energy storage system to reduce energy waste.
Circular Economy	- Sustainable development of green and environmentally friendly products: GRS and ISCC certified products. - Increase the proportion of revenue from green products.

4.2.2 Energy Management

Zig Sheng is committed to achieving the Energy Administration's target of an average annual electricity savings rate of at least 1% from 2015 to 2024, and continues to promote its energy management plan to ensure efficient resource utilization. Zig Sheng's energy management plan incorporates a range of initiatives designed to meet annual energy savings targets through energy efficiency improvement projects, including equipment upgrade, adoption of high-performance machinery, and process optimization. To align with global trend of sustainable development, we have set a long-term goal of reducing electricity consumption by 30% by 2030, with 2021 set as the base year, and are progressively reducing overall energy consumption.

To increase the proportion of green energy used, we plan to invest in solar power generation equipment to reduce our dependence on conventional energy sources. We will also actively adopt energy storage solutions to enhance energy efficiency, minimize waste, and guarantee a stable energy supply. In recent years, we have actively sought assistance from external professional consultants and technical teams to evaluate and introduce more advanced energy-saving technologies and management strategies to ensure that our energy management plans can be continuously optimized and meet the latest environmental protection and energy-saving requirements. Through these measures, Zig Sheng will continue its efforts to achieve energy conservation and carbon reduction goals, fulfill its corporate social responsibility, and contribute to environmental sustainability.

(1) Energy Consumption Statistics

To continuously save energy and reduce carbon emissions while considering our use of electricity, fuel oil, natural gas, bituminous coal and steam, we aim to consume less energy each year compared to the previous year.

